Master Thesis

"Learning from Fraud: How Director Experience and Board Independence Shape Monitoring Effectiveness"

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Abstract

Although directors' prior exposure to corporate fraud is often treated as a reputational liability, little is known about its behavioral consequences for future board monitoring. This study examines whether fraud-experienced directors increase or decrease the likelihood of future financial fraud, and how board independence moderates this effect. Drawing on the concepts experiential learning and moral disengagement, we develop two competing predictions: fraud experience may enhance vigilance or, conversely, tolerance towards immorality. Using a panel of U.S. public firms (2000–2024) and conditional logistic regression on a matched sample of 440 firm-year observations, we find that boards with fraud-experienced directors are significantly more likely to engage in future fraud. This effect is attenuated in boards with higher proportions of independent directors. These findings suggest that rather than serving as a governance asset, fraud experience may erode ethical sensitivity unless constrained by independent oversight. Our results nuance traditional agency theory by emphasizing the conditional nature of monitoring effectiveness, shaped by directors' experiential and cognitive backgrounds. This study contributes to corporate governance literature by integrating behavioral ethics into board research and offers practical implications for director appointment and renewal decisions and regulatory frameworks governing board composition.

Introduction

Corporate financial fraud has repeatedly shaken the global economy, with high-profile scandals such Enron, WorldCom and Wirecard. These incidents do not merely undermine organizational legitimacy but also reveal persistent weaknesses in the boards' monitoring (Beasley, 1996; Marcel & Cowen, 2014). While agency theory has traditionally framed board independence as a key structural safeguard against managerial opportunism – growing literature questions whether structural independence alone suffices in shaping boards that effectively monitor fraud risks. Scholars argue that monitoring requires more than positional detachment from management; it demands contextual and experiential depth (Paruchuri et al., 2024).

In the aftermath of financial scandals, organizations often initiate governance reforms to restore their legitimacy in the eyes of stakeholders. A growing body of literature has examined how such reforms typically involve increasing board independence (Donelson et al., 2015; Marciukaityte et al., 2006), director turnover (Marcel & Cowen, 2014), and the recruitment of directors with financial expertise or strong reputational standing (Ghannam et al., 2019) – all of which are primarily used to distance the firm from wrongdoing while restoring governance credibility (Arthaud-Day et al., 2006; Cowen & Marcel, 2011). Moreover, recent studies have increasingly highlighted the social nature of fraud – drawing on social network theory to illustrate how board interlocks can function as conduits for information spillovers as well as fraudulent practices (Chiu et al., 2013; Zhong et al., 2017). As a result, these interlocks have become key targets in post-fraud governance reforms, primarily aimed at disrupting the structural pathways that facilitate the diffusion of misconduct (Wang et al., 2022).

These responses reflect firms' belief that directors' experience and social relationships constitute reputational capital that can either bolster or erode legitimacy (Hillman & Dalziel, 2003; Pfeffer & Salancik, 2015), where associations with negative events or controversial organizations diminish the symbolic value of directors capital (Kang, 2008). However, Farber, (2005) and Wang et al. (2010) suggest that fraud incidents do not generally increase net benefits of changing a firm's leadership structure.

Although financial fraud is expected to trigger director turnover, empirical evidence shows a mixed picture. Some studies report considerable increases in outside director turnover following fraud incidents (Chang & Sun, 2016; Srinivasan, 2005), while others observe only small or no changes (Agrawal et al., 1999; Beneish, 1999), or even increased appointments of fraud-affiliated directors (Helland, 2006). Additionally, Fich and Shivdasani (2007), show that many directors stay on after fraud incidents, despite valuation losses.

These findings complicate the notion that board renewal logically follows fraud and raise questions about whether a directors' continued presence – either within or across boards – necessarily compromises the quality of board oversight; taking into account these directors are not necessarily perpetrators themselves (Marcel & Cowen, 2014). While prior literature has predominantly portrayed directors as vectors of contagion or reputational repair – as recently substantiated by Paruchuri et al. (2024) – the potential for directors' prior exposure to fraud to serve as a learning opportunity remains underexplored, despite its relevance for monitoring effectiveness. That is, limited attention has been paid to how directors accumulate and apply experience gained during their tenure on fraud-exposed boards.

This gap is concerning, given that boards are primarily responsible for fraud oversight (Fama & Jensen, 1983). If prior involvement in fraudulent environments affects how directors evaluate risk and implement monitoring, the prioritization of legitimacy over effectiveness leaves governance reforms blind to internal learning mechanisms as determinant of future fraud mitigation. This shift in focus reflects a broader need to move from symbolic legitimacy repair – treating reputational damage or contagion effects as default outcomes – to substantive monitoring improvement.

To address this gap, this study investigates *how* directors' prior exposure to fraud influences future fraud occurrences. Thereby, it shifts attention to the learning potential embedded in such experience – examining whether it strengthens or weakens a director's ability to prevent fraud. In addition, this study emphasizes that board independence may shape how directors' prior fraud experience translates into monitoring effectiveness – assuming such board composition to influence how prior experience is interpreted and acted upon.

To address these concerns, this study poses the following central research question: *"What is the influence of directors' fraud experience on future fraud occurrence, and how does board independence moderate this relationship?*". To examine these dynamics this study employs two competing concepts: Experiential Learning – which predicts that fraud experience enhances vigilance and oversight and Moral Disengagement – which predicts it erodes ethical responsiveness. Furthermore, drawing on Agency Theory, this study examines whether board independence conditions this relationship.

This research contributes to the corporate governance literature by positioning directors' prior fraud exposure as an artefact of learning with implications for board monitoring effectiveness. By applying two conflicting yet underdeveloped learning-based concepts, this study advances understanding of how fraud experience can yield both constructive and

detrimental effects within boardrooms. In addition, by examining how board independence complements fraud experience, this study contributes to ongoing debates about the contextual effectiveness of board composition. On a broader level, this study contributes to the expansion of theoretical conversations by integrating learning concepts into agency-based frameworks – offering a dynamic perspective on director effectiveness while providing the potential to resolve ambiguities in literature.

In doing so, this study provides practical implications for firms navigating board composition decisions related to governance renewal. It enables firms to make more informed choices about retaining or appointing directors who have controversial backgrounds. Additionally, it assists regulatory bodies in strategically designing governance standards that more effectively mitigate future fraud.

2. Theoretical Framework

This chapter introduces the theoretical lenses through which director experience may influence fraud occurrence. It adopts a learning perspective to explore how past experience with fraud affects directors monitoring behavior, building on two competing concepts: Experiential Learning and Moral Disengagement. Agency Theory is used to explore how board independence affects the impact of fraud experience on monitoring outcomes.

2.1 Financial Fraud

Corporate financial fraud is a pervasive global issue that undermines the trust among corporations, gatekeepers, and investors, where capital markets depend on to function effectively (Amiram et al., 2018). Financial fraud – often nothing more than lying money – disrupts the market's core function of allocating resources efficiently, making it a core concern for regulators and scholars alike (Daboub et al., 1995).

Fraud is typically referred to as "the deliberate actions taken by management at any level to deceive, con, swindle, or cheat investors or other key stakeholders" (Zahra et al., 2005, p. 4). In this article, financial fraud conceptually captures *securities fraud* – as one way to approach financial fraud – referring to a broad category of opportunistic and deceptive practices conducted by firms that violate laws or regulations – as enforced by securities regulations – and undermine investor trust (Guo et al., 2022). According to Cumming et al. (2015), securities fraud encompasses a broad range of violations, such as the misrepresentation of financial reports, misappropriation of assets, insider trading, market manipulation and illegal share transactions.

Financial fraud, is largely recognized as a critical manifestation of agency conflicts between corporate insiders and shareholders (Fama & Jensen, 1983). According to agency theory (Meckling & Jensen, 1976), corporate executives – entrusted with protecting and increasing shareholders' wealth – are seen as opportunistic actors who may exploit informational advantages and control over corporate resources to pursue their private interests, at the expense of shareholder value (Eisenhardt, 1989; Shleifer & Vishny, 1997). Such misalignment results in actions that misrepresent the firm's true economic condition; for example through inflating performance to secure managerial compensation (Qiu & Slezak, 2019; Shi et al., 2016). The managerial position enables them to conceal or manipulate earnings to project stability and success, which in turn compromises shareholders' ability to accurately

assess managerial performance and protect their investments (Khanna et al., 2015).

On firm-level, it is widely acknowledged that there are significant long-term consequences for committing fraud, beyond regulatory penalties and financial losses – particularly in terms of lost reputation (Karpoff et al., 2012). Fraud incidents are deeply stigmatizing events that erode organizational legitimacy, by the signaling governance failures that may damage long-term relationships with key stakeholders, ultimately incurring huge losses for shareholders (Murphy et al., 2009; Pierce, 2018; Pozner, 2008). Evidently, these costs outweigh the direct costs of sanctions in the form of fines (Cumming et al., 2015). In addition, on the individual level fraud creates reputational signals for affiliated directors – aside from simply replacement (Marcel & Cowen, 2014).

From a governance perspective, weak internal control environments and board oversight are seen as the primary cause of what management allows to carry out such fraud. Despite decades of efforts to strengthen corporate governance – including incentive-based pay and ethical codes to better align managers and shareholders' interests – financial fraud remains persistent (Berenson, 2004). This underscores the fact that the mere presence of independent directors may not be insufficient to prevent future fraud. As a result, attention has shifted toward examining how exactly board composition practices influence the board's effectiveness in preventing fraud, as addressed in the next paragraph.

2.2 Board Independence

Agency Theory positions the board of directors as the primary internal mechanism of governance control, tasked with overseeing managerial behavior and protecting shareholder interests to mitigate financial fraud risks (Fama & Jensen, 1983). One of the most central prescriptions of agency theory is that boards must be independent to mitigate problems that arise when ownership and control are separate which can lead to corporate wrongdoing (Meckling & Jensen, 1976).

Board independence is conceptually referred to "as the structural presence of directors who are unaffiliated with the firm's management or operations and whose only affiliation is their board membership" (Beasley, 1996, p. 448; Daily et al., 1999). Prior research has demonstrated that board independence is often associated with a reduced likelihood of securities fraud (Dechow et al., 1996; Farber, 2005; Uzun et al., 2004; Vafeas, 2005). Which is considered to be the result of joint factors that influence independent directors' ability and motivation to monitor firm's management (Neville et al., 2019).

First, independent directors are structurally well-positioned to monitor management due to their formal separation from firm's operations. Their lack of executive responsibilities and substantive ties enables them to evaluate managerial behavior with greater objectivity and fewer personal biases (Dalton et al., 2007; Hambrick et al., 2015). The structural distance enhances their ability to detect operational, financial, and strategic irregularities (Boivie et al., 2016; Loebbecke et al., 1989), and grants them greater authority relative to insiders – making them more likely to challenge managers.

Second, independent directors are more motivated to exercise effective oversight. From an agency theory perspective, their incentives are shaped by reputational concerns, as building a track record as vigilant monitors enhances their standing in the labor market (Fama & Jensen, 1983). Empirical evidence confirms this: directors who confront managerial opportunism are more likely to gain additional board appointments (Jiang et al., 2016). This motivates them to engage actively, for instance through questioning proposals, holding management accountable, and taking corrective action, to safeguard both firm integrity and personal reputation (Beasley & Salterio, 2001; Kaplan & Reishus, 1990).

In contrast, inside directors – who also hold executive roles – have deeper operational knowledge but face greater risk of conflicts of interest (Finkelstein et al., 2009). Their dual role may incentivize them to engage in poor performance or withhold critical information to protect their position and compensation. This alignment with managerial objectives can compromise board oversight, allowing the board to serve managerial agendas at the expense of shareholder accountability (Kim et al., 2013). Accordingly, insider directors are less likely to challenge top executives. Taken together, the ability and motivation of independent directors explain why they are more effective in identifying and curbing fraudulent practices.

However, the practical effectiveness of board independence remains contested. Critics argue that independent directors often lack access to internal information because they are not involved in daily operations, making it harder to assess managerial behavior and detect wrongdoing (Baysinger & Hoskisson, 1990; Zahra & Pearce II, 1990). Moreover, managerial control over information flows may restrict what they can actually observe, increasing the risk of opportunism and reducing directors' capacity to intervene (Ndofor et al., 2015). These shortcomings suggest that independence alone may be insufficient to ensure effective oversight.

This study instead views board independence as conditionally effective, depending on its interaction with directors' experiential characteristics (Carpenter & Westphal, 2001; Hillman

& Dalziel, 2003). Paragraph 2.3 introduces experience-based learning as a distinct source of board effectiveness, examining how prior experience with financial fraud shapes governance behavior. Accordingly, this study builds on the agency-based rationale outlined above to position board independence as a structural enabler that enhances the governance value of directors' fraud experience. This paragraph provides the theoretical foundation for exploring its moderating role in 2.3.1.1 and 2.3.2.1.

2.3 Beyond Structural Monitoring: The Role of Experiential Learning

Prior research often frames board responses to corporate fraud as symbolic legitimacy repairs – through signaling director turnover or the appointment of individuals with reputational capital (Karpoff & Lott Jr, 1993). In a similar vein, directors' prior fraud exposure is mainly explored in terms of external consequences, either considering it as a reputational signal or as attractive market value – for example because of litigation credentials (Helland, 2006).

Building on the notion of experience, existing literature primarily conceptualized it as a form of director capital, encompassing both human capital (e.g., education, tenure, domain expertise) and relational capital (e.g., interlocks, social ties) (Marcel & Cowen, 2014). Regarding the latter, studies drawing on social network theory suggested that fraud-affiliated directors may transfer insights across boards – either to protect their reputation or apply lessons learned (Field et al., 2013; Zhong et al., 2017). However, these forms of experience emphasize functional expertise, which may not directly equip directors to recognize or respond to fraud-specific risks.

Instead, this study redirects attention to an underexplored dimension of experience, approaching prior fraud events as sources of learning that influence directors' monitoring behavior and vigilance. This study assumes that directors' fraud exposure provokes cognitive learning processes that alter how directors perceive and act upon misconduct. Fraud contexts, marked by hidden information and ethical breaches, may create conditions that foster distinct forms of learning.

To capture this dimension, fraud-experienced directors are conceptually understood as individuals who have developed and internalized fraud-related knowledge through board service at firms subject to financial fraud. The following two sections explore two theoretically grounded but opposing concepts through which fraud experience may influence fraud occurrences. Section 2.3.1 introduces the concept of Experiential Learning to explain how fraud experience may enhance directors' vigilance and oversight. Conversely, section 2.3.2 draws on

the concept of Moral Disengagement to examine how experience might instead weaken ethical responsiveness.

2.3.1 Experiential Learning

Behavioral governance literature increasingly acknowledged that structural independence alone does not guarantee effective oversight – especially in context requiring complex judgement and risk assessment (Carpenter & Westphal, 2001; Westphal & Zajac, 2013). Drawing on the concept of Experiential Learning (EL), Kroll et al. (2008) argued that directors' ability to monitor is shaped not merely by their vigilance or detachment, but by the specific knowledge acquired through relevant experience. Specifically, they indicate that directors involved in critical situations – like acquisitions – gain deeper understanding of internal control failures and executive decision-making patterns, improving their strategic and monitoring judgement in future settings. Accordingly, this study draws on Experiential Learning to explain how directors' monitoring effectiveness is shaped not only by their formal role, but by the knowledge they acquire through first-hand exposure to fraud.

Experiential learning refers to the process by which individuals acquire knowledge and develop judgment through direct involvement in events (Nelson & Winter, 1982), as well as by reflecting on the outcomes of their actions (Greve, 2003). This process enables them to adapt behavior based on prior performance, ultimately improving organizational decision-making and performance (March, 1999). According to Kahneman et al. (1982), this direct involvement makes learning more salient and enduring compared to abstract or second-hand knowledge, as it triggers stronger emotional and cognitive processing.

In governance contexts, experiential learning suggests that directors who gain knowledge through firsthand experience may develop greater confidence, making them more likely to engage proactively in similar activities in the future (Kiesler & Sproull, 1982; Walsh, 1995). Moreover, experience enhances directors' development of relevant individual skills and capabilities, which shapes how they approach and engage in subsequent roles (Baty et al., 1971; Beckman, 2006; Boeker, 1997). In a similar vein, first-hand experience strengthens directors' contextual understanding and sharpens the cognitive frameworks they apply when interpreting organizational behavior environments – enabling directors to actively and effectively participate in monitoring activities in similar environments (Huff, 1990; Porac et al., 1989).

Applying these rationales to this study's context of directors who accumulate experience on fraudulent boards, there can be argued that such firsthand experience may positively

contribute to directors' vigilance and oversight capabilities. First, it could bolster their willingness to engage in stronger monitoring efforts in the future, because of improved risk-sensing capabilities and increased understanding of where to point direction when aiming to detect fraud. Second, such directors may feel more empowered by their prior involvement in fraud, leading to more confidence and proactive attitudes in future monitoring efforts. Furthermore, consistent with the idea that knowledge gained through personal experience is more accessible and durable than second-hand information, fraud-exposed directors may more likely develop a stronger sensitivity to warning signs even as a more nuanced understanding of how misconduct manifests over time.

Referring to the argument of improved contextual understandings, this study expects that directors' exposure to the dynamics of fraudulent environments and associated warning signals – such as organizational silence or breakdowns in accountability – triggers improved monitoring capabilities. Such conditions and uncommon perceptions may offer a unique opportunity for directors to develop context-specific vigilance. Madine et al. (2022) support this idea, demonstrating that adverse events can increase professional skepticism and strengthens risk assessment among corporate monitors. Lastly, because of 'lived' fraud exposure, directors may develop enhanced cognitive frameworks, improving their ability to interpret and act upon fraudulent dynamics. As research emphasizes effective directors adopt a skeptical stance towards management claims that conflict with their situational understanding – which is improved on the basis of cognitive imprint (Duchin et al., 2010; O'Donnell et al., 2015).

Drawing on Experiential Learning, this study posits that firsthand fraud exposure may foster more effective oversight by shaping directors' cognitive frameworks, contextual judgment, and confidence in intervening. Through lived familiarity with the warning signs and organizational dynamics of fraud such experience can strengthen directors' ability to detect misconduct. Accordingly, there is sufficient grounds to expect that director's prior fraud experience increases governance effectiveness in mitigating fraud occurrence. Therefore,

Hypothesis 1a. The presence of fraud-experienced directors on the board decreases the likelihood of future fraud.

While experiential learning highlights how fraud experience can foster oversight, its impact may be contingent on board-level conditions that enable such learning to translate into action.

2.3.1.1 The Complementing Role of Board Independence

Although the concept of experiential learning offers a compelling explanation for how directors with prior fraud experience may develop relevant knowledge and monitoring skills to reduce future fraud (Hypothesis 1a), the degree to which these experiences enhance monitoring may depend on the board's structural capacity to reinforce such monitoring skills. In this regard, board independence is expected to function as a *facilitating mechanism* that amplifies the positive effect of director experience, based on the advantages of independence posed by Neville et al. (2019).

Firstly, independent directors are not financially or hierarchically beholden to management, free from formal ties or financial dependencies (Hambrick et al., 2015). This independence helps them to evaluate advice from fraud-experienced directors with greater objectivity, which improves board's ability to adopt governance practices based on real experiences. As such, their objectivity is assumed to improve governance learning, moving the board beyond legitimacy repair – like hiring high capital directors with financial expertise – to substantive fraud prevention.

Moreover, independent directors limited social embeddedness – by design, not duration – makes them more likely to dissent and be open for critical insights raised by fraud-experienced directors. In this way, independent directors might encourage a governance environment where learned vigilance can be enacted without fear of retaliation or conformity pressures (Boivie et al., 2016). For example, by encouraging different viewpoints, independent directors can create a save space necessary for directors to use their skepticism and turn their experiential knowledge into governance decisions. By contrast, boards dominated by affiliated directors may discourage the expression of sensitive insights, especially if these threaten management's image.

Additionally, independent directors possess extrinsic motivations to engage in effective oversight (Dalton et al., 2007). Their professional reputations depend on being perceived as effective monitors, incentivizing them to actively seek out and act on relevant risk information from directors that might otherwise be overlooked in a board with more affiliated members.

As such, boards composed of more independent directors are better positioned to recognize and more motivated to operationalize the experiential knowledge of fraud-experienced directors. In doing so, board independence provides a structural channel through which fraud experience becomes more actionable and visible in boardroom decision-making, reinforcing monitoring effectiveness. Therefore,

Hypothesis 2a. A higher proportion of independent directors strengthens the negative association between board-level fraud experience and financial fraud occurrence.

While experiential learning highlights how directors' experiences can enhance monitoring, such learning is not inherently beneficial. Fraud exposure may also erode ethical responsiveness, desensitizing directors to deviance and the likelihood of future fraud – a dynamic explored through the lens of Moral Disengagement in the next section

2.3.2 Moral Disengagement

The growing prevalence of ethical scandals has prompted scholars in behavioral ethics to examine why organizational actors engage in deviant behavior (Bonner et al., 2016). In corporate governance, research shows that fraud is often accompanied by rationalization and framing strategies that make deviance appear acceptable (Barsky, 2011; Dang et al., 2017). These insights lend credibility to the notion that directors with prior experience on boards exposed to fraud may be particularly vulnerable to such cognitive dynamics.

To explain this phenomenon, this study draws on Moral Disengagement (MD), a concept that describes how individuals learn to justify unethical behavior through a process of cognitive restructuring – disconnecting inactions from internal moral standards (Bandura, 1999). It explains how individuals learn to suppress moral feelings that would typically restrain deviant behavior. This concept of moral disengagement is compatible with the learning perspective this study deploys, as it involves an individual adapting their internal moral framework based on experience.

While moral disengagement is a cognitive process, this study proposes that it becomes particularly noticeable in workplaces embedded in unethical environments, aligning with the study of Newman et al. (2020), which looked at moral disengagement in a managerial context. Specifically, this study argues that direct exposure to fraudulent practices may provide fertile ground for moral disengagement processes, offering opportunities for directors to observe how deviance is rationalized. Particularly when wrongdoing is met with weak sanctions or collective inaction, directors may learn to approach fraud as tolerable. Even though directors may be passive bystanders, over time they may desensitize to unethical activities, and in turn causing them to internalize cognitive patterns.

Bandura identifies four disengagement strategies ("loci"), each of which may be activated by fraud exposure, First the *behavioral locus* enables directors to retrospectively

justify fraud; framing it as a necessary act to meet financial targets, using sanitized language as "aggressive accounting" or downplaying it through comparisons to worse scandals (Newman et al., 2020). Second, the *agency locus* allows such directors to displace responsibility – by attributing accountability to the CFO or "the system" – thereby weakening their personal sense of duty to intervene (Rider et al., 2011; Semadeni et al., 2008). Third, the *outcome locus* facilitates reinterpretation of consequences in a way downplaying its seriousness, especially in case of unclear or delayed enforcement. Lastly, the *victim locus* may enable fraud-exposed directors to shift the blame to external pressures – such as investor demands – preserving a positive self-image while tolerating misconduct.

These mechanisms illustrate how fraud exposure may activate moral disengagement across several cognitive entry points: framing misconduct as a necessity, shifting responsibility outside, or downplaying harm due to delayed sanctions. Collectively, these strategies may suppress moral alertness and weaken directors' ethical commitment to intervene.

Building on this reasoning, this study argues that exposure to fraud – especially in environments marked by rationalizations and limited accountability – can normalize deviant behavior and erode ethical sensitivity. Rather than cultivating corrective oversight, such experience may desensitize directors, reduce their moral resistance, and increase their tolerance for misconduct. Consequently, fraud experience is not merely a useful asset, but a potential behavioral liability that undermines board effectiveness. Accordingly, there is sufficient grounds to expect that directors' prior fraud experience decreases governance effectiveness in preventing fraud occurrence. Therefore,

Hypothesis 1b. The presence of fraud-experienced directors on the board increases the likelihood of future fraud.

Given the potential for moral disengagement to undermine monitoring effectiveness, contextual factors may be critical to constrain cognitive distortions. Therefore, this study positions board independence as a structural safeguard that may limit the onset and spread of morally disengaged thinking within boardrooms.

2.3.2.1 The Complementing Role of Board Independence

While the concept of moral disengagement offers a compelling explanation for how directors with fraud experience may internalize rationalizations that erode ethical responsiveness – thereby increasing the likelihood of future fraud (Hypothesis 1b), the extent to which such

rationalizations are enacted may be contingent upon the structural conditions under which directors operate. In this context, board independence is expected to function as a *constraining mechanism* that inhibits the behavioral manifestation under which moral disengagement is likely to unfold out of fraud experience, drawing on advantages of independence posed by Neville et al. (2019). .

Independent directors, by virtue of their structural and social detachment from executive management, are more impartial and therefore more likely to challenge conformity pressures and collective justifications. This means that independent directors can be seen as moral guides board decisions, instead of acting as conformists, because their independence helps them to question rationalizations, rather than left them uncontested (Westphal & Zajac, 2013).

Moreover, independent directors are subject to shareholder accountability and reputational scrutiny in external markets, which incentivizes them to improve monitoring performance and to impose strong normative boundaries, refocusing the board on its ethical responsibilities (Arthaud-Day et al., 2006; Desai et al., 2006). As such, they may be more likely to create a culture of transparency and heightened sensitivity towards ethical deviance, encouraging directors to intervene when signs of tolerance towards unethical practice are shown. Such an arrangement might also foster an environment in which fraud-experienced directors themselves are more likely to critically reassess adopted rationalizations.

Furthermore, the outsider role of independent directors may bring an external perspective to the moral discourse. By imposing standards drawn from regulators and shareholders, independent directors think beyond internal consensus (Yermack, 2004). This external orientation may likely uphold ethical standards and less tolerance for fraud-prone behaviors. When faced with justified wrongdoing, independent directors are expected to shift the discussion in terms of duties and legal risks, which limits directors' chances of getting involved in fraud.

Therefore, board independence may limit the loci that contribute to moral disengagement. For instance, independent directors may reduce directors' tendency to engage in displacement of responsibility – where unethical behavior is attributed to collective decision-making, because independence disrupts the chain-of-command dynamics and makes individual accountability more visible. Second, sanitized language may be less likely to take hold, as outside perspectives are more capable of recognizing such strategies. Lastly, *advantageous comparison* may lose its power, as independent directors tend to benchmark behavior against external standards. Combined, we can presume that independent directors could significantly

influence the cognitive processes that lead to unethical actions.

As such, the authority and motivation of independent directors could potentially foster a governance climate that scrutinizes moral disengagement practices more closely. In doing so, board independence is expected to act as counterbalance – limiting the emergence and spread of morally disengaged thinking among fraud-experienced directors. Therefore,

Hypothesis 2b. A higher proportion of independent directors mitigates the positive association between board-level fraud experience and financial fraud occurrence.

2.5 Conceptual Model

Figure 1 shows how a director's past experience with fraud is likely to affect future fraud cases via two competing concepts: experiential learning (H1a) and moral disengagement (H1b), and how board independence is expected to either strengthen (H2a) or limit (H2b) the impact of that fraud experience on future fraud cases.

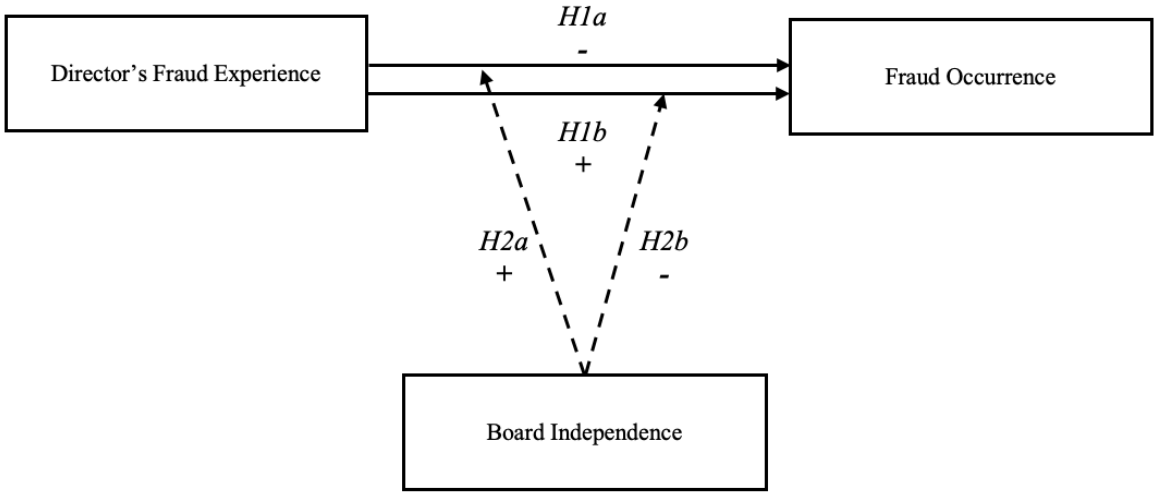

Figure 1

Conceptual Model

3. Methods

This chapter outlines the methods used to study *how* directors' prior fraud experience and board independence affect future fraud. Based on a firm-year panel of publicly listed firms (2000–2024), the study performs a conditional logistic regression based on a matched-sample design. The sections below describe the sample construction, variable measurement, research design and data preparation.

3.1 Sample construction

The sample construction follows a two-period design. The years 2000–2006 are used as a backward looking exposure window that capture the independent variable fraud experience, based on the timing of enforcement actions which typically lags the actual fraud by 2–3 years (Amiram et al., 2018). The starting year 2000 was chosen to coincide with the wave of corporate scandals, which marked a turning point in enforcement intensity and therefore provides a meaningful empirical context for identifying directors with prior fraud exposure (Karpoff, 2021). The subsequent years 2007–2024 form the observation window for analyzing the effect of experience on future fraud occurrence. This temporal separation enhances causal inference by ensuring that experience precedes fraud outcome measurement.

To ensure that the independent variable is substantively meaningful, the sample is restricted to firms that had at least one fraud-experienced director on the board at any point between 2007 and 2024. This restriction prevents conflating structurally incomparable firms – those to which the independent variable could never plausibly apply – with those where governance dynamics involving fraud-experienced directors may reasonably unfold. While this approach deviates from conventional designs that contrast treated and untreated firms, it aligns with the logic of conditional heterogeneity analysis in the treatment-effect literature. It mirrors an "ever-treated" design, in which variation in outcomes is examined within the subset of units exposed to treatment, rather than across fundamentally dissimilar groups. Bogetoft and Kromann (2018) argue that restricting analysis to comparable units helps reduce selection bias and strengthens internal validity. Consistent with that logic, this study aims to assess how fraud experience shapes governance outcomes under varying conditions – rather than merely establishing whether such experience has an effect.

The panel dataset consisted of 32,830 firm-year observations from 2899 publicly listed U.S. firms between 2000 and 2024, based on merged data on board characteristics, enforcement actions and financial performance, obtained from BoardEx, Violation Tracker (Good Jobs First)

and LSEG, respectively. The resulting matched sample consisted of 1,404 firm-year observations, equally split between fraud cases (N = 702) and non-fraud cases (N = 702).

3.2 Variable measurement

Building on the sample described in paragraph 3.1, this paragraph outlines how core variables are operationalized enabling empirical testing (Table 2).

3.2.1 Dependent Variable - Fraud Occurrence

The dependent variable in this study is Fraud Occurrence, capturing whether a firm engaged in financial fraud each year. Financial fraud is operationalized using U.S. federal enforcement actions related to securities fraud, in line with prior research (Cumming et al., 2015; Guo et al., 2022). This method enables objective and verifiable identification of fraud events, and avoids limitations of alternative proxies such as restatements, litigation, or media coverage, which may be incomplete or subjective (Amiram et al., 2018). To capture these events, this study uses the Violation Tracker, which aggregates enforcement actions across U.S. federal regulatory agencies, allowing comprehensive and systematic coverage.

Following the conceptualized definition of financial fraud in the theoretical framework, this study includes all enforcement actions on securities violations coded under "financial offenses" in GJF, including: accounting fraud or deficiencies, securities issuance or trading violations, insider trading, investor protection violations, toxic securities violations, banking violations, anti-money laundering deficiencies, money laundering, tax violations, bankruptcy professional violations, economic sanction violations, and banker investment violations.

In line with Fich and Shivdasani (2007), a binary variable is constructed at the firm-year level. The variable is coded 1 if the firm was subject to an enforcement action for a financial offense each year (t), and 0 otherwise. The enforcement year is used as the reference year for fraud occurrence, acknowledging that the actual misconduct may have occurred in preceding years.

3.2.2 Independent Variable - Directors' Fraud Experience

The independent variable in this study is Directors' Fraud Experience, which reflects whether a firm's board each year includes at least one director with prior exposure to securities fraud. To construct this variable, director data from BoardEx is matched with enforcement records from the Violation Tracker over a pre-sample period (2000–2006). A binary firm-year variable

is created and coded 1 if the board included one or more directors who previously served at the board of a company that became subject to a securities fraud enforcement action within 2000-2006. Otherwise, the value is coded 0.

A director is labeled as "fraud-experienced" if they held a board position during at least one of the three years prior to the enforcement year (i.e., t–1, t–2, or t–3), excluding the enforcement year itself to prevent simultaneity bias, in line with the method of Fich and Shivdasani (2007) (Table 1). This three-year lookback window captures the period of likely exposure to fraudulent activities before the misconduct was officially sanctioned. This strategy is supported by evidence indicating that enforcement actions often lag behind actual misconduct (Amiram et al., 2018). Accordingly, this operationalization serves as a proxy for the underlying conceptual definition of fraud experience, capturing the idea that directors learn from fraud exposure – regardless of whether they were directly involved in the misconduct, newly appointed or retained, or were as inside or outside directors.

Because directors' fraud experience is measured exclusively in the pre-sample period (2000–2006), it is treated as a time-invariant, baseline characteristic throughout the main observation window (2007–2024). Within this panel construction each firm-year observation between 2007–2024 is therefore coded based on whether fraud-experienced directors are present on the board. Once coded as "fraud-experienced", directors retain this label in all firm-year observations in which they appear. This procedure ensures that the variable reflects a pre-existing condition rather than a consequence of later events, preserving temporal ordering required for causal inference.

Table 1

Operationalization of fraud-experienced directors based on board membership in the three years preceding a firm's fraud enforcement year (t–1 to t–3), excluding year t.

	Fraud Year						
Director ID	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
2000		1	1	1			
2001			1	1	1		
2002				1	1	1	
2003					1	1	1
2004						1	1
2005							1
2006							

Note. Each column represents a fraud enforcement year. Each row represents a calendar year of directors' board service. "1" denotes that the director held a board position at a fraud firm in the specific year indicated, which is part of the three-year pre-enforcement observation window (t–1 to t–3). Blank cells indicate no board service during the lookback window. "Fraud Year" indicates the year of the firm's enforcement action and is excluded from the experience measure.

3.2.3 Moderating Variable – Board Independence

The moderating variable in this study is Board Independence, which captures the degree to which the board is composed of independent directors. To assess the board's level of independence, independent directors are conceptually referred to as those directors "who have no substantive relationship with the firm as employees or in any other capacity beyond their role on the board" (Beasley, 1996, p. 448), aligning with independence criteria of prior research (Neville et al., 2019) .

To measure board independence, this study constructs a firm-year continuous variable that reflects the share of independent directors within a board each year. We calculated it by dividing the number of independent directors by the total number of directors. The variable is adjusted to reflect the previous year (t–1) to keep it separate from the fraud results and to reduce the chance of confusing cause and effect, following common methods used in research, consistent with established practice (Bromiley & Harris, 2014). Important given that this study aims to capture board independence as predictor of the fraud outcome, recognizing its dual role as a determinant and a response to fraud. Since board composition is updated annually, this

time-variant measure captures firm-level changes in governance structure over time. Board independence is interacted with directors' fraud experience over the 2007–2024 period, allowing their combined effect on future fraud to be assessed within a consistent panel window

Table 2

Overview of main variables used in the analysis

Variable	Type	Value	Description
Fraud Occurrence	Dependent Variable	0 – No financial offense case 1 – financial offense case	Indicates whether a financial fraud enforcement action was issued each year.
Fraud Experienced Director	Independent Variable	0 – No fraud experienced director on board 1 – At least one fraud experienced director on board	Indicates whether the board includes at least one director who served on a fraud-exposed board during the lookback window.
Board Independence	Moderating Variable	Ratio of independent directors to total directors.	Indicates the proportion of independent directors on the board each year.

3.2.4 Control variables

In addition to the main variables of this study, it also includes some control variables to consider other reasons and potential confounders that could affect fraud occurrence – like the control variables used by Fich and Shivdasani (2007) in their analysis of financial fraud (Table 3). This study controls for the following firm variables: Firm Size, Firm Performance and Firm Leverage. These firm-level characteristics are commonly linked to fraud risks, where firms with lower leverage or profitability are associated with higher levels of corporate fraud (Hasnan et al., 2020). On board-level, Board Size and Frequency of Board meetings, were included, as it is known to affect fraud occurrence: with smaller boards and fewer frequency of meetings being more likely involved in fraud (Beasley, 1996; Salleh & Othman, 2016). Third, CEO-specific variables are incorporated, including CEO Duality and CEO Tenure. These controls ensure that the estimated effects of fraud experience and board independence are not conflated with

alternative forms of leadership experience or dependence, which are expected to positively influence the occurrence of fraud (Agrawal & Chadha, 2005; Altunbaş et al., 2018).

Table 3

Overview of control variables used in the analysis

Variable	Type	Value	Description
Firm Size	Control Variable – firm-level	Log of Total Assets	Indicates Firm Size.
Firm Performance	Control Variable – firm-level	Return on Assets	Indicates Firm Performance.
Firm Leverage	Control Variable – firm-level	Total debt divided by total assets	Indicated Firms Debts Ratio.
Board Size	Control Variable – board level	Number of directors on board	Indicates Board Size.
Board Meeting Frequency	Control Variable – board level	Frequency of Board Meetings per year	Indicates the number of board meetings per year.
CEO duality	Control Variable – individual level	1 – if the CEO also serves as board chair 0 – otherwise	Indicates whether the CEO simultaneously has a role as director.
CEO tenure	Control Variable – individual level	Number of years in role of CEO	Indicates the number of years of holding a CEO role.

3.3 Research Design

This study adopts a quantitative panel design to investigate how directors' prior exposure to securities fraud influences the likelihood of future financial misconduct in subsequent firm-years (2007–2024), and whether this relationship is conditioned by board independence. Given the binary nature of the dependent variable – fraud occurrence – logistic regression serves as the core estimation method (Hosmer Jr et al., 2013). Since securities fraud is a low-frequency event and logistic regression tends to produce biased estimates in imbalanced datasets, this study adopts a matched-pair sampling design, following the approach of Bromiley and Harris (2014).

This design improves internal validity and allows for stronger causal inference by reducing the influence of unobserved heterogeneity and sampling bias. Specifically, the study uses a 1:1 *nearest neighbor* matching strategy without replacement (each control unit is only

used once), where each fraud firm-year is matched to a non-fraud firm-year based on theoretically relevant covariates. These include firm size, firm performance and industry based on their theoretical and empirical relevance as potential confounders of the fraud-governance relationship[1], aligning with Bromiley and Harris (2014). Industries are matched when firm-years had the same 1-digit Standard Industrial Classification (SIC) code (*Appendix C*). Following matching, observations without an appropriate control pair are excluded.

Moreover, the estimation uses *conditional logit* (clogit), a standard procedure for estimating models with matched case-control samples and one dependent variable (Bowen & Wiersema, 2004) – modeled as a function of directors' fraud experience, board independence, their interaction, and control variables. By conditioning on the matched pair identifier, clogit effectively controls for all unobserved, time-invariant firm-level characteristics shared by each pair, thereby introducing a fixed-effects structure. This estimation strategy follows Bromiley and Harris (2014) but adapts firm-level matching to firm-year level to accommodate the panel structure of the data. The equation is as follows:

$$\text{Clogit}(P(\text{FraudOccurrence}_{it})) = \beta 1 \cdot \text{FraudExperience}_{it} + \beta 2 \cdot \text{BoardIndependence}_{it} + \beta 3 \cdot (\text{FraudExperience} \times \text{BoardIndependence})_{it} + \sum \beta k \cdot \text{Controls}_{it}$$

(conditioned on matched pair strata)

To determine if the specific matching procedure was not driving the findings, the robustness check included a one-to-many (1:n) matching strategy.

3.4 Validity & Reliability

Validity has been achieved to ensure the data measured what it was intended to measure. First, construct validity was ensured by adopting conceptually grounded and widely adopted operationalizations for key variables, including securities fraud, fraud exposure and board independence, consistently applied across the dataset. Moreover, validity was reinforced using

[1] Year was excluded as a matching variable, as preliminary tests showed no significant temporal effect on fraud likelihood ($\chi^2 = .717$, $p = .397$; Nagelkerke $R^2 = .000$) (*Appendix C*). Since fraud prevalence remained stable over time, as shown in cross-tabulations, including year would reduce match quality without improving specification. This choice also supports model parsimony (Hair Jr et al., 2019).

publicly available, widely adopted databases (BoardEx, Violation Tracker, LSEG). These sources are known for their reliability, which enhances the transparency, objectivity, and reproducibility of the data collection process. In addition, a long timeframe was adopted to capture the rare character of fraud occurrence as well as previously accumulated experience, while maintaining temporal separation from the outcome, ensuring temporal validity.

Reliability was reached through strict documentation of all data transformations while using replicable coding procedures, ensuring transparency and reproducibility. Second, missingness was minimal and was restricted to control variables. However, the variables exceeding the 10% threshold by Hair Jr et al. (2019) were retained, which may limit the generalizability of the findings and should be considered when interpreting the results. Lastly, robustness and reproducibility of results was assessed by estimating multiple models on different matched samples, as well as by testing an alternative construction of the key predictor (e.g., binary vs. continuous). These procedures mostly yielded substantively consistent results.

3.5 Research Ethics

This research complies with the APA Ethics Code. The anonymity of firms and board members is safeguarded by using databases that do not contain directly identifiable information. All findings are reported transparently, and selective reporting was avoided to minimize bias. The data are used exclusively for this study and will not be shared or repurposed. Proper citation and source acknowledgement are maintained to prevent plagiarism and ensure academic integrity.

4. Analysis

This chapter empirically tests the hypothesized relationship between directors' fraud experience, board independence and future fraud occurrence, performing a conditional logistic regression analysis on a matched sample basis. The analysis proceeded in two steps: data preparation and result estimation.

4.1 Data Preparation

Before the hypotheses were tested preliminary tests were performed in SPSS 29.0 software. A missing values analysis was conducted on all original variables. Among the variables those exceeding the 10% threshold for missingness included ROA (11.1%), LEV (10.7%), CEOtenure (16.5%) and BoardMeetings (35.9%) (*Appendix B*) (Hair Jr et al., 2019). A Little's MCAR test indicated that the data were not missing completely at random (χ^2 = 11,541.182, df = 80, p < .001) (*Appendix B*), suggesting systematic missingness. Given the theoretical relevance of the variables, there is decided to maintain all variables in the main model. Subsequently, listwise deletion was applied in the analysis, excluding all firm-years with missing values to maintain internal validity. This resulted in the exclusion of 3,890 firm-year observations yielding 28,940 complete cases, which were subsequently used for matched sampling and regression analysis.

Following Bromiley and Harris (2007), this study uniformly applied percentile-based winsorization (1st and 99th) to problematic continuous variables (*Appendix B*). This method reduces outlier bias while preserving both the underlying distribution and most of the data, enhancing robustness without compromising interpretive validity. Moreover, BoardIndependence and all time-varying control variables were lagged by one year (t–1), to ensure temporal ordering relative to fraud occurrence. Because the model uses conditional logistic regression (clogit) with matched pairs, standard assumptions were not separately tested. The design inherently controls for unobserved heterogeneity between matched observations and excludes predictors without within-pair variation, thereby reducing concerns about omitted variable bias and multicollinearity.

4.2 Result Estimation

This section reports the statistical findings from the hypothesis testing using conditional logistic regression (clogit). The analysis was conducted on a matched sample, in which each fraud case was paired with a non-fraud case based on key firm-level characteristics. All estimations were performed in STATA.

4.2.1 Descriptive Statistics and Matching Quality

Table 4 shows the distribution of financial fraud across the full sample and the matched 1:1 sample. In the full sample (N = 32.830), 743 firm-year observations (2.26%) were associated with securities fraud. This confirms the rarity of the outcome and supports the use of a matched case-control design. In the matched sample (N = 1.404), an equal number of fraud and non-fraud observations were included (702 pairs), ensuring comparability between groups.

Prior to matching, descriptive statistics (Table 5) show considerable differences between fraud and non-fraud firm-years. For example, the proportion of directors with prior fraud experience was higher among fraud firm-years (M = 0.856, SD = 0.351) compared to non-fraud firm-years (M = 0.622, SD = 0.485). Given the relatively high averages observed, the results were benchmarked against Fich and Shivdasani (2007), who find that 83.24% of outside directors retain board positions in the three years following a fraud incident, and that board presence declines gradually (see *Appendix C for details*). This supports the validity of the observed prevalence, particularly as the current analysis includes both inside and outside directors – of whom insiders more often remain active – and shows a similar temporal decline after fraud (Baum et al., 2016). Regarding the moderator, board independence was higher among fraud firm-years (M = 0.789, SD = 0.172) than among non-fraud firm-years (M = 0.706, SD = 0.224), suggesting that although most boards are highly independent overall, fraud cases exhibit slightly greater independence on average. This counterintuitive pattern aligns with prior findings questioning the effectiveness of board independence for fraud prevention (Neville et al., 2019). Lastly, fraud firm-years were associated with higher Leverage (M = 33.90, SD = 29.04 vs. M = 25.22, SD = 21.12) and lower ROA, conform expectations (M = 4.29, SD = 8.67 vs. M = 6.64, SD = 15.58). These comparisons reflect observable differences in theorized confounding variables prior to the matched sampling process. Post-matching, standardized mean differences (SMDs) for all covariates fell below the conservative threshold of 0.10, indicating that the matching procedure successfully balanced the covariates (*Appendix D*).

Table 6 reports Pearson pairwise correlations among all explanatory variables in the matched sample. All correlations remain well below the $|r| = 0.70$ threshold, suggesting that multicollinearity is not a concern. The highest observed correlation is $r = .583$ between BoardSize and FirmSize. These diagnostics support the appropriateness of the model specification.

Table 4

Frequency of fraud cases in full sample

	Freq.	Percent	Cum.
No Financial Fraud Case	32087	97.74	97.74
Financial Fraud Case	743	2.26	100.00
Total	32830	100.00	

Frequency of fraud cases in matched sample

	Freq.	Percent	Cum.
No Financial Fraud Case	702	50.00	50.00
Financial Fraud Case	702	50.00	100.00
Total	1404	100.00	

Note. The matched sample includes 702 treated and 702 control firm-year observations based on 1:1 nearest-neighbor matching.

Table 5

Descriptive Statistics – Pre-Matching Sample

FraudOccurrence: Financial Fraud Case	N	Mean	SD	Min	Max
FraudOccurrence	743	1	0.000	1	1
Directors'FraudExperience	743	.856	0.351	0	1
BoardIndependence	743	.789	0.172	0	1
FirmSize (LogTotalAssets)	722	18.496	2.512	11.395	22.188
FirmPerformance (ROA)	743	4.29	8.667	-52.63	31.997
Leverage (Debts/Assets)	743	25.219	21.117	0	95.164
FrequencyBoardMeetings	743	12.956	6.779	4	25
BoardSize	743	12.836	3.560	4	24
CEOtenure	743	14.165	13.605	.164	42.682
CEOduality	723	.407	0.492	0	1
No Financial Fraud Case					
FraudOccurrence	32087	0	0.000	0	0
Directors'FraudExperience	32087	.622	0.485	0	1
BoardIndependence	32086	.706	0.224	0	1
FirmSize (LogTotalAssets)	28777	15.456	2.193	1.099	22.567
FirmPerformance (ROA)	32087	6.64	15.580	-69.574	31.997
Leverage (Debts/Assets)	32087	33.899	29.040	0	95.164
FrequencyBoardMeetings	32087	14.882	8.599	4	25
BoardSize	32087	10.488	3.535	4	24
CEOtenure	32087	15.262	14.472	.164	42.682
CEOduality	31725	.299	0.458	0	1

Table 6

Pairwise correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) FraudExperience	1.000								
(2) BoardIndependence	0.072**	1.000							
(3) FirmSize	0.086**	-0.014*	1.000						
(4) FirmPerformance	0.018**	0.017**	0.224**	1.000					
(5) Leverage	-0.030**	0.029**	0.075**	0.424**	1.000				
(6) BoardMeetings	-0.028**	-0.074**	-0.390**	0.030**	0.213**	1.000			
(7) BoardSize	0.086**	-0.257**	0.583**	0.044**	-0.041**	-0.257**	1.000		
(8) CEOtenure	0.063**	-0.167**	0.023**	0.061**	0.051**	0.088**	-0.008	1.000	
(9) CEOduality	0.102**	0.190**	0.027**	-0.003	-0.012*	-0.048**	-0.060**	-0.070**	1.000

**. correlation is significant at the 0.01 level (2-tailed).

*. correlation is significant at the 0.05 level (2-tailed).

4.2.2 Hypothesis Testing (Conditional Logistic Regression)

This analysis followed a sequential modeling approach, isolating the incremental contribution of the interaction term. Model 1 includes the independent variable directors' fraud experience to test the main effect on fraud occurrence (H1a, H1b). Model 2 adds the interaction with board independence (H2a, H2b). Models were estimated on 440 firm-year observations (202 matched pairs), with matched pairs excluded if no within-group variation on the dependent variable was present. Table 7 presents both models used in the main analysis.

Hypothesis H1a predicted that the presence of fraud-experienced directors on the board would decrease the likelihood of future financial fraud, based on Experiential Learning. While Hypothesis H1b predicted that such directors would increase the likelihood of future fraud, based on Moral Disengagement. Results from Model 1 show support for *H1b* and reject *H1a* (b = 0.886, SE = 0.324, $p < .01$). This finding suggests that – conditional on matched firm-year characteristics – the presence of a fraud-experienced director is associated with a significantly higher probability of future fraud, relative to matched firms without such directors. Among the control variables, only FrequencyBoardMeetings had a marginal negative effect (b = –0.035, SE = 0.018, $p < .10$), suggesting that more frequent board meetings may be weakly related to a lower fraud likelihood, in line with theoretical expectation. Model 1 yields a pseudo R^2 of 0.060 and a statistically significant model fit ($\chi^2(10) = 18.390$, $p = .018$), indicating that the model with predictors improves significantly over a null model without explanatory predictors.

Hypothesis H2a posited that a higher proportion of independent directors strengthens the expected negative effect of fraud-experienced directors, whereas Hypothesis H2b proposed that board independence would mitigate their positive effect. The results of Model 2 show support for *H2b* and reject *H2a* (b = –7.088, SE = 2.734, $p < .01$). This finding suggests that – conditional on matched firm-year characteristics – the positive association between fraud-experienced directors and future fraud is significantly attenuated when boards have a higher proportion of independent directors. In other words, as the proportion of independent directors on the board increases, the likelihood that firms with fraud-experienced directors engage in future financial fraud decreases. Also, the main effect of fraud experience remains positive and significant (b = 6.543, SE = 2.226, $p < .01$). The introduced main effect of board independence also shows a positive and significant main effect (b = 8.013, SE = 2.719, $p < .01$). Additionally, FrequencyBoardMeetings becomes statistically significant in Model 2 (b = –0.039, SE = 0.019, $p < .05$), indicating that its protective effect is more pronounced when considering board-level governance interactions. Model fit improves in Model 2, with a higher pseudo R^2 of 0.098, a

lower AIC (294.969 vs. 302.595), and a stronger model fit ($\chi^2(11) = 30.016$, $p = <.01$), confirming that the inclusion of the interaction improves the model's explanatory value and overall fit.

Table 7

Main Analysis – Conditional Logistic Regression

Variables	**Model 1 (H1) *ß/se***	**Model 2 (H2) *ß/se***
Independent Variables		
Directors'Fraud Experience	0.886 *** (0.324)	6.543 *** (2.226)
BoardIndependence		8.013 *** (2.719)
Interaction Term		
Experience × Independence		–7.088 *** (2.734)
Control Variables		
FirmSize (LogTotalAssets)	0.073 (0.079)	0.046 (0.086)
FirmPerformance (ROA)	0.012 (0.011)	0.014 (0.011)
Leverage (Debts/Assets)	0.008 (0.006)	0.007 (0.007)
FrequencyBoardMeetings	–0.035 * (0.018)	–0.039 ** (0.019)
BoardSize	–0.084 (0.056)	–0.069 (0.061)
CEOTenure	–0.006 (0.011)	–0.009 (0.011)
CEODuality	–0.095 (0.275)	–0.222 (0.284)
N	440	440
SD dependent var	0.501	0.501
Pseudo R-squared	0.060	0.098
Mean dependent var	0.500	0.500
Chi-square	18.390	30.016
Prob > chi2	0.018	0.001
Akaike Information Criterion	302.595	294.969
Bayesian Criterion	335.289	335.837

*** P<.01, ** p < .05, * p < .1

4.3 Robustness Analyses

To verify the robustness of the main findings, two additional models are included in Table 8. Model 3 employs a one-to-many matching design (1:n) using standard logistic regression, allowing each fraud firm-year to be matched with *multiple* non-fraud firm-years. Model 4 re-estimates the main model using a continuous measure of fraud experience within the conditional logistic regression framework, replacing the binary indicator with the proportion of fraud-experienced directors on the board. These models assess whether the observed effects hold under different specifications.

Results of Model 3 show that directors' fraud experience significantly increased the likelihood of future fraud (b = 3.082, SE = 0.618, p <.01), and the interaction with board independence was again negative and significant (b = –2.733, SE = 0.770, p <.01). Although effect sizes differ due to model specification (fixed effects vs. pooled model), the direction and significance of core relationships are consistent. These findings suggest that the results are robust to alternative matching ratios and estimation strategies.

Results of Model 4 indicate that the main effect of directors' fraud experience remains positive and significant (b = 10.577, SE = 4.724, p < .05). However, the interaction with board independence is not significant, suggesting that the moderating effect lacks robustness to alternative operationalization.

Table 8

Robustness Analyses

Variables	Model 1 (H1) *β/se*	Model 2 (H2) *β/se*	Model 3 *β/se*	Model 4 *β/se*
Independent Variables				
Directors'FraudExperience	0.886 *** (0.324)	6.543 *** (2.226)	3.082*** (0.618)	10.577** (4.724)
Board Independence		8.013 *** (2.719)	5.409*** (0.713)	2.910** (1.425)
Interaction Term				
Experience × Independence		–7.088 *** (2.734)	-2.733*** (0.770)	-8.911 (5.494)
Control Variables				
FirmSize (LogTotalAssets)	0.073 (0.079)	0.046 (0.086)	0.012 (0.027)	-0.001 (0.088)
FirmPerformance (ROA)	0.012 (0.011)	0.014 (0.011)	0.003 (0.006)	0.014 (0.011)
Leverage (Debts/Assets)	0.008 (0.006)	0.007 (0.007)	-0.002 (0.003)	0.010 (0.007)
FrequencyBoardMeetings	–0.035 * (0.018)	–0.039 ** (0.019)	0.014* (0.008)	-0.029 (0.020)
BoardSize	–0.084 (0.056)	–0.069 (0.061)	0.040* (0.021)	-0.035 (0.063)
CEOTenure	–0.006 (0.011)	–0.009 (0.011)	-0.006 (0.004)	-0.001 (0.011)
CEODuality	–0.095 (0.275)	–0.222 (0.284)	0.185 (0.113)	-0.261 (0.302)
Constant			-5.632*** (0.741)	
N	440	440	2273	440
SD dependent var	0.501	0.501	0.462	0.501
Pseudo R-squared	0.060	0.098	0.131	0.122
Mean dependent var	0.500	0.500	0.309	0.500
Chi-square	18.390	30.016	191.223	37.286
Prob > chi2	0.018	0.001	0.000	0.000
Akaike Information Criterion	302.595	294.969	1712. 703	287.699
Bayesian Criterion	335.289	335.837	1775.721	328.567

*** P<.01, ** p < .05, * p < .1

Note. Model 3 (1:n logistic regression) was estimated using standard logistic regression, unlike Models 1, 2, and 4, which use conditional logistic regression and exclude the intercept. This required testing model assumptions (see *Appendix E*) and introduces potential dependence due to matching with replacement, that warrants consideration in interpreting the findings.

Thus, results largely remain robust across models, indicating that the suggested relationships are valid and strong. Although the moderation by board independence appeared sensitive to measurement choices. This chapter laid the empirical foundation for subsequent interpretation in Chapter 5.

5. Discussion & Conclusion

This chapter reflects on this study's key findings considering the theoretical framework, and addresses implications for scholarship, practice, and governance design. It also outlines the study's limitations, proposes directions for future research, and concludes with a reflection on the core contributions.

5.1. Interpretation of Results

Given the growing interest in behavioral mechanisms within corporate governance and the limited ability of boards to exercise direct control over organizational misconduct, this study theorized the role of directors' prior exposure to fraud as a latent experiential factor shaping boardroom monitoring effectiveness. Motivated by the need to move beyond contagion effects or symbolic legitimacy repair of fraud-affiliated directors, we identified fraud experience as a critical cognitive antecedent that may alter how directors perceive and respond to misconduct. Building on this view, we examined whether prior fraud experience enhances monitoring through experiential learning or undermines ethical responsiveness via moral disengagement, and how board independence shapes these outcomes.

The confirmation of Hypothesis 1b – that a higher proportion of fraud-experienced directors increases future fraud risk – supports the theoretical logic of Moral Disengagement (Newman et al., 2020). Arguing that directors embedded in unethical environments may adopt cognitive rationalizations that allow them to justify fraudulent behavior. Rather than fostering vigilance through Experiential Learning as proposed by Kroll et al. (2008) (H1a), fraud exposure appears to desensitize directors and suppress ethical responsiveness. This finding also conflicts with the study of Madine et al. (2022), who argue that adverse experiences can strengthen risk detection. Moreover, these results nuance the traditional rationale behind post-fraud board renewal. While earlier work (e.g., Arthaud-Day et al., 2006; Kang, 2008) suggests such turnover primarily serves symbolic or reputational purposes, the current findings indicate that replacement may also function as a cognitive reset – curbing entrenched rationalizations rather than restoring image. Governance renewal should therefore be viewed not only as a reputational tool, but also to disrupt maladaptive learning.

Support for Hypothesis 2b shows that board independence mitigates the negative effects of fraud experience. Thereby, independent directors appear more capable of challenging deviant justifications and reinforcing ethical boundaries, particularly in contexts marked by moral

erosion. This finding also reinforces the idea that the influence of experience is not uniform, but shaped by the structural environment in which it is embedded. In addition, it provides empirical grounding for reforms that increase board independence post-fraud, as advocated by Donelson et al. (2015) and Marciukaityte et al. (2006). Yet, rather than viewing independence as a symbolic repair tool, results demonstrate that its substantive value emerges when it enables critical scrutiny of prior experience – specifically by limiting the spread of disengaged thinking and amplifying vigilance where present.

While the interaction effect highlights the mitigating role of board independence in curbing the risks of prior fraud experience, the positive main effect board independence underscores that independence alone may be insufficient – further affirming the complementary nature of experience and structure. Providing support for concerns provided by Baysinger and Hoskisson (1990) and Zahra and Pearce II (1990), arguing that independent directors may lack access to internal information, limiting their ability to detect misconduct. However, support for H2b indicates that independence becomes most effective when unique characteristics fraud contexts enable its core attributes – such as critical distance and impartiality – to be meaningfully exercised.

Taken together, the findings answer the research question by demonstrating that directors' prior fraud experience generally increases the risk of future fraud, affirming the logic of moral disengagement over that of experiential learning. Its severity depends on the board's structural context, where higher levels of independence can curb the cognitive rationalizations that allow misconduct to persist. Herewith, the findings offer a more behavioral and contingent perspective on board governance in fraud contexts, which will be further elaborated in the subsequent paragraph.

5.2 Contributions to Existing Research & Theory

This study contributes to the field of research and existing studies in several ways. First, this study contributes to corporate governance theory by treating fraud experience as a cognitive construct with behavioral consequences. This study breaks from the dominant reputational accounts that interpret director experience as a proxy for legitimacy, expertise, or contagion. Findings thus contribute that the erosion of "capital" occurs not just in terms of external perception, but through internalized learning processes that increase tolerance toward fraud. On a broader level the result means that this study shifts the academic conversation from legitimacy-based models to learning-oriented frameworks. This study finds that director's fraud

backgrounds may negatively impact governance effectiveness, challenging arguments stating that affiliated directors are commonly valued for litigation experience and nuances incentives for governance renewal (Helland, 2006).

Another central contribution lies in jointly examining two underexplored and isolated concepts – experiential learning and moral disengagement – under a shared lens of director learning. By framing directors' fraud exposure as a learning process with dual potential, this study reveals that such experience can either impair or enhance monitoring effectiveness. This theoretical framing adds depth to existing work by Kroll et al. (2008) and Newman et al. (2020), who examined these mechanisms respectively in the context of corporate acquisitions and general organizational behavior, but not in relation to board oversight or fraud mitigation. By integrating both perspectives, this study brings clarity to the direction of monitoring implications for director experience, while reinforcing the value of incorporating learning-based frameworks.

Moreover, a key theoretical contribution from this study is that the impact of directors' fraud experience is not uniform, but contingent on formal board structures and level of independence. The finding that independence mitigates the harmful behavioral effects of fraud experience shows that the consequences of experiential exposure are not intrinsic to the individual but shaped by the institutional environment in which that experience is enacted – highlighting the regulatory potential of board independence to disrupt moral disengagement. As such, this study adds a behavioral dimension to existing governance models by showing that the structure of the boards conditions how board members think and act.

From an agency theory perspective, the results further reinforce the argument that board independence does not function as a universally effective safeguard, aligning with concerns of Hillman and Dalziel (2003). Instead, interaction with specific experiential characteristics reveals its effectiveness. By integrating experiential learning and behavioral ethics into board evaluation, this study offers a more psychologically grounded framework for understanding governance failures – and their prevention. Overall, this study contributes a more cognitively grounded and context-sensitive understanding of how boards navigate the complex legacies of fraud exposure.

5.3 Limitations & Future Research

Several limitations merit critical reflection. Theoretically, while this study conceptualizes fraud experience as activating either experiential learning or moral disengagement, it proxies this through prior enforcement exposure at the board level. This structural indicator insufficiently captures the cognitive processes involved, as it overlooks how directors perceive, internalize, or disengage from fraud. Moreover, being implicated in an enforcement action does not necessarily imply actual exposure to deviant practices – a core assumption in learning-based reasoning. Future research could therefore benefit from alternative measures that map how organizational cues or cultural norms shape the learning environment within fraud settings.

Methodologically, the current operationalization assumes equal influence across all directors, overlooking variation in roles, proximity to misconduct, and the timing or personal relevance of the exposure. Future research should use more granular, director-level indicators to capture differential learning outcomes. Additionally, by excluding firms without fraud-experienced directors, the study limits generalizability to the broader population. The results thus offer conditional inferences within the subset of ever-exposed firms. Future work should adopt comparative designs that contrast firms with and without such directors to assess whether and how their presence differentially impacts fraud occurrence.

Furthermore, while the matched-pair design improves internal validity by mitigating rare event bias, it remains limited in controlling for unobserved confounders – such as informal power dynamics or board culture – not captured by observable covariates. Similarly, conditional logistic regression, though appropriate for the matched setup, restricts generalizability and precludes marginal effect estimation. The nonsignificant interaction found in the one-to-many robustness check may reflect this limited external validity, and may also signal independence violations or within-cluster correlation – both of which bias standard errors. Future research could address these issues using multilevel models, fixed-effects estimators, instrumental variable approaches, or robust standard errors to improve causal inference.

5.4 Practical Implications & Recommendations

The findings highlight the importance for firms to consider how directors' prior fraud exposure may shape cognitive and behavioral risks, rather than focusing exclusively on reputational concerns, contagion effects, or functional governance expertise in post-fraud board renewal. Accordingly, firms and nomination committees should look beyond formal qualifications and

evaluate directors' past involvement in fraud environment as part of their ethical oversight potential. Moreover, when firms seek to adopt signaling strategies or retain valuable expertise through affiliated directors, they can offset potential tolerance toward fraudulent behavior by ensuring higher proportions of independent board members. Furthermore, practitioners could include disengagement awareness in board training, enabling directors to reflect critically on past misconduct and convert experience into ethical vigilance – which is partly allowed by structural conditions. Regulators and policymakers must revise governance codes to move beyond formal independence thresholds, otherwise, true independence may not effectively embed behavioral safeguards into structural designs that prevent misconduct.

5.5 Conclusion

Our theory and results offer an integrative perspective on how prior exposure to corporate fraud shapes subsequent monitoring behavior. Rather than treating experience as a reputational or binary trait, we build on behavioral views of governance to explore how such exposure is cognitively processed and situationally expressed. Our unique data allowed for a more refined analysis of *how* these experiential effects take place, offering a platform for future research on director learning and boardroom cognition. Through using insights from moral disengagement theory and experiential learning, we show that director fraud exposure should not be viewed solely as reputational reputational, but rather as an experiential event that can increase the risk of future misconduct. This challenges the assumption that experience strengthens governance and emphasizes the need to assess how directors internalize and act upon misconduct. It also highlights board independence as a contextual safeguard – effective not by default, but when enabling scrutiny of learned tolerance. However, autonomy alone is insufficient and may suffer from informational limitations.

In sum, fraud prevention requires more than structural reforms. It demands attention to how experience shapes cognition and behavior. By bridging behavioral ethics and governance design, this study calls for a more integrated approach – where oversight is strengthened not only by who sits at the table, but by how they process what they have seen.

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Appendixes

Appendix A. Data Coding Schemes

Data Set Coding

```
clear
set more off

ssc install fillmissing

global path C:\STATA 2025_2026\Coco Bugter (Board Independence)


/*
//PREPARING VIOLATION TRACKER SAMPLE
use "$path\pre-Violation Tracker.dta", clear

drop if hist_ISIN == ""

rename hist_ISIN ISIN

keep ISIN
duplicates drop ISIN, force

merge 1:m ISIN using "$path\Core Dataset - BoardEx.dta"
keep if _merge == 3
drop _merge

keep ISIN
duplicates drop ISIN, force

save "$path\Sample Check.dta", replace
*/

//PREPARING FRAUD EXPERIENCE
use "$path\pre-Violation Tracker.dta", clear

//Cleaning
keep penalty_year company current_parent_name penalty sub_penalty penalty_adjusted
offense_group primary_offense secondary_offense civil_criminal naics naics_tr hist_ISIN

//Drop if historical ISIN is missing
drop if hist_ISIN == ""

//Rename hist_isin and penalty_year
rename hist_ISIN ISIN
```

```
rename penalty_year Year

//Create sample
drop if Year < 2000
drop if Year > 2006

//Keep only financial offenses
keep if offense_group == "financial offenses"

//Create sample for fraud experience (a director will be flagged with fraud experience if they were on the board in the 3 years prior to the enforcement)
duplicates drop ISIN Year, force

gen Expand_years = 3
expand Expand_years

bysort ISIN Year: replace Year = Year - _n

duplicates drop ISIN Year, force
keep ISIN Year

//Generate fraud_experience
gen fraud_company = 1

//Merge with BoardEx data to get the directors
merge 1:m ISIN Year using "$path\Core Dataset - BoardEx.dta"
keep if _merge == 3
drop _merge

keep IndividualID

duplicates drop IndividualID, force

gen fraud_experience = 1

save "$path\Fraud Experience.dta", replace


//PREPARING FINANCIAL OFFENSES
use "$path\pre-Violation Tracker.dta", clear

//Cleaning
keep penalty_year company current_parent_name penalty sub_penalty penalty_adjusted offense_group primary_offense secondary_offense civil_criminal naics naics_tr hist_ISIN

//Drop if historical ISIN is missing
drop if hist_ISIN == ""

//Rename hist_isin and penalty_year
rename hist_ISIN ISIN
```

```
rename penalty_year Year

//Generate financial_offense_dummy and investor_protection_violation_dummy
keep if offense_group == "financial offenses"
gen financial_offense_dummy = 1

gen investor_protection_viol_dummy = 1 if primary_offense == "investor protection
violation"
bysort ISIN Year: fillmissing investor_protection_viol_dummy, with(any)

keep ISIN Year financial_offense_dummy investor_protection_viol_dummy
duplicates drop ISIN Year, force

replace investor_protection_viol_dummy = 0 if investor_protection_viol_dummy == .

//Save
save "$path\Financial Offenses.dta", replace



//PREPARING DATASTREAM DATA
import excel "C:\STATA 2025_2026\Coco Bugter (Board Independence)\Datastream Data
(RETRY).xlsx", sheet("Values") firstrow clear

drop if ISIN == ""
duplicates drop ISIN, force

destring TA2006-BoardMeetings2024, replace force

reshape long TA ROA LEV BoardMeetings, i(ISIN) j(Year)

bysort ISIN (Year): gen TA_lag1 = TA[_n-1]
bysort ISIN (Year): gen ROA_lag1 = ROA[_n-1]
bysort ISIN (Year): gen LEV_lag1 = LEV[_n-1]
bysort ISIN (Year): gen BoardMeetings_lag1 = BoardMeetings[_n-1]

drop if Year == 2006

save "$path\Datastream Data.dta", replace



//START OF MAIN CODE
use "$path\Core Dataset - BoardEx.dta", clear

//Cleaning
drop if RowType == "Disclosed Earner"

drop RowType BoardName
```

```
drop if Year < 2007

//Merge with CEO Tenure
rename CompanyID companyid
rename Year year

merge m:1 companyid year using "$path\CEO Tenure.dta"
drop if _merge == 2
drop _merge

rename companyid CompanyID
rename year Year

//Merge with Fraud Experience
merge m:1 IndividualID using "$path\Fraud Experience.dta"
drop if _merge == 2
drop _merge

replace fraud_experience = 0 if fraud_experience == .

//Keep only companies that have at some point had a director with fraud experience on the
board
bysort CompanyID: egen flag = sum(fraud_experience)
drop if flag == 0

drop flag

//Generate fraud_experience_ratio and fraud_experience_dummy
bysort CompanyID Year: egen fraud_experience_ratio = mean(fraud_experience)

gen fraud_experience_dummy = 1 if fraud_experience == 1
bysort CompanyID Year: fillmissing fraud_experience_dummy, with(any)
replace fraud_experience_dummy = 0 if fraud_experience_dummy == .

//Merge with Financial Offenses
merge m:1 ISIN Year using "$path\Financial Offenses.dta"
drop if _merge == 2
drop _merge

replace financial_offense_dummy = 0 if financial_offense_dummy == .
replace investor_protection_viol_dummy = 0 if investor_protection_viol_dummy == .

//Generate BoardIndependence_ratio
gen Independence_dummy = 1 if strpos(RoleName, "Independent")
replace Independence_dummy = 0 if Independence_dummy == .

bysort CompanyID Year: egen BoardIndependence_ratio = mean(Independence_dummy)
drop Independence_dummy

//Generate BoardIndependence_dummy
```

```
gen BoardIndependence_dummy = 1 if BoardIndependence_ratio >= 0.6
replace BoardIndependence_dummy = 0 if BoardIndependence_ratio < 0.6
replace BoardIndependence_dummy = . if BoardIndependence_ratio == .

//Generate ceo_dummy
gen ceo_dummy = 1 if strpos(RoleName, "CEO") | strpos(RoleName, "Chief Executive
Officer")
replace ceo_dummy = . if strpos(RoleName, "Vice") | strpos(RoleName, "Deputy") |
strpos(RoleName, "Co") | strpos(RoleName, "Group") | strpos(RoleName, "Division") |
strpos(RoleName, "Joint") | strpos(RoleName, "Regional") | strpos(RoleName, "Honorary")
replace ceo_dummy = 1 if strpos(RoleName, "/CEO") | strpos(RoleName, "/Chief Executive
Officer")

//Generate chair_dummy
gen chair_dummy = 1 if strpos(RoleName, "Chair")
replace chair_dummy = . if strpos(RoleName, "Vice") | strpos(RoleName, "Deputy") |
strpos(RoleName, "Co") | strpos(RoleName, "Group") | strpos(RoleName, "Division") |
strpos(RoleName, "Joint") | strpos(RoleName, "Regional") | strpos(RoleName, "Honorary")
replace chair_dummy = 1 if strpos(RoleName, "/Chair")

//Generate ceo_duality
gen ceo_duality = 1 if ceo_dummy == 1 & chair_dummy == 1
replace ceo_duality = 0 if ceo_dummy != chair_dummy

//Fill out ceo_duality
bysort CompanyID Year: fillmissing ceo_duality, with(any)

//Aggregate to company-level
drop IndividualID-NoQuals NetworkSize-Nationality fraud_experience ceo_dummy
chair_dummy

drop if ISIN == ""
duplicates drop ISIN Year, force

//Merge with Datastream Data
merge 1:1 ISIN Year using "$path\Datastream Data.dta"
drop if _merge == 2
drop _merge

//Generate log_TA
gen log_TA = ln(TA)

//Cleaning
drop BoardExModule CompanyID BoardID AnnualReportDate HOCountryName Sector
Succession Attrition GenderRatio NationalityMix STDEVTimeBrd STDEVTimeInCo
STDEVTotNoLstdBrd STDEVTotCurrNoLstdBrd STDEVNoQuals STDEVAge
```

Director Level Analysis

```
. use "C:\Users\s1059311\OneDrive\FINAL DATASET (Director-level).dta"

. keep if fraud_experience == 1
(334,906 observations deleted)

. duplicates drop IndividualID, force

Duplicates in terms of IndividualID

(38,651 observations deleted)

. count
  1,911

. count if fraud_experience == 1
  1,911

. tab Year if fraud_experience == 1
```

Year	Freq.	Percent	Cum.
2007	1,339	70.07	70.07
2008	77	4.03	74.10
2009	47	2.46	76.56
2010	51	2.67	79.23
2011	54	2.83	82.05
2012	44	2.30	84.35
2013	57	2.98	87.34
2014	46	2.41	89.74
2015	31	1.62	91.37
2016	34	1.78	93.14
2017	22	1.15	94.30
2018	24	1.26	95.55
2019	17	0.89	96.44
2020	23	1.20	97.65
2021	33	1.73	99.37
2022	7	0.37	99.74
2023	4	0.21	99.95
2024	1	0.05	100.00
Total	1,911	100.00	

```
. by sort Year IndividualID ( fraud_experience ): gen tag = _n == 1 if fraud_experience == 1
variable sort not found
r(111);

. bysort Year IndividualID ( fraud_experience ): gen tag = _n == 1 if fraud_experience == 1
```

```
. tab Year if tag == 1

      Year |      Freq.     Percent        Cum.
-----------+-----------------------------------
      2007 |      1,339       70.07       70.07
      2008 |         77        4.03       74.10
      2009 |         47        2.46       76.56
      2010 |         51        2.67       79.23
      2011 |         54        2.83       82.05
      2012 |         44        2.30       84.35
      2013 |         57        2.98       87.34
      2014 |         46        2.41       89.74
      2015 |         31        1.62       91.37
      2016 |         34        1.78       93.14
      2017 |         22        1.15       94.30
      2018 |         24        1.26       95.55
      2019 |         17        0.89       96.44
      2020 |         23        1.20       97.65
      2021 |         33        1.73       99.37
      2022 |          7        0.37       99.74
      2023 |          4        0.21       99.95
      2024 |          1        0.05      100.00
-----------+-----------------------------------
     Total |      1,911      100.00

. keep if fraud_experience == 1
(0 observations deleted)

. gen boardyear = Year * 100000 + BoardID

. duplicates drop boardyear, force

Duplicates in terms of boardyear

(788 observations deleted)
collapse (count) tag, by(Year)

. rename tag boards_with_fraud_director

. list

     +-----------------+
     | Year   boards~r |
     |-----------------|
  1. | 2007        578 |
  2. | 2008         73 |
  3. | 2009         43 |
  4. | 2010         49 |
  5. | 2011         52 |
```

```
     |-----------------|
  6. | 2012         42 |
  7. | 2013         54 |
  8. | 2014         43 |
  9. | 2015         30 |
 10. | 2016         32 |
     |-----------------|
 11. | 2017         22 |
 12. | 2018         24 |
 13. | 2019         16 |
 14. | 2020         22 |
 15. | 2021         31 |
     |-----------------|
 16. | 2022          7 |
 17. | 2023          4 |
 18. | 2024          1 |
     +-----------------+

. use "C:\Users\s1059311\OneDrive\FINAL DATASET (Director-level).dta"

. keep if fraud_experience == 1
(334,906 observations deleted)

. gen combo = IndividualID*1000000 + CompanyID

. duplicates drop combo, force

Duplicates in terms of combo

(35,613 observations deleted)

. bysort IndividualID: gen firm_count = _N

. bysort IndividualID (CompanyID): keep if _n == 1
(3,039 observations deleted)

. gen moved = firm_count > 1

. tab moved

      moved |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |        727       38.06       38.06
          1 |      1,183       61.94      100.00
------------+-----------------------------------
      Total |      1,910      100.00

use "C:\Users\s1059311\OneDrive\FINAL DATASET (Director-level).dta", clear
```

```
.
. keep if fraud_experience == 1
(334,906 observations deleted)

. tabulate Year

      Year |      Freq.     Percent        Cum.
-----------+-----------------------------------
      2007 |      4,107       10.13       10.13
      2008 |      3,774        9.30       19.43
      2009 |      3,481        8.58       28.01
      2010 |      3,349        8.26       36.27
      2011 |      3,244        8.00       44.27
      2012 |      3,039        7.49       51.76
      2013 |      2,843        7.01       58.77
      2014 |      2,584        6.37       65.14
      2015 |      2,376        5.86       71.00
      2016 |      2,152        5.31       76.30
      2017 |      1,887        4.65       80.95
      2018 |      1,674        4.13       85.08
      2019 |      1,471        3.63       88.71
      2020 |      1,290        3.18       91.89
      2021 |      1,225        3.02       94.91
      2022 |      1,056        2.60       97.51
      2023 |        884        2.18       99.69
      2024 |        126        0.31      100.00
-----------+-----------------------------------
     Total |     40,562      100.00
```

Descriptives

```
. use "C:\Users\s1059311\Downloads\VARIABLEVIEW.final.dta"


. tab FinancialOffense_dummy

 FinancialOffense_dummy |      Freq.     Percent        Cum.
------------------------+-----------------------------------
No Financial Fraud Case |     32,087       97.74       97.74
   Financial Fraud Case |        743        2.26      100.00
------------------------+-----------------------------------
                  Total |     32,830      100.00


. use matched.dta, clear


. tab FinancialOffense_dummy
```

```
 FinancialOffense_dummy |      Freq.     Percent        Cum.
------------------------+-----------------------------------
No Financial Fraud Case |        702       50.00       50.00
   Financial Fraud Case |        702       50.00      100.00
------------------------+-----------------------------------
                  Total |      1,404      100.00
```

```
    Variable |       Obs        Mean    Std. dev.       Min        Max
-------------+--------------------------------------------------------
FinancialO~y |       702           1           0           1          1
DirectorsF~y |       702    .8561254    .3512128           0          1
BoardIndep~1 |       702    .7906273    .1711237           0          1
  LogTA_lag1 |       702    18.43235    2.503153    11.39459   22.18796
  ROA_winsor |       702    3.553321    7.512074      -52.63     31.997
-------------+--------------------------------------------------------
  LEV_winsor |       702    23.49171    18.13166           0    95.1644
BoardMeeti~r |       702    12.73789    6.637095           4         25
BoardSize_~r |       702    12.81909    3.527359           4         24
CEOtenure_~r |       702    13.31615    12.92171       .1643    42.6825
CEOduality~1 |       702    .4031339     .490877           0          1
-------------+--------------------------------------------------------
IndustryTy~2 |       702    5.495726    1.337214           1          8
```

Main Analysis

```
. drop if missing( FinancialOffense_dummy, DirectorsFraudExperience_dummy,
BoardIndependence_lag1, LogTA_lag1, ROA_winsor, LEV_winsor, BoardMeetings_winsor,
BoardSize_winsor, CEOtenure_winsor, CEOdua
> lity_lag1, IndustryType_2 )
(3,890 observations deleted)
```

```
. sort pairid
```

```
. list pairid FinancialOffense_dummy LogTA_lag1 ROA_winsor IndustryType_2 in 1/20
```

```
     +-------------------------------------------------------------+
     | pairid   FinancialO~y    LogTA_lag1     ROA_winsor   Indust~2 |
     |-------------------------------------------------------------|
  1. |     1   Financial Fr   18.01877022    8.550000191          1 |
  2. |     1   No Financial   15.77678871    .4199999869          6 |
  3. |     2   No Financial   15.95771503    19.30999947          1 |
  4. |     2   Financial Fr   11.74298859     1.49000001          6 |
  5. |     3   No Financial   20.41905975    1.129999995          6 |
     |-------------------------------------------------------------|
  6. |     3   No Financial   20.34774208    1.350000024          6 |
  7. |     4   No Financial     20.386446   -28.35000038          3 |
```

```
 8. |     4   No Financial   18.39650726    13.27999973         1 |
 9. |     5   No Financial   20.87939644          1.25         6 |
10. |     5   No Financial   20.51512527    1.720000029         6 |
    |-----------------------------------------------------------|
11. |     6   No Financial   20.74378586    .8700000048         6 |
12. |     6   No Financial   20.50525475     1.00999999         6 |
13. |     7   No Financial   19.47918892    2.210000038         6 |
14. |     7   No Financial   19.34058952    2.140000105         6 |
15. |     8   No Financial   18.50620842    6.619999886         2 |
    |-----------------------------------------------------------|
16. |     8   Financial Fr   18.71290398    7.329999924         2 |
17. |     9   Financial Fr   19.27417755    5.389999866         2 |
18. |     9   No Financial   19.97013474    .1199999973         6 |
19. |    10   No Financial   20.17860603    .3700000048         6 |
20. |    10   No Financial   19.87403297    -.5099999905         6 |
    +-----------------------------------------------------------+
```

. pstest LogTA_lag1 ROA_winsor IndustryType_2, graph

```
-------------------------------------------------------------------------------
                |      Mean           |    t-test    |  V(T)/
Variable        | Treated Control   %bias |    t    p>|t| |  V(C)
----------------+---------------------+--------------+----------
LogTA_lag1      | 18.432    18.5     -2.7 |  -0.51  0.613 |  1.02
ROA_winsor      | 3.5533   3.0123     6.1 |   1.14  0.253 |  0.56*
IndustryType_2  | 5.4957    5.396     7.0 |   1.31  0.189 |  0.79*
-------------------------------------------------------------------------------
* if variance ratio outside [0.86; 1.16]

-----------------------------------------------------------------
Ps R2   LR chi2   p>chi2   MeanBias   MedBias     B      R     %Var
-----------------------------------------------------------------
0.002     4.00    0.262      5.3       6.1      10.7    0.78     67
-----------------------------------------------------------------
* if B>25%, R outside [0.5; 2]
```

. pstest LogTA_lag1 ROA_winsor IndustryType_2, both graph

```
-------------------------------------------------------------------------------------
             Unmatched |       Mean             %reduct |     t-test    | V(T)/
Variable       Matched | Treated Control   %bias  |bias| |    t    p>|t| |  V(C)
---------------------+-------------------------------+--------------+----------
LogTA_lag1           U | 18.432    18.5     -2.7         | -0.51  0.613 |  1.02
                     M | 18.432    18.5     -2.7     0.0 | -0.51  0.613 |  1.02
                       |                               |              |
ROA_winsor           U | 3.5533   3.0123     6.1         |  1.14  0.253 |  0.56*
                     M | 3.5533   3.0123     6.1     0.0 |  1.14  0.253 |  0.56*
                       |                               |              |
IndustryType_2       U | 5.4957    5.396     7.0         |  1.31  0.189 |  0.79*
                     M | 5.4957    5.396     7.0     0.0 |  1.31  0.189 |  0.79*
```

```
                    |                          |           |
-------------------------------------------------------------------------------
* if variance ratio outside [0.86; 1.16] for U and [0.86; 1.16] for M

-------------------------------------------------------------------------------
 Sample    | Ps R2   LR chi2   p>chi2   MeanBias   MedBias      B      R     %Var
-----------+-------------------------------------------------------------------
 Unmatched | 0.002      4.00    0.262      5.3       6.1      10.7    0.78     67
 Matched   | 0.002      4.00    0.262      5.3       6.1      10.7    0.78     67
-------------------------------------------------------------------------------
* if B>25%, R outside [0.5; 2]

. save matched_1to1.dta, replace



. use matched.dta, clear

. list _id _n1 pairid in 1/10
variable pairid not found
r(111);

. use matched.dta, clear

. list _id _n1 FinancialOffense_dummy Log_TA IndustryType_2 ROA_winsor in 1/10

    +-------------------------------------------------------------------------+
    |  _id    _n1   FinancialO~y       Log_TA   Indust~2     ROA_winsor |
    |-------------------------------------------------------------------------|
 1. | 28345   16758   Financial Fr    18.0350914         1    8.550000191 |
 2. | 20629       .   No Financial   15.66976833         6    .4199999869 |
 3. |  6831       .   No Financial   16.48128319         1    19.30999947 |
 4. | 28251    3812   Financial Fr   19.95141411         6     1.49000001 |
 5. | 27911       .   No Financial    20.1432724         6    1.129999995 |
    |-------------------------------------------------------------------------|
 6. | 27883       .   No Financial     20.386446         6    1.350000024 |
 7. | 27356       .   No Financial    10.0919981         3   -28.35000038 |
 8. | 18201       .   No Financial   18.37421227         1    13.27999973 |
 9. | 28085       .   No Financial   18.79849815         6           1.25 |
10. | 27955       .   No Financial   20.74378586         6    1.720000029 |
    +-------------------------------------------------------------------------+

. gen pairid = floor((_n + 1)/2)

. bysort pairid: gen check = _N

. tabulate check

     check |      Freq.     Percent        Cum.
```

```
------------+-----------------------------------
          2 |      1,404      100.00      100.00
------------+-----------------------------------
      Total |      1,404      100.00
```

```
. clogit FinancialOffense_dummy DirectorsFraudExperience_dummy LogTA_lag1
ROA_winsor LEV_winsor BoardMeetings_winsor BoardSize_winsor CEOtenure_winsor
CEOduality_lag1, group(pairid)
note: multiple positive outcomes within groups encountered.
note: 482 groups (964 obs) omitted because of all positive or
      all negative outcomes.

Iteration 0:  Log likelihood = -144.63133
Iteration 1:  Log likelihood = -143.30209
Iteration 2:  Log likelihood = -143.29736
Iteration 3:  Log likelihood = -143.29736

Conditional (fixed-effects) logistic regression         Number of obs =    440
                                                LR chi2(8)    =  18.39
                                                Prob > chi2   = 0.0185
Log likelihood = -143.29736                     Pseudo R2     = 0.0603

------------------------------------------------------------------------------
      FinancialOffense_dummy | Coefficient  Std. err.      z    P>|z|     [95% conf. interval]
-----------------------------+------------------------------------------------
DirectorsFraudExperience_dummy |   .8863776   .3240062     2.74   0.006      .251337
1.521418
                LogTA_lag1 |   .0729203   .0790556     0.92   0.356    -.0820257    .2278663
                ROA_winsor |   .0116119   .0107357     1.08   0.279    -.0094297    .0326534
                LEV_winsor |   .0080539   .0063319     1.27   0.203    -.0043564    .0204641
        BoardMeetings_winsor |  -.0351812    .018173    -1.94   0.053    -.0707995    .0004372
           BoardSize_winsor |  -.0843311   .0561033    -1.50   0.133    -.1942915    .0256294
           CEOtenure_winsor |  -.0055504   .0106676    -0.52   0.603    -.0264585    .0153576
            CEOduality_lag1 |  -.0954789   .2751526    -0.35   0.729    -.6347681    .4438103
------------------------------------------------------------------------------
. estat ic

Akaike's information criterion and Bayesian information criterion

-------------------------------------------------------------------------
      Model |          N   ll(null)  ll(model)      df        AIC        BIC
------------+------------------------------------------------------------
          . |        440  -152.4924  -143.2974       8   302.5947   335.2889
-------------------------------------------------------------------------
Note: BIC uses N = number of observations. See [R] IC note.

. clogit FinancialOffense_dummy DirectorsFraudExperience_dummy
BoardIndependence_lag1 Interaction_FE_BI LogTA_lag1 ROA_winsor LEV_winsor
BoardMeetings_winsor BoardSize_winsor CEOtenure_winsor CEOdual
```

```
> ity_lag1, group(pairid)
note: multiple positive outcomes within groups encountered.
note: 482 groups (964 obs) omitted because of all positive or
      all negative outcomes.

Iteration 0:  Log likelihood = -143.14977
Iteration 1:  Log likelihood = -137.57004
Iteration 2:  Log likelihood =  -137.4845
Iteration 3:  Log likelihood = -137.48447
Iteration 4:  Log likelihood = -137.48447

Conditional (fixed-effects) logistic regression         Number of obs =    440
                                                LR chi2(10)   =  30.02
                                                Prob > chi2   = 0.0009
Log likelihood = -137.48447                     Pseudo R2     = 0.0984

------------------------------------------------------------------------------
      FinancialOffense_dummy | Coefficient  Std. err.      z    P>|z|     [95% conf. interval]
-----------------------------+------------------------------------------------
DirectorsFraudExperience_dummy |   6.542593   2.226239     2.94   0.003     2.179246
10.90594
      BoardIndependence_lag1 |   8.012714   2.718596     2.95   0.003     2.684365    13.34106
         Interaction_FE_BI |  -7.088262    2.73356    -2.59   0.010    -12.44594   -1.730583
              LogTA_lag1 |   .0461447   .0856451     0.54   0.590    -.1217167     .214006
              ROA_winsor |   .0139492   .0106513     1.31   0.190     -.006927    .0348254
              LEV_winsor |   .0071058   .0065653     1.08   0.279    -.0057618    .0199735
       BoardMeetings_winsor |  -.0392238   .0192784    -2.03   0.042    -.0770088   -.0014388
          BoardSize_winsor |  -.0688727   .0606929    -1.13   0.256    -.1878286    .0500832
          CEOtenure_winsor |  -.0086927    .011055    -0.79   0.432    -.0303602    .0129748
           CEOduality_lag1 |  -.2220709   .2839235    -0.78   0.434    -.7785508     .334409
------------------------------------------------------------------------------

. estat ic

Akaike's information criterion and Bayesian information criterion

-------------------------------------------------------------------------------
     Model |          N   ll(null)  ll(model)      df        AIC        BIC
-----------+-------------------------------------------------------------------
         . |        440  -152.4924  -137.4845      10   294.9689   335.8367
-------------------------------------------------------------------------------
Note: BIC uses N = number of observations. See [R] IC note.
```

Robuustness Analysis

```
. use "C:\Users\s1059311\Downloads\VARIABLEVIEW.final.dta", clear
```

```
. psmatch2 FinancialOffense_dummy ( LogTA_lag1 ROA_winsor IndustryType_2 ),
neighbor(3)

Probit regression                               Number of obs =  28,940
                                                LR chi2(3)    = 1388.73
                                                Prob > chi2   =  0.0000
Log likelihood = -2609.8194                     Pseudo R2     =  0.2101

------------------------------------------------------------------------------
FinancialOffense_dummy | Coefficient  Std. err.      z    P>|z|     [95% conf. interval]
-----------------------+------------------------------------------------------------------
         LogTA_lag1 |   .2532696    .008506    29.78   0.000     .2365981    .2699412
         ROA_winsor |   -.004266    .001979    -2.16   0.031    -.0081447   -.0003873
      IndustryType_2 |   .1471599   .0108187    13.60   0.000     .1259556    .1683642
               _cons |  -6.897625   .1586567   -43.48   0.000    -7.208586   -6.586663
------------------------------------------------------------------------------

. gen treated = _treated

. save matched_all.dta, replace
(file matched_all.dta not found)
file matched_all.dta saved

. list _id _pscore _weight _treated if _treated==0 in 1/10

     +-----------------------------------------+
     |  _id     _pscore     _weight    _treated |
     |-----------------------------------------|
  2. | 27712   .16840136           .   Untreated |
  3. | 27961   .20454495           1   Untreated |
  5. | 27990   .20974747           1   Untreated |
  6. | 28086   .23364761   1.6666667   Untreated |
  8. | 24566   .04191066           .   Untreated |
     |-----------------------------------------|
  9. | 24110   .03858432           .   Untreated |
     +-----------------------------------------+

. use matched_all.dta, clear

. pstest LogTA_lag1 ROA_winsor IndustryType_2, both graph

-------------------------------------------------------------------------------------
             Unmatched |       Mean             %reduct |     t-test    | V(T)/
Variable       Matched | Treated Control    %bias  |bias| |    t   p>|t| |  V(C)
-----------------------+-------------------------------+---------------+----------
LogTA_lag1           U  | 18.432   15.456    126.6        |  35.48  0.000 |  1.31*
                     M  | 18.432   18.474     -1.8    98.6 | -0.32  0.752 |  1.05
                        |                      |           |
ROA_winsor           U  | 3.5533   3.7296     -1.6        | -0.34  0.734 |  0.30*
                     M  | 3.5533   3.0935      4.2  -160.9 |  1.00  0.316 |  0.62*
```

```
                |                    |          |
IndustryType_2      U | 5.4957    4.236     74.5       | 16.75  0.000 |  0.46*
                    M | 5.4957   5.4107      5.0    93.3 |  1.11  0.267 |  0.77*
                |                    |          |
-------------------------------------------------------------------------------
* if variance ratio outside [0.86; 1.16] for U and [0.86; 1.16] for M

-------------------------------------------------------------------------------
 Sample    | Ps R2   LR chi2   p>chi2   MeanBias   MedBias      B      R     %Var
-----------+-------------------------------------------------------------------
 Unmatched | 0.210   1388.73    0.000     67.6      74.5     141.3*   1.33    100
 Matched   | 0.001      2.77    0.428      3.7       4.2       8.9    0.76     67
-------------------------------------------------------------------------------
* if B>25%, R outside [0.5; 2]

. use matched_all.dta, clear

. drop if missing(_weight)
(26,667 observations deleted)

. logit FinancialOffense_dummy DirectorsFraudExperience_dummy
BoardIndependence_lag1 Interaction_FE_BI LogTA_lag1 ROA_winsor LEV_winsor
BoardMeetings_wi
> nsor BoardSize_winsor CEOtenure_winsor CEOduality_lag1 [pw=_weight]

Iteration 0:  Log pseudolikelihood = -973.17864
Iteration 1:  Log pseudolikelihood = -849.33188
Iteration 2:  Log pseudolikelihood = -845.38828
Iteration 3:  Log pseudolikelihood = -845.35162
Iteration 4:  Log pseudolikelihood = -845.35162

Logistic regression                             Number of obs =  2,273
                                                Wald chi2(10) = 191.22
                                                Prob > chi2   = 0.0000
Log pseudolikelihood = -845.35162               Pseudo R2     = 0.1314

------------------------------------------------------------------------------------------
                         |               Robust
      FinancialOffense_dummy | Coefficient  std. err.      z    P>|z|     [95% conf. interval]
-------------------------------+----------------------------------------------------------------
DirectorsFraudExperience_dummy |   3.082473   .6180645     4.99   0.000     1.871089
4.293857
      BoardIndependence_lag1 |   5.409309   .7128458     7.59   0.000     4.012157    6.806462
         Interaction_FE_BI |  -2.733005   .7698625    -3.55   0.000    -4.241908   -1.224103
              LogTA_lag1 |   .0123479   .0271873     0.45   0.650    -.0409383    .0656341
              ROA_winsor |   .0031357   .0062085     0.51   0.614    -.0090328    .0153042
              LEV_winsor |  -.0019933   .0026803    -0.74   0.457    -.0072465      .00326
       BoardMeetings_winsor |   .0143924   .0075943     1.90   0.058    -.0004921     .029277
          BoardSize_winsor |   .0404075   .0210828     1.92   0.055     -.000914    .0817289
          CEOtenure_winsor |  -.0057226    .003917    -1.46   0.144    -.0133998    .0019546
```

```
CEOduality_lag1 |   .1845029   .1130904     1.63   0.103    -.0371502    .4061559
          _cons |  -5.632445   .7409972    -7.60   0.000    -7.084772   -4.180117
------------------------------------------------------------------------------
```

. estat ic

Akaike's information criterion and Bayesian information criterion

```
-------------------------------------------------------------------------------
      Model |          N   ll(null)  ll(model)      df        AIC        BIC
------------+------------------------------------------------------------------
          . |      2,273  -973.1786  -845.3516      11   1712.703   1775.721
-------------------------------------------------------------------------------
```

Note: BIC uses N = number of observations. See [R] IC note.

. regress FinancialOffense_dummy DirectorsFraudExperience_dummy BoardIndependence_lag1 Interaction_FE_BI LogTA_lag1 ROA_winsor LEV_winsor BoardMeetings_
> winsor BoardSize_winsor CEOtenure_winsor CEOduality_lag1

```
      Source |       SS          df       MS      Number of obs   =     2,273
-------------+----------------------------------  F(10, 2262)    =     32.29
       Model |  60.6105433        10  6.06105433   Prob > F        =    0.0000
    Residual |  424.581714     2,262  .187701907   R-squared       =    0.1249
-------------+----------------------------------  Adj R-squared   =    0.1211
       Total |  485.192257     2,272   .21355293   Root MSE        =    .43325

------------------------------------------------------------------------------
FinancialOffense_dummy | Coefficient  Std. err.      t    P>|t|     [95% conf. interval]
-------------------------------+----------------------------------------------------------------
DirectorsFraudExperience_dummy |    .208395    .062183     3.35   0.001     .0864534
.3303366
       BoardIndependence_lag1 |   .5144392   .0728574     7.06   0.000      .371565    .6573135
          Interaction_FE_BI |  -.0620748   .0870418    -0.71   0.476    -.2327649    .1086154
               LogTA_lag1 |   .0271701   .0047126     5.77   0.000     .0179286    .0364116
               ROA_winsor |  -.0008667   .0010379    -0.84   0.404     -.002902    .0011686
               LEV_winsor |  -.0001543    .000467    -0.33   0.741    -.0010702    .0007615
     BoardMeetings_winsor |   .0046897   .0013407     3.50   0.000     .0020606    .0073189
        BoardSize_winsor |   .0064629   .0031815     2.03   0.042     .0002241    .0127018
        CEOtenure_winsor |  -.0013901   .0006545    -2.12   0.034    -.0026736   -.0001066
         CEOduality_lag1 |   .0390178   .0206839     1.89   0.059    -.0015436    .0795791
                   _cons |  -.7820226   .0962798    -8.12   0.000    -.9708286   -.5932166
------------------------------------------------------------------------------
```

Appendix B. Missing Value Analysis

MVA

Univariate Statistics

	N	Mean	Std. Deviation	Missing Count	Missing Percent	No. of Extremes[a] Low	No. of Extremes[a] High
BoardIndependence_ratio	32830	.707952588	.223392368	0	.0	1729	0
BoardSize	32830	10.57	3.688	0	.0	119	1537
BoardMeetings	21045	8.61	4.347	11785	35.9	0	792
Log_TA	29500	15.5304464	2.25039121	3330	10.1	876	827
ROA	29173	3.80559696	124.913813	3657	11.1	16	6
LEV	29315	26.9662787	23.4878351	3515	10.7	0	867
CEOtenure	27415	9.95903325	9.25286548	5415	16.5	0	1183
FinancialOffense_dummy	32830			0	.0		
DirectorsFraudExperience_dummy	32830			0	.0		
CEODuality	32449			381	1.2		

a. Number of cases outside the range (Mean – 2*SD, Mean + 2*SD).

MVA

E.M. Estimates

BoardIndependence_ratio	BoardSize	BoardMeetings	Log_TA	ROA	LEV	CEOtenure
.707925274	10.57	8.26	15.4896561	3.60206940	26.9644614	9.97344423

a. Little's MCAR test: Chi-Square = 11541.182, DF = 80, Sig. = .000

b. The EM algorithm failed to converge in 25 iterations.

Identification Duplicate Cases

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Primary Case	32830	100.0	100.0	100.0

Note. To ensure uniqueness of firm-year observations, duplicate cases were tested based on ISIN and year using SPSS's Identify Duplicate Cases function. No duplicates were identified.

Appendix C. Descriptives

Descriptive statistics

Original and winsorized variables

Frequencies

Statistics

		LAGS (BoardIndependence_ratio, 1)	LAGS(Log_TA, 1)	ROA_lag1	LEV_lag1	BoardMeetings_lag1	LAGS (BoardSize,1)	LAGS (CEOtenure,1)
N	Valid	32829	29499	29085	29267	20273	32829	27414
	Missing	1	3331	3745	3563	12557	1	5416
Percentiles	1	.000000000	10.0311766	-69.5741995	.000000000	4.00	4.00	.164271042
	99	1.00000000	21.0773697	31.9969999	95.1644000	25.00	24.00	42.6825466

Descriptives

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Variance
ROA_lag1	29085	-1110.94995	2200.00000	3.13645110	29.7892669	887.400
ROA_winsor	32830	-69.57	32.00	6.5872	15.46186	239.069
LEV_lag1	29267	.000000000	927.780029	26.6789152	23.9023388	571.322
LEV_winsor	32830	.00	95.16	33.7029	28.91366	836.000
BoardMeetings_lag1	20273	0	75	8.60	4.290	18.406
BoardMeetings_winsor	32830	4.00	25.00	14.8387	8.56671	73.389
LAGS(BoardSize,1)	32829	1	33	10.57	3.688	13.601
BoardSize_winsor	32830	4.00	24.00	10.5415	3.55284	12.623
LAGS(CEOtenure,1)	27414	.000000000	123.570160	9.95926260	9.25295631	85.617
CEOtenure_winsor	32830	.16	42.68	15.2376	14.45382	208.913
Valid N (listwise)	16931					

Descriptives matched sample

FinancialOffense_dummy: Financial Fraud Case

	N	Mean	SD	Min	Max
FinancialOffense d~y	702	1	0.000	1	1
DirectorsFraudExpe~y	702	.856	0.351	0	1
BoardIndependence ~1	702	.791	0.171	0	1
LogTA lag1	702	18.432	2.503	11.395	22.188
ROA winsor	702	3.553	7.512	-52.63	31.997
LEV winsor	702	23.492	18.132	0	95.164
BoardMeetings winsor	702	12.738	6.637	4	25
BoardSize winsor	702	12.819	3.527	4	24
CEOtenure winsor	702	13.316	12.922	.164	42.682
CEOduality lag1	702	.403	0.491	0	1
IndustryType	702	5.496	1.337	1	8

No Financial Fraud Case

FinancialOffense d~y	702	0	0.000	0	0
DirectorsFraudExpe~y	702	.613	0.488	0	1
BoardIndependence ~1	702	.649	0.242	0	1

LogTA lag1	702	18.5	2.479	11.026	22.412
ROA winsor	702	3.012	10.032	-69.574	31.997
LEV winsor	702	24.494	21.047	0	95.164
BoardMeetings winsor	702	12.561	6.882	4	25
BoardSize winsor	702	13.48	4.144	5	24
CEOtenure winsor	702	18.409	16.474	.167	42.682
CEOduality lag1	702	.242	0.429	0	1
IndustryType	702	5.396	1.504	1	9

Directors'Fraud Experience Incidence

While the incidence of boards with at least one fraud-experienced director in my dataset – 62.2% of firm-years – may seem high, it aligns with prior findings. Fich and Shivdasani (2007) show that even three years after a fraud-related lawsuit, 83.24% of outside directors remained on the board of the accused firm, suggesting that fraud involvement does not automatically lead to board exclusion – making the incidence of fraud experienced boards in this study more plausible. Moreover, both studies also show a temporal decline in the presence of such directors: Fich and Shivdasani report a drop in outside directors holding other board seats from 49.56% to 29.12%, while my data similarly show a gradual decrease in fraud-experienced director-years between 2007 and 2024. This parallel indicates that these directors often remain active shortly after the fraud event but fade over time. Given this pattern, it is not surprising that a substantial share of firm-years includes at least one fraud-experienced director.

In addition, a key contextual difference is that my analysis includes all directors, not just outsiders. Since insiders – especially executives – may more easily retain or regain board positions, this broader scope plausibly contributes to the higher observed incidence

Niveau	**Variable**	**Value**
Director-Year	Observations total	375.468
	With Fraud Experience	40.562 (10.8%)
	Without Fraud Experience	334.906 (89.2%)
Director (Individual)	Unique fraud experienced directors	1.911
	Moved to new firm	1.183 (61.9%)
	Stayed at focal firm	727 (38.1%)
Firm-Year	Fraud Experience (=1)	244.466 (65.1%)
	Fraud Experience (=0)	131.002 (34.9%)

Note. The estimate of the proportion of directors who switched firms (with or without moving) may be biased. Since the dataset only starts in 2007, it is not known whether fraudulent experience prior to 2007 was associated with an earlier firm switch. It is therefore possible that some directors were classified as 'not moved' even though they had switched firms prior to 2007.

Year	Number of unique boards with fraud-experienced director	Number of unique directors with fraud experience	Number of director–year observations with fraud-experienced director
2007	578	1.339	4.107
2008	73	77	3.774
2009	43	47	3.481
2010	49	51	3.349
2011	52	54	3.244
2012	42	44	3.039
2013	54	57	2.843
2014	43	46	2.584
2015	30	31	2.376
2016	32	34	2.152
2017	22	22	1.887
2018	24	24	1.674
2019	16	17	1.471
2020	22	23	1.290
2021	31	33	1.225
2022	7	7	1.056
2023	4	4	884
2024	1	1	126

Correlations

Correlations

		Directors'FraudExperience_dummy	LAGS (BoardIndependence_ratio, 1)	LAGS(Log_TA, 1)	ROA_winsor	LEV_winsor	BoardMeetings_winsor	BoardSize_winsor	CEOtenure_winsor	LAGS (CEODuality, 1)
Directors'FraudExperience_dummy	Pearson Correlation	1	.072**	.086**	.018**	-.030**	-.028**	.086**	-.063**	.102**
	Sig. (2-tailed)		<.001	<.001	.001	<.001	<.001	<.001	<.001	<.001
	N	32830	32829	29499	32830	32830	32830	32830	32830	32448
LAGS (BoardIndependence_ratio,1)	Pearson Correlation	.072**	1	-.014*	.017**	.029**	-.074**	-.257**	-.167**	.190**
	Sig. (2-tailed)	<.001		.016	.002	<.001	<.001	<.001	<.001	<.001
	N	32829	32829	29499	32829	32829	32829	32829	32829	32448
LAGS(Log_TA,1)	Pearson Correlation	.086**	-.014*	1	.224**	.075**	-.390**	.583**	.023**	.027**
	Sig. (2-tailed)	<.001	.016		<.001	<.001	<.001	<.001	<.001	<.001
	N	29499	29499	29499	29499	29499	29499	29499	29499	29206
ROA_winsor	Pearson Correlation	.018**	.017**	.224**	1	.424**	.030**	.044**	.061**	-.003
	Sig. (2-tailed)	.001	.002	<.001		<.001	<.001	<.001	<.001	.602
	N	32830	32829	29499	32830	32830	32830	32830	32830	32448
LEV_winsor	Pearson Correlation	-.030**	.029**	.075**	.424**	1	.213**	-.041**	.051**	-.012*
	Sig. (2-tailed)	<.001	<.001	<.001	<.001		<.001	<.001	<.001	.033
	N	32830	32829	29499	32830	32830	32830	32830	32830	32448
BoardMeetings_winsor	Pearson Correlation	-.028**	-.074**	-.390**	.030**	.213**	1	-.257**	.088**	-.048**
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	<.001		<.001	<.001	<.001
	N	32830	32829	29499	32830	32830	32830	32830	32830	32448
BoardSize_winsor	Pearson Correlation	.086**	-.257**	.583**	.044**	-.041**	-.257**	1	-.008	-.060**
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	<.001	<.001		.137	<.001
	N	32830	32829	29499	32830	32830	32830	32830	32830	32448
CEOtenure_winsor	Pearson Correlation	-.063**	-.167**	.023**	.061**	.051**	.088**	-.008	1	-.070**
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	<.001	<.001	.137		<.001
	N	32830	32829	29499	32830	32830	32830	32830	32830	32448
LAGS(CEODuality,1)	Pearson Correlation	.102**	.190**	.027**	-.003	-.012*	-.048**	-.060**	-.070**	1
	Sig. (2-tailed)	<.001	<.001	<.001	.602	.033	<.001	<.001	<.001	
	N	32448	32448	29206	32448	32448	32448	32448	32448	32448

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Sector distribution based SIC 1 Digit

IndustryType

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agriculture, Forestry, Fishing	59	.2	.2	.2
	Mining	1721	5.2	5.8	6.0
	Construction	5139	15.7	17.3	23.3
	Manufacturing	5944	18.1	20.0	43.2
	Transportation & Public Utilities	3531	10.8	11.9	55.1
	Trade (Wholesale & Retail)	2306	7.0	7.8	62.8
	Finance, Insurance, Real Estate	6752	20.6	22.7	85.5
	Services	3220	9.8	10.8	96.4
	Public Administration	1067	3.3	3.6	99.9
	Nonclassifiable Establishments	15	.0	.1	100.0
	Total	29754	90.6	100.0	
Missing	System	3076	9.4		
Total		32830	100.0		

Year Effects

Year * FinancialOffense_dummy Crosstabulation

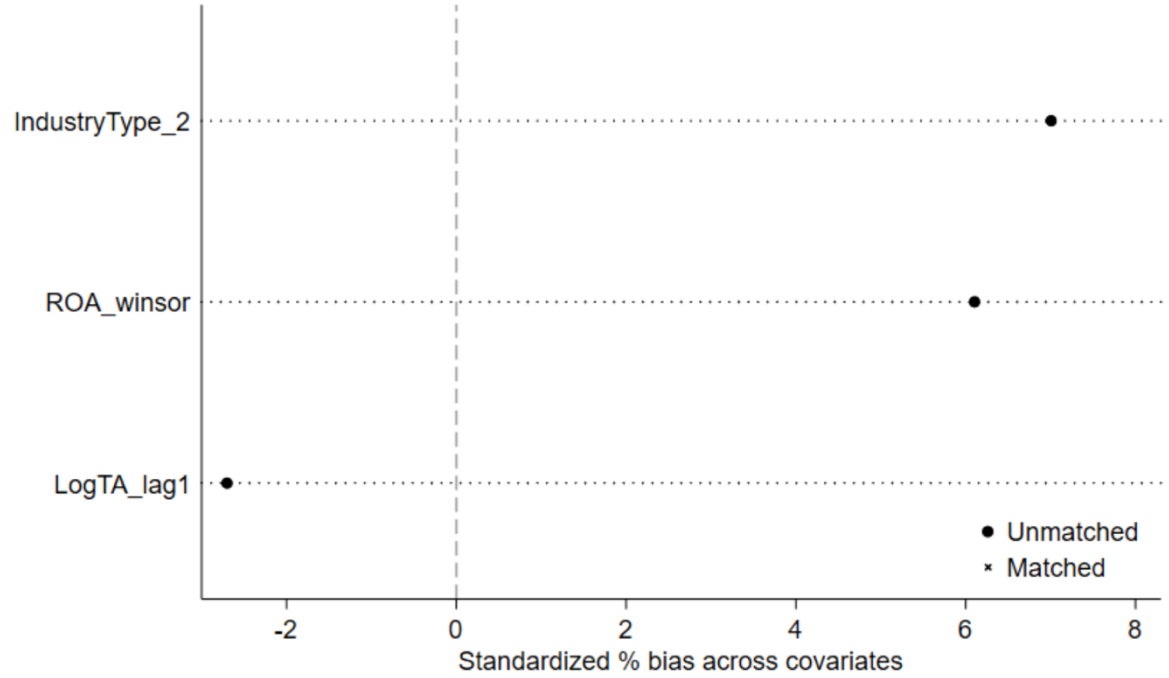
			FinancialOffense_dummy		
			No Financial Fraud Case	Financial Fraud Case	Total
Year	2007	Count	1982	47	2029
		% within Year	97.7%	2.3%	100.0%
		% within FinancialOffense_dummy	6.2%	6.3%	6.2%
	2008	Count	1962	42	2004
		% within Year	97.9%	2.1%	100.0%
		% within FinancialOffense_dummy	6.1%	5.7%	6.1%
	2009	Count	1939	42	1981
		% within Year	97.9%	2.1%	100.0%
		% within FinancialOffense_dummy	6.0%	5.7%	6.0%
	2010	Count	1964	47	2011
		% within Year	97.7%	2.3%	100.0%
		% within FinancialOffense_dummy	6.1%	6.3%	6.1%
	2011	Count	1995	42	2037
		% within Year	97.9%	2.1%	100.0%
		% within FinancialOffense_dummy	6.2%	5.7%	6.2%
	2012	Count	1981	39	2020
		% within Year	98.1%	1.9%	100.0%
		% within FinancialOffense_dummy	6.2%	5.2%	6.2%
	2013	Count	1979	44	2023
		% within Year	97.8%	2.2%	100.0%
		% within FinancialOffense_dummy	6.2%	5.9%	6.2%
	2014	Count	1949	51	2000
		% within Year	97.5%	2.5%	100.0%
		% within FinancialOffense_dummy	6.1%	6.9%	6.1%
	2015	Count	1929	66	1995
		% within Year	96.7%	3.3%	100.0%
		% within FinancialOffense_dummy	6.0%	8.9%	6.1%
	2016	Count	1888	57	1945
		% within Year	97.1%	2.9%	100.0%
		% within FinancialOffense_dummy	5.9%	7.7%	5.9%
	2017	Count	1827	42	1869
		% within Year	97.8%	2.2%	100.0%
		% within FinancialOffense_dummy	5.7%	5.7%	5.7%
	2018	Count	1793	41	1834
		% within Year	97.8%	2.2%	100.0%
		% within FinancialOffense_dummy	5.6%	5.5%	5.6%
	2019	Count	1755	49	1804
		% within Year	97.3%	2.7%	100.0%
		% within FinancialOffense_dummy	5.5%	6.6%	5.5%
	2020	Count	1746	40	1786
		% within Year	97.8%	2.2%	100.0%
		% within FinancialOffense_dummy	5.4%	5.4%	5.4%
	2021	Count	1823	25	1848
		% within Year	98.6%	1.4%	100.0%
		% within FinancialOffense_dummy	5.7%	3.4%	5.6%
	2022	Count	1737	38	1775
		% within Year	97.9%	2.1%	100.0%
		% within FinancialOffense_dummy	5.4%	5.1%	5.4%
	2023	Count	1604	31	1635
		% within Year	98.1%	1.9%	100.0%
		% within FinancialOffense_dummy	5.0%	4.2%	5.0%
	2024	Count	234	0	234
		% within Year	100.0%	0.0%	100.0%
		% within FinancialOffense_dummy	0.7%	0.0%	0.7%
Total		Count	32087	743	32830
		% within Year	97.7%	2.3%	100.0%
		% within FinancialOffense_dummy	100.0%	100.0%	100.0%

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Year	-.006	.008	.716	1	.397	.994
	Constant	9.186	15.302	.360	1	.548	9757.113

a. Variable(s) entered on step 1: Year.

Appendix D. Matched Sample Design



Note. All three matching variables – firm size (LogTA_lag1), profitability (ROA_winsor), and industry (IndustryType_2) – were balanced both before and after matching, with SMDs remaining well below the conventional 10% threshold. This indicates that the matched sample was successfully constructed with minimal residual bias across the selected covariates.

Appendix E. Robustness Analysis

Assumptions logistic regression

Before the binary logistic regression analysis, several fundamental presumptions were assessed (Hair et al., 2019). To assess *multicollinearity* among predictors, variance inflation factors (VIFs) were computed using an OLS model with the same set of independent variables. All VIFs were below 3, adhering thresholds and thus indicating no evidence of problematic multicollinearity (Hair Jr et al., 2019). Second, to identify *influential outliers*, standardized z-scores were calculated for each continuous predictor. Based on the conventional threshold of ±3 SD (Hair Jr et al., 2019), several variables showed extreme values. To mitigate the undue influence of such extreme observations while retaining data integrity, most continuous variables were winsorized at the 1st and 99th percentile before analysis (ROA, LEV, BoardMeetings, BoardSize, CEOtenure). The assumption of *independence of observations* may be partially violated due to the matched design without clustering correction, which could lead to slightly underestimated standard errors and is acknowledged in the interpretation of results. The assumption of no complete separation was met, as all combinations of the outcome variable and key binary predictors (e.g., Directors' Fraud Experience, CEO Duality) contained non-zero counts. This confirms that logistic regression coefficients could be reliably estimated without issues of perfect prediction. *Sample size adequacy* was assessed based on the number of events per variable (EPV). With 220 paired firm-year observations and 10 predictors included in the final model, the EPV is approximately 22, exceeding the commonly recommended minimum of 10–20 EPV. This indicates sufficient statistical power and a low risk of overfitting.

Multicollinearity

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1	(Constant)	-.277	.008		-33.760	<.001		
	BoardIndependence_dummy	.006	.003	.018	1.984	.047	.399	2.509
	LAGS (BoardIndependence_ratio,1)	.034	.006	.050	5.419	<.001	.379	2.640
	LAGS(Log_TA,1)	.017	.001	.250	32.752	<.001	.554	1.805
	LAGS(CEODuality,1)	.005	.002	.016	2.788	.005	.953	1.049
	ROA_winsor	.000	.000	-.044	-7.458	<.001	.931	1.074
	LEV_winsor	.000	.000	-.044	-7.642	<.001	.979	1.021
	CEOtenure_winsor	-9.016E-5	.000	-.008	-1.400	.162	.950	1.053
	BoardMeetings_winsor	.001	.000	.075	11.887	<.001	.821	1.218
	BoardSize_winsor	.000	.000	-.005	-.643	.520	.564	1.773

a. Dependent Variable: FinancialOffense_dummy

Influential outliers

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
LAGS (BoardIndependence_ratio,1)	32829	.000000000	1.00000000	.707957231	.223394186
LAGS(Log_TA,1)	29499	1.09861231	22.5670967	15.5305116	2.25040152
ROA_lag1	29085	-1110.94995	2200.00000	3.13645110	29.7892669
LEV_lag1	29267	.000000000	927.780029	26.6789152	23.9023388
BoardMeetings_lag1	20273	0	75	8.60	4.290
LAGS(BoardSize,1)	32829	1	33	10.57	3.688
LAGS(CEOtenure,1)	27414	.000000000	123.570160	9.95926260	9.25295631
Valid N (listwise)	16856				

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Zscore: LAGS (BoardIndependence_ratio,1)	32829	-3.16909	1.30730	.0000000	1.00000000
Zscore: LAGS(Log_TA,1)	29499	-6.41303	3.12681	.0000000	1.00000000
Zscore(ROA_lag1)	29085	-37.39892	73.74681	.0000000	1.00000000
Zscore(LEV_lag1)	29267	-1.11616	37.69929	.0000000	1.00000000
Zscore (BoardMeetings_lag1)	20273	-2.00338	15.47803	.0000000	1.00000000
Zscore: LAGS(BoardSize, 1)	32829	-2.59366	6.08337	.0000000	1.00000000
Zscore: LAGS(CEOtenure, 1)	27414	-1.07633	12.27833	.0000000	1.00000000
Valid N (listwise)	16856				

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
FinancialOffense_dummy	32830	0	1	.02	.149
Directors'FraudExperience_dummy	32830	0	1	.63	.483
LAGS (BoardIndependence_ratio,1)	32829	.000000000	1.00000000	.707957231	.223394186
LAGS(Log_TA,1)	29499	1.09861231	22.5670967	15.5305116	2.25040152
ROA_winsor	32830	-69.57	32.00	6.5872	15.46186
LEV_winsor	32830	.00	95.16	33.7029	28.91366
BoardMeetings_winsor	32830	4.00	25.00	14.8387	8.56671
BoardSize_winsor	32830	4.00	24.00	10.5415	3.55284
CEOtenure_winsor	32830	.16	42.68	15.2376	14.45382
LAGS(CEODuality,1)	32448	0	1	.30	.459
Valid N (listwise)	29206				

Robuustness Analyses

Logistic regression (1:n)

FraudOccurrence	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Directors'FraudExperience	3.082	.618	4.99	0	1.871	4.294	***
BoardIndependence	5.409	.713	7.59	0	4.012	6.806	***
Experience*Independence	-2.733	.77	-3.55	0	-4.242	-1.224	***
FirmSize (LogTotalAssets)	.012	.027	0.45	.65	-.041	.066	
FirmPerformance (ROA)	.003	.006	0.51	.614	-.009	.015	
Leverage (Debts/Assets)	-.002	.003	-0.74	.457	-.007	.003	
FrequencyBoard Meetings	.014	.008	1.90	.058	0	.029	*
BoardSize	.04	.021	1.92	.055	-.001	.082	*
CEOtenure	-.006	.004	-1.46	.144	-.013	.002	
CEOduality	.185	.113	1.63	.103	-.037	.406	
Constant	-5.632	.741	-7.60	0	-7.085	-4.18	***

Mean dependent var	0.309	SD dependent var	0.462
Pseudo r-squared	0.131	Number of obs	2273
Chi-square	191.223	Prob > chi2	0.000
Akaike crit. (AIC)	1712.703	Bayesian crit. (BIC)	1775.721

*** p<.01, ** p<.05, * p<.1

Conditional (fixed-effects) logistic regression – Alternative Fraud Experience Construct

FinancialOffense_d~y	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
DirectorsFraudExpe~o	10.577	4.724	2.24	.025	1.318	19.837	**
BoardIndependence_~1	2.91	1.425	2.04	.041	.116	5.704	**
Interaction_FE_BI_~t	-8.91	5.494	-1.62	.105	-19.679	1.858	
LogTA_lag1	-.001	.088	-0.01	.99	-.173	.171	
ROA_winsor	.014	.011	1.23	.217	-.008	.035	
LEV_winsor	.01	.007	1.52	.129	-.003	.023	
BoardMeetings_winsor	-.029	.02	-1.42	.156	-.068	.011	
BoardSize_winsor	-.035	.063	-0.55	.582	-.159	.089	
CEOtenure_winsor	-.001	.011	-0.07	.946	-.023	.021	
CEOduality_lag1	-.261	.302	-0.87	.387	-.853	.33	

Mean dependent var	0.500	SD dependent var	0.501
Pseudo r-squared	0.122	Number of obs	440
Chi-square	37.286	Prob > chi2	0.000
Akaike crit. (AIC)	287.699	Bayesian crit. (BIC)	328.567

*** p<.01, ** p<.05, * p<.1