Corporate Governance and Accounting Decisions: International Evidence from Board Reforms and Goodwill Impairment

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Keywords: board reforms; goodwill impairment; accounting decisions

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This study is based on Zhirong Piao's Honours thesis completed at the University of Queensland. The authors would like to thank participants at Early Career Researchers Support Network (ECRSN) for their comments on earlier versions of this study.

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Abstract

This study investigates the influence of corporate board structure on accounting decisions, specifically the timely recognition of goodwill impairment. Using the global staggered implementation of board reforms between 2000 to 2012 as a natural experiment, we find that firms are more likely to recognize goodwill impairment in a timely manner following the implementation of major board reforms. Our results are robust to a series of sensitivity considerations relating to econometric approach, study period, alternative proxies, event year identification, sample composition, and potentially confounding events. We also find that the association is stronger in settings where the reforms are more effective, and when they have a greater impact. Finally, our findings highlight that audit committee reforms play a critical role in addressing challenges of goodwill accounting and impairment decisions.

Keywords: board reforms; goodwill impairment; accounting decisions

1. Introduction

Corporate governance, widely recognized as a crucial mechanism for curbing managerial opportunism (Shleifer & Vishny, 1997), has attracted considerable attention from both practitioners and academics. At the core of this governance framework is the corporate board, one of the primary governance mechanisms (Fama & Jensen, 1983; Hu et al., 2020). The perceived significance of corporate boards in shaping managerial incentives and influencing corporate decisions has led to a wave of changes in board structures — referred to as board reforms — emerging as a key avenue for enhancing corporate governance. Prior research highlights the positive impact of board reforms, revealing that the changes are associated with, for example, increased firm valuation (Fauver et al., 2017), reduced stock price crash risk (Hu et al., 2020), and improved value relevance of earnings (Bae et al., 2020).

While prior studies have shed some light on the overall benefits of corporate governance, the existing literature remains unclear on whether and how the nature and strength of a firm's internal governance structure impacts its financial accounting decisions. In this study, we seek to add to our understanding of the role that internal governance plays in facilitating informed accounting decisions. We aim to achieve this by examining changes in management's goodwill impairment decisions following board reforms, specifically the timeliness of goodwill impairment recognition. The basic premise underlying our investigation is that if a firm's internal governance structure is relevant for its financial accounting decisions, we should then expect to see improvement in the timeliness of goodwill impairment following board reforms that strengthen internal governance.

With mergers and acquisitions (M&A) surging to unprecedented levels, exceeding US\$3.3 trillion in 1999 and US\$3.5 trillion in 2000 worldwide (Ghauri & Buckley, 2003), goodwill has emerged as an important intangible asset on balance sheets. Consequently, the reporting and informativeness of goodwill have become major concerns for regulators and academics. To better reflect the underlying economics of intangible assets, in 2001 the Financial Accounting Standards Board (FASB) introduced Statement of Financial Accounting Standards (SFAS) 142, subsequently

followed in 2004 by the International Accounting Standards Board's adoption of IFRS 3 *Business Combinations* (IASB 2004a) and IAS 36 *Impairment of Assets* (rev. 2004) (IASB 2004b).¹ These standards require firms to test goodwill and other intangible assets with indefinite useful lives for impairment at least annually, replacing the previous practice of regular amortization.

Despite these regulatory initiatives, challenges persist because the fair value estimation of goodwill remains inherently subjective (Ramanna & Watts, 2012). Goodwill fair values are determined by unpredictable and hard-to-verify factors such as the firm's future cash flows, acquisition synergies, and macroeconomic conditions. This subjectivity under the new standards provides managers with discretion in determining goodwill impairment, allowing them the flexibility to strategically delay necessary impairments and effectively "manage" the size of impairment losses (Chung & Hribar, 2021; Ramanna & Watts, 2012) with limited accountability for the failure to realize the expected fair value of goodwill (Killins et al., 2021). Such untimely recognition of goodwill impairment is widely perceived as a form of managerial opportunism (AbuGhazaleh et al., 2011; Beatty & Weber, 2006; Li & Sloan, 2017; Ramanna, 2008) that potentially undermines financial reporting transparency.

Recent research highlights several obstacles to the timely recognition of goodwill impairments. Many of these arise from board and internal governance dynamics (Amel-Zadeh et al., 2023). For instance, directors with multiple board appointments have been found to be less effective in enforcing timely impairments, due to divided attention and competing commitments (Mazboudi et al., 2025). Similarly, overconfident CEOs who tend to hold overly optimistic views of their firm's prospects often delay impairment recognition and record lower impairment charges (Chung & Hribar, 2021; Killins et al., 2021). However, this tendency can be mitigated by the presence of financial experts on the board (Chung & Hribar, 2021). Additionally, Kim (2024) finds that auditors increase their scrutiny following Public Company Accounting Oversight Board (PCAOB)-

¹ The International Accounting Standards Board (IASB) introduced IFRS 3 *Business Combinations* (IASB 2004a) and the revised IAS 36 *Impairment of Assets* (IASB 2004b). These standards marked a significant shift in accounting practices by discontinuing the traditional amortization of acquired goodwill and instead requiring firms to conduct annual impairment tests of their goodwill balances for the purpose of ensuring a more accurate and timely reflection of the firm's financial health.

identified deficiencies, which contributes to more timely impairment recognition. Collectively, these findings emphasize the critical role of board composition and the interplay of governance mechanisms in shaping impairment decisions, thereby reinforcing the importance of our research.

Following the intuition underlying prior literature on the impact of board reforms, we posit that board reforms mitigate managers' incentives to opportunistically delay goodwill impairments. Board reforms, encompassing improvements in board independence, audit committee independence, and CEO-Chair separation, are expected to strengthen management's fiduciary responsibility and curb managerial opportunism. Specifically, in relation to goodwill impairments, an independent board of directors is expected to actively monitor managers with respect to untimely and inaccurate recognition of impairment losses (Armstrong et al., 2014; Beasley, 1996; Cornett et al., 2009; Klein, 2002; Petra, 2007); an independent audit committee is expected to scrutinize questionable goodwill impairment decisions (Abbott et al., 2000; Krishnan, 2005; Yang & Krishnan, 2005); and separation of the roles of chairperson and CEO is expected to reduce the management's incentives to postpone impairment decisions by separating management's risk-bearing and decision-making functions (Fama & Jensen, 1983). In summary, we expect board reforms to promote more timely goodwill impairment decisions by enhancing board oversight.

However, *ex ante*, the effectiveness of board reforms in encouraging timely goodwill impairment recognition remains an empirical question. The inherent flexibility in goodwill estimation poses challenges, as boards may struggle to verify the fair value of goodwill. Considering that the magnitude and frequency of goodwill impairments are at management's discretion and closely aligned with overall business strategy (Filip et al., 2015), independent directors and auditors may find it difficult to assess and challenge management's impairment decisions. Additionally, while board reforms are intended to strengthen oversight, they may also improve operating performance and investment efficiency (Black & Kim, 2012; Dahya & McConnell, 2007; Fauver et al., 2017), potentially diminishing the need for goodwill impairment recognition. Effective board oversight could also lead managers to make more profitable merger

decisions thereby also reducing the likelihood of impairment loss recognition (Carline et al., 2009; Masulis et al., 2007; Schmidt, 2015). Therefore, whether board reforms can effectively facilitate timely and informative goodwill impairment decisions remains an open question.

Using a sample of 110,464 firm-year observations from 71 countries between 2000 to 2012, 36 of which implemented major board reforms during this period, and 35 which did not, we examine changes in the timeliness of goodwill impairment following board reforms. Employing a staggered difference-in-differences (DiD) analysis, we find a significant improvement in the timeliness of goodwill impairment recognition following board reforms. Specifically, while we find no evidence of goodwill impairment being associated with market expectations in the pre-reform period, in contrast we observe a significant positive association in the post-reform period. Further, the implications of board reforms for goodwill impairment decisions appear meaningful, with results indicating an increase of between 11% and 15% in the likelihood of goodwill impairment recognition in periods when the market deems the goodwill to be economically impaired. In this sense, our findings are consistent with the notion that enhanced board oversight disciplines managers and facilitates timely accounting decisions.

Our findings remain robust to a series of sensitivity tests, including alternative econometric approaches, study periods, alternative proxies, event year identification, sample composition, and potentially confounding events. We also find that, as predicted, the association between board reforms and the timeliness of goodwill impairment decisions is stronger in settings where the reforms are more effective, and when they have a greater impact. Finally, results from subsidiary analyses suggest that the critical reform, as least as it relates to the complex challenge of accounting for goodwill and determination of goodwill impairment, is that relating to audit committee reform.

Our study contributes to the literature in several ways. First, we extend the existing body of research on the role of corporate governance in accounting decisions. While prior research has focused on accrual-based and real-activity-based accounting decisions (Achleitner et al., 2014; Cohen et al., 2008; Roychowdhury, 2006), studies on the impact of internal corporate governance

on accounting decisions through direct discretionary items such as goodwill impairment are more limited. For example, Mazboudi et al. (2025) focus narrowly on one aspect of board activity, director busyness whereas Kim (2024) focuses on the role of external governance as facilitated through the auditor. In contrast, our focus in this study is on the underlying construction and strength of the firm's corporate governance structure that underpins its internal governance environment rather than on dynamics that influence its workings. In this regard, our findings demonstrate that improvements in internal corporate governance structures facilitate more timely goodwill impairment decisions, one of the most intricate and contentious assets but also often an economically material asset (Kabir & Rahman, 2016). As such, they confirm a role for internal governance structures in constraining managers' discretionary behaviour as it relates to accounting decisions, particularly in the context of goodwill which relies heavily on managerial subjectivity and provides avenues for opportunistic behaviour. By focusing on this discretionary item, our study not only sheds light on the specific role of corporate governance in goodwill accounting but also offers broader insights into how governance mechanisms shape accounting decisions as a whole.

Second, our paper contributes to the corporate board literature examining the impact of board reforms on firm valuation and corporate outcomes (Bae et al., 2020; Fauver et al., 2017; Hu et al., 2020; Li et al., 2020). Corporate insiders are often reluctant to invest in strong governance structures because they limit opportunities for rent seeking and private benefits while presenting only modest gains from increased firm value (Chen et al., 2021; Fama & Jensen, 1983; Fauver et al., 2017). Board reforms play a crucial role in overcoming this friction by mandating firms adopt practices that strengthen the board—practices that they may have otherwise avoided (Fauver et al., 2017). However, whether board reforms are effective in stimulating timely and informative accounting decisions, especially through discretionary items like goodwill impairment, has remained unclear. Our study provides evidence that improved board oversight, here resulting from board reforms, encourages managers to promptly recognize goodwill impairments. These finding lend robust support to the effectiveness of board reforms and affirms their role in disciplining

managerial behaviour, mitigating agency issues, and enhancing the information environment of firms.

Third, we contribute to the literature on the role of legal institutions as external governance mechanisms and their influence on the enforcement and efficacy of new regulations (Leuz et al., 2003). Strong and well-enforced legal institutions restrain insiders from extracting private benefits and reduce their incentives to manage earnings. Our findings indicate that the efficiency of board reforms is amplified in countries with strong enforcement and high institutional quality, advancing our understanding of the interactions between institutional environments and governance structures. Finally, our paper complements the work of Fauver et al. (2017) by identifying an important channel through which board reform adds value. Our findings are useful to firms, investors, stakeholders, and regulators undergoing or contemplating corporate board reforms, providing insight into the impact of boards on corporate governance.

The remainder of this study is organized as follows. The next section, Section 2, provides a brief summary of relevant literature and then develops the hypothesis underlying the study. Section 3 presents the study's methodology and describes the sample data. Section 4 presents the empirical results and Section 5 concludes.

2. Literature Review and Hypothesis Development

2.1 Goodwill Impairment

Goodwill represents the disparity between the consideration transferred from an acquirer to an acquiree and the net identified assets acquired in the M&A process (Gore & Zimmerman, 2010; Henning et al., 2000). It often constitutes a substantial portion of a public firm's balance sheet and plays a pivotal role in investors' oversight of a firm's capital allocation decisions (Filip et al., 2015). Unlike other intangible assets, goodwill is a distinct non-separable asset and its value is both sensitive to and proportional to the overall business value. Inflated goodwill balances can lead to a temporary overvaluation of the firm, resulting in security mispricing, stock volatility, and resource misallocation (Li & Sloan, 2017). Therefore, the accuracy and informativeness of goodwill

impairment are crucial elements for evaluating and projecting firm value, serving as key components in the assessment of a company's financial health.

The introduction of new accounting standards for business combinations and testing for goodwill impairment by the FASB and the IASB in 2002 ended amortization of goodwill and brought about a fundamental change in the accounting treatment of goodwill. Prior to the implementation of these standards, goodwill was either written off against profits or capitalized and amortized on a straight-line basis. However, this practice was argued to introduce "noise" into predictions of firm value, as a firm's future profitability is related more strongly to earnings before rather than after goodwill amortizations (Jennings et al., 2001; Moehrle et al., 2001). The new accounting practice of testing goodwill impairment was introduced to enhance the informativeness of goodwill and provide more value-relevant information. Under these standards, once goodwill is capitalized in consolidated financial statements, companies that have acquired goodwill are required to perform impairment tests at least annually to determine whether there are any indications that the goodwill is impaired (IAS 36, para. 90).²

Under the new accounting standards, managers are expected to use fair value estimates to communicate private information about the firm, enhancing the faithful representation and verifiability of financial reporting. Estimation of the fair value of goodwill is grounded in managers' private information and pertinent future estimates, encompassing cash flows, timing, discount rates, and perpetual growth rates (Jahmani et al., 2010). Providing additional information through goodwill impairment decisions is anticipated to have a significant signalling effect on market participants, serving as a crucial element in promoting investment efficiency.

² Generally, IFRS requires goodwill to be allocated to one or more (groups) of cash-generating units (CGUs) that are expected to benefit from a business combination's synergies at the time of acquisition, regardless of other assigned assets or liabilities. The impairment tests are then performed annually on the basis of these units to determine whether there is an indication of goodwill impairment. If a CGU's carrying amount is greater than the recoverable amount, which is the higher of its fair value less costs of disposal and its value in use (IAS 36, para. 105), then the firm should recognize an impairment loss. The impairment loss is allocated to the carrying amount of any goodwill allocated to the CGU before other assets absorb it within the unit(s) on a pro-rata basis (IAS 36, para. 104). This impairment loss has to be written off against current earnings immediately, reducing net profits and retained earnings. Once determined, reversal of impairment losses for goodwill is strictly prohibited in subsequent periods.

Equally, however, the treatment of goodwill under the new standards (i.e., goodwill impairment) is also susceptible to opportunistic accounting behaviour (AbuGhazaleh et al., 2011; Beatty & Weber, 2006; Li & Sloan, 2017; Ramanna, 2008). This is because goodwill reflects the present value of estimated future profits (Mazzi et al., 2017) and thereby depends on unpredictable elements, including the firm's prospects, relationships with customers and employees, industry competitiveness, and regulatory environments. Given the highly subjective nature of goodwill's fair value, coupled with its sensitivity to volatile economic conditions, managers retain significant flexibility in determining the size and timing of goodwill impairment.³

In particular, the new standards complicate verification of whether management's assumptions on goodwill valuation are reasonable, providing managers with an opportunity to exploit the unverifiable nature of goodwill and opportunistically manage accounting numbers to extract private benefits (Ramanna & Watts, 2012). Managers may attribute the inaccuracies in fair value estimation of goodwill to circumstances beyond their control, avoiding accountability for acquired goodwill losses (Killins et al., 2021). Consequently, corporate outsiders, such as investors and regulators, face difficulties in observing and verifying fair value estimates or the processes that support managers' impairment decisions (Filip et al., 2015). This practice aggravates information asymmetry, placing corporate outsiders at an information disadvantage with regard to the true economic value of goodwill, which is defined as "a non-separable asset capturing expected benefits from the efficient and effective management of other assets" (Filip et al., 2015). The accuracy of goodwill's fair value becomes a trade-off between managers' reputational and career concerns that accompany the valuation of goodwill and the subsequent financial outcomes that influence their decisions on the timing and recognition of impairment losses (Beatty & Weber, 2006; Chung & Hribar, 2021). Opportunistic discretion by managers hampers the effectiveness of information channels related to goodwill impairment, obscures true business performance, and misleads

³ The subjectivity associated with the estimation of the fair value of goodwill is significantly greater than in the case of any other class of assets, such as inventories, accounts receivables, or depreciation (Ramanna & Watts, 2012). Given that a large portion of assets and liabilities lack "active market value," goodwill fair values are determined by unobservable inputs (Palea, 2014), providing managers with an opportunity to determine goodwill in a discretionary manner.

investors' decision-making. Therefore, due to the complicated discretionary accounting involved, goodwill impairment provides an ideal setting for assessing the regulatory outcomes of a firm's informativeness in accounting decisions and its information environment in general.

Amel-Zadeh et al. (2023) suggest that recent goodwill literature has provided valuable new insights by addressing previously overlooked areas—particularly the moderating role of corporate governance and external monitoring in shaping goodwill impairment. Their review is structured around a comprehensive synthesis of empirical studies, highlighting that impairment decisions are shaped not only by underlying economic fundamentals but also by institutional contexts and managerial incentives. Accordingly, they advocate for quasi-experimental designs and behavioral, non-archival methods to deepen understanding of goodwill valuation.

Complementing this perspective, Mazboudi et al. (2025) provide empirical evidence on the role of internal governance, showing that firms with a higher proportion of busy directors—those serving on multiple boards—are less likely to recognize impairments in a timely manner, especially in firms with weak internal controls or limited external oversight. Similarly, Chung and Hribar (2021) and Killins et al. (2021) highlight the behavior dimension of managerial decision-making, showing that overconfident CEOs tend to underweight negative market signals, delaying impairment recognition and reporting lower levels of impairment. This tendency, however, can be moderated by the presence of financial experts on the board who are better equipped to challenge overly optimistic assumptions (Chung & Hribar, 2021). Kim (2024) adds to this evidence, showing that firms audited by auditors cited for valuation-related deficiencies by the PCAOB are more likely to recognize larger and more timely impairments.

Additionally, Gietzmann and Wang (2020) find that when firms engage independent valuation experts, they tend to report larger goodwill impairments that more accurately reflect underlying economic conditions. Ayres et al. (2019) suggest that higher analyst coverage increases the likelihood of timely impairments, particularly following downgrades, while failure to impair when

expected leads to reduced analyst following. However, Han et al. (2021) caution that (securities) analysts may also pressure managers to understate impairments to help meet market expectations, highlighting a tension between transparency and performance pressure. Together, these studies highlight the role of governance in goodwill impairment and lay the foundation for exploring institutional variation, reinforcing the relevance of this study.

2.2 Corporate Boards and Board Reforms

Corporate governance is designed to promote managers' integrity and reduce earnings management, ensuring that financial reporting accurately reflects a firm's true economic condition (Agrawal & Knoeber, 2013). Among the various corporate governance mechanisms, corporate boards play a central role in monitoring and advising management (Adams et al., 2010; Fama & Jensen, 1983; Shleifer & Vishny, 1997). Boards oversee and influence management's actions and provide assurance of the credibility of a firm's financial statements (Davidson et al., 2005). Previous studies provide substantial evidence that strong governance mechanisms lower the risk of managerial opportunism (Shleifer & Vishny, 1997), thereby increasing firm value, improving firm performance, and reducing agency costs relative to weaker governance (Huson et al., 2001; Perry & Shivdasani, 2005; Weisbach, 1988).

Because boards are a fundamental governance mechanism, board reforms have been a central policy tool for improving corporate governance (Fauver et al., 2017). Following the Cadbury Report (1992) in the U.K, over 40 countries have introduced significant corporate board reforms, with the aim being to improve board oversight, promote transparency and accountability, and eliminate unfavorable factors that are detrimental to firms' development. The primary focus of this wave of reforms, often referred to as "outside director euphoria", is on strengthening board independence, establishing audit committees and audit committee independence, and separating chairperson and CEO positions (Hu et al., 2020).

Although board reforms are intended to reduce agency conflicts and improve investor protection, uncertainty remains around the extent to which they have been successful. To explain, starting with board independence, one strand of literature suggests that outside directors mitigate managerial opportunism, proxied by improvements in financial reporting quality and decrease in earnings management (Armstrong et al., 2014; Beasley, 1996; Cornett et al., 2009; Klein, 2002). However, other studies question whether greater board independence always leads to better governance (Bhagat & Black, 1998; Park & Shin, 2004). For example, Bhagat and Black (1998) find that having more independent directors does not necessarily enhance the profitability of the firms. Similarly, Klein (1998) argues that broad calls for more independent outsiders may be misguided, suggesting that firm performance benefits more from the strategic inclusion of insider directors on finance and investment committees, who offer valuable firm-specific knowledge (Fama & Jensen, 1983).

Audit committees that exhibit strong structural independence and possess financial and accounting expertise are associated with more effective oversight, reduced financial misreporting, and fewer restatements, thereby supporting the overall integrity of the reporting process (Abbott et al., 2004; Davidson et al., 2005; Krishnan, 2005; Zhang et al., 2007). Audit committees assess and review the financial reporting process, facilitating information flow between corporate insiders and external parties (McMullen, 1996). However, their effectiveness depends, at least partly, on their independence from the board (Abbott et al., 2000; Yang & Krishnan, 2005). Prior research shows that independent audit committees are strongly associated with greater diligence in oversight and lower rates of financial reporting fraud (Be'dard et al., 2004; Dechow et al., 1996; Klein, 2002; McMullen, 1996).

Recent studies on the separation of chairperson and CEO positions also offer conflicting views. Corporate governance guidelines suggest that CEO duality (i.e., when the CEO also holds the position of chairperson on the board), through concentration of power, weakens internal control systems and undermines the board's capacity to fulfill its functions effectively (Aktas et al., 2019; Daily & Dalton, 1994; Rechner & Dalton, 1991; Tuggle et al., 2010). Combining decision management with decision control reduces the board's effectiveness in monitoring management, as the CEO is effectively evaluating their own performance (Goyal & Park, 2002). Without independent leadership, the board is less capable of overseeing and restraining the CEO's actions (Klein, 1998; Syriopoulos & Tsatsaronis, 2012). Jensen (1993, p.866) notes that CEO duality makes it "extremely difficult for the board to respond early to failure in its top management team". On the other hand, stewardship theory posits that CEO duality can be beneficial because the CEO, who manages day-to-day business operations and thereby possesses unique firm-specific knowledge, has lower costs of information gathering, transmission, and processing, compared to separating the roles (Brickley et al., 1997; Jensen & Heckling, 1995). A unified leadership structure can streamline decision-making, enabling quicker responses to external factors (Harris & Helfat, 1998; Yang & Zhao, 2014) and more likely to survive the crisis (Byrd et al., 2012). Under this view, duality can bolster cohesion between management and the board, fostering strong and unambiguous leadership that enhances information flow and corporate decision-making (Brickley et al., 1997). As such, forced separation of roles may harm firm performance and weaken incentive alignment (Dey et al., 2011).

2.3 Goodwill Impairment and Board Reforms

Our study extends the literature on board reforms by examining whether such reforms facilitate timely and informative goodwill accounting decisions. As discussed earlier, the new regulations provide managers unverifiable and challenging-to-audit discretion in recognizing goodwill impairment, leaving them with little or no accountability for discrepancies (Killins et al., 2021; Ramanna & Watts, 2012). To mitigate underlying agency conflicts, investors heavily rely on effective governance mechanisms, particularly those exercised by boards and auditors (Kabir & Rahman, 2016). These mechanisms assess the alignment of impairment decisions with accounting standards and evaluate the reasonableness of fair-value estimates, thereby safeguarding the integrity of financial reporting. Drawing on evidence that strong board reforms improve firm performance (Fauver et al., 2017), we hypothesize that board reforms improve oversight of managerial decisions and draw attention to questionable accounting practices. Managers,

anticipating heightened board monitoring, should find it more challenging to circumvent impairment recognition when an actual impairment exists. Consequently, to the extent board reforms enhance the monitoring function of corporate governance, curbing accrual-based earnings management and earnings smoothing (Bae et al., 2020; Chen et al., 2021; Hu et al., 2020), we expect that management will record goodwill impairments more promptly, resulting in more informative accounting decisions post-reforms.

However, this prediction is not without tension. First, the goodwill impairment procedure is inherently flexible and complex, granting managers considerable discretion over both the timing and magnitude of impairment losses. This hard-to-verify-and-audit subjectivity poses challenges for boards to confirm the accuracy and timeliness of goodwill impairment (Park & Shin, 2004). Second, stronger board oversight may lead to improved operating performance and investment efficiency (Black & Kim, 2012; Dahya & McConnell, 2007; Fauver et al., 2017), potentially reducing the necessity of goodwill impairment. Third, anticipating more profitable merger decisions (Carline et al., 2009; Masulis et al., 2007; Schmidt, 2015), managers may project favourable future performance and delay booking impairments despite indicators.

Ultimately, the extent to which board reforms induce management to make timely and informative goodwill impairment decisions is an empirical question. Based on the literature and given the intent of board reforms, we expect that board reforms will shape managerial incentives and dissuade managers from delaying goodwill impairment. Thus, we hypothesize that managers are more likely to make timely goodwill impairment decisions following board reforms and state our hypothesis as follows:

 H_1 : The timeliness of expected goodwill impairment decisions is improved following board reforms.

As reflected in H_1 , our expectation is that the board reforms will generally result in more timely goodwill impairment. However, as noted, the reforms are in fact comprised of three distinct individual reforms, board independence, audit committee independence, and separation of the CEO and Chair roles. Thus, as an extension of our primary tests of H_1 , subject to data limitations, as a final step, we also attempt to provide insights into the relative importance of each of the three types of reforms in relation to the timeliness of goodwill impairment.

3. Research Methodology and Sample Selection

3.1 Model Specification

Our primary hypothesis, H_1 , predicts an improvement in the timeliness of goodwill impairment after the implementation of major board reforms. To test this hypothesis, we use a staggered DiD design and estimate the following logistics regression model:

$$IMP_{i,j,t} = \beta_0 + \beta_1 POST_{i,j,t} + \beta_2 EXPECT_{i,j,t} + \beta_3 POST_{i,j,t} \times EXPECT_{i,j,t} + \beta_4 CONTROL_{i,j,t} + \alpha_i + \lambda_t + \varepsilon_{i,j,t},$$
(1)

where *IMP* is an indicator variable equal to one if the firm recognizes a material goodwill impairment during the given fiscal year, and zero otherwise⁴. Following Albersmann and Quick (2020), we define materiality as a goodwill impairment that exceeds 0.5% of the opening goodwill balance.⁵ *POST* is an indicator variable set equal to one for all years in which board reforms are effective in a given country, and zero otherwise. *EXPECT* is a measure of the market's expectations of the need for an impairment of goodwill. Following prior literature (Ayres et al., 2019; Beatty & Weber, 2006), we measure *EXPECT* as the firm's pre-impairment book value of equity less the market value of equity, divided by the pre-impairment book value of assets if book value exceeds the market value, and zero if market value exceeds book value.⁶ Since a price-to-book ratio of one is considered to be most closely aligned with the FASB's impairment guidelines (Beatty & Weber, 2006), investors would expect an impairment to be necessary if firm's price-to-book ratio is less

⁴ Measurement of goodwill impairment is not readily available for all companies in Compustat. If the goodwill impairment figure is missing, we manually calculate the amount of impairment as the difference between the opening and closing balances of goodwill and then adjust this figure by excluding any goodwill arising from acquisitions made during the year, as well as any goodwill written off and amortized within the current year.

⁵ For sensitivity purposes, we consider different materiality thresholds using total assets, net sales, and earnings before interest, tax, and depreciation, and find qualitatively similar results (see Section 4.2.3).

⁶ Beatty and Weber (2006) use a dichotomous measure to proxy for expected goodwill impairment. However, following Ayres et al. (2019), we use a continuous measure bounded at 0 to better capture the impact of board reforms under the argument that market expectations of an impairment should get stronger the more that book value exceeds market value. Nevertheless, for sensitivity purposes, we also consider the dichotomous measure, as well as alternative scalars and an unbounded continuous measure that can assume both positive and negative values and find qualitatively similar results (see Section 4.2.3).

than one, and unnecessary otherwise. *CONTROL* is a vector of 15 control variables identified from the literature and described in detail below. Finally, we include firm (α) and year (λ) fixed effects and cluster standard errors at the country level.⁷ The subscripts *i*, *j*, and *t* indicate firm-, country-, and year-level measures, respectively. All variables are defined in Appendix A. For all analyses, we winsorize all continuous variables at the 1% and 99% levels. The variable of interest in equation (1) is the interaction term, *POST* × *EXPECT*. *H*₁ predicts a positive coefficient on this term (i.e., $\beta_3 > 0$), indicating that board reforms enhance the timeliness of goodwill impairment by aligning it more closely with market expectations.

The set of control variables (*CONTROL*) includes firm- and country-level factors identified in the literature as influencing goodwill impairment decisions.⁸ The first set of firm-level factors capture firm-level economic drivers of goodwill impairment: *MB*, the firm's year-end market-to-book ratio; *GWA*, a categorical variable set equal to 1 if goodwill increases as a result of an acquisition during the year, and 0 otherwise; *ROE*, firm profitability, measured as return on equity; and ΔINC , measured as the annual change in the firm's net income divided by market value. Prior literature finds that the likelihood of goodwill impairment decreases with each of these factors (AbuGhazaleh et al., 2011; Beatty & Weber, 2006; Francis et al., 1996; Jarva, 2009; Lapointe-Antunes et al., 2008; Riedl, 2004; Zang, 2008).

The second set of firm-level factors account for managerial incentives in goodwill impairment decisions: *Lev*, leverage measured as the ratio of the firm's total debt to common equity; *SMOOTH*, a categorical variable set equal to 1 when the change in annual net income is above the industry median for positive values of the measure, and 0 otherwise; and *BATH*, a categorical variable set equal to 1 if the change in annual net income is below the industry median for negative values of the measure. The extant literature suggests that given the subjectivity and flexibility inherent in goodwill impairment, managers may exploit the discretion allowed under

⁷ Our findings are qualitatively unchanged when standard errors are clustered at the country-year level, industry level, or firm level. ⁸ For robustness, we alternatively lag all time-variant control variables by one year and find that the results (untabulated) remain qualitatively similar.

IFRS and GAAP opportunistically with higher leverage (Beatty & Weber, 2006; Ramanna & Watts, 2012; Riedl, 2004). Further, Riedl (2004) finds that *SMOOTH* and *BATH* capture managers' incentives to absorb impairment charges when a firm has unusually high or low income before the goodwill impairment loss.

The third set of firm-level factors capture the effect of the firm's information environment on goodwill impairment decisions: ΔRD , measured as the annual change in research and development expenses (R&D) divided by net sales; and *Analyst*, measured as the natural logarithm of one plus the number of unique analysts issuing earnings forecasts at the end of a given fiscal year. A higher investment in R&D is associated with greater information asymmetry, thereby incentivizing managers to signal good earning quality (Aboody & Lev, 2000; Gao et al., 2018). Greater analyst coverage enhances monitoring of both financial reporting and acquisition processes, reducing opportunistic financial reporting and the risk of engaging in a value-destroying acquisition and subsequent impairment loss (Chen et al., 2015).

The last set of firm-level factors includes the following additional controls commonly included as controls variables in the literature (Ayres et al., 2019; Beatty & Weber, 2006; Francis et al., 1996; Glaum et al., 2018); *CASH*, the ratio of cash and short-term investments to total assets; and *SIZE*, firm size, measured as the natural logarithm of total assets (in millions of U.S. dollars).

In line with prior literature (Fauver et al., 2017; Hu et al., 2020; Li et al., 2020), we also include the following country-level control variables: *GDP*, measured as the natural logarithm of gross domestic product (GDP); *Inflation*, measured as the country-specific annual inflation rate; *Rule*, measured as the country-specific measure of rule of law; and *Corruption*, measured as the countryspecific measurement for control of corruption.

3.2 Sample

To construct our sample, we first extract firm-level accounting data related to goodwill impairment and other financial variables across 71 countries from the Worldscope database (Glaum et al., 2018). We obtain the data on major corporate board reforms from Fauver et al. (2017), who

compile reform-related information from sources including the World Bank, the European Corporate Governance Institute, local stock exchange regulators, and other relevant literature (Kim & Lu, 2013). We then collect analyst-related variables from I/B/E/S and retrieve country-level economic variables, *Inflation* and *GDP*, from the World Bank's World Development Indicators. Remaining country-level legal institution variables are sourced from prior studies as follows: the accounting enforcement index and audit environment quality (Brown et al., 2014), legal origin ((La Porta et al., 1998), the investor protection index (Spamann, 2010), and governance mechanisms data (Worldwide Governance Indicators project).

Our sample period begins in 2000, the first year for which goodwill impairment data are available, and ends in 2012 in order to maintain balance between pre- and post-reform periods.⁹ To enhance cross-country comparability, we exclude firms with net assets less than US\$10 million (Fauver et al., 2017; Hu et al., 2020). We also exclude firms from the financial (SIC codes 6000–6999) and utilities (4900–4949) sectors. Finally, to mitigate concerns that our results are driven by an uneven distribution of observations across years and countries, we require that each country in our sample has at least ten firm-year observations.

Our final sample comprises 110,464 firm-years, representing 18,550 unique firms from 71 countries. Table 1 presents the sample distribution by country. The sample is geographically diverse, although the number of observations varies noticeably across countries, ranging from the U.S. which has the largest representation (3,743 firms; 23,410 firm-year observations; 21.19% of the sample observations) to Latvia which has the smallest representation (4 firms; 10 firm-year observations; 0.01% of the sample)

Finally, as confirmed by Fauver et al. (2017) across the 71 countries that comprise our final sample, 36 countries adopted board reforms whereas 35 did not. Table 2 presents details of the timing and nature of both the board reforms and IFRS adoption for the 36 economies that

⁹ The latest reform in our sample was enacted in 2007. We limit our sample period to five years following this reform to ensure that our findings are not driven by an imbalance in the number of observations between the pre- and post-reform periods. For robustness, in Section 4.2.2, we extend the sample through 2019 and find that our results remain qualitatively similar.

implemented board reforms between 2000 and 2012. As revealed, although the majority of reforms were enacted between 2001 and 2004, there is relatively little evidence of clustering by year. Overall, 27 reforms included provisions relating to board independence and 30 included provisions relating to the audit committee and auditor independence, but only nine included provisions relating to the separation of the chairperson and CEO positions. Further, 26 countries adopted reforms with non-board-related components. Finally, 20 countries adopted a 'comply-or-explain' approach while 16 opted for a 'rule-based' approach.

3.3 Descriptive Statistics and Correlation

Table 3 reports descriptive statistics for the firm- and country-level variables used in our study. Of particular note, at the firm level, the mean value of *IMP* is 0.110, indicating that 11% of the observations report a material goodwill impairment charge. Further, *EXPECT* has a mean of 0.068, consistent with those reported by prior study (Ayres et al., 2019) and *POST* averages 0.784, indicating that 78% of the observations fall in the post-reform period. Finally, of importance, the table also reveals that all variables exhibit considerable cross-sectional variation.

Table 4 presents correlation matrix for the primary variables used in our analysis. Consistent with expectation and in line with prior research (Ayres et al., 2019), our measure of material goodwill impairment, *IMP*, is positively correlated with our proxy for market expectations of an impairment, *EXPECT* (0.036). However, in contrast with H_1 , *IMP* is negatively correlated with *POST* (-0.020). Thus, while only univariate in nature, this correlation indicates that before controlling for differences in firm-level and country-level factors, on average, firms appear less likely to book an impairment following board reforms. Finally, except for the correlation between *SIZE* and *Analyst* (0.635), none of the pairwise correlations among the control variables in equation (1) exceed 0.50, alleviating potential concerns about multicollinearity.

4. Empirical Results

In this section, we present results for a series of analyses designed to build support for our primary hypothesis, H_1 , which predicts an improvement in the timeliness of expected goodwill

impairment charges following the implementation of major board reforms. Recognizing the challenges of establishing a definitive causal link between board reforms and the timing of goodwill impairment recognition, we employ multiple empirical strategies. Our approach begins with a baseline test of H_1 and is then followed by a series of robustness, cross-sectional, and sensitivity analyses that consistently reinforce our primary findings.

4.1 Results for Primary Tests of H₁

Table 5 presents results from several variants of equation (1) based on a staggered DiD design to test H_1 . Column 1 represents the base model that includes only the treatment variables (*POST*, *EXPECT*, and *POST* × *EXPECT*), and firm and year fixed effects. Subsequent columns incrementally add subsets of the control variables until Column 5 presents the full specification. Here, of first note, across all models, a majority of the control variables exhibit the expected sign with many being statistically significant and the adjusted R^2 s range between approximately 25% and 27%. Thus, overall, these results provide reasonable confidence around both the integrity of our sample data and the form of our econometric model.

Given the consistency of results across columns, for brevity we focus our discussion on the full model (Column 5). First, the coefficient on *EXPECT* is statistically insignificant (0.037, t = 0.92), a finding that suggests that prior to the board reforms, managers did not book goodwill impairments in contrast to the market's expectation. Of central interest, consistent with H_1 , the coefficient on the interaction term, *POST* × *EXPECT*, is positive and statistically significant at the 1% level (0.146; t = 4.52). The increase is also meaningful, with the estimated coefficient of 0.146 implying that the probability of goodwill impairment recognition when the market has deemed it to be economically impaired is 14.6% higher following the board reforms. Further, the sum of the coefficients of *EXPECT* and *POST* × *EXPECT* is also positive and significant at the 1% level (F =19.73). Thus, taken together, our findings indicate that not only did the timeliness of goodwill impairment improve following the reforms (H_1), but they also became more closely aligned with market expectations in the post-reform period. Overall, the findings support the notion that the board reforms are associated with a more timely recognition of goodwill impairments, consistent with the argument that board reforms enhance board oversight, promote managerial integrity, and curb managers' incentives to extract private benefits (Bae et al., 2020; Fauver et al., 2017; Hu et al., 2020; M. Li et al., 2020).

4.2 Sensitivity Analysis

In this section, we test the robustness of our primary findings to alternative econometric approaches, study periods, measures, event year identification, and sample selection criteria. The results, presented in Table 6, confirm that our results are robust to each of these considerations.

4.2.1 Alternative Econometric Approaches

To address potential concerns over heterogeneous treatment effects presented in staggered DiD models (Baker et al., 2022; Callaway & Sant'Anna, 2021), we employ two alternative approaches, cohort stacked DiD model and an entropy balancing (EB) procedure. The results from these two alternative approaches are presented Panel A of Table 6.

First, we use a cohort stacked DiD model following Cengiz et al. (2019). Specifically, we treat each board reform as a distinct event by grouping treated firms (firms that had undergone reforms by the given year) and their contemporaneous controls (firms that had not yet undergone reforms by the same year) into cohorts. We then aggregate these cohorts to form our final set of stacked DiD observations and additionally interact all fixed effects with cohort indicators (i.e., cohort-firm and cohort-year FE) to allow within-cohort comparisons (Duchin et al., 2024). The results, presented in the first column, confirm that the coefficient on *POST* × *EXPECT* remains positive and significant at the 1% level.

Second, we apply an entropy balancing (EB) procedure to mitigate potential imbalances between treatment and control groups. Specifically, we reweight the control group to balance its firm-level covariate distribution with that of the treatment group, thereby enhancing comparability between the two groups. The results, presented in the second column, confirm a positive coefficient on *POST* × *EXPECT*, significant at the 1% level.

4.2.2 Alternative Sample Periods

Our primary analyses are based on the sample period 2000 - 2012, with the event date identified as year in which the country implemented major board reforms (*POST*). As the next step in our sensitivity analysis, we consider three alternative sample periods. First, we extend the study period to 2019 by including an additional 47,707 firm-year observations from the period 2013 – 2019. Second, we restrict the sample to the period spanning five years before (t - 5) and after (t + 5) the year of the major board reform to balance the pre- and post-reform sample distribution and mitigate potential impact of confounding events. Third, we alternatively set the event year as the earliest year in which board reforms were implemented in a country. As confirmed in Table 2, the year of introduction is earlier for 15 of the 36 sample countries. Here, as confirmed in Panel B of Table 6, the coefficient on *POST* × *EXPECT* remains positive and significant at the 1% level across all these alternative periods.

4.2.3 Alternative Measures of the Market's Expectations and Impairment

We next consider the sensitivity of our results to the way in which we measure our primary variables, the market's expectation of an impairment charge (*EXPECT*) and the occurrence of a goodwill impairment (*IMP*). Beginning with measurement of the market's expectation, Filip et al. (2015) suggest that a market-to-book ratio of below one over a period of greater than one year indicates that goodwill is permanently impaired. Thus, as our first alternative proxy, we set *Alt_EXPECT1* equal to 1 if the firm's pre-impairment market-to-book ratio is less than 1 for two consecutive years, and 0 otherwise. Next, Li and Sloan (2017) suggest that when goodwill scaled by total assets exceeds 10%, ROA is negative, and book-to-market exceeds 1, the company has not made impairments in a timely manner. Thus, as our second alternative proxy, we set *Alt_EXPECT2* equal to 1 when these indicators imply that the company has not made a timely impairment, and 0 otherwise. As our third alternative proxy, we measure *Alt_EXPECT3* as the firm's pre-impairment book value of equity less the market value of equity, divided by its pre-impairment book value of assets (an unbounded continuous measure that can assume both positive and negative values). The

results based on these three alternative proxies are presented in the first set of three columns in Panel C of Table 6. As revealed, the coefficient on the interaction term, $POST \times EXPECT$, remains positive and significant based on each alternative proxy.

Second, we consider three alternative measures for impairment. Specifically, following prior studies (Albersmann & Quick, 2020; Ayres et al., 2019), we develop three categorical variables designed to capture whether impairment is: (1) greater than 0.5% of total assets (*Alt_IMP1*); (2) greater than 0.5% of net sales (*Alt_IMP2*); and (3) greater than 0.25% of earnings before interest, tax and depreciation (*Alt_IMP3*). The results based on these three alternative measures for impairment are presented in the second set of three columns in Panel C of Table 6, again confirming a positive and significant coefficient on the interaction term, *POST* × *EXPECT*.

4.2.4 Event Year Identification

In the late 1990s and the early 2000s, many countries initiated board reforms to restore investors' confidence following a series of accounting scandals (Bae et al., 2020). As such, it is possible that our results may simply reflect a general trend towards improved corporate governance as firms sought to distinguish themselves from those involved in the scandals, with one possible outcome being a general trend towards improved goodwill impairment decisions unrelated to the board reforms. To address this concern, we first conduct two placebo tests and then consider the period surrounding the actual year of the board reform.

For the placebo tests, first we adopt as alternative pseudo-reform years, three years prior to (t - 3) the actual reform year, restricting the sample to the pre-reform period to mitigate concerns around sample imbalance, and then three years post (t + 3) the actual reform year, restricting the sample to the post-reform period to avoid contamination from the actual reform. The results, presented in the two columns of Panel D of Table 6, reveal the coefficient on *POST* × *EXPECT* to be statistically insignificant in both instances, consistent with interpretation that in the absence of actual board reforms, there is no change in the timeliness of goodwill impairment recognition.

Second, we then randomly select a pseudo-reform year for each country between 1998 and 2007 (excluding their actual reform year) and re-estimate equation (1) using these pseudo-reform years. This process is repeated 1,000 times and the distribution of coefficient estimates for the variable of interest, *POST* × *EXPECT*, is plotted in Figure 1. As revealed, the actual coefficient on $POST \times EXPECT$ (0.146 from Model (5) in Table 5) lies outside the generated interval, confirming that the observed effect is statistically significant and not attributable to random variation.

Alternatively, to consider the trace of the effect over the period surrounding the board reforms, we create indicator variables, denoted *Year_n* (n = -3, -2, ..., +4), for each year from three years prior through four years post the year of the actual board reform (*Year₀*). We then rerun equation (1) after replacing the pre-post categorical variable *POST* with this series of year-by-year categorical measures. The variables of interest then become the series of interaction terms, *Year_n* × *EXPECT*. As revealed in the third column of Panel D of Table 6, the effect only emerges following the year of reform, with the coefficient estimate on this term becoming significant in *Year*₊₂ at the 5% level (0.143; t = 2.00), and then 1% in both *Year*₊₃ and *Year*₄₊ (0.132; t = 2.97 and 0.181; t = 4.44, respectively). The coefficients on the interaction terms are insignificant for each of the three years prior to the board reform and for the year of reform. Thus, the results appear to tie the improvement in the timeliness of expected goodwill impairment to the implementation of board reforms.

4.2.5 Alternative Sample Selection Criteria

Panel E of Table 6 presents the results for equation (1) based on the subsamples that emerge after imposition of a series of alternative data exclusion criterion, where the specific data excluded are identified at the top of each column. First, given that each represents a significant percentage of total sample observations (see Table 1), we alternatively exclude data from the U.S. (21.19% of total sample observations), Australia (10.18%), the U.K. (9.34%), and the Indo-Pacific region

(37.65%) (columns (1) to (4), respectively).¹⁰ We then exclude EU countries in the post-2007 period (column (5)) because of the improvement in investor protection arising from the amendment to trading rules under the Markets in Financial Instruments Directive (MiFID) (Cumming et al., 2011). Next, we exclude observations from countries that did not adopt either IFRS or GAAP at the time when international accounting standards on mandatory goodwill impairment became effective (column (6)). Following, we exclude countries that implemented the board reforms prior to 2003 (column (7)) since mandatory goodwill impairment was not yet a requirement. Finally, we exclude countries that also implemented non-board-related reforms (column (8)) under the concern that these additional reforms could affect accounting decisions.

Of central interest, the coefficient on the interaction term, $POST \times EXPECT$, is positive and significant at the 1% level across all analysis with the exception of the subsample excluding countries with pre-2003 reforms (column (7)) where it is significant at the 5% level. Thus, the analyses confirm that results are also robust to alternative sample composition criteria.

4.3 Alternative Measure of Timeliness

As the next step in our analysis, directly following approaches adopted by André et al. (2015) and Mazboudi et al. (2025), we consider an alternative perspective on the timeliness of goodwill impairment. Specifically, our primary analysis reported above focused on the likelihood that the firm impaired goodwill in the year when a charge was expected. In this section, we alternatively focus on the delay in recognizing goodwill impairment (*Delay*), measured as the number of years between the point at which goodwill is first deemed to be economically impaired and the year in which the impairment loss is actually recognized. To identify the year in which goodwill is first deemed to be economically impaired, we use four alternative indicators, which for ease of presentation, we generically denote as *Impaired*. These four indicators are *EXPECT*, *Alt_EXPECT1*, *Alt_EXPECT2*, and *EBIT*, where the first three are as previously defined and *EBIT* is a categorical

¹⁰ The countries (% of total sample observations) excluded under the criteria 'Indo-Pacific region' are Australia (10.18%), China (5.54%), India (2.40%), Indonesia (1.36%), Japan (4.53%), Malaysia (6.16%), New Zealand (0.56%), Pakistan (0.11%), Philippines (0.85%), Singapore (3.78%), and Thailand (2.19%).

variable set equal to 1 if a firm reports negative earnings before interest and tax, and 0 otherwise. From these four indicators, we then develop four corresponding measures of *Delay* that we denote as *Delay_EXPECT*, *Delay_EXPECT1*, *Delay_EXPECT2*, and *Delay_EBIT*, respectively,

From these measures, we first re-run equation (1) as a Poisson regression model alternatively with each of these four measures of *Delay* as the dependent variable and its corresponding indicator measure as the measure of *Impaired*. The results, presented in Panel A of Table 7, reveal a negative and statistically significant coefficient on $POST \times Impaired$ across all models. In this sense, the results uniformly suggest that there has been a reduction in the delay of goodwill impairment recognition following the board reforms, consistent the view of the reforms as promoting more timely and accurate financial reporting.

Second, we employ a Cox-proportional hazard rate model to evaluate the likelihood of goodwill impairment based on the duration that it has remained unimpaired prior to the event. We conduct this analysis based alternatively on each of the four measures for delay (*Delay*) described above. This model includes the same control variables as those in equation (1) and controls for industry and year fixed effects. As revealed in Panel B of Table 7, the coefficient on *POST* × *Impaired* is uniformly positive across all models and significant at the 5% level or better in three of the four models, indicative that board reforms significantly enhance the likelihood of goodwill impairments. To illustrate, from the first column for the model based on our primary measure of market expectations, *EXPECT*, the coefficient on the interaction term *POST* × *Impaired* is 0.447, significant at the 5% level. This estimate translates into a hazard ratio of 1.564 (i.e., $e^{0.447}$) which suggests that firms in countries that have implemented board reforms are 56.4% more likely to take a goodwill impairment when expected than those in non-reform countries.

In sum, the results across both sets of analyses uniformly reveal an improvement in the timeliness of goodwill impairment. In this sense, they confirm that results and conclusions are robust to the use of these alternative perspectives on the timeliness of goodwill impairment.

4.4. Cross-Sectional Analysis

In this section, we implement a series of alternative partitions across which we would expect to observe predictable differences in the effectiveness of board reforms and thereby their impact on the timeliness of goodwill impairment. Specifically, we first consider five alternative country-level factors and then two alternative firm-level factors. For these analyses, we modify equation (1) to additionally include both the conditioning variable (*Factor*) and a 3-way interaction term, *POST* × *EXPECT* × *Factor*. Our interest is in this 3-way interaction term coefficient which we expect to be positive under conditions where board reforms have the potential to play a greater role (where they are likely to be more effective and/or enhanced governance more important). As will be seen from Table 8, our results are largely consistent with expectations.

4.4.1 Country-Level Factors

The results based on the five country-level factors are presented in the first six columns of Table 8. First, we consider the approach to board reform adopted by each country. As revealed in Table 2, 20 countries adopted a 'comply or explain' approach whereas 16 countries adopted a 'rules based' approach. Under the 'comply or explain' approach, firms were required to either comply with the reforms or to explain why they failed to do so. Alternatively, under the 'rules based' approach, firms were left with little if any flexibility around compliance. Arguably, board reforms are likely to be more effective under the 'rules based' approach given the lack of discretion afforded management. For this analysis, we employ a categorical variable (*Approach*) set equal to 1 for firms in countries adopting a 'rules based' approach and 0 for a 'comply or explain' approach. The results, presented in Column (1), reveal that while positive, the coefficient on the 3-way interaction term is insignificant at conventional levels (-0.156; *t* = -1.29).¹¹

¹¹ In untabulated tests, we find that the impact of board reforms is more pronounced in rule-based countries when we exclude firms from countries where the reforms were enacted prior to mandatory goodwill impairment period (i.e., before 2003). One plausible explanation for the stronger findings is that prior to the introduction of the mandatory goodwill impairment rule in 2003, firms had more discretion in their accounting practices which could have influenced how they responded to board reforms.

Second, we consider legal institution. Prior literature finds that common law countries have stronger investor protection laws, stricter law enforcement, and higher disclosure levels of financial information than do civil law countries (Dayanandan et al., 2016; La Porta et al., 1998b; Li et al., 2011). As such, we expect that board reform will be relatively more effective in common law countries. Our proxy (*Law*) is a categorical variable set equal to 1 for firms from common law countries and 0 if from a civil law country. The results, presented in Column (2), confirm a positive coefficient on the 3-way interaction term. The coefficient estimate is 0.172 (t = 1.95).

Finally, we consider three factors that define the strength of the country-level institutions, the extent of 'economic development', 'rule of law', and the level of 'accounting enforcement'. First, we argue that relative to emerging economies, developed economies with their more mature and sophisticated financial systems provide for more efficient monitoring and a stronger regulatory framework, and hence board reforms should be more effective. Second, we argue that board reforms should be more effective in countries with stronger and more impartial legal systems (rule of law). Lastly, we argue that board reforms will be more effective in countries with stronger accounting enforcement rules. For these analyses, we proxy for economic development (Market) using a categorical variable set equal to 1 for firms from countries with developed economies and 0 if from emerging economies; we proxy for 'rule of law' (Rule) using the country's estimates (Worldwide Governance Indicators project); and we proxy for accounting enforcement using two alternative measures, the quality of the auditor's working environment (Audit) and the degree of accounting enforcement activity (Enforcement) (Brown et al., 2014). The results consistently reveal the predicted positive coefficient on the 3-way interaction term. For the model based on economic development (*Market*; Column (3)), its coefficient is 0.168 (t = 1.87); for the model based on 'rule of law' (*Rule*; Column (4)), its coefficient is 0.116 (t = 2.97); and for the models capturing 'enforcement', for the model based on Audit (Column (5)), its coefficient is 0.013 (t = 3.44) and for the model based on *Enforcement* (Column (6)), its coefficient is 0.013 (t = 2.16).

4.4.2 Firm-Level Factors

The results based on the two firm-level factors (flexibility and complexity) are presented in the final two columns of Table 8. We argue that the level of each factor potentially influences the process surrounding the estimation of the fair market value of goodwill and hence the impact that board reforms will have on the timeliness of goodwill impairment decisions. Specifically, we argue that in settings that afford management greater discretion or flexibility around fair market estimation, governance can play a more significant role in constraining managerial self-serving tendencies. Equally, we argue that when the goodwill account is more complex, management has greater leeway in determining fair market value and hence here also governance can play a greater role. Of direct relevance, we then argue that with an increased role for governance, the impact of board reforms on the timeliness of goodwill impairment decisions will be greater.

To develop empirical proxies, we first argue that two situations in which flexibility can arise are when goodwill account is larger and when the firm is engaged in more frequent acquisition activity. We thus proxy for flexibility, denoted *Flexibility*, using a categorical variable set equal to 1 if both the firm's beginning of year goodwill balance and its net assets from acquisitions during the year are above the sample median value of each, and 0 otherwise. Alternatively, we argue that with greater complexity, auditors will charge higher fees to offset potential reputational damage and litigation loss associated with the potential mismeasurement (Chen et al., 2019; Venkataraman et al., 2008). Hence, we proxy for complexity, denoted *Complexity*, using a categorical variable set equal to 1 if the firm's audit fee is above the sample median and 0 otherwise. The results confirm the expected positive coefficients on the 3-way interaction term. From Column (7) for the model with *Flexibility*, its coefficient is 0.269 (t = 2.09).

Taken together, we argue that the results from these cross-sectional analyses, results that largely align with expectations around settings in which board reforms should have a greater impact, serve to re-enforce conclusions based on our primary analysis around the importance of board reforms for the timeliness of goodwill impairment decisions.

4.5 Potential Confounding Events

In this section, we seek to address the concern that our findings could potentially be driven by two specific confounding events that occurred during the study period. First, we consider the adoption of International Financial Reporting Standards (IFRS) (see Table 2). Prior literature suggests that IFRS promotes more transparent financial reports, more prompt recognition of losses, and greater value relevance of accounting numbers (Barth et al., 2008). Second, since our sample includes financial years before, during and after the 2008 Global Financial Crisis (GFC), we examine whether the crisis alters the documented relation.¹² For this analysis, we first develop categorical variables to identify each event (*EVENT*) and then incorporate each into equation (1). Specifically, for IFRS, we measure *EVENT* as a categorical variable set equal to 1 for years in which the country operates under IFRS, and 0 otherwise, and for the GFC, we measure *EVENT* as a categorical variable set equal to 1 for the years 2008, 2009, and 2010, and 0 otherwise.

The results for these analyses are presented in Panel A of Table 9. As revealed, the coefficient on the variable of primary interest, $POST \times EXPECT$, remains positive and significant at the 1% in each instance. Thus, these results appear to confirm an effect for major board reforms on the timeliness of goodwill impairment that is separate and distinct from any potential effect that each of these two potentially confounding events might have had. In this sense, they support the view that our findings are not an artefact of the selected confounding events but a genuine effect arising from board reforms.

4.6 Prior Governance Setting and Reform Impact

As the next step, in an attempt to further tie the improvement in the timeliness of goodwill impairment to the implementation of board reforms, we consider the firm's pre-reform governance

¹² Following prior studies (e.g., Fauver et al., 2017; Hu et al., 2020), we also control for changes in dividend and capital gains rates. Here, the results (untabulated) again confirm a positive and significant coefficient on $POST \times EXPECT$ in each instance, and as such, also indicate that the effect of board reform is separate and distinct from the effect of changes in either of these two tax rates.

structure. Specifically, we argue that if board reform plays a role in the improvement in the timeliness of the goodwill impairment as opposed to the improvement being driven exclusively by other factors, we would expect the effect to be more pronounced for firms that exhibited weak corporate governance pre-reform and made improvements in their governance structure in response to the reforms. Critically, if alternatively, the firm had voluntarily adopted a strong governance structure prior to the implementation of the reforms, we would not expect it to alter its governance structure in response to the reforms and hence any observed change in the timeliness of its goodwill impairment decision should be unrelated to board reform. Equally, if the firms with weak governance structures pre-reform choose not to respond to the implementation of the board reforms, such as for example under a 'comply-or-explain' approach, here also any observed changes in the timeliness of its goodwill impairment decision would be unrelated to board reform.

To conduct this analysis, we identify firms that had weak pre-reform governance structures and then improved their governance structure immediately following board reform using the following categorical variables (*Impact*) (Fauver et al., 2017). First, focusing on board reform, we set *Ind_Impact* equal to 1 if the firm has less than 50% independent directors pre-reform and increased the figure to greater than 50% in the first-year board reform became effective, and 0 otherwise. Second, focusing on audit committee reform, we set *AC_Impact* equal to 1 if the firm has less than 50% outside directors on the audit committee and increased the figure to greater than 50% in the first-year board reform became of pre-reform has less than 50% outside directors on the audit committee and increased the figure to greater than 50% in the first-year board reform became effective, and 0 otherwise. Third, focusing on both board and audit committee reforms, we set *Gov_Impact* equal to 1 for firms for which both *Ind_Impact* and *AC_Impact* are equal to 1 and 0 otherwise. We then re-run equation (1) after adding a three-way interaction term (*POST* × *EXPECT* × *Impact*) to discriminate settings in which we expect board reform to have an impact, using alternatively each of these three 'impact' measures.¹³ The results, presented in Panel B of Table 9, confirm that the improvement in the timeliness of goodwill

¹³ Reform requirements for the number of outsider representation on board and audit committee vary across the country. However, since a majority of countries in the world mandate a 50% threshold of independent directors, we use 50% as the benchmark in identifying firms for which their corporate governance structure changes concurrent with board reform.

impairment decisions is greater for firms with meaningful changes in their governance structure. The coefficient on each of the three 'impact' three-way interaction terms is positive and significant at the 1% level. Thus, in this sense, we view the findings as providing further support for the interpretation that the improvement is likely at least in part to be attributable to board reform.

4.7. Subcomponent Analysis

As the final step in our investigation, we consider the role that each of the three board-related reforms (board independence, audit committee independence, and separation of the chairperson and CEO roles) play in the documented improvement in the timeliness of goodwill impairment. As revealed through Table 2, conducting this analysis poses a design challenge. Specifically, in only two countries (Denmark and Poland) did the reforms involve board independence exclusively. Similarly, only in five countries (Argentina, Chile, France, Japan, and Pakistan) were the reforms focused exclusively on the audit committee. The reforms in a further 16 countries involved both board and audit committee independence. Finally, for nine countries, the reforms involved all three elements. In no countries, was the separation of the chairperson and CEO the exclusive focus of the reform; this reform only occurred when the reforms involved all three components.

Given these challenges, our empirical strategy is as follows. First, to isolate a role for the reform of board independence, we focus exclusively on sample data from Denmark and Poland. The results are presented in the first column of Table 10. Of central interest, the coefficient on *POST* × *EXPECT* is insignificant at conventional levels (0.63; t = 1.26). Thus, for this subsample, there is no evidence that the reform related to board independence affected the timeliness of goodwill impairment.

Second, to isolate a role for the reform of the audit committee, we focus on sample data from the five countries where the reforms solely involved audit committee independence. The results, presented in the second column of Table 10, reveal the coefficient on *POST* × *EXPECT* of 0.118 to be significant at the 10% level (t = 1.72). Thus, based on this subsample, the timeliness of goodwill impairment appears related to reform of the audit committee.

Third, to further strengthen these conclusions around the importance of board and audit committee reform, we extend the sample to include all countries where the reforms involved board independence and/or audit committee independence, but not separation of the chairperson and CEO roles. Our focus here is on the contrast between the subsample of firms from the five countries that solely introduced audit committee reform and the subsample of firms from the 16 countries that simultaneously introduced board and audit committee reforms. For this purpose, we introduce an additional categorical variable, denoted *BOTH*, set equal to 1 for firms from countries that adopted both reforms and 0 for those that only adopted audit committee reform. The results are presented in the third column of Table 10. Of direct interest, the coefficient on the interaction term *POST* × *EXPECT* is statistically at the 5% level (0.173; t = 2.28) while the coefficient on the interaction term *POST* × *EXPECT* × *BOTH* is statistically insignificant at conventional levels (-0.039; t = - 0.35). Thus, taken together, the results for these two sets of analyses are consistent with audit committee reform being the critical step as it relates to the goodwill impairment decision, with no incremental benefit to additionally including board reform.

Fourth and finally, turning to the separation of the chairperson and CEO roles, as noted above this reform was only adopted in countries that adopted all three reforms. Thus, in an attempt to provide insights around the incremental role, if any, of this third reform, we restrict our focus to firms from countries that introduced at least two reforms. Within our sample, when a country introduced only two reforms, they were always board and audit committee independence. We then introduce an additional categorical variable, denoted *ALL*, set equal to 1 for firms from countries that adopted all three reforms and 0 for those that only adopted the two reforms. These results are presented in the fourth column of Table 10. Of note, the coefficient on the interaction term of relevance, *POST* × *EXPECT* × *ALL* is statistically insignificant at conventional levels (-0.023; t = -0.20). On this basis, the results appear to suggest that the separation of the roles of chairperson and CEO exhibits no incremental benefit beyond that offered by the reforms relating to board and audit committee independence.

In sum, while imperfect given the challenges posed by the pattern of reforms undertaken across the sample countries, the evidence provided through this analysis appears to suggest that reform of the audit committee is the reform of central importance as it narrowly relates to the timeliness of goodwill impairment decisions. Such a principal role for audit committee reform is, however, perhaps not unexpected given that goodwill impairment represents a technical accounting challenge and the audit committee most likely has the focused expertise necessary to confront the challenge.

5. Conclusion

This study examines the impact of board reforms on the timeliness of goodwill impairment recognition. Based on the sample of firms from 71 countries, 36 of which implemented major board reforms between 2000 and 2012, and 35 which did not, we find an improvement in the timeliness of goodwill impairment decisions following the reforms. Our results are robust to a series of sensitivity considerations that include those relating to econometric approach, study period, alternative proxies, identification of event year, sample composition, and potentially confounding events. In conjunction, we also find, as predicted, that the association between implementation of the board reforms and the timeliness of goodwill impairment decisions is stronger in settings where the reforms are likely to be more effective, and when they are likely to have a greater impact. Finally, we find that the critical reform, as least as it relates to the complex challenge of accounting for goodwill and determination of goodwill impairment, is that relating to audit committee reform.

We argue that our study contributes to the existing literature by providing direct evidence of the role of board reforms in shaping managerial behavior and promoting informative and timely accounting decisions. We focus on goodwill impairment given the importance of its signaling effect for market participants. Goodwill impairment charges serve as management's acknowledgement that the value of acquired assets is overestimated and/or that the investment is poorly managed (Chung & Hribar, 2021; Hayn & Hughes, 2006). However, due to the complexity and flexibility of the impairment process, determining the timing and magnitude of goodwill impairment becomes an accounting decision that is vulnerable to managers' discretion and subjective assessments. We use goodwill impairment as a proxy to test the effectiveness of board reforms on agency issues and accounting decisions and provide new insights relevant to the current corporate governance literature. Our study sheds light on the effectiveness of board reforms and their association with corporate governance and subsequent accounting decisions and, more broadly, the information environment.

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Appendix A: Definition of Variables

Variables	Definitions
IMP	Goodwill impairment, measured as a categorical variable set equal to 1 if the firm has recognized a material goodwill impairment (defined as 0.5% of goodwill opening balance) in the given fiscal year, and 0 otherwise.
POST	A categorical variable set equal to 1 for years in which board reforms are effective in a country, and 0 otherwise.
EXPECT	The market's expectations around the need for a goodwill impairment charge, measured as the firm's pre-impairment book value of equity less the market value of equity, divided by the pre-impairment book value of assets if book value exceeds the market value, and 0 if market value exceeds book value.
MB	Market-to-book ratio, measured as the year-end market value of equity divided by book value of equity.
GWA	A categorical variable set equal to 1 if there is an increase in goodwill as a result of acquisition in a given year, and 0 otherwise.
ROE	Profitability, measured as the return on equity and sourced from Worldscope Fundamentals.
ΔINC	The change in the firm's net income from $t-1$ to t , divided by market value.
Lev	Leverage, measured as total debt divided by common equity and sourced from Worldscope Fundamentals.
SMOOTH	A categorical variable set equal to 1 when the change in annual net income is above the industry median for positive values of the measure, and 0 otherwise.
BATH	A categorical variable set equal to 1 if the change in annual net income is below the industry median for negative values of the measure, and 0 otherwise.
ΔRD	The change in research and development expenses from $t-1$ to t , divided by net sales.
Analyst	The extent of analyst following, measured as the natural logarithm of one plus the number of unique analysts issuing earnings forecasts at the end of a given fiscal year.
CASH	Cash and cash equivalents, measured as the ratio of cash and short-term investments to total assets.
SIZE	Firm size, measured as the natural logarithm of total assets (in millions of US dollars).
GDP	Economic development, measured as the natural logarithm of the country's gross domestic product (GDP).
Inflation	The country's annual inflation rate.
Rule	Country-specific measurement of rule of law (an estimate ranging from -2.5 to 2.5) obtained from the Worldwide Governance Indicators.
Corruption	Country-specific measurement of control of corruption (an estimate ranging from -2.5 to 2.5) obtained from the Worldwide Governance Indicators.
Yeart	A categorical variable set equal to 1 for year t ($t = -3, -2, -1, 0, +1, +2, +3, 4+$) relative to the year is which the major board reforms are implemented ($t = 0$).
Delay	The number of years it takes for goodwill impairment loss to be recognized after goodwill is economically impaired.
EBIT	A categorical variable set equal to 1 if the earnings before interest and tax are negative, and 0 otherwise.
Approach	A categorical variable set equal to 1 if the country adopts a 'rule-based' reform approach, and 0 if it adopts a 'comply or explain' approach.
Law	A categorical variable set equal to 1 for common law countries, and 0 for civil law countries.

Market	A categorical variable set equal to 1 for developed economies and 0 for emerging economies.
Audit	A measure of the quality of the auditor's working environment.
Enforcement	A measure of the degree of accounting enforcement activity.
Flexibility	A categorical variable set equal to 1 if a firm's goodwill opening balance and its net assets from acquisition in that year are both above the sample median, and 0 otherwise.
Complexity	A categorical variable set equal to 1 if the firm's audit fee is above the sample median, and 0 otherwise.
EVENT	For IFRS, <i>EVENT</i> is a categorical variable set equal to 1 for years in which the country operates under IFRS, and 0 otherwise
	For the GFC, <i>EVENT</i> as a categorical variable set equal to 1 for the years 2008, 2009, and 2010, and 0 otherwise.
Ind_Impact	A categorical variable set equal to 1 if the firm has less than 50% independent directors pre-reform and increased the figure to greater than 50% in the first year that board reform became effective, and 0 otherwise.
AC_Impact	A categorical variable set equal to 1 if the firm has less than 50% outside directors on the audit committee pre-reform and increased the figure to greater than 50% in the first year that board reform became effective, and 0 otherwise.
Gov_Impact	A categorical variable set equal to 1 if both <i>Ind_Impact</i> and <i>AC_Impact</i> are equal to 1 for a firm, and 0 otherwise.
ВОТН	A categorical variable set equal to 1 for firms from countries that adopted both board independence and audit committee independence reforms and 0 for those that only adopted audit committee reform.
ALL	A categorical variable set equal to 1 for firms from countries that adopted all three reforms and 0 for those that only adopted the two reforms.
Alt_EXPECT1	A categorical variable set equal to 1 if the firm's pre-impairment market-to-book ratio is less than 1 for two consecutive years, and 0 otherwise.
Alt_EXPECT2	A categorical variable set equal to 1 if goodwill scales by total assets exceeds 10%, ROA is negative, and book-to-market exceeds 1, and 0 otherwise.
Alt_EXPECT3	<i>Alt_EXPECT3</i> is a firm's pre-impairment book value of equity less the market value of equity, divided by the pre-impairment book value of assets (non-zero for negative value).
Alt_IMP1	A categorical variable set equal to 1 if the impairment is greater than 0.5% of total assets, and 0 otherwise.
Alt_IMP2	A categorical variable set equal to 1 <i>Alt_IMP2</i> equals one if the impairment is greater than 0.5% of net sales, and 0 otherwise.
Alt_IMP3	A categorical variable set equal to 1 if the impairment is greater than 0.25% of earnings before interest, tax, and depreciation, and 0 otherwise.



Figure 1. Placebo test based on pseudo-reform year

This figure plots the coefficient estimates of $POST \times EXPECT$ using randomly selected pseudo-reform years over the period 1998 – 2007, excluding the actual reform year. The random selection process is repeated 1,000 times and the plot presents the distribution of the coefficient estimates from equation (1) using a staggered DiD research design.

Country	(1)	(2)	(3)	Country	(4)	(5)	(6)
Argentina	371	52	0.34	Malaysia	6,800	940	6.16
Australia	11,242	1,825	10.18	Malta	32	8	0.03
Austria	518	78	0.47	Mauritius	59	14	0.05
Bahrain	16	6	0.01	Mexico	842	124	0.76
Belgium	734	106	0.66	Morocco	144	24	0.13
Bermuda	191	35	0.17	Netherlands	1,188	177	1.08
Botswana	15	5	0.01	New Zealand	616	106	0.56
Brazil	777	167	0.70	Nigeria	115	25	0.10
Bulgaria	162	43	0.15	Norway	920	169	0.83
Canada	3,911	774	3.54	Oman	136	26	0.12
Cayman Islands	65	20	0.06	Pakistan	119	25	0.11
Chile	643	122	0.58	Papua New Guinea	44	5	0.04
China	6,117	1,099	5.54	Peru	460	69	0.42
Colombia	141	24	0.13	Philippines	942	138	0.85
Croatia	39	13	0.04	Poland	1,116	230	1.01
Cyprus	109	31	0.10	Portugal	272	37	0.25
Denmark	737	109	0.67	Qatar	36	7	0.03
Estonia	39	7	0.04	Romania	17	6	0.02
Finland	949	124	0.86	Saudi Arabia	259	53	0.23
France	4,386	647	3.97	Serbia	13	5	0.01
Germany	4,119	636	3.73	Singapore	4,175	587	3.78
Greece	823	146	0.75	Slovenia	82	17	0.07
Hungary	126	22	0.11	South Africa	1,931	304	1.75
Iceland	40	9	0.04	Spain	717	105	0.65
India	2,655	606	2.40	Sri Lanka	174	39	0.16
Indonesia	1,503	251	1.36	Sweden	1,963	324	1.78
Ireland	714	112	0.65	Switzerland	1,315	191	1.19
Israel	1,293	242	1.17	Thailand	2,415	362	2.19
Italy	1,370	208	1.24	Tunisia	35	13	0.03
Japan	5,004	1,125	4.53	Ukraine	14	4	0.01
Jordan	119	23	0.11	United Arab Emirates	105	22	0.10
Kenya	69	14	0.06	United Kingdom	10,321	1,811	9.34
Kuwait	259	54	0.23	United States	23,410	3,743	21.19
Latvia	10	4	0.01	Vietnam	107	41	0.10
Lithuania	33	9	0.03	Zimbabwe	92	19	0.08
Luxembourg	179	32	0.16				
Total	110,464	18,550	100.00				

Table 1Sample Distribution by Country

This table provides the sample distribution by country. The full sample consists of all Worldscope and IBES observations satisfying the sample requirement between 2000 and 2012. Firms with net assets less than US \$10 million and from regulated industries (i.e., financial firms and utilities) are excluded from the sample. We also require at least ten firm-year observations in each country to run Equation (1). Columns (1) and (4) represent the number of firm-years, columns (2) and (5) represent the number of unique firms, and columns (3) and (6) represent the percentage of firm years in the sample.

Country	Board Reforms								IFRS
	Reform			Component			Type of Reform	Year	Туре
	First	Major	IND	AC	CEO	NON			
Argentina	2001	2001	0	1	0	1	Rule-based	2012	Modified (most)
Australia	2003	2004	1	1	1	1	Comply-or-explain	2005	Required
Austria	2002	2004	1	1	0	1	Comply-or-explain	2005	Required (EU)
Belgium	1998	2005	1	1	1	1	Comply-or-explain	2005	Required (EU)
Brazil	2002	2002	0	0	0	1	Rule-based	2010	Modified
Canada	2004	2004	1	1	1	0	Rule-based	2011	Required (most)
Chile	2001	2001	0	1	0	1	Rule-based	2009-2012	Required (most)
China	2001	2001	1	1	0	1	Rule-based	2007	Convergence
Colombia	2001	2001	0	0	0	1	Rule-based	2015	Required (EU)
Denmark	2001	2001	1	0	0	1	Comply-or-explain	2005	Required (EU)
Finland	2003	2004	1	1	1	1	Comply-or-explain	2005	Required (EU)
France	2001	2003	0	1	0	1	Rule-based	2005	Required (EU)
Germany	2002	2002	1	1	0	1	Comply-or-explain	2005	Required (EU)
Greece	1999	2002	1	1	0	0	Rule-based	2005	Required (EU)
Hungary	2003	2003	0	0	0	0	Comply-or-explain	2005	Required (EU)
India	1998	2002	1	1	0	1	Rule-based		Permitted
Indonesia	2000	2007	1	1	0	0	Rule-based	2009	Convergence
Israel	2000	2000	1	1	1	1	Rule-based	2008	Required (most)
Italy	2006	2006	1	1	0	1	Rule-based	2008	Required (EU)
Japan	2002	2002	0	1	0	0	Rule-based	2010	Permitted
Malaysia	2001	2001	1	1	0	0	Comply-or-explain	2012	Required (most)
Mexico	1999	2001	1	1	0	1	Rule-based	2012	Required (most)
Netherlands	1997	2004	1	1	1	0	Comply-or-explain	2005	Required (EU)
Norway	2005	2005	1	1	1	1	Comply-or-explain	2005	Required (EU)
Pakistan	2002	2002	0	1	0	0	Comply-or-explain	2015	Modified
Peru	2002	2005	1	1	0	0	Comply-or-explain	2012	Required (most)
Philippines	2002	2002	1	1	0	1	Comply-or-explain	2011	Convergence
Poland	2002	2002	1	0	0	1	Comply-or-explain	2005	Required (EU)
Portugal	1999	2001	1	1	0	0	Rule-based	2005	Required (EU)
Singapore	2003	2003	1	1	0	1	Comply-or-explain	2008	Modified
Spain	1998	2006	1	1	0	1	Comply-or-explain	2005	Required (EU)
Sweden	2005	2006	1	1	1	1	Comply-or-explain	2005	Required (EU)
Switzerland	2002	2002	0	0	0	1	Comply-or-explain	2005	Permitted
Thailand	2002	2002	1	1	0	1	Comply-or-explain	2014	Convergence
U.K.	1992	1998	1	1	1	1	Comply-or-explain	2005	Required (EU)
U.S.	2003	2003	1	1	0	1	Rule-based	N.A.	Prohibited

Table 2 Board Reforms and IFRS Adoption by Country

This table presents details around board reform and IFRS adoption. The first set of columns under the label *Board Reforms* provides details around board reforms implemented by country across the 36 countries identified from Fauver et al. (2017) as having implemented board reforms. Within this set, the first two columns labeled *Reform* indicate the year in which the country's first reforms (*First*) and major reforms (*Major*), respectively, were implemented. The next four columns labeled *Component* present categorical variables that identify whether the major reforms involve board independence (*IND*), audit committee and auditor independence (*AC*), chairperson and chief executive officer separation (*CEO*), and whether they also include a non-board component (*NON*), respectively. The final column in this set labeled *Type of Reform* identifies the type of reform, 'comply-or-explain' or 'rules-based'. The second set of columns under the label *IFRS* identifies the year in which the country adopted IFRS accounting standards and then the type of adoption. 'Convergence' indicates that a modified version of IFRS has been adopted, 'Required' indicates that IFRS is required for all firms in the country, 'Required (EU)' indicates that IFRS as mandated by the EU is required for all firms, 'Permitted' indicates that IFRS in some form is permitted but not required, 'Prohibited' indicates that IFRS is currently prohibited by the country, and the qualifier 'Most' indicates that exemptions or modifications apply for firms in certain industries.

Variable	Ν	Mean	Std Dev	Q1	Median	Q3
IMP	110,464	0.110	0.314	0	0	0
POST	110,464	0.784	0.411	1	1	1
EXPECT	110,464	0.068	0.133	0	0	0.073
MB	110,464	2.303	2.695	0.833	1.491	2.667
GWA	110,464	0.130	0.336	0	0	0
ROE (%)	110,464	-2.631	46.821	-4.971	7.300	16.388
ΔINC	110,464	-0.020	0.377	-0.038	0.006	0.039
Lev	110,464	0.692	1.214	0.028	0.314	0.806
SMOOTH	110,464	0.283	0.450	0	0	1
BATH	110,464	0.209	0.406	0	0	0
Analyst	110,464	0.838	1.001	0	0.693	1.609
ΔRD	110,464	0.001	0.016	0	0	0
CASH	110,464	0.170	0.187	0.039	0.103	0.232
SIZE	110,464	19.078	2.149	17.540	18.978	20.506
GDP	71	28.013	1.603	26.639	28.112	29.261
Inflation (%)	71	3.069	2.924	1.539	2.393	3.981
Rule	71	1.151	0.793	0.468	1.565	1.713
Corruption	71	1.186	0.923	0.331	1.456	1.919

This table reports summary descriptive statistics for all variables used in the primary analysis based on equation (1). See Appendix A for variable definitions.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
(1) IMP	1																
(2) <i>POST</i>	-0.020*	1															
(3) EXPECT	0.036*	0.011^{*}	1														
(4) MB	-0.061*	-0.002	-0.343*	1													
(5) GWA	-0.039*	0.001	-0.075*	0.008^*	1												
(6) ROE	-0.067*	0.001	-0.025*	-0.102*	0.087^*	1											
(7) ΔINC	-0.077^{*}	-0.005*	-0.089*	0.041*	0.017^{*}	0.296^{*}	1										
(8) Lev	0.043*	-0.032*	-0.094*	0.155*	0.026^{*}	-0.133*	-0.061*	1									
(9) SMOOTH	0.017^{*}	-0.008*	-0.150*	0.101^{*}	0.052^{*}	0.220^{*}	0.296^{*}	0.036*	1								
(10) BATH	0.117^{*}	-0.005*	0.024^{*}	-0.052*	-0.002	-0.188*	-0.393*	0.109^{*}	-0.322*	1							
(11) Analyst	0.080^{*}	0.087^{*}	-0.248*	0.129*	0.103*	0.202^{*}	0.012^{*}	0.001^{*}	0.346*	0.160^{*}	1						
$(12)\Delta RD$	-0.019*	0.021^{*}	-0.040*	0.071^{*}	0.030^{*}	0.014^{*}	-0.047*	-0.032*	-0.024*	0.045^{*}	0.061^{*}	1					
(13) CASH	-0.064*	0.067^{*}	-0.089*	0.203^{*}	-0.065*	-0.112*	0.040^{*}	-0.242*	-0.031*	-0.055*	-0.027*	0.087^*	1				
(14) SIZE	0.104^{*}	0.010^*	-0.145*	-0.042*	0.128^{*}	0.326*	0.007^*	0.180^{*}	0.440^{*}	0.253*	0.635*	0.027^{*}	-0.251*	1			
(15) GDP	-0.030*	0.214^{*}	-0.173*	0.103*	0.042^{*}	-0.048*	-0.006*	0.014^{*}	0.141*	0.088^*	0.295^{*}	0.056^{*}	0.099*	0.209^{*}	1		
(16) Inflation	-0.086*	-0.066*	0.070^{*}	-0.003	-0.057*	0.043*	-0.010*	-0.013*	-0.042*	-0.046*	-0.137*	-0.006*	-0.017*	-0.104*	-0.277*	1	
(17) Rule	0.070^{*}	0.014^{*}	-0.125*	0.072^{*}	0.061*	-0.128*	-0.006*	-0.042*	0.018^{*}	0.038*	0.156*	0.019*	0.075^{*}	-0.036*	0.282^{*}	-0.509*	1
(18) Corruption	0.077^{*}	-0.032*	-0.120*	0.066^{*}	0.049*	-0.126*	-0.003	-0.054*	0.014^{*}	0.030^{*}	0.114*	0.010^{*}	0.084^{*}	-0.054*	0.195*	-0.476*	0.961*

This table presents Pearson pair-wise correlations for all variables used in the primary analysis based on equation (1). See Appendix A for variable definitions. * denotes significance at the 10% level or (two-tailed).

Dep. Var. = <i>IMP</i>	(1)	(2)	(3)	(4)	(5)
<i>POST</i> × <i>EXPECT</i>	0.108 ^{***} (3.44)	0.117 ^{***} (3.60)	0.120 ^{***} (3.72)	0.118 ^{***} (3.74)	0.146 ^{***} (4.52)
POST	0.065 (1.51)	0.064 (1.51)	0.064 (1.50)	0.064 (1.50)	0.065 (1.54)
EXPECT	0.109* (1.84)	0.066 (1.39)	0.060 (1.29)	0.061 (1.25)	0.037
МВ	()	-0.005*** (-7.47)	-0.006***	-0.006*** (-7.22)	-0.004*** (-4 77)
GWA		-0.034***	-0.034***	-0.034*** (-7.19)	-0.036***
ROE		-0.001*** (-5 71)	-0.001*** (-5.24)	-0.001*** (-5 61)	-0.001*** (-7.18)
ΔINC		-0.043*** (-4.46)	-0.031^{***}	-0.031*** (-3.95)	-0.030*** (-3.60)
Lev		(1.10)	0.000^{***}	0.000***	0.005*
SMOOTH			0.013**	0.013**	0.012^{***}
BATH			0.045***	0.045***	0.042***
ΔRD			(0.15)	-0.050	-0.098
Analyst				-0.002	(-1.42) -0.010
CASH				(-0.21)	-0.019 [*]
SIZE					0.025***
GDP					-0.040
Inflation					0.002 (1.47)
Rule					(1.47) 0.145^{*} (1.86)
Corruption					-0.094
Firm FE Year FE Observations Adjusted R ²	Yes Yes 110,464 0.249	Yes Yes 110,464 0.262	Yes Yes 110,464 0.264	Yes Yes 110,464 0.264	Yes Yes 110,464 0.268

This table presents the logistic regression results based on equation (1) for the impact of board reforms on the timeliness of goodwill impairment. The sample period begins in 2000 and ends in 2012. Variable definitions are provided in Appendix A. *t*-statistics are in parentheses and ***, **, and * represent the significance levels of 10%, 5%, and 1%, respectively. Standard errors are clustered at the country level. Coefficients on the variable of primary interest, *POST* × *EXPECT*, appear in bold and italics when significant at the 5% level or better, and in italics when significant at the 10% level.

Table 6Sensitivity Analyses

	Econometric Approach						
Dep. Var. = <i>IMP</i>	Stacked DiD	Entropy Balancing					
<i>POST</i> × <i>EXPECT</i>	0.151*** (3.22)	0.298 ^{***} (3.50)					
POST	0.031 (1.07)	0.102* (1.83)					
EXPECT	0.057** (2.28)	-0.044 (-0.53)					
Control variables Firm FE Year FE Observations Adjusted R ²	Yes Yes 204,955 0 337	Yes Yes Yes 110,464 0,522					

Panel A: Alternative Econometric Approaches

Panel B: Alternative Sample Periods

	Time Period							
Dep. Var. = <i>IMP</i>	2000 - 2019	[-5, + 5]	First Reform					
<i>POST</i> × <i>EXPECT</i>	0.122***	0.212 ^{***}	0.113 ^{***}					
	(3.33)	(4.08)	(3.06)					
POST	0.070	0.018	0.087 ^{**}					
	(1.65)	(0.46)	(2.04)					
EXPECT	0.068*	0.047	0.057					
	(1.97)	(0.98)	(1.37)					
Control variables	Yes	Yes	Yes					
Firm FE	Yes	Yes	Yes					
Year FE	Yes	Yes	Yes					
Observations	158,171	66,591	110,464					
Adjusted R ²	0.230	0.333	0.269					

Panel C: Alternative Measures

	Alternati	ve Measures o Expectations	of Market	Alternative	e Measure of I	mpairment
Dep. Var. = <i>IMP</i>	Alt_ EXPECT1	Alt_ EXPECT2	Alt_ EXPECT3	Alt_IMP1	Alt_IMP2	Alt_IMP3
<i>POST</i> × <i>EXPECT</i>	0.147 ^{***}	0.153 ^{***}	0.008 [*]	0.099***	0.085 ^{**}	0.083 ^{***}
	(3.10)	(5.26)	(1.70)	(2.77)	(2.62)	(2.79)
POST	0.066 (1.52)	0.069 (1.66)	0.078^{*} (1.78)	0.050 (1.19)	0.117** (2.58)	-0.004 (-0.47)
EXPECT	-0.047	-0.010	0.099 ***	0.108 ^{**}	0.119 ^{***}	-0.017
	(-0.97)	(-0.42)	(3.26)	(2.38)	(2.67)	(-1.01)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	110,464	110,464	110,464	110,464	110,464	110,464
Adjusted R ²	0.266	0.268	0.266	0.294	0.349	0.289

Panel D: Event Year

	Placeb	o Tests	Parallel T	rends
Dep. Var. = <i>IMP</i>	Pre-reform (<i>t</i> – 3)	Post-reform $(t+3)$		
POST × EXPECT	0.148	0.047	$Year_{-3} \times EXPECT$	-0.070
	(1.65)	(0.79)		(-1.33)
POST	-0.071	0.059**	<i>Year</i> ₋₂ × <i>EXPECT</i>	0.050
	(-1.28)	(2.28)		(0.50)
EXPECT	0.060**	0.129*	<i>Year</i> ₋₁ \times <i>EXPECT</i>	0.022
	(2.45)	(1.95)		(0.42)
Control variables	Yes	Yes	$Year_0 \times EXPECT$	0.071
Firm FE	Yes	Yes		(0.51)
Year FE	Yes	Yes	$Year_{+1} \times EXPECT$	0.111
Observations	14,822	85,969		(1.53)
Adjusted R ²	0.383	0.300	$Year_{+2} \times EXPECT$	0.143 ^{**} (2.00)
			$Year_{+3} \times EXPECT$	0.132 ^{***} (2.97)
			$Year_{4+} \times EXPECT$	0.181 ^{***} (4.44)
			Control variables	Yes
			Firm FE	Yes
			Year FE	Yes
			Observations	110,464
			Adjusted R^2	0.278

Panel E: Alternative Sample Exclusion Criteria

	Country Exclusions							
Dep. Var. = <i>IMP</i>	U.S.	Australia	U.K.	Indo- Pacific	Post- 2007 EU	Non-IFRS Non-GAAP	Pre-2003 Reforms	Non- board Reforms
<i>POST</i> × <i>EXPECT</i>	0.182*** (4.50)	0.151*** (3.65)	0.153*** (4.03)	0.234 ^{***} (3.60)	0.127*** (3.61)	0.255*** (2.90)	0.205 ^{**} (2.47)	0.138*** (3.26)
POST	-0.008 (-0.35)	0.073* (1.70)	0.039 (1.08)	0.113 ^{**} (2.49)	0.055 (1.57)	0.047 (1.17)	0.039* (1.75)	0.047 (1.02)
EXPECT	-0.030 (-0.79)	0.047 (1.14)	0.022 (0.64)	0.041 (0.88)	0.049 (1.22)	-0.008 (-0.21)	0.034 (1.11)	0.006 (0.15)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	87,054	99,222	100,143	68,876	98,607	60,265	59,256	26,276
Adjusted R ²	0.299	0.269	0.244	0.281	0.290	0.191	0.214	0.314

This table presents results of a series of sensitivity analysis based on variants of equation (1). The tests consider the sensitivity to econometric approach (Panel A), study time period (Panel B), measurement of the market's expectations and impairment (Panel C), identification of event year (Panel D), and the exclusion of sample observations from the identified countries (Panel E). The column labels identify which sample observations are excluded from consideration under each analysis. Variable definitions are provided in Appendix A. *t*-statistics are in parentheses and ***, **, and * represent the significance levels of 10%, 5%, and 1%, respectively. Standard errors are clustered at the country level. Coefficients on the variable of primary interest, *POST* × *EXPECT*, appear in bold and italics when significant at the 5% level or better, and in italics when significant at the 10% level.

	(1)	(2)	(3)	(4)
Dep. Var. =	Delay_ EXPECT	Delay_ Alt_EXPECT1	Delay_ Alt_EXPECT2	Delay_EBIT
POST × Impaired	-0.826*** (-2.67)	-0.371*** (-2.59)	-0.575** (-1.96)	-0.394*** (-4.49)
POST	0.168 (1.59)	0.158 (1.19)	-0.195 (-1.62)	0.279 ^{***} (2.69)
Impaired	1.878 ^{***} (6.74)	0.777 ^{***} (5.76)	1.381 ^{***} (6.23)	0.862 ^{***} (8.93)
Control variables	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	17,780	14,990	13,428	15,991
Pseudo R ²	0.169	0.203	0.328	0.189

Panel A: Poisson Regression

Panel B: Cox Hazard Model

	(1)	(2)	(3)	(4)
Dep. Var. =	Delay_ EXPECT	Delay_ Alt_EXPECT1	Delay_ Alt_EXPECT2	Delay_EBIT
POST × Impaired	0.447 ^{**} (2.30)	0.118 ^{**} (2.02)	0.027 (0.15)	0.110 ^{***} (3.08)
POST	-0.065 (-1.63)	-0.033 (-0.80)	0.012 (0.85)	-0.099*** (-3.51)
Impaired	-1.848*** (-10.44)	-0.707*** (-13.98)	-0.839*** (-8.07)	-0.518*** (-14.61)
Control variables	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	17,780	14,990	13,428	15,991
Prob > ChiSq	< 0.001	< 0.001	< 0.001	< 0.001

This table presents the results using an alternative measure of the timelines of goodwill impairment recognition based on the delay in recognition. The tests present estimates from a Poisson regression model (Panel A) and a Cox hazard rate model (Panel B). Variable definitions are provided in Appendix A. *t*-statistics are in parentheses and ***, **, and * represent the significance levels of 10%, 5%, and 1%, respectively. Standard errors are clustered at the country level. Coefficients on the variable of primary interest, $POST \times Impaired$, appear in bold and italics when significant at the 5% level or better, and in italics when significant at the 10% level.

	Country-Level Enforcement Environment						Firm-Level Reporting Environment	
Dep. Var. = <i>IMP</i>	Reform Approach	Legal System	Economic Development	Rule of Law	Audit	Enforcement	Flexibility	Complexity
$POST \times EXPECT \times Factor$	-0.156 (-1.29)	0.172^{*} (1.95)	0.168 [*] (1.87)	0.116 ^{***} (2.97)	0.013 ^{****} (3.44)	0.013 ^{**} (2.16)	0.127 ^{**} (2.44)	0.269 ^{**} (2.09)
$POST \times EXPECT$	0.235 ^{***} (2.88)	0.029 (0.45)	0.048 (0.79)	-0.032 (-0.56)	-0.096 (-0.98)	-0.071 (-0.63)	0.122 ^{***} (3.74)	0.070 (1.09)
POST	0.064 (1.43)	0.067 (1.55)	0.064 (1.52)	0.055 (1.41)	0.073 (1.53)	0.070 (1.49)	0.065 (1.54)	0.119 [*] (1.89)
EXPECT	0.044 (0.86)	0.029 (0.75)	0.029 (0.78)	0.110** (2.43)	0.022 (0.46)	0.025 (0.53)	0.037 (0.93)	0.101 (1.60)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	104,394	110,464	110,464	110,464	104,394	104,394	110,464	68,893
Adjusted R ²	0.267	0.268	0.269	0.350	0.268	0.268	0.268	0.271

Table 8 Cross-sectional Analyses: Enforcement Environment and Financial Reporting Environment

This table presents results for a series of sensitivity analysis based on equation (1) for the sample alternatively partitioned according to six country-level and two firm- level factors (*Factor*). The country-level factors are intended to capture the approach to board reform (comply-or-explain versus rules-based), legal system (common versus civil law), economic development (developed versus emerging economies), rule of law, and level of accounting enforcement (audit and accounting enforcement). The firm-level factors are designed to capture the flexibility that managers have when determining goodwill and the complexity of the goodwill account. Variable definitions are provided in Appendix A. *t*-statistics are in parentheses and ***, **, and * represent the significance levels of 10%, 5%, and 1%, respectively. Standard errors are clustered at the country level. The coefficients on the variable of primary interest, *POST* × *EXPECT*, appear in bold and italics when significant at the 5% level or better, and in italics when significant at the 10% level.

Dep. Var. = <i>IMP</i>	IFRS	GFC	
<i>POST</i> × <i>EXPECT</i>	0.128 ^{***} (3.27)	0.130**** (4.03)	
POST	0.048 (1.74)	0.066 (1.56)	
EXPECT	0.048 (1.26)	0.036 (0.89)	
EVENT	-0.143*** (-5.03)	0.039 (1.65)	
Control variables	Yes	Yes	
Firm FE	Yes	Yes	
Year FE	Yes	Yes	
Observations	110,464	110,464	
Adjusted R ²	0.277	0.268	

Panel A: Confounding Events

Panel B: Prior Governance Setting and Impact

Dep. Var. = <i>IMP</i>	Ind_Impact	AC_Impact	Gov_Impact
$POST \times EXPECT \times Impact$	1.319*** (2.94)	1.670* (1.98)	2.957*** (5.64)
Impact	-0.160*** (-2.84)	-0.120 (-1.58)	-0.235 ^{***} (-4.76)
$POST \times EXPECT$	0.296 ^{***} (2.93)	0.304*** (2.94)	0.295 ^{***} (2.94)
POST	0.034 (0.82)	0.031 (0.73)	0.035 (0.84)
EXPECT	-0.072 (-0.75)	-0.077 (-0.78)	-0.068 (-0.71)
Control Variables	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	20,164	20,164	20,164
Adjusted R ²	0.379	0.378	0.379

Panel A presents results for equation (1) modified to alternatively control for the effects of two potentially confounding events, IFRS adoption and the GFC. Panel B presents results based on equation (1) for the sample conditioned on degree of impact that board reform is likely to have on the firm. Variable definitions are provided in Appendix A. *t*-statistics are in parentheses and ***, **, and * represent the significance levels of 10%, 5%, and 1%, respectively. Standard errors are clustered at the country level. The coefficients on the variables of primary interest appear in bold and italics when significant at the 5% level or better, and in italics when significant at the 10% level.

Dep. Var. = <i>IMP</i>	Board Independence	Audit Committee Independence	Board and Audit Committee Independence	Separation of Chairperson and CEO
<i>POST</i> × <i>EXPECT</i>	0.063 (1.26)	0.118 [*] (1.72)	0.173 ^{**} (2.28)	0.165 ^{***} (2.72)
POST	0.045 ^{**} (2.01)	0.194 ^{***} (3.71)	0.087 ^{**} (2.21)	0.061 (1.30)
EXPECT	0.043 (1.49)	0.034 (1.02)	0.050* (1.89)	0.037 (0.88)
<i>POST</i> × <i>EXPECT</i> × <i>BOTH</i>			-0.039 (-0.35)	
$POST \times EXPECT \times All$				-0.023 (-0.20)
Control variables	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	7,923	16,160	73,298	94,995
Adjusted R ²	0.319	0.390	0.242	0.242

Table 10Subcomponent Analysis

This table presents results based on equation (1) for the separate effects of each dimension of the board reform (board independence, audit committee independence, and separation of chairperson and CEO roles) on the timeliness of expected goodwill impairment decisions. Variable definitions are provided in Appendix A. *t*-statistics are in parentheses and ***, **, and * represent the significance levels of 10%, 5%, and 1%, respectively. Standard errors are clustered at the country level. The coefficients on the variables of primary interest appear in bold and italics when significant at the 5% level or better, and in italics when significant at the 10% level.