Empirical Essays on Acquirers' Post-M&A Behaviour

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Declaration

I confirm that this thesis is my own work. I am aware of the University's Guidance on the Use of Unfair Means (www.sheffield.ac.uk/ssid/unfair-means). This work has not previously been presented for an award at this, or any other, university. However, some parts of this thesis have been presented in various workshops.

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Abstract

In this thesis, I examine the behaviour of acquirers following mergers and acquisitions (M&A). Specifically, I investigate acquirers' post-M&A earnings management, financial report readability, and management efficiency in three separate chapters.

Chapter 1 examines the earnings management (EM) practices of acquirers following M&A. It looks at the motivations, facilitators, and moderators involved. After M&A, to protect firm and managerial interests which are closely tied to M&A outcomes, acquirers may engage in post-M&A EM. In terms of the specific EM strategy, acquirers who previously used AEM face greater scrutiny risks after the M&A, while increased visibility could draw unwanted regulatory attention, making continued AEM less feasible. Real earnings management (REM) is therefore a more attractive option for post-M&A acquirers, as it is harder for regulators to detect. Conversely, exceptional M&A performance is expected to reduce such REM by reducing the motivation to artificially boost firm performance. Through empirical analysis, I find that during the post-M&A period, acquirers' REM tends to increase, while AEM decreases. The growing complexity and visibility of acquirers' businesses after M&A drive the use of post-M&A REM while good M&A performance tends to mitigate such behaviour.

While Chapter 1 examines how acquirers manage their earnings after M&A, Chapter 2 builds upon this by exploring how acquirers present their financial reporting following M&A. Specifically, Chapter 2 analyses the readability of acquirers' annual reports after M&A and how certain deal characteristics impact this readability. Due to the more complex information environment following M&A, acquirers may experience reduced firm readability. Cross-border M&A (CBM&A) can be further complicated by institutional differences, which may result in additional costs for acquirers. Poor readability would restrict individual investors' trading activities, making it difficult for acquirers to attract local investors. As a way of mitigating the negative impacts of cross-national distance on M&A synergies, cross-border acquirers are likely to improve their financial report readability. The extent to which acquirers improve their readability is expected to be positively correlated with the length of cross-national distance. If the difference between the acquirer and the target is minor, post-M&A integration will be less challenging. Therefore, acquirers with English-speaking targets may exhibit lower financial readability after M&A due to greater business complexity and little motivation to improve readability across integration barriers. The empirical results show that acquires' financial report readability generally decreases after M&A due to greater complexity. However, following cross-border M&A, acquirers tend to improve their readability. The greater the cross-national

distance, the more readable the acquirers' post-M&A financial report. When targets speak English, the readability of acquirers' post-merger financial reports is reduced.

Chapter 2 finds that acquirers face significant post-M&A integration challenges due to cross-national distance, though Chapter 3 provides insights into how governance mechanisms can help acquirers mitigate such challenges. Chapter 3 explores the impact of M&A on the managerial efficiency of acquiring firms, as well as the influence of corporate social responsibility (CSR) practices and CEO power on acquirers' post-M&A managerial efficiency. Cross-national distance between merging firms can complicate post-M&A integration (PMI), reducing acquirers' managerial efficiency. However, corporate governance practices such as CSR programs and strong CEOs can moderate this effect by reducing internal conflicts. CSR practices can improve post-merger managerial efficiency by increasing employee cooperation, improving stakeholder relationships, and gaining investor trust. Powerful CEOs can speed up decision-making and implementation during PMI by leveraging their authority and connections, thus improving post-merger efficiency. Empirically, I find that acquirers' managerial efficiency decreases after an M&A. As a result of cross-national distance, integration challenges hinder management duties, resulting in a decrease in acquirers' managerial efficiency after M&A. By addressing PMI challenges, acquirers' CSR programs and powerful CEOs can enhance this efficiency.

Overall, through a coherent analysis of the motivations and strategies adopted by acquirers regarding earnings management, financial report readability, and managerial efficiency after M&A, this thesis provides insight into how acquirers utilise accounting techniques, financial disclosure, and governance practices to navigate post-M&A challenges and uncertainties.

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I was blessed to have my dear friend Zaiqing Yu accompany me on my PhD journey. She comforted me during stressful times and rejoiced with me in my successes. Her kind words and empathy kept me going. She lightened my load, helping me overcome self-doubt and distress. Her friendship made the PhD journey much less lonely. I'll always treasure our talks, her understanding, and the memories we made. She steadied me through the ups and downs. I couldn't have asked for a better, kinder friend.

Finally, I must acknowledge myself for persevering, embracing solitude, remaining determined and hopeful, and continuously working hard towards my goals. I have learned that patience and persistence pay off. The fight goes on.

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Acronyms

AEM Accrual-Based Earnings Management

CAR Cumulative Abnormal Return

CBM&A Cross-Border Mergers & Acquisitions

CEO Chief Executive Officer

CFO Chief Financial Officer

COGS Cost of Goods Sold

CSR Corporate Social Responsibility

EM Earnings Management

EWI Employee Welfare Index

FASB Financial Accounting Standard Board

GAAP Generally Accepted Accounting Principles

GDP Gross Domestic Product

IASB International Accounting Standards Board

IPO Initial Public Offering

M&A Mergers & Acquisitions

PMI Post-Merger Integration

R&D Research and Development Expenditures

REM Real Earnings Management

SEO Seasoned Equity Offering

SG&A Selling, General and Administrative Expenses

SOX Sarbanes–Oxley Act

Introduction

1 Background to the thesis

Mergers and acquisitions (M&A)[1] refer to the consolidation of companies or assets through various types of financial transactions (Gaughan, 2010). By allowing merging companies to restructure their businesses through the acquisition, reorganization, or divestiture of assets and resources, they facilitate company development and longevity (Karim and Capron, 2016). Due to this, M&A has become a more prevalent global business strategy, enabling companies to expand into new markets or business segments, maximizing growth opportunities.

Previous research on M&A provides valuable insights into historical patterns, evaluation methods, and motivations for such deals (e.g., Rhodes–Kropf et al., 2005; Zollo and Meier, 2008; Bao and Edmans, 2011; Alexandridis et al., 2012; Fatima and Shehzad, 2014; Malik et al., 2014; Song et al., 2021). While the literature on M&A is abundant, most of it focuses on the period preceding the deal and during the deal itself. There is a scarcity of research that delves into the post-M&A actions and strategies of acquiring firms, beyond the common evaluations of operational performance and stock returns.

"Mergers should not be viewed as a stopping point in defining a firm's boundaries. Rather, each merger should be viewed as an initial step that sets in motion a vigorous restructuring process that resets the boundaries of the acquiring firm"(Maksimovic et al., 2011, p.341). While M&A offer the potential for synergies and gains, reaping these benefits depends heavily on the post-merger period (e.g., Bodner and Capron, 2018; Oh and Johnston, 2020). Following M&A, the integration process is complex and dynamic, involving both strategic integration through the combination and reconfiguration of resources, as well as the sociocultural integration of human and cultural factors (Bodner

[1] Merger and acquisition are not the same terms. In acquisition, one organization purchases a part or whole of another organization while in merger, two or more organizations combine to form one organization (Alao, 2010). However, they are often used interchangeably. In this thesis, the terms merger and acquisition are used interchangeably.

and Capron, 2018). Both integration processes tend to be challenging due to the inherent differences between merging organizations and the various obstacles that arise. For example, cross-border M&A creates significant integration barriers and incurs extra integration costs due to economic, political, social, and cultural differences (Moeller and Schlingemann, 2005; Li et al., 2016; Boateng et al., 2019). As a result, overcoming integration challenges and securing synergies from M&A can be a major concern for acquirers.

Moreover, substantial M&A payments can also put significant pressure on acquirers to demonstrate value creation from the deal during the post-M&A period. Managers who fail to convince shareholders that the M&A will generate significant value may be dismissed, while the acquiring firms may experience declines in market performance (Agrawal et al., 1992; Lehn and Zhao, 2006). The decisions and actions employed by the acquirers regarding these post-merger issues have a significant impact on whether M&A deals result in firm value creation or destruction in the long run. However, as the majority of post-M&A studies concentrate on the operational and stock performance of the acquiring firms, there is a lack of understanding regarding how acquirers strategically respond to post-M&A challenges, alter their behaviours, and the impact of these modifications on integration results.

This thesis aims to address critical research gaps regarding acquirers' post- M&A behaviour by examining the causes as well as the impact of changes in the acquirers' ways of operating following the M&A. Throughout this thesis, I seek to uncover answers to the following topics and questions: The impacts of M&A on acquirers' earnings management practices and the motivations, facilitators, and moderators of acquirers' post-M&A EM; The influences of M&A on the readability of acquirers' annual reports, as well as the determinants of acquirers' post-M&A readability; The effects of M&A on the managerial efficiency of acquiring firms after the deal and how certain corporate governance practices affect their post- M&A managerial efficiency.

2 Research questions and thesis structure

This thesis examines how acquirers respond to post-M&A challenges, adapt their behaviour, and thereby influence integration outcomes during the post- M&A period. Specifically, it looks at acquiring firms' earnings management, financial readability, and managerial efficiency after M&A. This section delivers insights into each chapter of this thesis.

Chapter 1 discusses acquirers' post-M&A earnings management practices. Specifically, I address the following questions: (i) "Do acquirers manage earnings following M&A ?", (ii) "What incentives do they have to manage earnings during the post-M&A period?", (iii) "What tools do they use for executing earnings management following M&A?" and (iv) "What factors encourage (discourage) acquirers to engage in post- M&A earnings management?"

Previous literature on earnings management in M&A has emphasized the prevalence of pre-M&A earnings manipulation by the acquirers. According to Dechow et al. (1996) and Jiambalvo (1996), stock-for-stock M&A provide acquirers with strong earnings management motivations. This is because when an agreed deal value has been reached, the more the acquirer's stock price is inflated through earnings management on the merger agreement date, the fewer shares the acquirer needs to pay. Although pre-merger earnings management helps with M&A payment reduction in stock-swap deals, it results in acquirers' stock price reversal and long-term underperformance following the merger (e.g., Louis, 2004; Huang et al. 2019).

During the post-M&A period, acquirers' EM motivations may exist and be strengthened by a more complex and less transparent environment as they are pressured to show value creation from the M&A deals and protect managerial interests closely associated with those results. However, while numerous studies have examined the behaviour of acquirers' pre- M&A earnings management and its implications, to the best of my knowledge, only Zhang (2017) has explored acquiring firms' EM behaviour after M&A (Erickson and Wang, 1999; Louis, 2004; Gong, Louis and Sun, 2008;

Higgins, 2013; Karim and Capron, 2016; Huang, Goodell and Zhang, 2019). Zhang (2017) investigates acquiring firms' EM practices both before and after M&A, links acquirers' EM strategies to their M&A payment method and examines the long-term outcome of such EM practices.

The lack of empirical evidence regarding acquirers' post-merger EM is a significant gap in both EM and M&A research, which serves as the primary motivation for Chapter 1. Varying from Zhang (2017), I concentrate on the post-M&A context. I not only examine the existence of acquirers' post-merger earnings management but also delve into the motivations behind it and the factors that either augment or mitigate such practices. I hypothesise that acquirers manage earnings following M&A and they prefer real earnings management (REM) to accrual-based earnings management (AEM). M&A-induced business complexity and visibility of acquirers are anticipated to drive their use of REM following the M&A while good M&A performance moderates it.

Chapter 2 addresses the questions of "What impact do M&A have on the readability of acquirers' financial reports?" and "What particular characteristics of M&A contribute to such an impact?" Previous studies on corporate financial readability have shown that numerous companies have low levels of financial readability due to factors such as poor performance, earnings manipulation, and complex information (Healy, 1977; Lebar, 1982; Jones and Shoemaker, 1994; Bloomfield, 2008; Lo, Ramos and Rogo, 2017; Bushee, Gow and Taylor, 2018). To attract investors and maintain trading volume, firms have been found to improve the readability of their disclosures (Miller, 2010; Rennekamp, 2012; Lawrence, 2013). However, there is limited understanding of the circumstances under which firms may choose to prioritize the needs of investors and produce more readable annual reports, as most existing studies on financial readability focus on the measurements, determinants, and impact on report readability.

Chapter 2 aims to expand research on annual report readability, particularly in post-merger contexts. Specifically, I hypothesise that acquirers' financial readability reduces after the merger due to M&A-induced complexity. However, following cross-border

M&A, acquirers are expected to improve their financial readability to mitigate integration barriers and attract local investors. The greater the distance between the acquirer and the target, the more improvement in financial readability can be expected from the acquirers. Accordingly, following mergers with English targets, acquirers tend to be less motivated to make their reports more readable for users who may have language barriers. As a result, it is hypothesised that English-speaking targets are associated with reduced financial readability by post-merger acquirers. In Chapter 2, I utilise the alternative M&A-induced complexity measures presented in Chapter 1 as my primary M&A-induced complexity measure.

Lastly, Chapter 3 examines the impact of M&A on the managerial efficiency of acquiring firms and the role of corporate social responsibility practices and strong leadership in enhancing the acquirers' post-merger managerial efficiency. Managerial efficiency, as defined in previous studies, is a mix of personal traits, skills, and social roles that contribute to excellent job performance. It is measured by how well managers transform resources into revenue through strategic planning, decision-making, communication, leadership, and problem-solving (Boyatzis, 1991; Demerjian et al., 2012; Chong, 2013). Yang and Liu (2012) find that mixed ownership, cost management, profit-making capabilities, and benchmark adoption are the key factors influencing managerial efficiency in Taiwanese banks.

In the post- M&A context, managerial efficiency refers to the efficiency of acquiring firms' management teams in completing the integration process and converting acquired resources into M&A synergies. While there is a large body of literature on post- M&A firm performance, very few studies have examined the evolution of managerial efficiency as a key corporate capability following M&A (Agrawal et al., 1992; Agrawal and Jaffe, 2003; Knapp et al., 2005; Yang and Liu, 2012; Malikov et al., 2021). The objective of Chapter 3 is to contribute to the literature by examining the variation in acquirers' managerial efficiency following the M&A as well as the factors influencing this variation.

Following M&A, the managerial efficiency of acquirers which can be attributed to task-specific performance, is expected to be impaired by integration barriers due to differences between merging companies. The greater the distance between the acquirer and the target, the more challenging post-M&A integration (PMI), leading to a reduction in the acquirer's managerial efficiency. However, previous studies have shown that acquirers' CSR practices like employee-friendly policies reduce employee resistance to M&A and improve integration outcomes (Ertugrul, 2013; Fauver et al., 2018). Consequently, CSR programs are anticipated to enhance acquirers' post-M&A managerial efficiency by motivating employee output and stimulating stakeholder trust. Moreover, I hypothesise that powerful CEOs improve post-M&A managerial efficiency for acquirers as their authority can hasten decision-making and implementation during the integration process (Bergenhenegouwen, 1996). Chapter 3 uses the same method as Chapter 2 for measuring cross-national distances.

3 Contribution to the literature

The post-M&A strategic actions of the acquirers have significant implications for shareholders, investors, and regulatory agencies across the world. It is crucial to understand the practices that acquirers may undertake after M&A deals to safeguard stakeholder interests and maintain market integrity. This thesis offers several distinct contributions to the existing literature on the effects of M&A on acquiring firms. A variety of aspects of M&A's impacts on acquirers' behaviour are explored throughout the thesis, with each chapter discussing its specific contributions. Through the examination of factors influencing the diverse outcomes of M&A on the strategic behaviours of acquiring firms, this thesis offers a more nuanced understanding of the various transformations and dynamics that can result from M&A activity. An emphasis is placed on M&A as a starting point for a vigorous restructuring process that redefines the boundaries of acquiring firms.

Chapter 1 of this thesis, to my knowledge, is the first study to comprehensively explore how M&A shape acquirers' earnings management behaviour. I show that, following M&A, acquirers increase their real earnings management (REM) and

decrease their accrual-based earnings management (AEM), perhaps, due to the increased business complexity but also the increased visibility. Increased complexity following M&A creates opportunities for earnings management, but increased visibility also heightens the risk and cost of scrutiny for AEM. Acquirers appear to balance these factors by increasing REM (which is not under the purview of any financial reporting regulations) but also decreasing AEM (which is more restricted by regulatory oversight).

While prior studies mainly focused on acquirers' pre- M&A earnings management (EM) through AEM, Chapter 1 expands on those findings by demonstrating acquirers' preference for using REM following M&A (e.g., Dechow et al., 1996; Erickson and Wang, 1999; Louis, 2004; Gong and Sun, 2008; Higgins, 2013; Huang et al., 2019). Furthermore, this study builds on Zhang's (2017) examination of acquirers' EM practices around M&A and delves into the post-merger context. Beyond Zhang (2017), it elucidates why acquirers favour REM over AEM following M&A, how certain deal characteristics incentivize more aggressive EM practices, and how factors like M&A underperformance can drive acquirers' continued reliance on EM to portray M&A success. Finally, contrary to most previous literature that predominantly discusses acquirers' EM practices during the pre-and immediate period of M&A, Chapter 1 links acquirers' post-M&A EM behaviour to their M&A performance, highlighting that the completion of an M&A does not mean the end of acquirers' EM, but rather the beginning of new motivations to do so (e.g., Datta et al., 1992; King et al., 2004; Louis, 2004; Gong and Sun, 2008; Higgins, 2013; Akben-Selcuk, 2015; Rao-Nicholson et al., 2016).

As with Chapter 1, Chapter 2 is the first known study to investigate the effects of M&A on the readability of acquirers' financial reports. It discovers that the overall readability of these reports decreases after an M&A, due to greater complexity. The study also identifies cross-national distance as a significant driver of acquirers' post-M&A readability and provides evidence of strategic improvements to readability following foreign acquisitions to facilitate integration. These novel findings underscore

the importance of readability in addressing cross-border barriers and provide valuable insights into how M&A influence financial reporting.

Chapter 2 expands on previous studies showing detailed explanations and complex information negatively affect firm readability, and further reveals that firms have self-motivating reasons to voluntarily enhance financial readability (e.g., Bloomfield, 2008; Rutherford, 2016; Guay et al., 2016; Lundholm et al., 2014). Moreover, it builds on Lundholm et al. (2014) and Lang and Stice-Lawrence's (2015) arguments that the institutional environment shapes financial readability across countries. As demonstrated in this chapter, acquirers are more likely to improve post-merger readability when the cross-national distance between merging firms is greater. This new insight advances the current understanding of how acquirers leverage readability strategically to facilitate cross-border deals. Lastly, the finding that acquirers who purchase English-speaking targets exhibit less pressure to boost readability supports the contentions of Kroon et al. (2015), Kedia and Reddy (2016), and Navío-Marco et al. (2016) around shared language reducing M&A costs and improving performance. As such, Chapter 2 provides rare empirical evidence confirming the benefits of linguistic alignment in M&A, specifically the reduction of the need to improve post-merger readability.

Chapter 3 presents the first empirical investigation into how M&A influence acquirers' managerial efficiency, which differs from previous research on post-merger performance by focusing on managerial efficiency with a unique metric that separates the managerial contribution to firm performance from the overall efficiency of acquirers. The study reveals the negative effects of M&A on acquirers' managerial efficiency due to post-merger integration challenges. These findings further previous research, which shows that PMI challenges caused by firm differences negatively affect M&A outcomes and PMI simplicity caused by firm connections positively affects them (Ionascu et al., 2005; Li et al., 2016; Bodner and Capron, 2018; Oh and Johnston, 2020; Wang and Larimo, 2020). By distinguishing managerial efficiency from accounting and stock outcomes, the study also provides novel insight into the root causes of value destruction

in M&A. Through investigation and identification of reduced managerial efficiency as a key underlying mechanism, these findings extend previous studies observing post-merger underperformance (e.g., Agrawal et al., 1992; Agrawal and Jaffe, 2000; Knapp et al., 2005; Malikov et al., 2021).

Moreover, Chapter 3 builds upon past research suggesting that CSR practices can enhance firm performance, M&A synergies and facilitate post-merger integration (Ertugrul, 2013; Javed et al., 2014; Guo et al., 2016; Symitsi et al., 2018). However, unlike these prior findings, my study shows that robust CSR can directly contribute to the managerial efficiency of acquirers, rather than simply improving overall firm performance. Lastly, by showcasing the effectiveness of powerful CEOs in navigating PMI challenges and boosting managerial efficiency, this chapter advances existing research evidencing that influential leadership can promote organizational cohesion and create value during times of significant transactions, such as M&A (Rhodewalt and Davison Jr., 1986; Adams et al., 2005; Li et al., 2019). By emphasising the importance of backing managers and governance in times of uncertainty, Chapter 3 expands the academic understanding of how to achieve M&A success.

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Chapter 1

Do M&A Induce Earnings Management?

Do M&A Induce Earnings Management?

Abstract

This study delves into the earnings management behaviours of acquiring firms after mergers and acquisitions (M&A), exploring the driving forces behind such actions and the elements that may inhibit them. Analysing a dataset of 3,728 public US acquirers from 1985 to 2018, the findings reveal a notable shift in earnings management strategies post-M&A: an increase in real earnings management accompanies a decrease in accrual-based earnings management. This transition is largely attributed to the enhanced complexity and visibility resulting from M&A activities. While the intricate business landscape post-merger offers fertile ground for real earnings manipulation, the heightened visibility subjects accrual-based strategies to increased scrutiny, making real earnings management the more favoured approach among acquirers. Furthermore, the study observes a negative correlation between the extent of real earnings management and the success of the M&A, indicating that effective mergers may naturally deter the need for such financial manipulations.

Keywords: Accrual-based earnings management; Real earnings management; M&A

1. Introduction

This chapter explores the earnings management (EM) practices of acquirers following M&A[2]. EM refers to the use of accounting practices to present a favourable view of a company's operations and finances. The process entails manipulating financial data and adhering to the generally accepted accounting principles (GAAP), to achieve predetermined objectives and expectations. To deceive stakeholders about a company's financial health or to secure more beneficial contracts, companies may be incentivized to manipulate their earnings (e.g., Healy and Wahlen, 1999; Holthausen and Leftwich, 1983; Roychowdhury, 2006).

Prior studies generally explore EM behaviour by investigating the motives for EM (e.g., Burgstahler and Dichev, 1997; Alsharairi and Salama, 2011). This strand of literature suggests that managers engage in EM to beat or meet earnings targets (e.g., Peasnell et al., 2000; Kaplan et al., 2007), hide firm underperformance (e.g., Ghazali et al., 2015; Campa, 2019), inflate stock prices (e.g., Louis, 2004; Gong and Sun, 2008), avoid taxation (e.g., Blaylock and Wilson, 2012), and increase managers' performance-related rewards (e.g., Bergstresse and Philippon, 2006). Another strand of the literature examines the consequences of EM and finds that it could negatively impact subsequent operating performance (e.g., Gunny, 2005). The cost of capital also increases when a company is found to be manipulating earnings (e.g., Dechow et al., 1996).

Discretionary accruals and real activities are both viable EM options. Altering accounting methods or estimates to manipulate actual transactions is how accrual-based earnings management (AEM) is accomplished, to achieve the desired financial reporting results (e.g., Schipper, 1989; Healy and Wahlen, 1999; Zang, 2012). Unlike the standard method of AEM, which assumes that cash flows are independent of accruals decisions, real earnings management (REM) involves intentionally manipulating reported earnings through the timing and structure of an operation,

[2] The terms merger, acquisition, takeover, and M&A are used interchangeably in this paper.

investment, or business transaction, with consequent cash flow effects (e.g., Roychowdhury, 2006).

As earnings have a significant impact on firm stock prices, firms tend to engage in income-increasing EM before key corporate events to inflate their stock prices, (e.g., DeAngelo, 1986; DeAngelo, 1990). For instance, Initial Public Offering (IPO) and Seasoned Equity Offering (SEO) firms manage their earnings upwards to gain a higher price premium (e.g., Teoh et al., 1998b; Rangan, 1998; Cohen and Zarowin, 2010; Alhadab et al., 2015; Alhadab and Clacher, 2018). However, EM before IPOs and SEOs can result in negative consequences that encourage further EM after these events (Teoh et al., 1998a; DuCharme et al., 2001; Nagata, 2013). Teoh et al. (1998a) suggest that pre-IPO EM can lead to reduced market returns and underperformance. To prevent pre-IPO EM price fluctuations caused by overvaluation, issuers manage post-IPO earnings upwards (Teoh et al., 1998a; Premti and Smith, 2020; Carvalho et al., 2020). Like IPO issuers, SEO firms overstate their earnings to minimize pre-SEO EM's adverse impact (Teoh et al., 1998b; Rangan, 1998; Cohen and Zarowin, 2010).

In M&A, acquirers tend to manage their earnings before the deal. There is substantial evidence to suggest that stock-for-stock M&A present acquirers with high EM incentives (e.g., Dechow et al., 1996; Jiambalvo, 1996; Erickson and Wang, 1999; Louis, 2004; Higgins, 2013). This is because, with an agreed deal value, the higher the acquirer's stock price on the M&A agreement date, the fewer shares the acquirer must pay for the deal. However, pre-merger EM firms tend to experience a post-merger stock price reversal and long-term underperformance following a merger, which may lead to lawsuits from investors and stakeholders (e.g., Louis, 2004; Gong and Sun, 2008; Huang et al., 2019).

While extensive studies have explored the acquirers' EM behaviour before M&A, there is a lack of research on acquirers' post-M&A EM practices (e.g., Dechow et al., 1996; Jiambalvo, 1996; Erickson and Wang, 1999; Louis, 2004; Gong and Sun, 2008; Higgins, 2013; Karim, 2016; Huang et al., 2019). As far as I am aware, Zhang (2017) is the only study to examine the EM behaviour of acquiring firms before and after

M&A. This lack of empirical evidence on post-M&A EM in acquirers serves as the impetus for my research.

This study aims to assess whether the degree of EM practices is substantial and has significant economic importance. I then examine the motives and determinants of the EM practices observed in post-M&A deals. Unlike Zhang (2017), I focus on the post-M&A context as the merger completion signals the start of a crucial restructuring process that is vital to the firm's long-term development (Maksimovic et al., 2011; Malikov et al., 2021). During the post-merger period, a poor M&A outcome increases the firm's risk of facing a hostile takeover and management replacement (Jensen, 1986; Mitchell and Lehn, 1990; Bao and Edmans, 2011). Inflating earnings before a merger leads to price reversal after the deal, which harms shareholders (Louis, 2004; Higgins, 2013). A better understanding of acquirers' post-merger EM behaviour is thus necessary for identifying post-merger firm difficulties and safeguarding stakeholder interests.

Following the merger, the acquirers' EM incentives may be strengthened due to the pressure to demonstrate value creation from M&A and protect managerial interests closely tied to the M&A results. Firstly, due to the market discipline function, acquirers who engage in value-diminishing M&A are more likely to become new takeover targets (e.g., Jensen,1986; Mitchell and Lehn, 1990). Accordingly, their managers will face a high dismissal risk (Lehn and Zhao, 2006). Under such circumstances, post-merger EM can be used by managers to enhance reported firm performance and potentially avoid being terminated for unsatisfactory M&A results (e.g., Ravenscraft and Scherer, 1989; Morck et al., 1990; Agrawal, 2000; Malmendier and Tate, 2008; Higgins, 2013).

Secondly, after the merger, a more complex business environment resulting from the increased size and firm diversification leads to greater information asymmetry, which presents an advantageous condition for acquirers to manage their earnings opportunistically (e.g., Dye, 1988; Trueman and Titman, 1988; Cormier et al. 2013). Building on these discussions, I hypothesise that acquirers manage their earnings

following the M&A (H1), as suggested by Zhang (2017), who finds that acquiring firms keep managing their earnings after the merger.

As for acquirers' post-M&A EM strategy, due to the higher level of publicity, a more visible post-M&A firm may attract the attention of regulators, which restrains the AEM (Ewert and Wagenhofer, 2004). Prior studies have shown that both AEM and REM are used by acquirers to increase earnings before M&A (Zhu and Lu, 2013; Chang and Pan, 2020). However, evidence shows that 51% of acquirers involved in pre-merger REM continue using REM after the M&A while only 8% of acquirers keep employing AEM following the M&A (Zhang, 2017). This finding is in line with previous research, such as Louis (2004), which indicates that acquirers do not prefer the AEM following M&A if they have used it previously. This is because continuing AEM poses an increased risk of scrutiny following a merger while REM is more difficult to detect, allowing firms to meet their EM goals more efficiently. Given the trade-offs between the two EM techniques, REM is expected to be the preferable option for post-merger acquirers (e.g., Zang, 2006; Zhang, 2017; Lennox et al., 2018; Haga et al., 2018).

Furthermore, Zhao et al. (2012) discover that in takeovers, less protected managers tend to employ REM to inflate earnings temporarily. In this regard, if post-merger managers perceive the threat of takeover due to their poor performance, they may use REM to safeguard their jobs. In light of the discussion above, I further hypothesise that acquirers prefer REM to AEM during the post-merger period (H2).

In terms of the factors influencing acquirers' post-merger EM practices, the following factors are examined: Firstly, greater firm complexity following the merger generates information asymmetry and provides a favourable environment for acquirers' EM behaviour (e.g., Dye, 1988; Trueman and Titman, 1988; Cormier et al. 2013). Given that REM is anticipated to be the primary EM tool following the merger, my fourth hypothesis posits that acquirers' post-merger REM levels will rise with their M&A-induced complexity after the merger (H3). Unlike business complexity, which can decrease a firm's transparency, M&A-induced visibility attracts more market

attention (Byun and Roland, 2020). As a means of achieving their financial goals, post-merger acquirers are more likely to engage in REM rather than AEM, which can be detected by regulators. Therefore, the fourth hypothesis is formulated as acquirers' post-merger REM level increases with greater visibility following the merger (H4). Lastly, since poor M&A performance is expected to be a strong motivator of acquirers' post-merger EM behaviour, good M&A performance may moderate such behaviour. According to Zhao et al. (2012), when acquiring firms' managers face the risk of losing their positions due to poor M&A results, they are likely to apply REM. Accordingly, the fifth hypothesis proposes that good M&A performance can moderate acquirers' post-merger EM, particularly REM (H5).

To test these hypotheses, I utilise a similar corporate event analysis approach as Fauver et al. (2017), Chen et al. (2020), and Hu et al. (2020), and limit my sample period to the [−3, +3] year M&A event window to minimize the impact of confounding events. I collect data from the Compustat North America database for financial information of all US-listed companies between January 1, 1985, and December 31, 2018. I also obtain M&A data from the Securities Data Corporation Platinum (SDC) Mergers and Acquisitions database, which contains information on all US-listed companies that carried out M&A transactions during the same period. I gather data on board characteristics from the Boardex database and acquire the business complexity measure from Loughran and McDonald (2020).[3] I employ the modified Jones model by Dechow et al. (1995) and the measures proposed by Roychowdhury (2006) to capture the acquirers' EM through accruals and real activities respectively. I merge the firm financial information with the M&A data using CUSIP and year as the identifiers to create my primary dataset, then incorporate the complexity data and board

[3] This study by Loughran and McDonald (2020) analyses the complexity of all 10-K filings from 1996 to 2021. The data is freely available for academic research and can be accessed at https://sraf.nd.edu/complexity/.

information into the main dataset. My final sample consists of 17,223 firm years for 3,728 US public acquirers over the period 1985–2018.[4]

The empirical findings of my study are consistent with all hypotheses. The evidence shows that acquirers do manage earnings following M&A and they prefer REM to AEM. These findings align with those of Zhang (2017), who discovers that the continuity effect of the acquirer's REM is more pronounced than their AEM following M&A. Acquirers who have adopted AEM tend to switch to REM rather than continue using AEM. Furthermore, I find the M&A-induced complexity and firm visibility encourage acquirers' post-merger REM practices. These findings further reinforce the notion that firm diversification, which is a measure of business complexity, aggravates the likelihood of REM (e.g., Jiraporn et al., 2008; El Mehdi and Seboui, 2011; Farooqi et al., 2014). They also concur with He and Yang (2014) and Zang (2006), who have demonstrated that transparency constraints firms' AEM and fosters firms' REM, owing to the heightened costs of employing AEM. Finally, my evidence indicates that exceptional M&A performance can mitigate acquirers' post-merger EM behaviour, typically their REM, by diminishing the EM incentive to protect managerial interests associated with M&A outcomes. These findings align with the observations by Lehn and Zhao (2006) regarding managers' EM incentives to minimize the risk of dismissal resulting from poor M&A outcomes.

This study contributes to the literature in several ways. First, it adds to the earnings management literature in the post-M&A context. Although acquirers' pre-M&A EM behaviour has been widely explored, very few studies have investigated their EM practices following M&A (e.g., Dechow et al., 1996; Jiambalvo, 1996; Erickson and Wang, 1999; Louis, 2004; Gong and Sun, 2008; Higgins, 2013; Karim, 2016; Zhang, 2017; Huang et al., 2019). As opposed to previous studies that documented acquirers'

[4] US-listed acquirers are selected as the sample firms because they are more representative of global acquirers given the leading status of the US economy and capital market worldwide. The justification for the choice of acquirers is discussed in section 3.1.

pre-merger EM primarily through AEM (e.g., Erickson and Wang, 1999; Louis, 2004; Gong and Sun, 2008; Higgins, 2013), I find that acquirers prefer REM following M&A.

Second, building upon the groundwork laid by Zhang (2017), this study significantly expands the scope by analysing a more extensive dataset of 3,728 US public acquirers from 1985 to 2018, offering a deeper historical perspective and insight into evolving EM practices. Unlike Zhang's findings, which indicate the use of both accruals and real earnings management with some complementary effects, my research reveals a post-M&A shift towards increased REM and decreased AEM. Furthermore, I delve into the motivations behind such shifts, attributing them to the intricate dynamics of post-acquisition business environments not the M&A payment methods. This nuanced change underscores the adaptability of EM strategies in response to the heightened complexity and visibility acquirers face after M&As, suggesting a strategic pivot towards REM to navigate the scrutiny associated with AEM.

Third, beyond Zhang (2017), my analysis extends to the impact of M&A performance on EM practices, uncovering that REM diminishes with successful M&A outcomes. This finding adds a critical dimension to our understanding of post-M&A financial strategies, suggesting that the perceived need for REM is significantly reduced when acquisitions achieve their strategic and financial objectives. Moreover, this observation posits that successful M&A activities may inherently foster a more transparent and sustainable financial reporting environment.

Overall, this study enhances the academic understanding of how firms behave in an opportunistic EM manner following M&A. The findings have significant implications for both research and practice, as they highlight the importance of post-M&A firm practices and raise awareness of acquirers' opportunistic behaviour to cover M&A failures. To tackle the post-M&A EM issue, policymakers can enhance disclosure requirements and increase auditor vigilance. Providing guidance and implementing regulations that focus on acquirers' post-M&A REM is crucial for protecting investors and maintaining market integrity.

The following sections of this chapter are organized as follows: Section 2 reviews the relevant literature and develops the hypotheses of this study. Section 3 discusses the data selection process and discusses the data, models, and variables. Section 4 presents and discusses my empirical results and assesses their robustness. Finally, Section 5 concludes.

2. Related literature and hypotheses development

2.1 Earnings management around key corporate events

Under GAAP, firms have the autonomy to manage their accounts (Palliam and Shalhoub, 2003). Holthausen et al. (1995) define EM as the practice that managers choose to report earnings in regulatory and contractual contexts in beneficial ways to the firm. Healy and Wahlen (1999) contend that EM takes place when company managers manipulate financial statements using their judgment to deceive stakeholders about a firm's economic performance or to influence contractual outcomes that are influenced by accounting figures.

From the perspective of agency theory, EM occurs when the costs of not managing earnings exceed the cost of conducting it (Watts and Zimmerman, 1986). Due to the high cost and difficulty of detecting EM, the regulatory restrictions on such practices are limited, leading managers to engage in EM for self-interested reasons such as maintaining control and seeking financial benefits (e.g., Erickson and Wang, 1999; Kaplan et al., 2007; Das et al., 2011). For example, Lasalle et al. (1993) suggest that firms undergoing executive changes are likely to engage in EM to demonstrate the CEO's managerial abilities through improved firm performance. Additionally, Pourciau (1993) finds that incoming executives tend to decrease a firm's earnings in the year they take over and increase them in the following year, likely as a means of enhancing their managerial performance. DeAngelo (1988) argues that executives may increase earnings through discretionary accruals to maintain control over the firm during proxy contests.

During critical corporate events like IPOs, SEOs, and M&A, firms often employ EM to enhance their market value as a company's worth is heavily dependent on its earnings (Foster, 1977; Beaver et al., 1979; DeAngelo, 1986; DeAngelo, 1990). The accounting information of issuers is limited before IPOs. Research indicates that firms often manipulate their earnings upwards prior to IPOs to obtain a higher price premium (e.g., Alhadab et al., 2015; Alhadab and Clacher, 2018). IPO issuers with higher levels of AEM tend to receive higher valuations from investors (DuCharme et al., 2001).

However, evidence shows that pre-IPO earnings management causes negative market returns and firm underperformance after the IPO (e.g., Teoh et al., 1998a; DuCharme et al., 2001; Nagata, 2013). Teoh et al. (1998a) find that IPO issuers with unusually high accruals in the IPO year experience three-year poor stock return performance after the IPO. Alhadab et al. (2015) find that a high EM level through accruals and real activities during the IPO year contributes to a higher probability of IPO failure and lower survival rates in post-IPO periods. Nagata (2013) and Gao et al. (2017) argue that pre-IPO EM decreases institutional investors' bid prices and leads to firms' underpricing afterwards due to EM firms' poor earnings quality perceived by the investors.

To mitigate the adverse impact of pre-IPO overstated earnings and preserve the firm reputation, issuers often engage in post-IPO EM (e.g., Teoh et al., 1998a; Premti and Smith, 2020; Carvalho et al., 2020). Teoh et al. (1998a) suggest that firms managing earnings upward before the IPO are likely to manage their first reported earnings after the IPO. By analyzing a sample of 3,293 IPOs from 29 countries, Premti and Smith (2020) find that IPO firms tend to present significantly positive accruals after the IPO. Carvalho et al. (2020) indicate that post-IPO EM may be motivated by managers' incentives to decrease the influence of post-IPO earnings reversal on their reputation. They suggest the other motivation behind post-IPO EM is to maintain a firm's share

prices during the lock-up period[5] before shareholders can sell their shares. Before the end of the IPO lock-up period, keeping post-IPO earnings inflated could help shareholders benefit from market overvaluation once they can trade shares.

Similar to IPO issuers, SEO firms engage in income-boosting pre-SEO EM to raise their asking prices and follow up with post-SEO EM to reduce the negative impact of the pre-SEO EM activities (e.g., Teoh et al., 1998b; Rangan, 1998). Extensive studies document that firms' pre-SEO EM for inflating share prices causes subsequent market disappointment and share price reversal (e.g., Teoh et al., 1998b; Kim and Park, 2005; Cohen and Zarowin, 2010). Rangan (1998) finds that post-SEO EM exists for two reasons. One is to reduce the negative effects of pre-SEO EM, such as share price drops and lawsuits. The other is to keep share prices high until the lock-up period ends, allowing insiders to benefit from selling overvalued shares.

Previous literature on earnings management around M&A has primarily focused on the pre-merger EM of firms, particularly suggesting that acquirers tend to manage their earnings before M&A to inflate stock prices and reduce M&A transaction costs (e.g., Dechow et al., 1996; Jiambalvo, 1996; Gong and Sun, 2008; Karim, 2016). This is because, in many M&A transactions, acquirers purchase targets' shares with their stocks. The number of acquirers' shares paid for targets' shares usually depends on the acquirers' stock value on the M&A agreement date. Therefore, the higher the acquirers' stock prices on the M&A agreement date, the fewer shares acquirers have to pay for the deal. For instance, by investigating abnormal accounting accruals of 55 stock-for-stock acquirers completing their M&A during the period from 1985 to 1990, Erickson and Wang (1999) find that acquirers manage their earnings upward in the quarter before the announcement of the M&A agreement to reduce the cost of buying the target.

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[5] Ranging from 90 to 180 days, the IPO lock-up period is a contractual restriction preventing a firm's shareholders from selling shares for a stated period after IPOs (e.g., Bradley et al., 2001). It helps to avoid the flooding of the market with too many shares, leading to lower firm stock prices and investors' confidence in firms' prospects (e.g., Arthurs, 2009).

In a high M&A activity context, known as a "hot market," the pre-merger EM becomes more distinct, profitable, and less harmful as market participants are more likely to inefficiently price value-irrelevant discretionary accruals (Botsari and Meeks, 2018). Comparing the periods with rising stock prices and vigorous M&A activity (e.g., 1997–2000) and periods with lower stock prices and fewer M&A transactions (e.g., 2000–2002), Botsari and Meeks (2018) find that pre-merger EM stock acquirers can, on average, increase their market value by almost 2.4% or £34 million in a hot market. Additionally, in areas with weaker investor protection, acquirers tend to manipulate their accruals more aggressively, regardless of shareholder interest, due to a lack of restrictions (Karim, 2016).

While acquirers can use EM tools to benefit from the better price of the transaction, research suggests that M&A only have a 50% survival rate due to factors such as serial acquisitions, CEO overconfidence, acquirer-target relatedness, and shareholder voting or activism (e.g., Renneboog and Vansteenkiste, 2019). However, survival does not guarantee success in M&A. Rather, it should be viewed as the beginning of a restructuring process, during which acquirers must address new challenges like pre-merger EM consequences and generate M&A synergies in a dynamic environment (Maksimovic et al., 2011).

To my knowledge, there have been few previous studies on the behaviour of EM triggered by or following the completion of M&A, despite extensive research on pre-merger EM. Zhang (2017) explores EM around M&A and finds acquirers use both AEM and REM, before and after the M&A. He argues that EM behaviour is not limited to stock acquirers; acquirers that utilise 100% cash payments or mixed cash and stock payments may also manage their earnings during the period following the acquisition.

However, except for Zhang (2017), the existence of acquirers' post-merger EM lacks empirical support. The under-explored nature of acquirers' post-merger EM and its significant implications for various stakeholders make it a valuable area of research. Differing from Zhang (2017), this study on post-M&A EM practices of acquirers

focuses on the impacts of M&A performance and M&A-induced business environment on acquirers' EM practices following the deal rather than M&A payment methods. In addition to adding to academic literature, it helps stakeholders identify firms' post-merger issues and safeguard their interests.

2.2 Acquirers' post-M&A earnings management

I draw on the agency theory to develop several hypotheses on the EM behaviour of firms following M&A. The theory explains the conflicts of agents who are hired by the principals (i.e., owners) of a firm (e.g., Jensen and Meckling, 1976; Fama and Jensen, 1983). Motivated by self-interest, managers pursue their interests at the cost of owners. For example, managers utilise firm owners' resources without taking much risk because all losses will be the owners' burden. Due to the uneven distribution of risk, managers may have higher risk preferences regardless of firm owners' interests. To ensure lower agency costs, performance-based compensation packages are designed to align managers' incentives with the firm's interest (Welbourne et al., 1995). However, this performance-based structure could result in managers manipulating their earnings (Levitt, 1998).

M&A-related decisions are some of the most critical strategic decisions made by a company's CEO. Successful M&A can generate considerable synergies, while poorly executed acquisitions can lead to the misuse of a company's resources and reduced economic efficiency (Bao and Edmans, 2011). In capital markets, acquirers making firm value-diminishing M&A are likely to become new takeover targets due to the market discipline function (e.g., Jensen,1986; Mitchell and Lehn, 1990). According to Jensen (1986), the purpose of takeovers is to either undo targets' previous unprofitable mergers or prevent them from making further unprofitable acquisitions. By redirecting targets' resources to more efficient uses, hostile takeovers can improve the economic efficiency of underperforming targets (Mitchell and Lehn, 1990).

A poor acquisition can also raise the CEO's risk of being dismissed, as shown by Lehn and Zhao (2006). In their study of 714 M&A from 1990 to 1998, the authors find that

nearly half of CEO turnovers at acquiring firms occurred within five years, and 16% of these turnovers were caused by takeovers. As a result, acquirers who fail to enhance shareholder wealth may face disciplinary action, such as a market takeover or management replacement, due to their lack of economic efficiency.

Following the M&A, the need to avoid market discipline and uphold performance-related managerial interests may result in strong EM incentives. Firstly, similar to the post-IPO and post-SEO issuers, following the M&A, acquirers have the pressure to offset the earnings reversal effects of pre-merger EM (Louis, 2004; Higgins, 2013; Huang et al., 2019). A number of studies document that EM that inflates stock acquirers' incomes before M&A leads to subsequent stock price decreases and post-merger underperformance studies (e.g., Erickson and Wang, 1999; Louis, 2004). The declining stock prices and subpar performance after acquisitions would negatively impact the acquirers' market value (e.g., Ravenscraft and Scherer, 1989; Morck et al., 1990; Agrawal, 2000; Malmendier and Tate, 2008; Higgins, 2013). To maintain their firm value and prevent hostile takeovers, these acquirers may resort to EM.

Secondly, managers of acquiring firms may utilise EM techniques to enhance their firm's reported performance following a merger, to avoid being terminated for unsatisfactory M&A outcomes (Lehn and Zhao, 2006). Thirdly, following the merger, a more intricate business environment emerges due to increased firm size and diversification, leading to greater information asymmetry (e.g., Dye, 1988; Trueman and Titman, 1988; Cormier et al. 2013). This creates a favourable environment for managerial opportunism and enables the acquirers to manage their earnings.

Therefore, driven by firm and managerial interests associated with M&A results as well as an advantageous environment for opportunism, acquirers are likely to apply EM after the merger. Given the points raised in the discussion above, I propose my first hypothesis as follows:

H1: Acquirers manage their earnings following the merger.

2.3 The strategy of acquirers' post-M&A earnings management

Earnings management in firms can be conducted through either discretionary accruals or real activities. The implementation of accrual-based earnings management (AEM) involves manipulating the accounting methods or estimates employed to structure transactions and achieve the desired financial reporting outcome (e.g., Schipper, 1989; Healy and Wahlen, 1999; Zang, 2012). The AEM methods that are prone to managerial discretion or manipulation include altering the fixed assets depreciation method, adjusting the estimate for doubtful accounts provisions, and manipulating reported earnings to inflate or deflate them without affecting the actual transactions (Cohen and Zarowin, 2010).

Real earnings management (REM) is defined by Roychowdhury (2006, p.337) as "*departures from normal operational practices, which alters an operation, investment, or financing transaction and then causes suboptimal business consequences"*. REM is typically achieved by reducing the cost of goods sold (COGS) through overproduction, decreasing discretionary expenses such as R&D and advertising expenditures, and increasing sales in the current period through price discounts or lenient credit terms. (Gunny, 2005; Roychowdhury, 2006). Prior research has documented various REM activities, including stock repurchases, selling profitable assets, derivative hedging, debt-equity swaps, and securitization (e.g., Hand, 1989; Barton, 2001; Hribar et al., 2006; Dechow and Shakespeare, 2009; Cohen et al., 2010).

Although most of the previous research has focused on only one method of EM when there is a probability of managing earnings, evidence suggests that companies may use both AEM and REM simultaneously or as substitutes to achieve earnings targets (e.g., Dechow and Sloan, 1991; Healy, 1985; Roychowdhury, 2006; Mao and Renneboog, 2015; Wang et al., 2018; Zhang et al., 2018). A firm's EM strategy is often determined based on its relative cost, as demonstrated by Zang (2012). If one approach proves to be too costly, it is generally chosen to adopt a different method instead.

For example, several factors limit the use of AEM, such as high-quality auditing, increased external scrutiny of accounting practices following the Sarbanes-Oxley Act (SOX), and accounting flexibility which is influenced by the accounting methods chosen previously and the length of a firm's operating cycle (Cohen et al. 2008; Cohen and Zarowin 2010; Enomoto, 2015). When either the adverse publicity and legal costs or the operation inconvenience caused by accounting adjustments exceeds the benefits of AEM, firm managers are motivated to switch to REM. Accordingly, REM, in deviating from a firm's best operational practices, may harm the long-term value of businesses by putting a strain on firms' cash flow and taking away their competitive edge (Gunny, 2005; Lennox et al., 2018; Haga et al., 2018). Thus, weighing the costs of each EM tool, a firm's EM strategy reflects the trade-off between AEM and REM under its particular circumstances (Zang, 2006).

Previous studies have documented that acquirers often use both AEM and REM strategies to improve profitability and increase share prices before M&A (e.g., Dechow et al., 1996; Jimbalvo, 1996; Louis, 2004; Higgins, 2013; Zhu and Lu, 2013; Chang and Pan, 2020). Many studies demonstrate that acquirers inflate stock prices with discretionary accruals before M&A to reduce costs (e.g., Erickson and Wang, 1999; Louis, 2004; Higgins, 2013). This is because the higher the acquirers' stock price, the fewer shares they need to pay for the merger.

Zhu and Lu (2013) and Chang and Pan (2020) find that stock acquirers apply REM through sales manipulation and overproduction before M&A to increase the firm's market value. Specifically, investigating 586 pure stock-swap and 1695 pure cash payment M&A announced between 1990 and 2013, Chang and Pan (2020) show that stock acquirers exhibit abnormally high levels of credit sales and overproduction in the quarter before the M&A announcement. Moreover, they find that such REM contributes to the acquirers' pre-merger high abnormal discretionary accruals, as the variation in receivables and inventory caused current accrual changes. This finding aligns with Roychowdhury (2006) who argued that REM can affect firms' AEM in some cases.

Although acquirers use both AEM and REM to reduce their transaction costs before the M&A, Zhang (2017) finds approximately 51% of acquirers involved in pre-merger REM continue to do REM post-merger, whereas only 8% continue to use AEM post-merger. This is in line with previous research, such as Louis (2004), which suggests that AEM is not preferred by firms following M&A if it was previously employed by the acquirer. Following M&A, it is expected that acquirers will be motivated to conduct EM, driven by both firm and managerial interests related to M&A results, as well as the complexity of the new business environment. However, the AEM may not be the optimal choice as the specific EM tool for post-merger acquirers. As firms grow in size and visibility, those that use pre-merger AEM and require more EM to address post-merger stock price reversals and underperformance are more likely to attract market attention and scrutiny if they continue to use AEM (Louis, 2004; Higgins, 2013; Gavana et al., 2019). This could increase regulatory risks for the firm, as regulators may view the use of AEM as a way to manipulate stock prices and protect the interests of top managers.

In comparison to AEM, REM is more challenging for market participants to detect due to its integration with regular business operations (Cohen and Zarowin, 2010; Kothari et al., 2016). When firms' earnings outcomes are transparently disclosed, regulatory bodies are unable to challenge their standard operating procedures, even if auditors and regulators suspect that firms manipulate their business activities (Chi et al., 2011, Graham et al., 2005, Lo, 2008, Zang, 2012). Zhao et al. (2012) suggest that managers who are more vulnerable to being removed in M&A are more likely to artificially inflate short-term earnings through the use of REM. In such situations, post-merger managers may apply REM to protect their positions if they feel their performance is at risk of being criticized. Given the benefits and drawbacks of both EM methods in the post-merger context, REM appears to be a more appropriate choice as it minimizes scrutiny risks and improves short-term operational performance.

Therefore, built on Zhang (2017), who suggests that acquirers' EM behaviour exhibits a stronger continuity effect for the REM than for the AEM following the merger, my second hypothesis proposes that:

H2: Acquirers prefer REM to AEM during the post-merger period.

2.4 M&A-induced complexity and post-M&A earnings management

A more complex post-merger environment with lower firm transparency is likely to encourage acquirers' interest in engaging in EM activities. Following M&A, larger firm size and greater firm diversification result in increased complexity and information asymmetry, with a more intricate organizational structure, more business segments, and a broader group of stakeholders (e.g., Moeller et al., 2004; Lim et al. 2008; Cormier et al., 2013). According to Richardson (2000), information asymmetry, measured by the bid-ask spread and analysts' forecast dispersion, is positively related to a firm's EM level. This is because a higher level of information asymmetry restricts public access to firm information and hinders investors' ability to monitor a company's behaviour (e.g., Dye, 1988; Ali et al., 2015). Under such circumstances, detecting opportunistic EM promptly can be challenging. Consequently, acquirers can be encouraged to implement post-merger EM in a more complex environment.

Acquiring a private target is also likely to raise the level of the acquirer's post-merger information asymmetry. The opaqueness of the target contributes to a higher level of firm complexity and facilitates the acquirers' opportunistic behaviour of exploiting private information situations (Makadok and Barney, 2002; Capron and Shen, 2007). Rodrigues and Stegemoller (2007) conduct an empirical study of 10,342 transactions involving public acquirers and private targets between 1983 and 2004. Their findings demonstrate that around 80% of acquisitions of private targets are classified as insignificant by the SEC and do not require the disclosure of the target's financial information. This is because the SEC uses the relative size of the target to the acquirer as the sole measure of significant acquisitions to reduce the cost of preparing and auditing private targets' statements. Some large targets' information thus may not be

disclosed if the target's relative size to the acquirer does not exceed the regulatory threshold. As a result, acquirers are likely to utilise the relaxed disclosure regulation of private targets to conduct post-merger EM since the benefits of doing it seem to outweigh the cost.

Empirical evidence supports my argument by showing that firm diversification leads to an increase in EM levels (e.g., Lim et al., 2008; Rodríguez-Pérez and Hemmen, 2010; Chin et al., 2009). For example, Lim et al. (2008) examine 940 new SEO issuers reported during 1991-2001 and find that diversified SEO firms exhibit higher levels of AEM compared to focused ones. Similarly, Farooqi et al. (2014) analyse 45,170 firms from different industries over the period from 1990 to 2010 and find that industrial diversification alone and the combination of industrial and global diversification exacerbate REM. Investigating 1,221 US companies over the period from 2001 to 2012, Alhadab and Nguyen (2018) find that both AEM and REM practices are used to enhance the financial performance of diversified firms.

Moreover, some studies find that firm diversification mitigates the AEM due to the offset effect of accruals originating from varied cash flow sources across different business segments (e.g., Jiraporn et al., 2008; El Mehdi and Seboui, 2011; Vasilescu and Millo, 2016). On the contrary, Farooqi et al. (2014) find that REM increases with firm diversification while Alhadab and Nguyen (2018) indicate firm diversification reduces AEM but increases REM. Jiraporn et al. (2008) also suggest that although there may be some offset effects among accruals from different business segments, firms may still resort to REM to improve performance. Graham et al. (2005) also document that chief financial officers (CFOs) are willing to engage in REM as long as the real costs are not too high.

Considering the trade-offs between acquirers' post-merger AEM and REM discussed in section 2.3, this study anticipates that a more complex post-merger environment will provide advantageous conditions for acquirers to enhance their REM practices. In light of this discussion, I specifically hypothesise:

H3: Acquirers' post-merger REM increases with business complexity following the merger.

2.5 M&A-induced visibility and post-merger earnings management

After the M&A, the expansion of the acquirers in terms of size, income sources, analyst coverage, and institutional holdings results in increased firm visibility (Baker et al., 1999; Bushee and Miller, 2012; Gavana et al., 2019). As a firm becomes more visible, stakeholders are better informed about managerial behaviour and are more likely to monitor for opportunistic misconduct. Consequently, firms with higher levels of visibility are subject to more rigorous scrutiny and greater levels of regulation by stakeholders.

For example, Erfle and Mcmillan (1990) indicate that the most visible major domestic oil companies exhibited fewer profits than their less visible counterparts during the 1979 oil crisis. This might be because greater transparency and higher disclosure frequency reduce firm EM (Hunton et al., 2006; Jo and Kim, 2007). Byun and Roland (2020) find that high-reputation analysts focus on more visible firms, which attract more investor attention. As a result, Udayasankar (2008) notes that larger, more visible firms are more likely to engage in Corporate Social Responsibility (CSR) practices. Hao and Li (2021) find that highly visible firms tend to have better credit ratings, as increased visibility enhances information disclosure and disciplines managerial activities.

Due to the potential for strict regulation resulting from increased visibility, post-merger acquirers are more likely to choose REM as a means of achieving their EM objectives, rather than AEM (He and Yang, 2014). Therefore, following M&A, acquirers may increase the use of REM as they face increased visibility and are mandated to be more transparent which amplifies the reputational costs of any misconduct (Gottardo and Moisello, 2019). Specifically, I hypothesise that:

H4: Acquirers' post-merger REM increases with visibility following the merger.

2.6 M&A performance and post-M&A earnings management

This study expects poor M&A performance to be a significant factor driving acquirers' post-merger EM, which is discussed in detail in Section 2.2. Following an M&A, managers of the acquiring firm may use EM to enhance the reported firm performance and avoid being penalized for poor M&A performance.

Therefore, it is expected that good M&A performance will alleviate pressure on managers to manage earnings for their interests and prevent hostile takeovers, as reported by Zhao et al. (2012), who find that managers who are at risk of losing their jobs due to poor M&A performance are more likely to engage in EM. Specifically, I hypothesise as follows:

H5: The acquirers' post-merger EM declines with good M&A performance.

3. Methodology and data

3.1 Data source and sample selection

I obtain financial data from the Compustat North America database for all US-listed companies in the period between January 1, 1985, and December 31, 2018. Due to the leading status of the US economy and capital market, I chose US-listed acquirers as my sample firms. To capture a comprehensive range of acquisition activities, there are no limitations on the target's public status or location. Additionally, I procure M&A data from the Securities Data Corporation Platinum (SDC) Mergers and Acquisitions database, which includes information on all US-listed companies that carried out M&A transactions during the same time frame. I collect data on board characteristics from the Boardex database and acquire the business complexity measure from the study conducted by Loughran and McDonald (2020). Using CUSIPs and fiscal years as identifiers, I merge the financial information into the M&A data to create my main dataset. Then, I incorporate the complexity data and board information into the main dataset.

To minimize the impact of serial acquisitions on my research sample and to focus on the major effects of M&A on the acquirer's EM behaviour, I selected sample acquirers based on the filters, following similar approaches by Alexandridis et al. (2013) and Zhang (2017): (1) The acquirer is listed on NYSE or NASDAQ; (2) The acquirer holds 100% of the target's shares after the M&A so as to capture the major effect of acquirers' behaviour; (3) The acquisition deal value is more than $1 million as large transactions represent significant economic events and are more likely to influence managerial behaviour directly; (4) The acquisition represents the largest transaction made by the acquirer during the period from January 1st, 1985 to December 31st, 2018 to avoid the separate effects of each acquisition since serial M&A have an adverse effect on the accounting information environment and operating performance of the firm (Xu et al., 2022); (5) For both acquirers and targets, the financial industry and regulated firms are excluded because regulated industries have conflicting incentives to do downward earnings management when their economic interests are served by reporting fewer earnings to regulators[6]. As for the financial institutions, their EM incentives for avoiding earnings decreases or losses are likely to depend on regulatory oversight (Burgstahler and Dichevs, 1997).

To address concerns regarding confounding events and correlated omitted variables, I have further limited my sample period to a [−3, +3] year window[7] around M&A completion year, based on the approach taken by Fauver et al. (2017), Chen et al. (2020) and Hu et al. (2020). My final sample consists of firm-years for 17,223 firm years for 3,728 US public acquirers over the period 1985-2018. To minimize the influence of extreme observations, I winsorize all variables at the 1% and 99% levels of their respective distributions each year.

[6] I use the Fama and French 48 industry classification to define the industry of acquirers in my sample. Regulated industries (i.e., Compustat SIC codes ranging from 4400 to 5000) and financial institutions (i.e., Compustat SIC codes ranging from 6000 to 6500) are excluded.

[7] Alternative event windows are employed for robustness check in Section 4.4.

3.2 Definition of variables and measurement proxies

3.2.1. Dependent variable

Following the related literature capturing EM, this study measures the EM dependent variables using both discretionary accruals and real earnings management proxies (e.g., Dechow et al., 1995; Gunny, 2005).

3.2.1.1 Measuring discretionary accruals

In the literature on earnings management, there are five main models typically used to capture accrual-based earnings management. These include the Healy Model by Healy (1985), the DeAngelo Model by DeAngelo (1986), the Jones Model by Jones (1991), the modified Jones Model by Dechow et al. (1995), and the Industrial Model by Dechow and Sloan (1991). The Healy Model and the DeAngelo Model both use the total accruals in an estimation period to calculate the expected non-discretionary accruals, which suit firms using a time-series process to generate non-discretionary accruals.

However, constant nondiscretionary accruals might not be the case for many firms due to varying firm characteristics. The Jones Model by Jones (1991) does not assume that nondiscretionary accruals are constant by regarding revenues as part of the non-discretionary accruals. In this case, EM bias can occur when EM is conducted through revenue management. To eliminate such bias, Dechow et al. (1995) come up with the modified Jones model which adjusts the changes in revenues according to the changes in receivables during the event period. Similar to the Jones Model, the Industrial Model by Dechow and Sloan (1991) relaxes the assumption of constant nondiscretionary. However, it sees the variations of common industry nondiscretionary accruals as determinants of firms' nondiscretionary changes, which only suits firms in closely correlated industries.

Each of the accrual-based models mentioned above analyses EM from diverse perspectives by utilising different data and techniques, but all of them overlook certain variables and have econometric issues. As a result, their ability to identify EM is

restricted. Comparatively, the modified Jones model is the most accurate since Dechow et al. (1995) rely on SEC data for the analysis (Chen, 2010). Hence, the modified Jones model is applied to measure discretionary accruals. An alternative AEM model, the performance-matched Jones model as proposed by Kothari et al. (2005), is used for robustness checks. This model filters changes in AEM caused by fluctuations in firms' periodic performance, serving as an alternative measurement of AEM.

In the following modified Jones model, I use the total abnormal accruals (abTACC) to proxy for AEM. It is calculated as the total accruals minus non-discretionary accruals in the specific firm-year. The total accruals are calculated as follows:

$$\text{TA}_{it} = (\Delta CA_{it} - \Delta CL_{it} - \Delta CASH_{it} + \Delta STDebt_{it} - DepAm_{it})/Assets_{it-1} \quad (Eq.1)$$

Where ΔCA_{it}, ΔCL_{it}, $\Delta CASH_{it}$, $\Delta STDebt_{it}$ denotes the firm *i*'s changes in current assets, current liabilities, cash, and short-term debt in year *t* respectively. $DepAm_{it}$ denotes the depreciation and amortization expenses of firm *i* in year *t*.

Next, I use the total accruals in the following equations to obtain the estimated non-discretionary accruals of firm *i* in year *t*:

$$TA_{it} = \alpha_1\left(\frac{1}{A_{it-1}}\right) + \alpha_2\left(\frac{\Delta REV_{it}}{A_{it-1}}\right) + \alpha_3\left(\frac{PPE_{it}}{A_{it-1}}\right) + \varepsilon_{it} \quad (Eq.2)$$

$$NDA_{it} = \hat{\alpha}_1\left(\frac{1}{A_{it-1}}\right) + \hat{\alpha}_2\left(\frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}}\right) + \hat{\alpha}_3\left(\frac{PPE_{it}}{A_{it-1}}\right) \quad (Eq.3)$$

Where TA_{it}= total accruals of firm *i* in year *t* scaled by lagged total assets;

NDA_{it}= nondiscretionary accruals of firm *i* in year *t*;

A_{it-1}= lagged total assets of firm *i* in year *t*;

ΔREV_{it}= changes in revenues of firm *i* in year *t* ;

ΔREC_{it}= changes in net receivables of firm *i* in year *t*;

PPE_{it}= gross property plant and equipment of firm *i* in year *t*.

The total abnormal accruals (abTACC) are the difference between a firm's total accruals and nondiscretionary accruals. If a firm inflates earnings through AEM, the value of total abnormal accruals (abTACC) is expected to be positive (e.g., Dechow et al., 1995).

3.2.1.2 Measuring real earnings management

Real earnings management is usually accomplished through four accounts under the operating activities: cost of goods sold (COGS), research and development (R&D) expenditures, selling, general and administrative (SG&A) expenses and gain (loss) on assets sales (see among others, Berger, 1993; Bartov, 1993; Dechow et al., 1998; Anderson et al., 2003). Gunny (2005) specifies a firm's real earnings management through the following activities: decreasing discretionary expenses (R&D and SG&A expenses), the timing of income recognition from the sale of fixed assets, cutting prices to boost sales in the current period and overproducing to decrease COGS expense. Roychowdhury (2006) looks into the zero earnings threshold and annual data and presents three different REM ways of firms trying to avoid reporting losses: (1) increasing sales by accelerating sales timing and/or generating additional unsustainable sales with greater price discounts or more lenient credit terms; (2) overproducing and thereby making more overhead allocated to inventory and less to cost of goods sold, resulting in lower cost of goods sold and higher operating margins; and (3) aggressively cutting discretionary expenses including the R&D, advertising, and SG&A expenses to improve margins. When the discretionary expenses do not produce instant revenue and profit, the reduction of such expenses is most likely to take place.

There are two assumptions required by Roychowdhury (2006). First, in normal business operations, all firms in the same industry generate the same levels of discretionary, production costs and cash operating profits. Second, it is either current revenue or past revenue that determines optimal costs. Under these assumptions, Roychowdhury (2006) measures a firm's deviation from optimal expenditures by deriving residuals from regressing SG&A, R&D, production costs, and operating cash flow on current or past revenues classified by industry and year. The regression residuals are found to have an association with the frequency with which earnings benchmarks are met. In this regard, Roychowdhury (2006) concludes that the regression residuals represent the firm's suboptimal behaviour in manipulating its financial

statements. Despite enhancements proposed by subsequent research, Roychowdhury's model is still widely used in the literature (e.g., Gunny, 2010; Zang, 2012).

Following Roychowdhury (2006), this study estimates post-merger acquirers' REM through three proxies: cash flows from operations (CFO), production costs (PROD) and discretionary expenses (DISX) using the model below:

$$\frac{CFO_{it}}{A_{it-1}} = \alpha_0 + \alpha_1\left(\frac{1}{A_{it-1}}\right) + \beta_1\left(\frac{S_{it}}{A_{it-1}}\right) + \beta_2\left(\frac{\Delta S_{it}}{A_{it-1}}\right) + \varepsilon_{it} \qquad (Eq.4)$$

Where S_{it} is firm *i*'s total sales in year *t* and ΔS_{it} is firm *i*'s sales in year *t* minus sales in year *t-1*.

I also define the firms' production costs (PROD) as the sum of firms' costs of goods sold (COGS) and changes in inventories (finished goods) in a specific firm-year.

$$\frac{COGS_{it}}{A_{it-1}} = \alpha_0 + \alpha_1\left(\frac{1}{A_{it-1}}\right) + \beta\left(\frac{S_{it}}{A_{it-1}}\right) + \varepsilon_{it} \qquad (Eq.5)$$

$$\frac{\Delta INV_{it}}{A_{it-1}} = \alpha_0 + \alpha_1\left(\frac{1}{A_{it-1}}\right) + \beta_1\left(\frac{\Delta S_{it}}{A_{it-1}}\right) + \beta_2\left(\frac{\Delta S_{it-1}}{A_{it-1}}\right) + \varepsilon_{it} \qquad (Eq.6)$$

$$\frac{PROD_{it}}{A_{it-1}} = \alpha_0 + \alpha_1\left(\frac{1}{A_{it-1}}\right) + \beta_1\left(\frac{S_{it}}{A_{it-1}}\right) + \beta_2\left(\frac{\Delta S_{it}}{A_{it-1}}\right) + \beta_3\left(\frac{\Delta S_{it-1}}{A_{it-1}}\right) + \varepsilon_{it} \qquad (Eq.7)$$

Where ΔINV_{it} denotes the change in the firm *i*'s inventory in year *t*; ΔS_{it-1} means firm *i*'s sales in year *t-1* minus sales in year *t-2*; ε_{it} means firm *i*'s residuals in year *t*.

To avoid the problem when firms manage sales upward and unusually low residuals shown from a linear regression as above even when there is no reduction in discretionary expenses (the sum of advertising, R&D and SG&A expense), firm *i*'s discretionary expenses in year *t* $DISE_{it}$ is estimated with the following modified model:

$$\frac{DISX_{it}}{A_{it-1}} = \alpha_0 + \alpha_1\left(\frac{1}{A_{it-1}}\right) + \beta\left(\frac{S_{it-1}}{A_{it-1}}\right) + \varepsilon_{it} \qquad (Eq.8)$$

The abnormal values of all three proxies are calculated as the difference between the actual values and the expected values from models. Due to the different nature of these three REM methods, the measurement of REM varies: Specifically, inflated reported earnings due to accelerating sales with greater price discounts or more lenient credit terms lead to abnormally low cash flow from operations (CFO); Reduced discretionary

expenses to increase earnings cause abnormally low discretionary expenses (DISX); Overproducing to lower the costs of sales leads to abnormally high production cost (PROD). As a result, income-increasing REM is associated with higher abnormal PROD, lower abnormal CFO, and lower abnormal DISX. To facilitate interpretation, following (Bee et al., 2013), I assume that all measures (i.e., RM_CFO, RM_PROD, and RM_DISX) increase in reported earnings.

I follow Zang (2006) and Cohen and Zarowin (2010), to capture the total amount of REM involved by an acquirer. In particular, I apply two aggregate measures of REM, RM1 and RM2. RM1 is computed as the abnormal production costs add the amount of abnormal discretionary expenses. RM2 is the sum of abnormal cash flows from operations and the amount of abnormal discretionary expenses.

$$RM1 = RM\_PROD + RM\_DISX \qquad (Eq.9)$$

$$RM2 = RM\_CFO + RM\_DISX \qquad (Eq.10)$$

Along with these two combined measures of REM, I also apply Cohen et al. (2008)'s approach of aggregating the three individual measures of REM including abnormal production costs, abnormal discretionary expenses and abnormal operation cash flows. This aggregated measure is called "comREM" and is calculated as the sum of the positive values of all three individual REM measures.

$$comREM = RM\_PROD + RM\_DISX + RM\_CFO \qquad (Eq.11)$$

In line with Cohen and Zarowin (2008), an acquirer is regarded as doing income-increasing REM if either RM1 or RM2 has a positive value. Similarly, if either two of the three individual REM proxies (RM_CFO, RM_PROD, RM_DISX) have positive values, the firm would be seen as using REM.

3.2.2 Independent variable -- Post-M&A time status

Following Fauver et al. (2017) and Chen et al. (2020), I generate the dummy variable "Post" to proxy for the acquirers' M&A status in the models I develop. I take the

acquirers' M&A completion year as the beginning year (year 0). The dummy variable "Post" equals 1 if the sample firm's year *t* is after the M&A year, otherwise 0.

3.2.3 Moderating variables

3.2.3.1 M&A performance

Prior studies indicate that stock prices on the M&A announcement day reflect market investors' assumptions towards the M&A gains (e.g., Kau et al., 2008). Others find an event study perspective could show the present value of such gains clearly (e.g., Gao et al., 2019).

Following previous studies on M&A gains, I take the event study method and apply the cumulative abnormal returns (variable "CAR") over the 7 days M&A event window [-3, 3] using the Market model which estimates the expected return to measure the M&A performance (e.g., Houston and Ryngaert, 1994; Hankir et al., 2011). Following Moeller et al. (2004), the parameters for the market model are estimated over the (−205, −6) days interval. The Market model used for estimating the expected returns is as follows:

$$R_{it} = \alpha_i + \beta_i R_{Mt} + \varepsilon_{it} \qquad (Eq. 12)$$

Where α_i is the intercept, R_{it} is firm *i*'s expected daily stock return on day *t*, R_{Mt} is day *t*'s average daily return of the value-weighted market portfolio and ε_{it} is the daily abnormal return.

3.2.3.2 M&A-induced complexity

Measuring the complexity of a firm has proven challenging. Previously, researchers examined the complexities of a company's accounting, business operations, and reporting practices as proxy measures of corporate complexity. Loughran and McDonald (2020) conclude that, as documented in the literature, the level of firm-specific complexity has been measured in terms of the number of business segments, sales from abroad, firm age, word counts in annual reports, the use of derivatives, and the intangible assets ratio. These measures, however, have several limitations, including

narrow scopes concentrating on a single aspect of the measure, small sample sizes, and poor measurement accuracy (Loughran and McDonald, 2020).

Using textual analysis, Loughran and McDonald (2020) develop a new measure of corporate complexity. Specifically, during the analysis of US corporate annual reports, Loughran and McDonald (2020) measured the frequency of words associated with a greater degree of complexity. They created a multiple-dimensional list of words related to the complexity that includes M&A transactions, corporate events, legal matters, accounting terminology, international operations, derivatives, and intangible assets. A company that uses these words more frequently is considered to be more complex. As a result, this novel measure has the advantage of combining a variety of previous approaches to measuring corporate complexity into a single, multifaceted measure (Loughran and McDonald, 2020).

Being tested empirically by Loughran and McDonald (2020), this new metric of complexity, in line with theoretical predictions, can explain audit fees, stock returns surrounding the 10-K filing dates, unanticipated earnings, and initial public offerings. These tests indicate that this new complexity measure has validity and utility in empirical settings. Hence, following Loughran and McDonald (2020), I adopt their omnibus measure of complexity and generate the variable "complexity" which is calculated as the logarithm of the number of words in their complexity word list.

The alternative measure for M&A-induced complexity, the Complexity PCA Score, is derived from a set of key variables that collectively capture the multifaceted nature of organizational complexity. These variables encompass the number of business segments, which indicates the degree of operational diversity; the Herfindahl-Hirschman Index, reflecting the level of market concentration; the number of employees, suggesting the scale of management complexity; whether the company targets private markets, introducing specific challenges; and the relative size of significant business deals, affecting organizational and strategic complexity. By incorporating these diverse factors, the Complexity PCA Score provides a

comprehensive and holistic measure of the complexity faced by organizations, particularly in the context of mergers and acquisitions.

3.2.3.3 M&A-induced visibility

Previous studies have measured firm visibility using various indicators such as organization size, sales, media exposure, the number of analysts following the firm, the number of institutional shareholders, the proportion of shares held by institutions, and proximity to consumers (Baker et al., 1999; Bushee and Miller, 2012; Gavana et al., 2019). Consistent with these studies, I introduce a variable titled "Change in Analyst Following" to capture the change in the number of analysts providing research coverage for the acquiring firms after M&A transactions. This variable serves as an indicator of the shift in visibility and investor attention that acquirers experience as a result of the M&A activity.

3.2.4 Control variables

In this study focusing on listed acquirers, I control for firm-specific characteristics that may influence earnings management practices. These include Firm Size, gauged by the natural logarithm of market value of equity; Market-to-Book Ratio, indicating market versus book valuation; Cash Flow, as the ratio of operational cash flow to total assets, assessing liquidity; Leverage, revealing debt proportion in equity; Sales Growth, showing yearly sales increments; Return on Assets (ROA), a binary measure of profitability; Firm Age, indicating time since listing; and Auditing Quality, differentiated by Big Four auditor engagement. Also factored in are Capital Expenditure, reflecting investment in physical assets; Market Concentration, via the Herfindahl-Hirschman Index; Market Shares, measured by the log of stock outstanding; Tangible Assets Ratio, showing the proportion of tangible assets; Earnings Volatility, capturing profit fluctuations; and the Z-Score, predicting bankruptcy risk. These controls are essential in parsing out the impact of various firm attributes on the propensity to manage earnings.

I control for these firm characteristics because they might affect the firm's EM practices. Indeed, Watts and Zimmerman (1990) find that to reduce unwanted political visibility, large firms facing high political costs may have the incentive to manage earnings. Kasznik and Lev (1995) argue that firm size significantly influences the firm's forecast disclosure in a positive way and thus affects the EM behaviour of firms. Besides, Dechow et al. (1995) and Kasznik (1999) document that the estimated discretionary accruals are positively related to firms' earnings performance while Watts and Zimmerman (1990) contend that firms with better financial performance are likely to manage earnings downwards. Moreover, some studies document that a firm's sales growth contributes to the increase of discretionary accruals as high growth leads to increased working capital and produces more discretionary space (e.g., Kothari et al.,2005; Pungaliya and Vijh, 2009). Prior literature also notes that a firm's EM practice may be influenced by debt ratio, operating cash flows and auditing quality (e.g., Lang et al.,2006; Jelinek, 2007). Additionally, capital expenditure is controlled for due to its potential influence on aggressive accounting practices aimed at smoothing earnings. Market concentration, as measured by the Herfindahl-Hirschman Index, is considered given its impact on competitive behavior and the potential for earnings management to maintain market perceptions. The number of outstanding shares is included to capture the effect of market signaling and analyst scrutiny on earnings practices. The tangible assets ratio is factored to reflect asset structure's impact on earnings management options. Earnings volatility is controlled to account for its role in incentivizing earnings smoothing to portray stability. Lastly, the firm's bankruptcy risk, assessed by the Z-Score, is crucial as financial distress can drive firms towards earnings manipulation to obscure their financial predicaments (Tunyi et al., 2022). By controlling the factors which may affect EM, this study captures a more accurate relationship between post-merger time status, greater business complexity and acquirers' EM respectively.

In additional analysis, I also consider firms' governance traits, such as board gender diversity, size, and independence, as previous research suggests that these can impact EM behaviour, and therefore should be controlled for (e.g., Klein, 2002a).

3.3 Research models

Considering the diversity of time periods and cross-sectional data points within my sample, I employ a fixed-effects model to analyse the effects of post-merger timing and other variables on acquirers' earnings management post-M&A. This approach aptly accounts for both the time series and cross-sectional dimensions inherent in the data, allowing for more precise estimation of the M&A impact.

3.3.1 Model for examining post-M&A earnings management

To examine the first hypothesis (H1) that acquirers manage earnings following the merger and the second hypothesis that acquirers prefer REM to AEM during the post-merger period (H2), I estimate the following model:

$$EM_{it} = \alpha_{it} + \beta_0 Post_{\ it} + \sum \beta_k Controls_{it} + \varepsilon_{it} \quad (1)$$

where EM_{it} denotes the firm *i*'s represents the earnings management activity (either AEM or REM) for each listed firm *i* in year *t*; $Post_{it}$ denotes the firm *i*'s post-deal time status in year *t* (dummy variable equals 1 if year *t* is after the M&A completion year, otherwise 0); $Controls_{it}$ encompasses firm size, market-to-book ratio, cash flow, leverage, sales growth, binary return on assets (indicating whether ROA is positive), firm age, auditing quality (with a binary variable for Big Four auditor engagement), capital expenditure, market concentration (via the Herfindahl-Hirschman Index), the natural logarithm of outstanding shares, the ratio of tangible assets to total assets, Z-Score for bankruptcy risk, and earnings volatility. The model also includes fixed effects for firm, year, industry and country to account for temporal and sector-specific influences. The intercept α_{it} captures the firm-specific time-invariant characteristics, and ε_{it} denotes the idiosyncratic error term. The coefficient β_0 quantifies the relationship between post-merger status and earnings management. Here β_0 is expected to be positive for REM and negative for AEM according to H1 and H2, reflecting the expectation that acquirers may use REM to inflate post-M&A earnings.

3.3.2 Model for M&A-induced complexity and post-merger REM

Exploring the fourth hypothesis which argues acquirers' post-merger REM increases with greater business complexity following M&A (H3), I employ model (2) as follows:

$$REM_{it} = \alpha_{it} + \beta_1 Complexity_{it} + \beta_2 Post_{it} + \beta_3 Complexity_{it} \times Post_{it} + \sum \beta_k Controls_{it} + \varepsilon_{it} \quad (2)$$

where REM_{it} represents the real earnings management of firm *i* in year *t*; $Complexity_{it}$ is the measurement of the acquirer *i*'s M&A-induced complexity in year *t* that is proxied by the logarithm of the number of words in the complexity word list by Loughran and McDonald (2020) and the complexity PCA score; $Controls_{it}$ represents the same firm-specific characteristics controlled in model (1). The model also includes fixed effects for year, industry, firm and country to account for temporal and sector-specific influences. α_{it} is the intercept and ε_{it} is the error term. β_3 represents the impact of firm complexity on post-merger acquirers' REM, which is expected to be positive based on H3.

3.3.3 Model for M&A-induced visibility and post-merger REM

To test H4, which suggests that acquirers' post-merger REM increases with greater visibility, I estimate the following model (3) to examine the impact of post-merger visibility on the acquirers' REM following a merger.:

$$REM_{it} = \alpha_{it} + \beta_1 Visibility_{it} + \beta_2 Post_{it} + \beta_3 Visibility_{it} \times Post_{it} + \sum \beta_k Controls_{it} + \varepsilon_{it} \quad (3)$$

where REM_{it} represents the real earnings management of firm *i* in year *t*; $Visibility_{it}$ is the measurement of the acquirer *i*'s M&A-induced visibility in year *t* that is proxied by the change in number of analysts following sample acquirers as previously discussed; $Controls_{it}$ represents the same firm-specific characteristics controlled in model (1). The fixed-effects are also controlled in this model. α_{it} is the intercept and ε_{it} is the error term. Here β_3 in model (3) indicates the impact of firm visibility on the acquirer's post-M&A REM, which is expected to be positive in H4.

3.3.4 Model for M&A performance and post-merger EM

Investigating whether post-merger EM declines with better M&A performance (H5), I develop the following model to examine the influence of M&A performance on the acquirers' post-merger EM:

$$EMpost_{it} = \alpha_{it} + \beta_1 CAR_{it} + \beta_2 EMpre_{it} + \sum \beta_k Controls_{it} + \varepsilon_{it} \qquad (4)$$

Where $EMpost_{it}$ denotes the average value of firm *i*'s EM including abTACC, RM1, RM2 and comREM during the three post-merger years; $EMpre_{it}$ denotes the average value of firm *i*'s EM proxied by abTACC, RM1, RM2 and comREM during the three pre-merger years; CAR_{it} denotes M&A performance or gains during the 7 days M&A event window [-3, +3] and the 21-day event window [-10, +10] using the market model of acquirer i in year t; $Controls_{it}$ represents the same firm-specific characteristics controlled in model (1). In this model, I also take into account the effects of the firm, country, year and the industry. α_{it} is the intercept and ε_{it} is the error term. β_1 here represents the relation between acquirers' post-merger EM and M&A performance and is anticipated to be negative as good M&A performance is expected to moderate acquirers' post-merger EM.

4. Empirical results and analysis

4.1 Descriptive statistics of the sample

Table 1 presents the sample distribution by M&A announcement year (Panel A), the acquirer's industry (Panel B), the target's nation region (Panel C), and the target's public status (Panel D). According to the M&A announcement dates, 54.37% of the sample of 2,925 acquisitions occurred between 1994 and 2007, and 20.59% were completed between 2014 and 2018. Business Services, Electrical Equipment, and Trading are the major industries of the sample acquirers, which take 19.72%, 7.38%, and 7.38% of the entire sample respectively. As for the target nation region, 85.86% of sample US acquirers conducted domestic deals and the rest of them merged firms from

Europe, North America, South America, the Middle East, Asia, and Africa. Besides, 45.95% of targets are private firms and 20.01% of them are public firms.

[Insert Table 1]

Table 2 offers a comprehensive analysis of M&A deals over a 7-year period, detailing descriptive statistics for key variables (Panel A), T-tests for earnings management (EM) variables during pre- and post-merger periods (Panel B), and T-tests for acquirers' EM variables before and after the Sarbanes-Oxley Act (SOX) implementation (Panel C). Panel A shows that during the [-3, +3] year M&A event window, the acquirers' abTACC mean is 0.001 while the mean of RM1, RM2 and comREM is -0.008, 0, and -0.031 respectively. This suggests that, throughout the 7-year M&A event window, it has been approximately the same for acquirers in terms of their average AEM and REM.

Panel B indicates a decrease in acquirers' average abnormal total accruals (abTACC) from a pre-merger mean of 0.021 to a post-merger mean of -0.015, confirming a significant reduction in accrual-based earnings management (AEM) after M&As ($p < 0.0001$). Similarly, the real earnings management (REM) variables—RM1, RM2, and combined REM (comREM)—show significant shifts from pre-merger means of -0.037, -0.025, and -0.066 to post-merger means of 0.013, 0.021, and -0.003, respectively, with all differences significant at the 1% level. These changes suggest a substitution effect where acquirers reduce AEM in favor of increased REM post-M&A, aligning with my hypotheses that acquirers actively manage earnings through REM after mergers, a behavior also documented by Zhang (2017).

Panel C compares the average earnings management measures for acquirers both before and after the Sarbanes-Oxley Act (SOX) and the subsequent M&A events. The findings show a significant decrease in accrual-based earnings management (abTACC) from a pre-SOX mean of 0.039 to a post-SOX, pre-M&A mean of 0.003, and a further decline post-M&A to -0.014. Real earnings management (REM) variables exhibit an opposite trend with an increase from more negative pre-SOX means of RM1 (-0.084), RM2 (-0.048), and comREM (-0.105) to post-SOX, pre-M&A values of RM1 (0.011),

RM2 (0.023), and comREM (-0.029), and these further increase to RM1 (0.013), RM2 (0.021), and comREM (0.006) after M&A. These significant shifts in both abTACC and REM measures post-SOX and post-M&A (all $p < 0.0001$) suggest a nuanced post-regulatory environment where acquirers' AEM decreases while their REM activities significantly increase, highlighting a strategic adaptation in earnings management practices in response to regulatory changes. This trend reflects a strategic shift towards REM methods post-regulation, supporting the notion that regulatory oversight such as SOX may drive firms to opt for REM, a subtler approach to earnings management that may attract less regulatory attention, as corroborated by prior studies (e.g., Cohen et al. 2008; Cohen and Zarowin 2010; Enomoto, 2015).

[Insert Table 2]

4.2 Acquirers' post-M&A earnings management results and analysis

In the post-M&A context, acquirers remain incentivized to engage in earnings management to substantiate the purported synergies of mergers and acquisitions (Jensen, 1986; Lehn and Zhao, 2006). Given the enhanced scrutiny post-merger, particularly for firms with a history of accrual-based earnings management (AEM), the risk associated with continuing such practices may escalate significantly (Zang, 2006). Consequently, acquirers are increasingly resorting to real earnings management (REM) as a subtler and ostensibly less detectable method of bolstering reported earnings, thereby aligning reported performance with market expectations.

Table 3 delineates the findings from a fixed effects regression model, assessing acquirers' earnings management behaviours subsequent to M&A. The model validates Hypothesis 1 (H1), indicating a reduction in AEM post-merger, as evidenced by the significant negative coefficients for AEM proxies in columns (1) and (2) (both -0.041). Hypothesis 2 (H2) is corroborated by the positive coefficients for REM in columns (3) to (5) (0.049, 0.012, and 0.029, respectively), reflecting an increase in REM post-merger, which is significant at the 1% and 10% levels. These results are in accordance with the extant literature that posits firms may strategically substitute AEM with REM

to meet earnings benchmarks, thus potentially reducing exposure to regulatory repercussions (Mao and Renneboog, 2015; Wang et al., 2018; Zhang et al., 2018). The continuity of REM over AEM post-merger, as reported by Zhang (2017), is further substantiated by our findings, suggesting a deliberate shift in earnings management strategies in response to regulatory oversight.

[Insert Table 3]

The complexity inherent to acquirers' operations following M&A is posited to increase the utilization of real earnings management (REM), as posited in Hypothesis 3 (H3). The augmentation in firm size and diversification through new business segments, consequent to M&A, engenders a more intricate business milieu that is conducive to REM owing to heightened information asymmetry (Moeller et al., 2004). In Panel A of Table 4, the interaction of post-merger REM and business complexity, as measured by Loughran and McDonald (2020)'s complexity index, is significantly and positively associated with REM across three metrics in columns (2) to (4)—RM1 (0.258, $p < 0.01$) and RM2 (0.087, $p < 0.05$)—and demonstrates a positive association with comREM (0.159, $p < 0.1$). In column (1), the absence of a significant correlation between AEM and post-merger status reinforces the preference for REM in complex business settings.

Panel B of the table refines this observation by incorporating a composite measure of complexity—Complexity PCA—derived from a constellation of variables that encapsulate operational diversity, market concentration, managerial complexity, market specificity, and the scale of business transactions. Results in Panel B confirm the conclusion that post-merger REM is significantly influenced by complexity, as captured by a multidimensional PCA score, while AEM is not significantly influenced. Specifically, the coefficients of the interaction between post-merger period and Complexity PCA are positive and significant for RM1 (0.043, $p < 0.01$) and comREM (0.028, $p < 0.05$), while RM2 also shows a positive relationship (0.037, $p < 0.01$). This

positive interaction indicates that more complex acquirers are more likely to engage in REM post-merger.

These results substantiate the fourth hypothesis (H4) and cohere with extant literature which posits that greater business complexity, often quantified through firm diversification and related factors, correlates with elevated REM activities (Jiraporn et al., 2008; El Mehdi and Seboui, 2011; Farooqi et al., 2014; Vasilescu and Millo, 2016). The PCA-based complexity score, therefore, provides a robust and nuanced tool for analysing the interplay between organizational complexity and REM practices in the post-merger context.

[Insert Table 4]

The increased visibility resulting from M&A is hypothesized to intensify regulatory oversight, thereby curbing accrual-based earnings management (AEM) and leading to a rise in real earnings management (REM) post-M&A (H5). This table reveals the dynamics between the acquirers' M&A-induced visibility—measured by the change in analyst following—and their post-merger earnings management practices. The interaction term between post-M&A status and change in analyst following in column (1) for abTACC is not significant, indicating that increased visibility does not significantly affect AEM. Conversely, the interaction terms are positive and significant for REM, with coefficients of 0.006 for comREM (significant at the 1% level), 0.005 for RM1 (significant at the 5% level), and 0.004 for RM2 (significant at the 5% level).

This pattern of results suggests that while acquirers' visibility does not have a significant impact on their accrual-based earnings management, it does appear to be associated with an increase in real earnings management strategies post-M&A. This supports H5, which posits that as firms become more visible following M&A, they are more likely to employ REM over AEM. The findings resonate with prior research by He and Yang (2014) and Zang (2006), which argue that firms are more constrained in their use of AEM due to transparency and therefore may resort to REM to manage earnings post-M&A.

[Insert Table 5]

Greater business complexity and heightened firm visibility typically create an environment conducive to increased real earnings management (REM) by post-merger acquirers. However, robust M&A performance is hypothesized to curtail the inclination towards EM. This is predicated on the notion that successful M&A outcomes can mitigate the motivation for EM by showcasing managerial competence and minimizing the threat of corporate takeovers. Table 6 scrutinizes this hypothesis (H6) by exploring the relation between post-merger EM and M&A performance across short-term event windows.

Panel A of Table 6 indicates that the cumulative abnormal return (CAR) over a 7-day window surrounding the M&A announcement (CAR [-3, +3]) is inversely related to both AEM and REM. Specifically, the CAR's impact on post-merger abTACC is significantly negative at the 10% level (-0.035), and the effect on comREM is also negatively significant at the 5% level (-0.098). Additionally, the data suggests a continuity in REM practices from the pre-merger to the post-merger period, with all pre-merger REM proxies showing a significant positive relationship with post-merger levels (coefficients of 0.382, 0.252, and 0.434 at the 1% level).

In Panel B, the negative coefficients associated with CAR over a more extended 21-day event window (CAR [-10, +10]) in relation to the acquirers' post-merger EM proxies—across all four measures—are both substantial and statistically significant at the 1% level. This finding substantiates the inverse correlation between M&A performance and the level of post-merger EM, lending credence to H6 that posits an inverse relationship between post-merger EM and favourable M&A outcomes.

These observations align with existing literature which posits that subpar M&A performance may heighten managerial job insecurity, propelling less-entrenched managers to resort to EM as a defensive mechanism to safeguard their positions (Lasalle et al., 1993; Leker and Salomo, 2000; Lehn and Zhao, 2006; Zhao, 2012). Thus, the results from Table 6 not only validate H6 but also enrich the discourse on the implications of M&A performance for corporate EM strategies.

[Insert Table 6]

4.3 Additional analysis

To assess the robustness of my empirical results, I conduct a series of checks to ensure that my results are not driven by modelling and measurement choices.

4.3.1 Additional analysis for cross-border subsamples

The empirical analysis presented in Table 7 offers insights into the accrual-based and real earnings management practices of acquirers engaging following cross-border M&A. Consistent with the proposed H1 the findings suggest a reduction in accrual-based earnings management post-M&A, as indicated by the significant negative coefficients for the 'Post' variable in column (1) and (2) for accrual-based total accruals (abTACC and abTACCP). Specifically, the coefficients of -0.029** and -0.035* in the abTACC and abTACCP models respectively, indicate a robust declination in the employment of AEM strategies to manage earnings in the post-M&A period for cross-border M&A.

In contrast to the previous findings, the results for real earnings management shown in columns (3), (4), and (5) do not reveal a significant change in the post-M&A period. This lack of significance may suggest that firms maintain their pre-M&A levels of real earnings management activities or that the impact of M&A on such activities is not easily discernible. This observation is consistent with the idea that real earnings management, which is inherently more difficult to detect and often intertwined with legitimate business operations, remains a subtle tactic for firms to present their financial position post-M&A (Gunny, 2005; Lehn and Zhao, 2006; Zhao et al., 2012).

The outcomes outlined in Table 7 provide valuable insights into the complex relationship between cross-border M&A and earnings management practices. The findings indicate a strategic shift away from earnings management techniques that rely on accruals, possibly due to increased regulatory oversight or a push for transparent financial reporting in the newly acquired market. The absence of substantial results in the area of real earnings management merits additional exploration, which could

indicate that such activities are more entrenched in a firm's operations and cannot be quickly altered following M&A transactions in a newly entered market.

[Insert Table 7]

4.3.2 Additional analysis controlling for board characteristics

Previous literature (e.g., Klein, 2002; Bergstresser and Philippon, 2006; Harris et al., 2019) documents the effect of board characteristics including director gender, director age and board independence (CEO duality) on firm EM behaviour. Specifically, director gender might affect the firm's EM behaviour due to differences in risk-taking behaviour and ethical attitude. Compared to their male counterparts, female CFOs engage in less EM and are more conservative in their financial reporting (Liu et al., 2016). The board size influences firm earnings management as it determines the monitoring quality of the board (Kao and Chen, 2004). A larger board size would result in less effective board monitoring because when the number of board members increases, it becomes more difficult for the members to monitor the management. The director's age may also influence management effectiveness as less experience leads to more time spent on decision-making. For older directors, they are more likely to achieve better firm performance with a better understanding of firm situations. The EM incentives to achieve better performance are for experienced management and thus can be less. As for board independence, the dual office (CEO duality) structure potentially facilitates more management discretion and impedes effective monitoring thus motivating firm EM behaviour (e.g., Jensen, 1993; Cornett et al., 2008).

These board characteristics are not controlled for in my main models due to the limited data availability. Therefore, I include these additional controls for board characteristics, including board gender diversity, board age, and board independence to filter the effect of these factors on acquirers' poet-merger EM. Table 8 presents the post-merger EM analysis with the inclusion of additional board characteristic controls. The negative coefficient for 'Post' in the accrual-based earnings management model (abnTACC), at -0.020*, suggests a statistically significant decrease in AEM at the 10% level post-merger. This aligns with the expectation that firms may reduce accrual

manipulation to avoid the risks associated with integrating financial reporting systems and the increased transparency demanded by regulatory environments and stakeholders.

Conversely, the 'Post' variable exhibits a positive and significant relationship with the first proxy for real earnings management (RM1), evidenced by a coefficient of 0.046, although this is only significant at the 10% level. This implies a potential increase in real activities-based earnings management in the post-merger period, which may go undetected as it involves the timing or structuring of operational decisions rather than explicit accounting adjustments.

These findings align with H1 and H2, suggesting a shift in the method of earnings management from accrual-based strategies to those involving real activities post-M&A. The strategic reduction in easily identifiable earnings manipulation through accruals, coupled with a potential uptick in the opaquer real earnings management tactics, highlights a nuanced approach by firms to maintain earnings performance in a way that satisfies regulatory standards and aligns with the operational flexibility of the new business environment.

[Insert Table 8]

4.4 Mitigating self-selection bias: strategies for endogeneity concerns

4.4.1 Placebo tests: validating earnings management post-M&A

The employment of a placebo test in the context of this study serves a critical role in affirming the robustness of the findings related to earnings management behaviour following M&A events. Given the concern for potential endogeneity due to self-selection bias, the placebo test provides a mechanism for distinguishing the impact of actual M&A from other unrelated factors that could also influence earnings management.

The use of a placebo allows us to conduct a falsification test: it helps determine if the patterns observed in the data could be due to chance or other external factors. By demonstrating that the patterns of earnings management do not emerge in these placebo

years, it can be more confidently stated that the significant results found in actual post-merger years are not the product of chance or inherent company characteristics that persist over time. Furthermore, the placebo test lends support to a causal interpretation of the results by showing that the timing of the M&A is crucial in influencing earnings management behaviours. If the behaviours were consistent across time, one would expect to see similar patterns in the placebo years, but this is not the case. The specificity of the timing thus adds weight to the assertion that M&A activities indeed have a unique effect on the financial reporting practices of the acquiring firms.

Table 9 illustrates that after randomly assigning non-M&A years as placebo "treatment" years, there are no significant changes in earnings management behaviours, as indicated by the 'Post' coefficients across all models. The coefficients in the placebo tests are statistically insignificant for both accrual-based earnings measures (abnTACC and abnTACCP) and all proxies for real earnings management (RM 1, RM 2, and comREM). This lack of significance stands in contrast to the earlier findings where the 'Post' period of actual M&A activity was associated with significant changes in earnings management behaviours. Incorporating this placebo test results substantively strengthens the credibility of this chapter's findings. It effectively rules out the year itself as a confounding factor and ensures that the changes observed can be attributed with greater certainty to the event of the M&A, rather than being spurious effects or a reflection of a broader trend within the sample firms.

This rigorous approach to addressing potential endogeneity showcases Chapter 1's methodological strength and underscores the careful consideration given to ensuring that the observed changes in earnings management are truly a consequence of M&A activity. It is a compelling addition to the existing literature, offering a more nuanced understanding of how corporate events such as M&A shape acquirers' earnings management practices.

[Insert Table 9]

4.4.2 Heckman two-stage model: confirming post-M&A earnings management

In addressing the potential self-selection bias inherent in this study of post-merger earnings management, I implement Heckman's two-step correction procedure, evidenced by my analysis results which underscore the necessity for such correction. In Table 10, the Inverse Mills Ratio (IMR) is significantly different from zero across all model specifications—abTACC, abTACCP, RM1, RM2, and ComREM—demonstrating the presence of self-selection bias within my sample. This significance suggests that the corrective measure is integral to deriving unbiased estimates of the impact of M&A on earnings management. My models are robust, incorporating a variety of control variables including Market-to-book, Leverage, Size, Growth, Cash flow, Return on Assets (ROA), auditing quality (Big four), Age, Capital expenditure, Market Herfindahl Index (MHI), Market shares, Tangible assets, and Earnings volatility, which collectively contribute to the reliability of my findings.

The consistency of the IMR's significance across these diverse models enhances the robustness of this study, reinforcing the pertinence of the Heckman correction irrespective of model choice. Moreover, the inclusion of Year and Firm Fixed Effects (FE) in each model further ensures that these results are not conflated with unobserved heterogeneity over time and across firms. My dataset consists of a sizeable sample size, as indicated by the R-squared values, which demonstrate a reasonable level of explanatory power for cross-sectional financial data. The coefficients of variables such as Size, ROA, and Leverage are statistically significant, validating their relevance and supporting the economic rationale of this research.

Incorporating the Inverse Mills Ratio (IMR) to control for potential self-selection bias, findings in Table 10 indicate a consistent alignment with the baseline model's results. By applying the Heckman correction method, this analysis has demonstrated the presence of self-selection bias and effectively minimized its impact, enhancing the credibility of my findings on post-merger earnings management.

[Insert Table 10]

5. Conclusion

5.1 Summary of results

This study examines whether acquirers engage in earnings management following M&A, the incentives behind it, the specific techniques used, and the key determinants influencing this behaviour. The research sample includes 3,728 US public acquirers from 1985 to 2018, encompassing 17,223 firm observations within a 7-year M&A event window. Previous research on EM in M&A has focused on pre-merger earnings manipulation by acquirers to boost earnings and reduce M&A payment (e.g., Erickson and Wang, 1999; Louis, 2004; Gong et al., 2008; Higgins, 2013; Karim and Capron, 2016; Huang et al., 2019). Zhang (2017) is the only study that has examined acquirers' post-merger EM, resulting in a gap in EM and M&A research.

The related literature suggests that after the merger, stock acquirers' pre-merger AEM can result in share price reversal and poor firm performance (e.g., Louis, 2004; Gong et al., 2008; Higgins, 2013). This firm underperformance may increase the risk of market discipline through a hostile takeover, which could jeopardize the survival of the firm and the managers' positions (e.g., Jensen, 1986; Lehn and Zhao, 2006). Acquirers' EM practices may be motivated by the urge to preserve the interests of both firms and their managers that are closely linked to the M&A outcomes. Consequently, acquirers are expected to manage earnings following a merger. As for the specific EM strategy, acquirers who have previously used AEM before M&A are at much greater risk of being scrutinized if they continue to do so (Cohen and Zarowin, 2010; Kothari et al., 2016). Additionally, the increased visibility of acquirers through M&A could attract regulatory attention, making the use of AEM less feasible (He and Yang, 2014; Gottardo and Moisello, 2019). As a result, REM is anticipated to be a more attractive option for post-merger acquirers compared to AEM, as regulators may have difficulty detecting it through auditing. Besides, the more complex post-merger context is hypothesised to encourage the implementation of REM through compelling incentives

and favourable conditions. Conversely, exceptional M&A performance is expected to decrease acquirers' EM by diminishing the motivation to enhance firm performance.

The empirical findings strongly support my arguments. I find that acquiring firms do manage their earnings following the M&A. During the post-merger period, REM is preferred by acquirers as there is a heightened level of REM and a lowered level of AEM. Post-merger REM is primarily used due to the greater complexity and visibility of the acquirer's business. Complex business environments are advantageous for EM, while increased visibility can lead to increased scrutiny costs for AEM. Therefore, post-merger acquirers typically prefer REM. A good performance in M&A deals mitigates the acquirer's EM post-M&A by reducing the EM incentive for performance enhancement. My findings agree with Zhang (2017), who finds that the acquirer's REM is more pronounced than its AEM following the M&A. Those who have adopted AEM prior to M&A are more inclined to shift towards REM than to continue using AEM post-merger. Additionally, my findings support previous research which suggests that a company's level of REM is increased by firm diversification, acting as an indicator of heightened business complexity (Jiraporn et al., 2008; Khanchel El Mehdi and Seboui, 2011; Farooqi et al., 2014). Finally, my findings are consistent with those of He and Yang (2014) and Zang (2012), who have found that transparency constrains firms' AEM and enhances their REM due to the increased costs associated with the use of AEM.

5.2 Contributions and implications

This study has made significant contributions to the literature. First, it adds to the limited EM literature in the post-M&A context. Unlike Zhang (2017), this study focuses on the post-merger context. In addition to examining the practices of acquirers' post-merger EM, it also delves into the motivations behind them and the factors that either augment or mitigate such practices. Second, it suggests a shift in the acquirers' inclination towards EM techniques, from AEM before M&A to REM after M&A. Unlike previous studies that documented acquirers' EM predominantly through AEM prior to M&A, I find that acquirers prefer REM after the merger (e.g., Erickson and

Wang, 1999; Louis, 2004; Gong and Sun, 2008; Higgins, 2013). Finally, this study reveals a link between M&A performance and acquirers' post-merger EM practices, adding to the M&A literature. While previous studies examined acquirers' EM practices during the pre-M&A period and the M&A event, my findings suggest that M&A completion represents the beginning of a new journey in which acquirers' strategic EM actions are initiated (e.g., Datta et al., 1992; King et al., 2004; Louis, 2004; Gong and Sun, 2008; Higgins, 2013; Akben-Selcuk, 2015; Rao-Nicholson et al., 2016).

This study sheds light on opportunistic earnings management by acquirers following M&A. This has significant implications for research and practice, highlighting the need to carefully examine the financial reporting and actions of acquirers after M&A deals to detect any unethical behaviour that conceals firm value destruction. As a result of my findings, regulators should become aware of loopholes that allow acquirers to manipulate earnings, deceive investors, and conceal the failure of M&A deals. To prevent such misconduct, policymakers could consider implementing expanded deal-related disclosures, instituting clawback provisions for executive compensation tied to inflated earnings, and introducing accounting standards that limit flexibility for manipulations. Increased auditor scrutiny of post-merger financial statements is also necessary. Ultimately, addressing the issue of post-merger earnings management requires the implementation of stringent regulations specifically targeting acquirers' reporting, so that market integrity can be maintained, and stakeholders are protected from potentially misleading representations of a deal's success.

5.3 Research limitations

While focusing solely on US public acquirers limits generalizability, this focus enabled access to quality data fundamental for examining post-merger earnings management. Although private bidders are excluded, public deals represent the most substantial M&A activities, providing critical insight into the motivations and techniques acquirers use to manipulate earnings. Concentrating on US firms also allows an in-depth analysis within a consistent regulatory context. While numerous factors related to post-merger

earnings manipulation remain unexplored, this research illuminates key determinants and establishes strong evidence of acquirers' opportunistic practices. Though broadening the scope could yield additional perspectives, the sample provides sufficient diversity to thoroughly assess the fundamental drivers and methods of acquirers' post-merger earnings management. Thus, these limitations are unlikely to substantially undermine the validity of the findings or preclude valuable contributions to understanding acquirers' post-merger earnings management.

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Appendix:

Variable definitions and descriptions

Variable	Definition or description
Industry	Fama and French 48 industry classification scheme used for cross-industry EM calculation. Fama and French 12 industry classification scheme for identifying diversified deals and controlling industry effects. Source: Fama-French (1997) industrial classification
abTACC	Firm's total accruals minus nondiscretionary accruals in the specific firm-year. To calculate abnTACC, these financial variables from Compustat are used: act (current assets), ch (cash), lct (current liability), dlc (debt in current liabilities), at (total assets), revt (total revenues), rect (total receivables) Source: Dechow et al. (1995)
RM_CFO	Denotes the volume of abnormal cash flow from operations. It is calculated as the values of abnormal cash flows from operations multiplied by the negative one. To calculate this variable, the following financial variables from Compustat are used: at (total asset), sale (sales), oancf (operating cash flow). Source: Roychowdhury (2006)
RM_PROD	The firm's actual value of production costs minus its expected value. To calculate RM_PROD, these financial variables from Compustat are used: cogs (costs of goods sold), invt (inventories), at (total asset), sale (sales). Source: Roychowdhury (2006),
RM_ DISX	Denotes the volume of abnormal discretionary expenses, which is calculated as the values of abnormal discretionary expenses multiplied by negative one. To calculate RM_DISX, these financial variables from Compustat are used: xad (advertising expense), xrd (research and development expense), xsga (selling, general and administrative expense). Source: Roychowdhury (2006)
RM1	The sum of RM_PROD and RM_DISX. Denotes the first combined measure of REM. Source: Zang (2006), Cohen and Zarowin (2010)
RM2	The sum of RM_CFO and RM_DISX. Denotes the second combined measure of REM. Source: Zang (2006), Cohen and Zarowin (2010)
ComREM	The sum of RM_PROD, RM_DISX and RM_CFO. Denoted the aggregated measure of REM. Source: Cohen et al. (2008)
Post	A dummy variable that equals 1 if the sample firm's year t in the [-5, +5] year M&A window is after the M&A year, otherwise 0.

	Source: Fauver et al. (2017) and Chen et al. (2020)
CAR	Denotes the cumulative abnormal returns over the 7-day event window [-3, +3] and 21-day event window [-10, +10] using the market model to indicate the M&A performance. Source: Moeller et al. (2004)
Complexity	The logarithm of the number of words in the complexity word list by Loughran and McDonald (2020). Denotes the measurement of the acquirer's business complexity. Source: Loughran and McDonald (2020).
Complexity PCA	The Complexity PCA Score is derived from key variables including the number of business segments (indicating operational diversity), Herfindahl-Hirschman Index (reflecting market concentration), number of employees (suggesting management complexity), whether the company targets private markets (introducing specific challenges), and the relative size of significant business deals (affecting organizational and strategic complexity). These variables collectively provide a comprehensive measure of organizational complexity.
Private target	A dummy variable named private target which indicates the public status of the M&A target as the proxy of acquirers' post-acquisition complexity. It equals 1 if the target is private, otherwise 0. Source: Capron and Shen (2007)
Diversified	Denotes whether the acquisition deal is diversified. It is a dummy variable that equals 1 if the acquirer and the target are defined as the same industry according to the Fama and Frech 12 industry classification scheme. Source: Lim et al. (2008) and Farooqi et al. (2014)
Analysts following change	A dummy variable denotes the change of the analysts following and indicates the change of analysts following acquirers after the merger as the proxy of acquirers' post-acquisition visibility. It equals 1 if the number of analysts following increases after the merger, and 0 otherwise. Source: Baker et al. (1999), Bushee and Miller (2012) and Gavana et al. (2019)
Size	The natural log of the market value of equity in millions as of the end of the year. Source: Lang et al. (2006)
Cash flow	Cash Flow, which is calculated as the annual net cash flow from operating activities, is scaled by end-of-year total assets. Source: Lang et al. (2006) and Jelinek (2007)
Market-to -book	Market to Book Ratio, which is the market value of common equity divided by the book value of common equity. Source: Cohen and Zarowin (2010)
Leverage	Firm leverage that quals the end-of-year total liabilities divided by end-of-year total equity. Source: Lang et al. (2006) and Cohen and Zarowin (2010)
Growth	The ratio of changes in sales to lagged sales. Source: Lang et al. (2006)
Big four	The dummy variable equals 1 if a firm works with big-four auditors,

	otherwise 0. Source: Memis and Cetenak (2012)
ROA	Return on assets. ROA equals 1 if the firm's return on assets figure is positive, otherwise 0. Source: Arun et al. (2015)
Capital Expenditure	Represents the total amount a company spends on acquiring or maintaining physical assets such as property, plants, and equipment.
HHI	The Herfindahl-Hirschman Index measures market concentration and is calculated as the sum of the squares of the market shares of all firms within the industry, with market shares expressed as percentages.
Market Shares	Defined as the logarithm of the common stock outstanding, indicating the scale of equity a company has issued.
Tangible	The ratio of tangible assets (physical and financial assets) to total assets highlights the company's investment in physical resources.
Z-Score	Taffler Z-Score, a predictive model for bankruptcy risk among private firms, formulated as $ZScore = 3.20 + 12.18 * X_1 + 2.50 * X_2 - 10.68 * X_3 + 0.029 * X_4$, where X1 is the ratio of profit before tax (PBT) to current liabilities, X2 is the ratio of current assets to total liabilities, X3 is the ratio of current liabilities to total assets, X4 is the ratio of quick assets minus current liabilities to daily operating expenses (DOE). DOE is computed as sales minus PBT minus depreciation divided by 365.
Earnings Volatility	Measures the standard deviation of a company's earnings over a period.

Table 1. Sample Distribution

The sample acquisitions meet the following selection criteria: (1) The acquirer is listed on NYSE or NASDAQ; (2) The acquirer holds 100% of the target's shares after the M&A; (3) The acquisition deal value is more than $1 million; (4) The acquisition is the biggest deal conducted by the acquirer during the period from January 1st, 1985, to December 31st, 2018. Panel A shows the sample distribution by announcement year. Panel B shows the sample distribution by Fama and French 48 industry classification. Panel C shows the sample distribution by the target nation region. Panel D shows the sample distribution by target public status.

Table 1: Sample distribution

Panel A: M&A announcement year distribution

M&A announcement year	Frequency	Percentage
1985	20	0.54
1986	35	0.94
1987	28	0.75
1988	44	1.18
1989	35	0.94
1990	41	1.10
1991	45	1.21
1992	61	1.64
1993	91	2.44
1994	106	2.84
1995	106	2.84
1996	152	4.08
1997	201	5.39
1998	215	5.77
1999	181	4.86
2000	186	4.99
2001	128	3.43
2002	111	2.98
2003	96	2.58
2004	128	3.43
2005	134	3.59
2006	132	3.54
2007	151	4.05
2008	89	2.39
2009	59	1.58
2010	87	2.33
2011	90	2.41
2012	105	2.82
2013	103	2.76
2014	153	4.10
2015	163	4.37
2016	145	3.89
2017	151	4.05
2018	156	4.18
Total	3,728	100.00

Panel B: French and Fama 48 industry distribution

Fama-French 48 industry	Frequency	Percentage
Agriculture	14	0.38
Food Products	59	1.58
Candy & Soda	5	0.13
Beer & Liquor	8	0.21
Tobacco Products	2	0.05
Recreation	20	0.54
Entertainment	55	1.48
Printing and Publishing	32	0.86
Consumer Goods	42	1.13
Apparel	39	1.05
Healthcare	110	2.95
Medical Equipment	161	4.32
Pharmaceutical Products	201	5.39
Chemicals	85	2.28
Rubber and Plastic Products	28	0.75
Textiles	20	0.54
Construction Materials	72	1.93
Construction	48	1.29
Steel Works Etc	52	1.39
Fabricated Products	8	0.21
Machinery	143	3.84
Electrical Equipment	53	1.42
Automobiles and Trucks	57	1.53
Aircraft	19	0.51
Shipbuilding, Railroad Equipment	11	0.30
Defense	5	0.13
Precious Metals	11	0.30
Non-Metallic and Industrial Metal Minin	15	0.40
Coal	6	0.16
Petroleum and Natural Gas	184	4.94
Personal Services	53	1.42
Business Services	735	19.72
Computers	210	5.63
Electronic Equipment	275	7.38
Measuring and Control Equipment	101	2.71
Business Supplies	42	1.13
Shipping Containers	11	0.30
Transportation	41	1.10
Wholesale	150	4.02
Retail	171	4.59
Restaraunts, Hotels, Motels	59	1.58
Real Estate	16	0.43
Trading	275	7.38
Other	24	0.64
Total	3,728	100.00

Panel C: M&A target nation distribution

Target Nation	Frequency	Percentage
Argentina	2	0.05
Australia	19	0.51
Austria	5	0.13
Belgium	12	0.32
Bermuda	2	0.05
Brazil	6	0.16
British Virgin Islands	3	0.08
Canada	108	2.90
China (Mainland)	9	0.24
Costa Rica	1	0.03
Czech Republic	1	0.03
Denmark	10	0.27
Egypt	1	0.03
Finland	3	0.08
France	32	0.86
Germany	55	1.48
Hong Kong	3	0.08
India	1	0.03
Indonesia	2	0.05
Ireland	6	0.16
Israel	12	0.32
Italy	15	0.40
Japan	7	0.19
Jersey	1	0.03
Lithuania	1	0.03
Luxembourg	5	0.13
Mexico	9	0.24
Netherlands	23	0.62
Norway	7	0.19
Pakistan	1	0.03
Poland	1	0.03
Portugal	2	0.05
Puerto Rico	2	0.05
Russia	3	0.08
Singapore	6	0.16
South Africa	1	0.03
South Korea	5	0.13
Spain	5	0.13
Sweden	15	0.40
Switzerland	10	0.27
Taiwan	5	0.13
Turkey	1	0.03
United Kingdom	108	2.90
United States	3,200	85.86
Venezuela	1	0.03
Other	1	0.03
Total	3,728	100.00

Panel D: M&A target public status distribution

Target Public Status	Frequency	Percentage
Joint Venture	40	1.07
Private	1,713	45.95
Public	746	20.01
Subsidiary	1,229	32.97
Total	3,728	100.00

Table 2. Descriptive Statistics of Sample Firms' Key Variables

The table presents descriptive statistics of the sample firm's EM variables, M&A performance (CAR), firm business complexity, firm visibility and controlled firm characteristics during the 7-year M&A window [-3, +3]. Panel A presents descriptive statistics of all variables used in the baseline models during the 7-year M&A window. Panel B presents descriptive statistics of the sample firm's EM variables during the pre-merger M&A window [-3, 0]. Panel C presents descriptive statistics of the sample firm's EM variables, complexity and firm visibility during the post-merger M&A window [0, +3]. Panel C presents descriptive statistics of sample acquirers' EM variables across the pre-SOX and post-SOX periods. The number of observations (N), mean, median and standard deviation (Std. Dev) of all variables are provided together with the 25^{th}, 50^{th} and 75^{th} distribution percentiles. Full variable definitions are available in the Appendix. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 2: Descriptive statistics

Panel A: Descriptive statistics of all variables

	N	Mean	Std. Dev.	min	p25	Median	p75	max
Dependent variables								
abTACC	17,223	.001	.236	-.898	-.065	-.01	.038	4.44
RM 1	17,223	-.008	.536	-7.907	-.209	.014	.216	2.69
RM 2	17,223	0	.357	-6.605	-.123	.019	.151	1.494
comREM	17,223	-.031	.522	-5.791	-.249	-.004	.209	2.36
Independent variables								
Post	17,223	.528	.499	0	0	1	1	1
Moderating variables								
Complexity PCA	14,015	0	.378	-.898	-.146	-.003	.162	8.99
Complexity	9,785	.227	.052	.083	.193	.225	.259	.388
Chang in analyst following	14,884	.395	2.545	-9	-1	0	2	11
CAR (-3, +3)	10,484	.016	.11	-.357	-.042	.013	.068	.552
CAR (-10, +10)	10,491	.009	.156	-.629	-.077	.005	.09	.736
Control variables								
Market-to-book	17,223	1.009	.199	.33	1	1	1	5.162
Leverage	17,223	1.391	2.243	.03	.38	.826	1.558	33.629
Size	17,223	6.252	1.885	1.404	4.904	6.203	7.506	11.865
Growth	17,223	.254	.667	-.731	.011	.122	.297	12.113
Cash flow	17,223	.069	.117	-.878	.033	.082	.131	.464
ROA	17,223	0	.18	-2.37	-.012	.039	.079	.307
Bigfour	17,223	.764	.425	0	1	1	1	1
Age	17,223	18.414	14.897	2	7	13	25	69
Capital expenditure	17,223	119	382.252	0	3.533	14.551	63.185	5197
HHI	17,223	.083	.061	.011	.045	.064	.094	.504
Market shares	17,223	3.479	1.247	-1.298	2.602	3.402	4.207	7.81
Tangible	17,223	.437	.356	0	.168	.331	.617	2.37
ZScore	17,223	10.319	18.106	-228.273	3.043	8.58	16.644	145.486
Earnings volatility	17,223	290.877	768.854	.617	19.468	57.621	194.521	8142.658

Panel B: Comparative summary of earnings management variables Pre- and Post-M&A with statistical test results

EM Variables	Pre-M&A Mean	Post-M&A Mean	Mean Difference	T value	Mann-Whitney Test Statistic	P-value
abTACC	0.021	-0.015	0.036***	(9.578)	7.054	< 0.0001
RM_1	-0.037	0.013	-0.050***	(-5.866)	-4.511	< 0.0001
RM_2	-0.025	0.021	-0.046***	(-8.221)	-6.611	< 0.0001
ComREM	-0.066	-0.003	-0.064***	(-7.780)	-7.201	< 0.0001
Observations	7,917	9,306	17,223			

Panel C: Results of T-Tests comparing earnings management before and after M&A events, across Pre-SOX and Post-SOX periods

Pre-SOX	**Pre-M&A**	**Post-M&A**		
	(1)	(2)	(3)	(4)
	Mean	Mean	Difference	T value
EM variables				
abTACC	0.039	-0.016	0.035***	(4.372)
RM1	-0.084	-0.006	-0.048***	(-9.602)
RM2	-0.048	0.017	-0.045***	(-6.009)
comREM	-0.105	-0.015	-0.063***	(-7.688)
Observations	3,744	3,863	17,223	

Post-SOX	**Pre-M&A**	**Post-M&A**		
	(1)	(2)	(3)	(4)
	Mean	Mean	Difference	T value
EM variables				
abTACC	0.003	-0.014	0.035***	(9.491)
RM1	0.011	0.029	-0.048***	(-5.762)
RM2	-0.004	0.023	-0.045***	(-8.166)
comREM	-0.029	0.006	-0.063***	(-7.721)
Observations	4,173	5,443	17,223	

Table 3. The Regression of Acquirers' EM and Post-M&A Status

This table explores the relationship between post-merger time variable—Post and acquirers' EM behaviour. The Post variable indicating acquirers' post-merger time status is the independent variable. I use both AEM and REM variables including abTACC, abTACCP, RM1, RM2, comREM as the dependent variables. The model also controls firm-level characteristics including firm size, market-to-book ratio, cash flow, leverage, sales growth, ROA, firm age, auditing quality, capital expenditure, HHI, market shares, tangible assets, Z-Score, and earnings volatility. The fixed effects of firm, year, industry and country are also controlled in this model. Full variable definitions are available in the Appendix. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 3. The relation between post-M&A status and acquirers' EM

VARIABLES	(1) abTACC	(2) abTACCP	(3) RM_1	(4) RM_2	(5) comREM
Post	-0.041***	-0.041***	0.049***	0.012*	0.029***
	(0.007)	(0.007)	(0.010)	(0.007)	(0.009)
Market-to-book	0.003	0.006	-0.026*	-0.009	-0.021
	(0.010)	(0.010)	(0.015)	(0.010)	(0.013)
Leverage	0.003**	0.003**	0.001	-0.001	-0.000
	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)
Size	0.034***	0.032***	-0.010	-0.020***	-0.011**
	(0.004)	(0.004)	(0.006)	(0.004)	(0.006)
Growth	0.030***	0.023***	-0.132***	-0.124***	-0.106***
	(0.003)	(0.004)	(0.005)	(0.004)	(0.005)
Cash flow	-0.534***	-0.562***	-0.056	-0.748***	-1.099***
	(0.027)	(0.029)	(0.042)	(0.029)	(0.036)
ROA	-0.015	-0.019	-0.036	0.018	0.034
	(0.018)	(0.019)	(0.028)	(0.019)	(0.024)
Big four	-0.007	-0.010	-0.042***	-0.029***	-0.051***
	(0.010)	(0.011)	(0.015)	(0.011)	(0.013)
Age	0.006	0.062	0.164	-0.099	0.099
	(0.079)	(0.083)	(0.121)	(0.085)	(0.106)
Capital expenditure	-0.000	-0.000	0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
HHI	0.104	0.114	-0.650***	-0.491***	-0.561***
	(0.140)	(0.148)	(0.216)	(0.152)	(0.188)
Market shares	-0.027***	-0.022***	0.049***	0.040***	0.040***
	(0.007)	(0.008)	(0.011)	(0.008)	(0.010)
Tangible	-0.075***	-0.067***	-0.108***	-0.031	-0.090***
	(0.019)	(0.020)	(0.029)	(0.021)	(0.026)
Earnings volatility	0.000	0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Z Score	0.005***	0.005***	-0.002***	-0.001***	-0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	-0.225**	-0.288**	0.042	0.237**	0.043
	(0.108)	(0.114)	(0.167)	(0.117)	(0.145)

Year FE	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES
Observations	17,223	17,209	17,223	17,223	17,223
R-squared	0.118	0.113	0.082	0.169	0.157
Number of firms	3,432	3,429	3,432	3,432	3,432

Table 4. The Regression of M&A-Induced Complexity and Acquirers' Post-M&A EM

This table explores the relationship between M&A-induced complexity variables "Complexity", "Complexity PCA" and their EM in the three-year post-merger period. The EM variables including abTACC, RM1, RM2 and comREM are applied as the dependent variables. The complexity proxy and its interaction with "Post" are the independent variables. The model also controls firm-level characteristics including firm size, market-to-book ratio, cash flow, leverage, sales growth, ROA, firm age, auditing quality, capital expenditure, HHI, market shares, tangible assets, Z-Score, and earnings volatility. The fixed effects of firm, year, industry and country are also controlled in this model. Full variable definitions are available in the Appendix. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 4. The relation between M&A-induced complexity and acquirers' post-M&A EM

Panel A: The relation between variable "complexity" and acquirers' post-M&A EM

VARIABLES	(1) abTACC	(2) RM_1	(3) RM_2	(4) comREM
Complexity	0.014	-0.067	0.033	0.008
	(0.048)	(0.082)	(0.051)	(0.082)
Post	-0.013	-0.065***	-0.034***	-0.046**
	(0.012)	(0.020)	(0.013)	(0.020)
Post × Complexity	-0.045	0.258***	0.087*	0.159*
	(0.049)	(0.083)	(0.051)	(0.083)
Market-to-book	0.002	-0.040***	-0.026***	-0.025*
	(0.008)	(0.014)	(0.008)	(0.014)
Leverage	0.001	0.002	0.001*	0.000
	(0.001)	(0.001)	(0.001)	(0.001)
Size	0.014***	0.014**	0.004	0.002
	(0.003)	(0.006)	(0.003)	(0.006)
Growth	0.002	-0.015**	-0.051***	-0.013*
	(0.004)	(0.007)	(0.004)	(0.007)
Cash flow	-0.357***	-0.239***	-0.794***	-1.125***
	(0.022)	(0.037)	(0.023)	(0.037)
ROA	0.074***	-0.097***	-0.012	-0.027
	(0.016)	(0.028)	(0.017)	(0.028)
Big four	0.004	-0.027**	-0.021**	-0.034**
	(0.008)	(0.014)	(0.008)	(0.014)
Age	0.008	0.262***	-0.058	0.263***
	(0.053)	(0.090)	(0.056)	(0.090)
Capital expenditure	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
HHI	-0.123	-0.112	0.061	0.105
	(0.119)	(0.201)	(0.125)	(0.201)
Market shares	-0.001	0.002	0.009	0.012
	(0.006)	(0.010)	(0.006)	(0.010)
Tangible	-0.028**	-0.152***	-0.037**	-0.111***
	(0.014)	(0.024)	(0.015)	(0.024)

Earnings volatility	0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Z Score	0.001***	-0.000	0.001***	-0.000*
	(0.000)	(0.000)	(0.000)	(0.000)
Constant	-0.157	-3.276***	0.689	-3.290***
	(0.666)	(1.123)	(0.698)	(1.125)
Observations	9,692	9,692	9,692	9,692
Year FE	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
R-squared	0.071	0.043	0.207	0.161
Number of Firms	2,233	2,233	2,233	2,233

Panel B: The relation between variable "Complexity PCA" and acquirers' post-M&A EM

VARIABLES	(1) abTACC	(2) RM_1	(3) RM_2	(4) comREM
Complexity PCA	-0.178***	0.505***	0.388***	0.428***
	(0.042)	(0.060)	(0.043)	(0.053)
Post	-0.033***	0.032***	-0.001	0.015*
	(0.007)	(0.010)	(0.007)	(0.009)
Post× Complexity PCA	-0.016	0.043***	0.037***	0.028**
	(0.010)	(0.014)	(0.010)	(0.013)
Market-to-book	0.002	-0.025	-0.012	-0.022
	(0.011)	(0.015)	(0.011)	(0.014)
Leverage	0.005***	-0.001	-0.004**	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)
Size	0.041***	-0.016**	-0.025***	-0.018***
	(0.005)	(0.007)	(0.005)	(0.006)
Growth	0.012***	-0.121***	-0.117***	-0.101***
	(0.004)	(0.006)	(0.004)	(0.005)
Cash flow	-0.491***	-0.091**	-0.746***	-1.128***
	(0.031)	(0.045)	(0.032)	(0.039)
ROA	-0.046**	-0.042	-0.000	0.028
	(0.020)	(0.029)	(0.020)	(0.025)
Big four	0.001	-0.056***	-0.046***	-0.059***
	(0.011)	(0.016)	(0.012)	(0.015)
Age	0.221	0.339*	-0.067	0.271
	(0.136)	(0.197)	(0.140)	(0.174)
Capital expenditure	-0.000	0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
HHI	0.169	-0.995***	-0.764***	-0.819***
	(0.171)	(0.247)	(0.176)	(0.218)
Market shares	-0.025***	0.029**	0.024***	0.024**
	(0.009)	(0.012)	(0.009)	(0.011)
Tangible	-0.084***	-0.136***	-0.056**	-0.124***
	(0.023)	(0.033)	(0.023)	(0.029)
Earnings volatility	0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Z Score	0.005***	-0.002***	-0.001***	-0.002***
	(0.000)	(0.000)	(0.000)	(0.000)
Constant	-0.440***	0.037	0.309**	0.025
	(0.151)	(0.218)	(0.155)	(0.193)
Year FE	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Observations	14,015	14,015	14,015	14,015
R-squared	0.124	0.130	0.249	0.210
Number of firms	3,246	3,246	3,246	3,246

Table 5. The Regression of Firm Visibility and Acquirers' Post-M&A EM

This table explores the relationship between M&A-induced visibility variable – change in the number of analysts following and their REM in the three-year post-merger period. The EM variables including abTACC, RM1, RM2, and comREM are applied as dependent variables. The visibility proxy and their interaction with Post are the independent variables. The model also controls firm-level characteristics including firm size, market-to-book ratio, cash flow, leverage, sales growth, ROA, firm age, auditing quality, capital expenditure, HHI, market shares, tangible assets, Z-Score, and earnings volatility. The fixed effects of firm, year, industry and country are also controlled in this model. Full variable definitions are available in the Appendix. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 5. The relation between firm visibility and post-M&A EM

VARIABLES	(1) abTACC	(2) comREM	(3) RM_1	(4) RM_2
Change in analyst following	0.032*	-0.027	-0.037	-0.033*
	(0.017)	(0.023)	(0.026)	(0.018)
Post	-0.041***	0.026***	0.046***	0.014*
	(0.007)	(0.009)	(0.011)	(0.007)
Post × Chang in analyst following	-0.002	0.006***	0.005**	0.004**
	(0.001)	(0.002)	(0.002)	(0.002)
Market-to-book	-0.018*	-0.009	-0.007	-0.003
	(0.010)	(0.014)	(0.016)	(0.011)
Leverage	0.002	-0.001	0.000	-0.001
	(0.001)	(0.002)	(0.002)	(0.001)
Size	0.036***	-0.009	-0.009	-0.020***
	(0.004)	(0.006)	(0.007)	(0.005)
Growth	0.037***	-0.111***	-0.140***	-0.132***
	(0.004)	(0.005)	(0.006)	(0.004)
Cash flow	-0.536***	-1.087***	-0.022	-0.733***
	(0.029)	(0.039)	(0.045)	(0.031)
ROA	-0.015	0.050*	0.001	0.027
	(0.019)	(0.026)	(0.030)	(0.021)
Big four	-0.003	-0.045***	-0.034**	-0.025**
	(0.010)	(0.014)	(0.016)	(0.011)
Age	0.047	0.024	0.111	-0.163*
	(0.087)	(0.116)	(0.134)	(0.093)
Capital expenditure	-0.000	-0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
HHI	0.161	-0.514***	-0.625***	-0.492***
	(0.148)	(0.198)	(0.229)	(0.160)
Market shares	-0.033***	0.039***	0.053***	0.038***
	(0.008)	(0.010)	(0.012)	(0.008)
Tangible	-0.052***	-0.095***	-0.123***	-0.038*
	(0.020)	(0.026)	(0.030)	(0.021)
Earnings volatility	0.000	-0.000	-0.000	-0.000

	(0.000)	(0.000)	(0.000)	(0.000)
Z Score	0.004***	-0.002***	-0.002***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
Constant	-0.305**	0.084	0.067	0.318**
	(0.124)	(0.166)	(0.192)	(0.134)
Year FE	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Observations	14,884	14,884	14,884	14,884
R-squared	0.122	0.156	0.078	0.169
Number of Firms	2,877	2,877	2,877	2,877

Table 6. The Regression of M&A Performance and Acquirers' Post-M&A EM

This table explores the relationship between acquirers' M&A performance in the 7-day and 21-day M&A event window [-3, +3] and [-10, +10] and their REM in the three-year post-M&A period. Here PostRM1, PostRM2 and PostcomREM are independent variables which denote the mean value of the acquirers' REM variables in the three post-M&A years. PreabTACC, PreRM1, PreRM2 and PrecomREM are dependent variables which represent the mean value of the acquirers' EM variables in the three pre-M&A years. The variables CAR (-3, +3) and CAR (-10, +10) demonstrate the acquirers' M&A performance during the 7-day and 21-day M&A event window respectively. The model also controls firm-level characteristics including firm size, market-to-book ratio, cash flow, leverage, sales growth, ROA, firm age, auditing quality, capital expenditure, HHI, market shares, tangible assets, Z-Score, and earnings volatility. The year and industry effects (Fama and French 12 industry classification) are also controlled in this model. Full variable definitions are available in the Appendix. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 6. The relation between M&A performance and acquirer's post-M&A EM

Panel A: The relation between the acquirer's post-M&A EM and its M&A performance during the 7-day M&A event period

VARIABLES	(1) Post abTACC	(2) Post RM1	(3) Post RM2	(4) Post comREM
Car (-3, +3)	-0.035*	-0.073	-0.023	-0.098**
	(0.075)	(0.133)	(0.436)	(0.025)
PreAEM	-0.056***			
	(0.000)			
PreRM1		0.382***		
		(0.000)		
PreRM2			0.252***	
			(0.000)	
PreRMcom				0.434***
				(0.000)
Market-to-book	0.004	-0.013	0.010	0.008
	(0.683)	(0.576)	(0.489)	(0.740)
Leverage	-0.001	0.004**	0.003*	0.004**
	(0.121)	(0.046)	(0.094)	(0.039)
Size	0.009***	0.013*	0.002	0.010*
	(0.000)	(0.050)	(0.643)	(0.094)
Growth	0.024*	0.055**	-0.008	0.017
	(0.063)	(0.031)	(0.646)	(0.507)
Cash flow	-0.129***	-0.117	-0.319***	-0.480***
	(0.000)	(0.295)	(0.000)	(0.000)
ROA	-0.011	-0.098	-0.015	-0.054
	(0.560)	(0.360)	(0.857)	(0.565)
Big four	0.005	-0.018*	-0.014*	-0.024**
	(0.191)	(0.090)	(0.050)	(0.017)
Age	0.000***	0.001*	0.001***	0.000
	(0.007)	(0.051)	(0.000)	(0.172)
Capital expenditure	-0.000***	-0.000***	-0.000**	-0.000***
	(0.000)	(0.000)	(0.017)	(0.000)
HHI	0.033	-0.585***	-0.469***	-0.486***
	(0.108)	(0.000)	(0.000)	(0.000)
Market shares	-0.011***	-0.028***	-0.014**	-0.027***
	(0.000)	(0.001)	(0.018)	(0.000)
Tangible	-0.011**	-0.010	-0.004	-0.004
	(0.018)	(0.521)	(0.722)	(0.780)
Earnings volatility	0.000***	0.000***	0.000***	0.000***
	(0.002)	(0.000)	(0.000)	(0.000)
Z Score	0.001***	-0.000	-0.000	-0.000
	(0.000)	(0.573)	(0.779)	(0.394)
Constant	-0.056***	0.166***	0.125	0.238
	(0.000)	(0.000)	(0.139)	(0.163)
Observations	5,544	5,577	5,508	5,505
R-squared	0.114	0.494	0.359	0.562
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

Panel B: The relation between the acquirer's post-M&A EM and its M&A performance during the 21-day M&A event period

VARIABLES	(1) Post abTACC	(2) Post RM1	(3) Post RM2	(4) Post comREM
Car (-10, +10)	-0.026**	-0.130***	-0.080***	-0.133***
	(0.046)	(0.000)	(0.001)	(0.000)
PreAEM	-0.056***			
	(0.000)			
PreRM1		0.382***		
		(0.000)		
PreRM2			0.254***	
			(0.000)	
PreRMcom				0.434***
				(0.000)
Market-to-book	0.004	-0.012	0.011	0.008
	(0.683)	(0.603)	(0.461)	(0.721)
Leverage	-0.001	0.004**	0.003*	0.004**
	(0.100)	(0.043)	(0.084)	(0.036)
Size	0.009***	0.013**	0.002	0.010*
	(0.000)	(0.046)	(0.611)	(0.084)
Growth	0.024*	0.055**	-0.008	0.016
	(0.064)	(0.031)	(0.657)	(0.513)
Cash flow	-0.129***	-0.122	-0.322***	-0.485***
	(0.000)	(0.279)	(0.000)	(0.000)
ROA	-0.011	-0.089	-0.010	-0.046
	(0.581)	(0.405)	(0.909)	(0.629)
Big four	0.005	-0.017*	-0.014*	-0.024**
	(0.191)	(0.094)	(0.053)	(0.018)
Age	0.000***	0.001**	0.001***	0.000
	(0.006)	(0.039)	(0.000)	(0.147)
Capital expenditure	-0.000***	-0.000***	-0.000**	-0.000***
	(0.000)	(0.000)	(0.019)	(0.000)
HHI	0.035*	-0.570***	-0.460***	-0.473***
	(0.090)	(0.000)	(0.000)	(0.000)
Market shares	-0.011***	-0.031***	-0.016***	-0.029***
	(0.000)	(0.000)	(0.008)	(0.000)
Tangible	-0.010**	-0.008	-0.003	-0.002
	(0.028)	(0.594)	(0.766)	(0.881)
Earnings volatility	0.000***	0.000***	0.000***	0.000***
	(0.002)	(0.000)	(0.000)	(0.000)
Z Score	0.001***	-0.000	-0.000	-0.001
	(0.000)	(0.491)	(0.666)	(0.329)
Constant	-0.053***	0.169***	0.129	0.241
	(0.000)	(0.000)	(0.122)	(0.158)
Observations	5,548	5,581	5,512	5,509
R-squared	0.114	0.495	0.361	0.564
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

Table 7. The Regression of Acquirers' EM and Post-M&A Status: A Cross-Border Subset Analysis

This table presents an analysis focused on the relationship between post-merger time status and the earnings management practices of acquirers in cross-border M&A deals. The Post variable indicating acquirers' post-merger time status is the independent variable. I use both AEM and REM variables including abTACC,abTACCP, RM1, RM2, comREM as the dependent variables. The model also controls firm-level characteristics including firm size, market-to-book ratio, cash flow, leverage, sales growth, ROA, firm age, auditing quality, capital expenditure, HHI, market shares, tangible assets, Z-Score, and earnings volatility. The fixed effects of firm, year, industry and country are also controlled in this model. Full variable definitions are available in the Appendix. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 7. The regression of acquirers' EM and post-M&A status: A cross-border subset analysis

VARIABLES	(1) abTACC	(2) abTACCP	(3) RM_1	(4) RM_2	(5) Com REM
Post	-0.029*	-0.035*	0.002	-0.006	0.010
	(0.016)	(0.018)	(0.017)	(0.013)	(0.015)
Market-to-book	0.000	-0.005	-0.029	-0.039*	-0.019
	(0.023)	(0.024)	(0.031)	(0.023)	(0.026)
Leverage	0.001	0.001	-0.002	-0.001	-0.002
	(0.002)	(0.002)	(0.003)	(0.002)	(0.003)
Size	0.019	0.021	0.014	-0.009	0.003
	(0.011)	(0.013)	(0.015)	(0.011)	(0.015)
Growth	-0.015	-0.020	0.023	0.003	0.003
	(0.033)	(0.039)	(0.035)	(0.030)	(0.027)
Cash flow	-0.601***	-0.659***	-0.200	-0.914***	-1.274***
	(0.086)	(0.092)	(0.125)	(0.092)	(0.133)
ROA	0.077	0.062	-0.057	0.072	0.026
	(0.072)	(0.073)	(0.102)	(0.078)	(0.107)
Big four	-0.039	-0.039	0.005	0.006	-0.006
	(0.025)	(0.027)	(0.034)	(0.026)	(0.032)
Age	0.014	0.012	0.056	0.065**	0.113**
	(0.089)	(0.087)	(0.053)	(0.031)	(0.044)
Capital expenditure	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
HHI	0.331	0.242	-0.169	-0.078	-0.006
	(0.217)	(0.224)	(0.427)	(0.279)	(0.417)
Market shares	-0.015	-0.012	0.030	0.024	0.036
	(0.016)	(0.018)	(0.026)	(0.019)	(0.025)
Tangible	-0.040	-0.039	-0.029	0.045	0.041
	(0.036)	(0.038)	(0.053)	(0.036)	(0.053)
Earnings volatility	0.000*	0.000*	-0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

Z Score	0.005***	0.005***	-0.001*	0.000	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Constant	-0.111	-0.125	-0.263	-0.210	-0.376*
	(0.275)	(0.272)	(0.225)	(0.138)	(0.197)
Year FE	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES
Observations	2,723	2,721	2,723	2,723	2,723
R-squared	0.160	0.157	0.079	0.189	0.206
Number of firms	532	531	532	532	532

Table 8. Regression of Post-M&A Status and Acquirers' EM Controlling Board Characteristics

This table presents the acquirers' EM behaviour in the post-merger period with additional board characteristics controls including directors' gender, age and board independence. Here variable "Director Age" denotes the firm directors' age. Variable "Director gender" indicates firm directors' gender, which equals 1 if the director's gender is male, and 0 if the director's gender is female. Variable "Duality" indicates firm board independence, which is a dummy variable that equals 1 if the CEO does not hold the chairman position, otherwise 0. The model also controls firm-level characteristics including firm size, market-to-book ratio, cash flow, leverage, sales growth, ROA, firm age, auditing quality, capital expenditure, HHI, market shares, tangible assets, Z-Score, and earnings volatility. The fixed effects of firm, year, industry and country are also controlled in this model. Full variable definitions are available in the Appendix. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 8. Baseline regression controlling board characteristics

VARIABLES	(1) abnTACC	(2) abnTACCP	(3) RM_1	(4) RM_2	(5) comREM
Post	-0.020*	-0.019	0.046*	0.020	0.025
	(0.012)	(0.013)	(0.024)	(0.018)	(0.022)
Market-to-book	-0.001	-0.003	-0.047	-0.064**	-0.033
	(0.020)	(0.023)	(0.041)	(0.031)	(0.037)
Leverage	0.002	0.002	0.010***	0.004	0.007**
	(0.002)	(0.002)	(0.004)	(0.003)	(0.003)
Size	0.019**	0.021**	0.038**	0.017	0.019
	(0.008)	(0.008)	(0.015)	(0.011)	(0.014)
Growth	0.018**	0.017*	-0.150***	-0.141***	-0.150***
	(0.008)	(0.009)	(0.017)	(0.013)	(0.015)
Cash flow	-0.451***	-0.513***	0.098	-0.664***	-0.937***
	(0.054)	(0.062)	(0.109)	(0.083)	(0.100)
ROA	0.044	0.026	0.240***	0.122*	0.283***
	(0.046)	(0.052)	(0.092)	(0.070)	(0.083)
Big four	-0.005	-0.001	-0.062*	-0.057**	-0.068**
	(0.017)	(0.019)	(0.035)	(0.026)	(0.031)
Age	-0.172	-0.151	0.160	0.142	0.183
	(0.158)	(0.178)	(0.317)	(0.241)	(0.289)
Capital expenditure	-0.000	-0.000	-0.000*	-0.000**	-0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
HHI	-0.004	0.059	-0.459	-0.406	-0.427
	(0.244)	(0.276)	(0.491)	(0.373)	(0.447)
Market shares	-0.045***	-0.046***	0.095***	0.079***	0.095***
	(0.011)	(0.013)	(0.022)	(0.017)	(0.020)
Tangible	-0.083**	-0.072*	-0.122*	-0.023	-0.080
	(0.033)	(0.037)	(0.066)	(0.051)	(0.061)
Earnings	0.000	0.000	-0.000	-0.000	-0.000

volatility					
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Z Score	0.002***	0.002***	-0.005***	-0.002***	-0.005***
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)
Director gender	-0.034**	-0.038**	0.060*	0.015	0.043
	(0.015)	(0.017)	(0.031)	(0.023)	(0.028)
Director Age	0.001*	0.001**	-0.001	-0.001	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Duality	-0.023	-0.025	0.035	0.025	0.041
	(0.016)	(0.018)	(0.031)	(0.024)	(0.028)
Constant	-0.209	-0.277	-0.0821	0.172	0.0420
	(0.370)	(0.418)	(0.746)	(0.567)	(0.678)
Year FE	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES
Observations	2,218	2,218	2,218	2,218	2,218
R-squared	0.107	0.090	0.111	0.144	0.174
Number of Firms	326	326	326	326	326

Table 9. The Placebo Test for Acquirers' Post-M&A Earnings Management: Addressing Self-Selection Bias

This table presents the results of the regression of acquirers' EM and post-M&A status using the placebo test with a randomly selected firm year. The Post variable indicating acquirers' post-M&A time status is the independent variable. I use both AEM and REM variables including abTACC, RM1, RM2, and comREM as the dependent variables. The model also controls firm-level characteristics including firm size, market-to-book ratio, cash flow, leverage, sales growth, ROA, firm age, auditing quality, capital expenditure, HHI, market shares, tangible assets, Z-Score, and earnings volatility. The fixed effects of firm, year, industry and country are also controlled in this model. Full variable definitions are available in the Appendix. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 9. Placebo test of the acquirers' post-M&A EM behaviour with a randomly assigned year

VARIABLES	(1) abnTACC	(2) abnTACCP	(3) RM_1	(4) RM_2	(5) comREM
Post	-0.001	-0.001	0.003	0.003	0.003
	(0.004)	(0.004)	(0.007)	(0.005)	(0.007)
Market-to-book	-0.006	-0.016	0.005	-0.016	0.004
	(0.010)	(0.011)	(0.018)	(0.011)	(0.017)
Leverage	-0.000	-0.000	0.001	0.000	0.001
	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)
Size	0.019***	0.019***	0.009	-0.001	0.007
	(0.004)	(0.004)	(0.006)	(0.004)	(0.006)
Growth	0.053***	0.047***	-0.087***	-0.100***	-0.076***
	(0.005)	(0.005)	(0.008)	(0.005)	(0.007)
Cash flow	-0.517***	-0.543***	-0.145***	-0.771***	-1.140***
	(0.029)	(0.031)	(0.050)	(0.031)	(0.047)
ROA	0.152***	0.153***	0.011	0.096***	0.101**
	(0.024)	(0.025)	(0.042)	(0.026)	(0.040)
Big four	0.007	0.001	-0.012	-0.001	-0.011
	(0.007)	(0.008)	(0.012)	(0.008)	(0.012)
Age	0.067*	0.061	-0.047	-0.010	-0.031
	(0.041)	(0.043)	(0.071)	(0.044)	(0.067)
Capital expenditure	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
HHI	0.039	0.083	-0.535***	-0.344***	-0.445***
	(0.071)	(0.076)	(0.124)	(0.077)	(0.118)
Market shares	-0.016***	-0.012**	0.028***	0.020***	0.030***
	(0.005)	(0.006)	(0.009)	(0.006)	(0.009)
Tangible	-0.011	0.004	-0.084***	-0.036**	-0.066***
	(0.014)	(0.015)	(0.024)	(0.015)	(0.023)
Earnings volatility	0.000	0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Z Score	0.003***	0.003***	-0.001**	-0.000	-0.002***

	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	-0.510**	-0.493**	0.306	0.216	0.270
	(0.215)	(0.229)	(0.375)	(0.234)	(0.356)
Year FE	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES
Observations	9,617	9,607	9,617	9,617	9,617
R-squared	0.134	0.116	0.052	0.170	0.140
Number of firms	2,970	2,969	2,970	2,970	2,970

Table 10. Heckman Two-Stage Correction Analysis for Acquirers' Post-M&A Earnings Management: Addressing Self-Selection Bias

This table exhibits the results from applying the Heckman two-stage correction procedure to address the self-selection bias inherent in the study of acquirers' earnings management behaviours following M&A. In the first stage, a probit model estimates the likelihood of a firm engaging in an M&A, using instrumental variables that influence the selection process but are uncorrelated with the error term of the EM equation. The second stage employs the inverse Mills ratio derived from the first stage as an additional regressor in the EM model, effectively correcting for potential self-selection bias. Key variables include the degree of earnings management, measured through discretionary accruals, and control variables such as firm size, market-to-book ratio, cash flow, leverage, sales growth, ROA, firm age, auditing quality, capital expenditure, HHI, market shares, tangible assets, Z-Score, and earnings volatility. The table is organized to present coefficients, standard errors, and significance levels for each variable across both stages of the model, providing the impact of M&A on acquirers' EM while mitigating the effects of self-selection.

Table 10. Heckman Two-Stage Correction Analysis for Acquirers' Post-M&A Earnings Management: Addressing Self-Selection Bias

Description	**Selection Model (Probit)**	**abTACC Model (1)**	**abTACCP Model (1)**	**RM1 Model (1)**	**RM2 Model (1)**	**ComREM Model (1)**
Selection Equation						
Size	0.069***					
	(0.003)					
Sales Growth	0.016***					
	(0.0063)					
Cash flow	0.499***					
	(0.030)					
Year Dummies	YES					
Outcome Equations						
Post		-0.030***	-0.028***	0.054***	0.041***	0.059***
		(0.004)	(0.004)	(0.006)	(0.004)	(0.006)
Market-to-book		0.024***	0.027***	-0.008	-0.002	-0.007
		(0.006)	(0.006)	(0.010)	(0.007)	(0.010)
Leverage		-0.000	-0.000	0.001	0.000	0.001**
		(0.000)	(0.000)	(0.001)	(0.000)	(0.001)

Size	0.046***	0.043***	0.032***	0.059***	0.095***
	(0.004)	(0.004)	(0.007)	(0.005)	(0.006)
Growth	0.025***	0.021***	-0.058***	-0.055***	-0.024***
	(0.002)	(0.002)	(0.003)	(0.002)	(0.003)
Cash flow	-0.123***	-0.116***	0.278***	-0.084***	-0.033
	(0.021)	(0.021)	(0.039)	(0.028)	(0.036)
ROA	0.130***	0.124***	0.124***	0.193***	0.225***
	(0.008)	(0.008)	(0.014)	(0.010)	(0.012)
Big four	-0.008*	-0.008*	0.012	0.012**	0.011
	(0.005)	(0.005)	(0.008)	(0.005)	(0.007)
Age	0.003***	0.003***	0.007***	0.010***	0.012***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Capital expenditure	-0.000**	-0.000**	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
HHI	0.133**	0.120**	-0.640***	-0.363***	-0.527***
	(0.055)	(0.055)	(0.091)	(0.064)	(0.083)
Market shares	-0.019***	-0.018***	0.036***	0.031***	0.037***
	(0.003)	(0.003)	(0.005)	(0.004)	(0.005)
Tangible	-0.064***	-0.050***	-0.095***	-0.046***	-0.077***
	(0.008)	(0.008)	(0.013)	(0.009)	(0.012)
Earnings volatility	0.000	0.000	0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Z Score	0.002***	0.002***	-0.001***	-0.001***	-0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Heckman_lambda	0.514***	0.504***	1.340***	2.059***	2.908***
	(0.078)	(0.077)	(0.140)	(0.099)	(0.128)
Constant	-0.363***	-0.365***	-0.629***	-0.991***	-1.435***
	(0.048)	(0.047)	(0.083)	(0.059)	(0.076)
Year FE	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES
Observations	57,417	50,719	46,880	46,956	46,871
R-squared	0.075	0.070	0.037	0.106	0.091
Number of firms	7,340	7,333	6,922	6,926	6,921

Chapter 2

Do M&A Induce the Obfuscation of Financial Reports?

Do M&A Induce the Obfuscation of Financial Reports?

Abstract

This chapter explores the readability of the acquirers' annual reports following M&A and the factors that influence this readability in 3,440 acquisitions completed by US-listed bidders from 1985 to 2018. As measured by the Bog Index, I find that the readability of acquirers' financial statements generally decreases after M&A, perhaps, due to M&A-induced business complexity. However, following cross-border M&A, acquirers often improve the readability of their annual reports to mitigate the negative impacts of cross-national distance, such as integration barriers, on M&A synergies. Specifically, when the distance between the acquirer and the target is greater, the acquirer's post-merger financial report tends to be more readable. Accordingly, when acquiring English-speaking targets, the readability of the acquirers' financial reports reduces following the M&A.

Keywords: Financial report readability; Post-merger; Cross-border M&A; Cross-national distance; English-speaking targets

1. Introduction

Previous literature defines the concept of readability as the aggregate impact (including interactions) of all the constituent elements of a given piece of printed material that impact its success with its intended audience (Tefki, 1987; DuBay, 2007). In the context of financial disclosure, "readability" refers to the effectiveness of communicating valuation-relevant information, whether it is direct interpretation by investors or indirect interpretation by analysts (Loughran and McDonald, 2014).

Evidence shows that investors' decisions, trading volume as well as analyst coverage and dispersion are influenced by the readability of firms' financial reports (You and Zhang, 2009; Miller, 2010; Lawrence, 2013; Lehavy et al., 2011; De Franco et al., 2015). For example, Lawrence (2013) indicates retail investors favour companies that have shorter, more readable 10-Ks, whereas Miller (2010) reports increased trading activity by smaller investors around filing dates for firms with better-written 10-Ks. De Franco et al. (2015) present a positive relationship between the readability of analyst reports and the resulting trading volume. You and Zhang (2009) find that companies that produce more complex financial statements have a delayed reaction in the stock market over the following year. Moreover, Lehavy et al. (2011) document that less readable 10-Ks result in more analysts following the stock, greater analyst dispersion, and lower accuracy. According to the authors, to meet investors' demand for information, more analysts are required to cover the stock as the processing costs increase for 10-Ks with less readable text.

Previous research, which has explored a wide range of financial reporting documents including financial statements footnotes, 10-Ks, annual reports, and press releases, has consistently demonstrated the limited readability of firms' financial reports (Healy, 1977; Jones and Shoemaker, 1994; Lebar, 1982; Asay et al., 2016; Drake et al., 2016; Wilkinson and Czyzewski, 2015; Melloni et al., 2017; Chakrabarty et al., 2018; Dyer et al., 2017). This phenomenon has been condemned by the SEC (Securities and Exchange Commission) for overwhelming both well-educated financial professionals and individual investors with little accounting knowledge.

Some researchers attribute the low financial reporting readability level to firm underperformance and earnings management (e.g., Grossman and Stiglitz, 1980; Bloomfield, 2002; Li, 2008; Davis and Tama-Sweet, 2012; Brennan and Merkl-Davies, 2013). Specifically, the management obfuscation hypothesis posits that the low readability of financial reports is

caused by firms with poor performance intentionally using more complex disclosures to delay market reactions (e.g., Bloomfield, 2002). Another line of research attributes less readable financial reporting to business complexity and regulatory requirements rather than intentional obfuscation. For instance, Bloomfield (2008) argues that poor firm performance is associated with lower readability due to the need to provide additional explanations for poor performance. Similarly, Rutherford (2016) and Bushee et al. (2018) argue that less readable reports can convey valuable information rather than simply conceal negative information since both obfuscation and detail can add to linguistic complexity.

Another part of the literature finds that firms may have strong incentives to enhance their disclosure readability to attract investors and maintain trading volume (Miller, 2010; Rennekamp, 2012; Lawrence, 2013). Studies by Graham et al. (2005) and Guay et al. (2016) suggest that firms providing lengthy and complex reports tend to offer more voluntary disclosure to offset the negative impacts of poor readability. However, previous research on annual report readability has primarily focused on measuring, understanding the determinants of, and evaluating the impact of readability on report users (e.g., Jones and Shoemaker, 1994; Bloomfield, 2008; Lehavy et al., 2011; Chakrabarty et al., 2018; Loughran and McDonald, 2014). It has not been investigated whether organizational changes, such as M&A, affect firm readability, or whether firms are more apt to prioritize investor needs during these changes and produce more readable reports as a result.

This study aims to contribute to the existing literature on annual report readability by investigating acquirers' financial readability in the post-merger context. Specifically, I examine the variability of acquirers' readability following M&A, the reasons for such fluctuations, and the effect of the cross-border setting and the distance between acquirers and targets on these changes.

Following M&A, acquirers' greater business complexity derived from larger firm size, more complicated organizational structure, expanded business segments, and new stakeholders would generate a significant amount of information (Moeller et al., 2004; Lim et al., 2008; Cormier et al., 2018). According to the complex information hypothesis of low reliability, as M&A induces complexity and additional information, acquirers' post-merger financial reports are likely to be more complicated and less readable (e.g., Bloomfield, 2008; Bushee et al., 2018; Rutherford, 2016). Consequently, I hypothesise that the readability of acquirers' financial

reports reduces following M&A (H1) and M&A-induced business complexity exacerbates the obfuscation of financial reports following M&A (H2).

Although M&A-induced complexity tends to decrease the financial readability of acquirers, cross-border M&A acquirers have strong incentives to improve their financial readability. Following CBM&A, more readable financial reports would help acquirers gain recognition and support from the local stakeholders to access external resources including expertise, assets, and technology in the new market (Suchman, 1995; Zimmerman and Zeitz, 2002). Otherwise, the costs derived from the differences in two countries' institutional environments might exceed the benefits, which is likely to endanger the survival and growth of acquiring firms profoundly (Selim et al., 2003; Bruner and Perella, 2004; Kostova and Zaheer, 1999; Khan et al., 2015; DePamphilis, 2019). To mitigate the costs of CBM&A barriers and capitalize on the synergies of the new market, acquirers are expected to enhance the readability of their financial reports. Consequently, I propose the third hypothesis that acquirers improve their financial report readability after cross-border M&A (H3).

In CBM&A, the cross-national distance [8]between acquirers and targets hinders the post-merger integration process and incurs extra costs (Schout, 1991; Kostova and Zaheer, 1999; Hitt and Pisano, 2003; Ionascu et al., 2005). Specifically, the cross-national distance reduces acquirers' communication efficiency with local stakeholders, diminishes their interpretation accuracy of the target country's institutional environment, and causes a delay in proper actions. Under such circumstances, because of M&A-induced complexity, acquiring companies' intricate financial reports are likely to increase the costs of post-merger integration by bewildering local investors. Therefore, in order to reap the benefits of CBM&A (by bypassing traditional trade barriers, improving the efficiency of the companies by expanding abroad, and achieving higher returns), acquirers must overcome the barriers arising from cross-national distance (Cartwright and Cooper, 1993; Rosenzweig, 1993; Chakrabarti, Gupta-Mukherjee and Jayaraman, 2009).

As improved financial reporting readability would enhance individual investor confidence and increase trading volumes, CBM&A acquirers may be motivated to improve their report readability in order to facilitate communication with shareholders and attract local investors

[8] The cross-national distance including distance in formal constraints like laws, regulations, and administrative orders, and distance in informal constraints like culture, customs, and routines.

(Miller, 2010; Rennekamp, 2012; Lawrence, 2013). The greater the cross-national distance, the higher the post-merger integration cost will be, and the more likely it is that CBM&A acquirers will seek to reduce such costs through improved financial readability. In light of this discussion, I hypothesise that following cross-border M&A, acquirers' financial report readability increases with the level of cross-national distance between acquirers and targets (H4). Accordingly, when there are minor differences between the acquirer and the target, such as both speaking English, acquirers will be less motivated to improve the readability of their post-merger financial statements to reduce the cost of cross-national distance. Without self-motivated improvements, these acquirers' post-merger readability will be lower due to the complexity induced by M&A. Therefore, I finally hypothesise that: The financial readability of the acquirer decreases following M&A with an English-speaking target (H5).

My research design follows the approach of Fauver et al. (2017). To control for confounding events regarding the variation of the readability of acquirers' financial reports following the merger, I restrict the sample period to [-3, +3] years surrounding the M&A completion. The Compustat North America database is used to obtain financial information for all US-listed companies between January 1, 1985, and December 31, 2018. During the same period, I collect M&A data from the Securities Data Corporation Platinum (SDC) database of US-listed acquirers [9]. The cross-national distance data is obtained from Berry, Guillén and Zhou (2010)[10] while the financial report readability measure is derived from the Bog Index scores of Bonsall et al. (2017) [11] which are publicly available. My sample consists of 15,201 firm-year observations of 3,440 US-listed bidders from January 1985 to December 2018. The justification of acquirers' selection filters is further discussed in Section 3.1.

For testing the hypotheses, I develop five models based on variables measuring the acquirer's financial report readability, post-merger time status, M&A-induced complexity, cross-border deal, cross-national distance, and English-speaking target. After conducting the models, first, I find that there is a significant and positive relationship between the post-merger status of

[9] I chose US-listed acquirers as my sample firms due to the US economy and capital market's global dominance.
[10] The data is available at: http://www.management.wharton.upenn.edu/guillen/Distance_Data_Downloads.htm. On this website, the cross-national and longitudinal data for the nine distance dimensions including administrative, cultural, demographic, economic, financial, global connectedness, knowledge and geographic distance that are described in paper by Berry, Guillen and Zhou (2010), "An Institutional Approach to Cross National Distance" is provided.
[11] This dataset contains Bog Index scores for 10-K filings filed since 1994. The Bog Index is described and validated in Bonsall, Leone, Miller and Rennekamp (2017). This dataset is freely available at https://host.kelley.iu.edu/bpm/activities/bogindex.html.

acquirers and the Bog Index score (higher Bog Index values indicate less readable reports), which suggests the financial readability of acquirers tends to decrease following M&A Secondly, I observe that the M&A-induced complexity has a positive and significant relationship with acquirers' post-merger Bog Index score, which indicates that acquirers' M&A-induced complexity leads to their lower financial readability following M&A.

Thirdly, I discover a significant negative correlation between cross-border deals and acquirers' post-merger Bog Index scores, indicating that cross-border M&A increase acquirers' financial readability; Moreover, I find that the cross-national distance between the merging firms negatively impacts acquirers' post-merger Bog Index score, suggesting that this distance improves acquirers' financial readability following M&A; Lastly, I notice that in M&A involving English-speaking targets, the acquirers' post-merger readability decreases.

My empirical findings provide empirical support for all hypotheses. By highlighting the detrimental effects of the M&A-induced complexity on acquirers' post-merger annual reports, these findings support previous research which has shown that detailed explanations and substantial information associated with increased business complexity can reduce firm readability (e.g., Bloomfield, 2008; Rutherford, 2016; Guay et al., 2016; Habib and Hasan, 2020). The results also indicate that large cross-national distance encourages acquirers to reduce institutional barriers' cost by attracting local investments through better financial readability. This reinforces the viewpoint proposed by Lundholm et al. (2014) and Lang and Stice-Lawrence (2015) that a firm's financial readability can be influenced by the institutional environment across different countries. Additionally, my research indicates that acquirers with English-speaking targets are less motivated to improve their post-merger readability to minimize M&A costs. This validates Kroon et al. (2015), Kedia and Reddy (2016) and Navío-Marco et al. (2016) who all highlight the benefits of shared language between acquirers and targets in terms of lower M&A costs and improved post-merger performance.

This study contributes to the literature on annual report readability and addresses the research gap in acquirers' financial readability following the merger. My findings indicate that the financial readability of acquiring firms decreases following an M&A due to increased complexity, revealing the impact of organizational changes such as M&A on firms' readability. Additionally, these findings expand upon previous studies that have demonstrated the negative effect of detailed explanations and complex information on firm readability (e.g., Bloomfield, 2008; Rutherford, 2016). In addition, I consider cross-national distance to be a significant

factor affecting acquirers' post-merger financial report readability and discover that acquirers tend to intentionally enhance their readability following cross-border M&A. These findings add to the current understanding of how acquirers strategically use readability to maximize synergies in cross-border deals, extending previous work by Lundholm et al. (2014), Lundholm et al. (2014), Lang and Stice-Lawrence (2015) and Guay et al. (2016). Lastly, my findings offer empirical evidence demonstrating the advantages of a common language in M&A, particularly through lowered pressure on acquirers to boost their financial report readability following the merger. This expands on the work of Kroon et al. (2015), Kedia and Reddy (2016), and Navío-Marco et al. (2016).

Both researchers and regulators may find this study useful in clarifying the impact of expansion strategies on the readability of firms' annual reports. In addition, my findings recall to stakeholders the impact that changes in the readability of financial reports have on their interests. Researchers may be able to investigate further the circumstances and factors that motivate more readable firm reports, and regulators may use the empirical results as a basis for establishing policies encouraging more readable disclosures from firms.

The rest of this chapter is organised as follows. Section 2 reviews the related literature and develops several testable hypotheses. Section 3 discusses the data selection, describes the sample, and presents the models and variables used in the empirical analysis. Section 4 presents and discusses my empirical results. Finally, Section 5 discusses the implicates of this study and concludes.

2. Related literature and hypotheses development

2.1 Corporate disclosure and regulation

Previous literature documents that corporate disclosure is essential for a well-functioning capital market (e.g., Grüning, 2011; Healy and Palepu, 2001). This is because corporate disclosure moderates the information asymmetry between investors and firms which leads to misvalued investment (Akerlof, 1978). Firms disclose information via regulatory financial reports including financial statements, report footnotes, management discussion and analysis, as well as other filings. Apart from mandatory information-sharing, some companies initiate voluntary communication through management forecasts, analysts' reports, and press releases. There are also information intermediaries, such as financial analysts, rating agencies, industry experts, and the financial press that generate private information to uncover the firm situation.

Researchers attempted to explain the prevalence of significant disclosure regulations around the world from two perspectives: market imperfection and investor concern (Beaver et al., 1989; Leftwich, 1980; Watts and Zimmerman, 2006). These scholars argue that in an imperfect market, accounting information can be seen as a public benefit because existing stockholders pay for its production but cannot charge potential investors for its usage, which might cause information underproduction in the economy. Disclosure regulations, therefore, can be applied to improve economic efficiency. They also raise that disclosure regulations could be motivated by regulators' concern about the welfare of small investors who are financially unsophisticated. Setting minimum disclosure requirements can reduce the information asymmetry among investor groups and redistribute wealth.

In terms of disclosure readability, it is agreed by the Financial Accounting Standard Board (FASB) and the International Accounting Standards Board (IASB) that financial information must be understood by its users to be valuable (Mala and Chand, 2015). Over a long period, the SEC has emphasized that disclosure should be targeted at all sorts of investors, from the individual investor to the expert financial analyst and made consistent efforts to make disclosure documents easier to read and understand (Firtel, 1998). In 1969, the "Wheat Report" by the SEC revealed that most investors find it hard to comprehend complicated prospectuses and suggested reducing excessive complexity and length of disclosure writing. In 1998, the plain English disclosure guidelines were issued by the SEC to promote the use of plain English in public firms' disclosure documents. More specifically, there are six principles for firms to comply with when preparing their writing: concise phrases; clear and plain language; the active voice; using tabular or bullet lists for complex content; avoiding legal jargon and highly complicated business terminology as well as double negatives.

2.2 Financial report readability

One important type of corporate disclosure is financial reporting, which serves as a tool for management to communicate to outside investors information related to the firm's performance and governance. Exploring a wide range of financial reporting, previous studies show that average firm readability is very limited for overwhelming both well-educated financial professionals and unsophisticated individual investors (Healy, 1977; Jones and Shoemaker, 1994; Lebar, 1982; Asay et al., 2016; Drake et al., 2016; Wilkinson and Czyzewski, 2015; Melloni et al., 2017; Chakrabarty et al., 2018; Dyer et al., 2017).

Specifically, Smith and Smith (1971) investigate Fortune 50 companies' disclosure document footnotes and indicate the deficient readability of the notes. Barnett and Leoffler (1979) measure the readability of selected auditing content in the annual report with the Flesch Reading Ease Formula and suggest that over time, financial statements have become increasingly difficult to read. More recently, Bonsall et al. (2017) use the Bog Index to measure financial reporting readability and find that the readability of firms' annual reports is generally poor. Other studies, exploring financial statements footnotes, 10-Ks, annual reports and press releases, conclude that corporate annual reports are commonly considered as technical literature which is inaccessible to a large proportion of unsophisticated private shareholders (Chakrabarty et al., 2018; Dyer et al., 2017; Healy, 1977; Jones and Shoemaker, 1994; Lebar, 1982; Melloni et al., 2017; Wilkinson and Czyzewski, 2015).

According to previous literature, low financial reporting readability is a result of firm underperformance, earnings management, and complex financial information. Bloomfield (2002) develops the management obfuscation hypothesis to explain firms' low readability by arguing that obfuscation is used by underperforming firms to delay market reactions through complex information. The management obfuscation argument is supported by the "incomplete revelation hypothesis" which indicates information that is costly to process may not be fully reflected in market value (Grossman and Stiglitz, 1980). According to Bloomfield (2002), poor readability reflects an information-based agency problem and managers are at least partly motivated to add complexity to the disclosures to hide negative information which may affect stock prices.

Many studies support the management obfuscation hypothesis with empirical evidence. For example, Subramanian et al. (1993) note that profitable firms produce more readable annual reports. Measuring financial report readability with the Fog Index, Li (2008) finds that firms tend to produce less-readable reports to diffuse poor firm performance. You and Zhang (2009) find that the low readability of financial reports impairs investors' ability to fully process and reflect firm information through share prices. Lee (2012) finds that less readable reports withhold information, which leads to insufficient market reaction to such information. Brennan and Merkl-Davies (2013) adopt a quantitative method to examine the financial narrative complexity and find firms manage their public image by reducing the readability of bad news disclosure. Moreover, examining the relationship between firms' discretionary accruals and annual report readability, Ajina et al. (2016) find that firms managing their earnings tend to make the annual report less readable to hide such behaviour.

Varying from the obfuscation hypothesis, another stream of literature attributes less readable firms' financial reporting to business complexity and the requirement of corporate disclosure regulations or rules. This means, that even though the management tries to prepare more readable reports, the complicated transactions, complex reporting, and complicated disclosure requirements such as consolidation accounting and hedge accounting can result in complex financial statements. Specifically, Courtis (1986) indicates the association between annual report readability and firm profitability is insignificant. Bloomfield (2008), taking a different view from Li (2008), argues that poor firm performance is linked to lower readability because the explanations required to explain poor performance reduce readability. Rutherford (2016) and Bushee et al. (2018), adding to Bloomfield (2008), argue that less readable reports may convey useful information rather than simply conceal bad news, as obfuscation and detail can both cause linguistic complexity.

Other studies explore the results of firms' financial readability. Presenting solid evidence, Guay et al. (2016) point out that firms producing long and complicated reports offer more voluntary disclosure to mitigate the negative impacts of poor readability caused by informative disclosure content. This is because financial reporting readability can influence the behaviour of investors significantly. For example, since complex reports are costly to process, longer, more complicated, and less readable filings reduce small investor trading activity (Miller, 2010). Accordingly, a more readable disclosure is more likely to attract small investors since reading fluency acting as a subconscious heuristic cue boosts investors' belief in the disclosure's credibility (Rennekamp, 2012). Supporting this argument, Lawrence (2013) indicates that clear and concise disclosures attract more individual investors because accuracy and clarity increase the return on investments.

Moreover, Tan et al. (2014) investigate how financial reporting readability influences investors' judgements and find that more readable reports lead to positive judgements about a firm's current challenges and prospects. Biddle et al. (2009) argue that, as one progressive facet of reporting quality, readability has a significant impact on investment efficiency. This might be because the low readability of financial reports reduces analyst forecast accuracy and enhances analyst forecast dispersion (Lehavy et al., 2011). Other studies record the consequences of higher readability including more accurate analyst and management forecasts (Guay et al., 2016; Lehavy et al., 2011), better stock liquidity, investment efficiency and increased institutional ownership (Biddle et al., 2009; Lang and Stice-Lawrence, 2015), higher

trading volumes and credit ratings as well as lower cost of debt and potential share price crashes (Bonsall et al., 2017; De Franco et al., 2015; Ertugrul et al., 2017).

Reviewing previous literature, I find that extant research mainly explores annual report readability by focusing on the examination, the determinants, and the consequences of firms' readability levels. It has been insufficiently investigated whether organizational changes, such as M&A, will affect the readability of firms' reports, or whether firms will voluntarily prioritize investor needs during these changes, providing more readable reports. This study aims to add to the existing literature on annual report readability by exploring the financial readability of acquirers following the M&A and whether there is a voluntary improvement in acquirers' readability in the post-merger context. Specifically, I examine how acquirers' readability varies following M&A, the reasons for these shifts, and how cross-border settings and the distance between merging firms affect these changes.

2.3 M&A-induced complexity and acquirers' post-M&A report readability

In the context of M&A, the decision to voluntarily disclose information can be influenced by various theories. These include the management obfuscation hypothesis, which suggests that firms may intentionally obscure information to avoid negative consequences, the complex information theory, which proposes that firms may disclose more complex information to signal their expertise, and the management impression theory, which posits that firms may prioritize the creation of a favourable impression over the disclosure of accurate information.

Given the considerable changes that often come with M&A activities, the implications of these theories for the readability of financial reports can be particularly relevant. Each theory provides different motivations and insights into how companies approach financial disclosures, adding depth to our understanding of the complex dynamics at play in M&A. The management obfuscation hypothesis proposes that management may have incentives to deliberately create less readable financial disclosures. Such obfuscation is often motivated by the desire to conceal suboptimal performance or complexities that may cause alarm among stakeholders (Bloomfield, 2008). Following M&A, especially if the integration process is difficult or the benefits are less apparent, management might use this form of strategic opacity to maintain stakeholder confidence and to mitigate potential adverse reactions from the investment community.

In contrast, the complex information theory provides a more benign explanation for the decline in readability of post-merger reports. According to this theory, as firms expand and diversify their operations through M&A, the inherent complexity of their business activities necessitates more elaborate and sophisticated disclosures (Moeller et al., 2004; Lim, Thong and Ding, 2008; Cormier et al., 2018; Li, 2008). This suggests that the complexity of the information, rather than managers deliberately attempting to obscure it, leads to less readable reports. The theory recognizes that the increased intricacy of disclosures is an inevitable result of the more complicated business structures and broader range of activities that follow M&A.

Meanwhile, the management impression theory provides a strategic perspective for managing stakeholder perceptions after M&A (Merkl-Davies and Brennan, 2007). This theory posits that firms can utilize disclosures to shape stakeholders' views of the merger, thereby influencing their impressions and expectations. Financial reports may contain extensive narratives, optimistic forecasts, and subjective evaluations that could make them difficult to read due to their promotional content and complexity.

Taking into account the theories mentioned in the development of my hypothesis, I anticipate that the financial reports of firms involved in M&A will show a reduction in readability. This hypothesis is based on the complex information theory, which I expect to be the primary driver, given the increased complexity and breadth of information that naturally occur following M&A. However, it is important to acknowledge the potential influence of the management obfuscation and impression theories, as these could also contribute to the observed changes in disclosure readability. The combination of these theories in explaining post-merger financial report readability highlights the multifaceted motivations behind voluntary disclosures and the need for a nuanced approach to analysing the implications of M&A on corporate reporting. Consequently, I propose my first hypothesis as follows:

H1: The readability of acquirers' financial reports reduces following M&A.

Drawing on the discourse surrounding voluntary disclosure theories, my examination of financial report readability in the context of post-M&A recognises that an increase in business complexity can significantly influence the nature of disclosed information. As Rutherford (2016) and Bushee et al. (2018) highlight, a rise in operational and structural complexity following M&A typically necessitates a more detailed and sophisticated level of reporting. However, this augmentation of complex details, although informative, can inadvertently impede the readability of financial disclosures. In aligning my hypothesis development with

these insights, I delve deeper into the post-merger information environment of acquirers. I propose that the intricate details emerging from such transactions not only broaden the scope of disclosure but could also lead to a less accessible presentation of financial information.

To evaluate the impact of M&A-induced complexity on financial report readability, I propose a second hypothesis. This hypothesis is grounded in the complex information theory and also takes into account the implications of management obfuscation and impression theories. It is presented in the following manner:

H2: M&A-induced business complexity exacerbates the obfuscation of financial reports following M&A.

2.4 Acquirers' report readability following cross-border M&A

Despite the anticipated decline in readability among acquirers following an M&A, the variation in readability levels may be influenced by differences in the integration processes of domestic and foreign targets. In comparison to domestic M&A, cross-border M&A presents both more opportunities and challenges.

Previous literature on cross-border M&A documents a number of benefits[12] of acquiring foreign targets including accessing new markets and scarce specialized resources, improving economic efficiency, and decreasing political risk (Cooke, 1988). Specifically, cross-border M&A have enabled firms to overcome traditional trade and investment barriers, leading to increased efficiency in utilizing foreign market opportunities and subsequently resulting in higher returns (Cartwright and Cooper, 1993; Chakrabarti et al., 2009; Rosenzweig, 1993). In addition, acquiring targets in another country allows acquirers to gain access to local expertise, resources, and technology without having to build everything from the ground up. (Rosenzweig, 1993; Teerikangas and Very, 2006).

[12] For example, the national cultural distance which represents differences in organizational design norms, routines, and repertoires between two nations brings acquirers cultural diversity, promotes innovation, offers learning opportunities and fosters novel issue solutions by enabling acquirers to access unique patterns and repertoires rooted in diverse cultures (Datta and Puia, 1995; Kogut and Singh, 1988; Morosini et al., 1998; Page, 2007). Morosini et al. (1998) examine a sample of 52 cross-border acquisitions completed between 1987 and 1992 and discover that cultural distance exerts a positive and significant effect on performance. Chakrabarti et al. (2009) look into over 800 cross-border acquisitions during 1991-2004 and suggest for the long run, cross-border acquisitions performance improves with the cultural distance between the acquirer and the target.

While cross-border M&A offer many benefits, they are generally more complex than domestic deals due to differences in institutional environments between the two countries, which can negatively impact the value of the acquirer (Selim et al., 2003; Bruner and Perella, 2004; Brock, 2005; Conn et al., 2005; Rui and Yip, 2008; Nicholson and Salaber, 2013; Du and Boateng, 2015; DePamphilis, 2019). For example, Datta and Puia (1995) investigate 112 large cross-border acquisitions by US acquirers between 1978 and 1990. They find that cross-border acquisitions generally do not create value for acquirers as the huge cultural difference reduces the acquiring firm shareholders' wealth. Cakici et al. (1996), investigating the deals completed during 1983–1992, document that US acquirers received little return from their overseas expansion. This is because the intense competition among bidders for the same target reduces the returns to acquirers. Similarly, studying 344 US acquisitions announced in Europe and Canada between 1975 and 1988, Markides and Oyon (1998) discover that US international acquisitions in Britain and Canada did not generate value since cross-border acquisitions are not considered valuable investments by investors unless the acquiring company possessed intangible assets to exploit abroad. A study conducted by Moeller and Schlingemann (2005), examining 4430 acquisitions between 1985 and 1995, shows that US firms that acquired cross-border targets experienced lower announcement stock returns compared to those that acquired domestic targets. The authors attributed this to the lower level of shareholder rights or a more restrictive institutional environment in the target country.

Based on previous research, differences in institutional environments can be characterized by the cross-national distance encompassing the distance between mandatory constraints, such as laws, regulations, and administrative orders, and the distance between nonmandatory constraints, such as culture, customs, and routines (Hitt and Pisano, 2003; Kostova and Zaheer, 1999; Schout, 1991). The cross-national distance prevents acquirers from effectively communicating with the local stakeholders, correctly perceiving and deciphering the target country's institutional environment, and quickly taking proper actions (Kostova and Zaheer, 1999; Ionascu et al., 2005). For instance, cultural distance hinders post-M&A integration by obstructing resource transfer (Basuil and Datta, 2015; Dakessian and Feldmann, 2013), aggravating intra-organizational conflicts (Datta and Puia, 1995; David and Singh, 1994; Wang and Larimo, 2020) and exacerbating the outflow of core workers (Li et al., 2016).

Large cross-national distance produces significant impairment on acquirers' integration capabilities and post-acquisition performance, which makes gaining legitimacy in the new market more difficult thereby leading to potential acquisition failure (Reus and Lamont, 2009;

Xu et al., 2004). The legitimacy of an organization, derived from the trust and support of stakeholders in its institutional environment, is the key to gaining access to other external resources (Suchman, 1995; Zimmerman and Zeitz, 2002). Markides and Oyon (1998) find US acquirers' deals in Continental Europe gain significantly since they successfully access and exploit the intangible assets in Europe. Accordingly, entering a foreign market without the necessary legitimacy could pose a threat to the survival and growth of acquiring firms, as it may increase the likelihood of an M&A failure (Kostova and Zaheer, 1999; Khan et al., 2015). Therefore, in order to fully benefit from CBM&A and maintain good firm performance, acquirers must rapidly build trust with local stakeholders and attract investors in the market (Suchman, 1995; Xu and Shenkar, 2002).

Previous research has shown that firms have an incentive to improve their financial readability in order to attract investors, as a more transparent and understandable disclosure can increase individual investor confidence and lead to an increase in trading volume. (Lawrence, 2013; Miller, 2010; Rennekamp, 2012). For instance, Lundholm et al. (2014) point out that foreign firms listed on the US exchanges have better readability since these firms strive to overcome the information disadvantage faced by US investors and decrease their hesitation to hold securities of foreign-based companies. Lang and Stice-Lawrence (2015) examine the annual reports of more than 15,000 non-US companies in 42 countries from 1998 to 2011 and show that annual report readability differs across countries and institutional settings. Their findings suggest that the readability of annual reports is influenced by regulation and firms' incentives for greater disclosure transparency, and that improvements in financial readability led to positive economic outcomes such as liquidity and institutional ownership. Chen et al. (2017) find that when the readability of a firm's disclosure is poor, it causes greater short-window abnormal trading volume, suggesting that investors become more disagreeable when they have difficulty understanding the firm's M&A press releases.

Based on the discussions above, acquirers following CBM&A have the motivation to reduce costs resulting from cross-national distance to fully exploit these deals. Evidence shows that improving financial readability is effective in attracting local investors (Lawrence, 2013; Miller, 2010; Rennekamp, 2012; Lundholm et al., 2014). As a result, this study expects cross-border acquirers to enhance their financial readability to moderate the value destruction effect of cross-national distance and maximize the benefits of CBM&A. To demonstrate this argument, I propose the third hypothesis as follows:

H3: Acquirers improve their financial report readability following cross-border M&A.

2.5 Cross-national distance and acquirers' post-merger report readability

Early studies note that cross-national distance may be caused by differences in culture, administration, geography, and economy (Ghemawat, 2001; Johanson and Vahlne, 1977). Other studies have taken a less comprehensive approach, emphasizing only one aspect, primarily culture (e.g., Hofstede, 1980; Kogut and Singh, 1988; Hutzschenreuter and Voll, 2008). The four cultural dimensions proposed by Hofstede (1980), including power distance, uncertainty avoidance, individualism, and masculinity, are commonly used to measure cross-national differences.

However, Hofstede's measure has been criticized in several aspects. First, Hofstede's cultural variables are influenced by economic, linguistic, religious, and legal factors (Tang and Koveos, 2008). Second, Hofstede assumed that cross-national distances remained constant over time. Recent sociological research has questioned this assumption by demonstrating that cultural distance, as well as economic or political distance, is subject to rapid change over time (e.g., Inglehart and Baker, 2000; Shenkar, 2001). Third, using Hofstede's cultural measures to analyse the behaviour of individual managers may lead to an incorrect interpretation. This is because everyone is assumed to possess the group's average characteristics. Due to the limitations of Hofstede (1980) and the lack of recognition of distance's complexities of Ghemawat (2001), Berry et al. (2010) examine cross-national distance from an institutional perspective which captures the rich diversity of ways countries differ.

Based on recent institutional theories (e.g., Jackson and Deeg, 2008; Pajunen, 2008), Berry et al. (2010) recognize nine dimensions of distance including economic, financial, political, administrative, cultural, demographic, knowledge, and global connectedness as well as geographic distance. Specifically, economic factors such as income level, inflation rates, and international trade intensity can affect consumer buying power, preferences, macroeconomic stability, as well as an economy's openness to external influences. Based on this, the cross-national economic distance influences a firm's selection of a foreign market and entry mode (Iyer, 1997; Yeung, 1997; Zaheer and Zaheer, 1997). Moreover, cross-national differences in financial dimensions including market capitalization, number of listed companies, and private credit can have a significant impact on corporate governance, foreign investments, and acquisitions (Capron and Guillén, 2009; Rueda-Sabater, 2000; Berry et al., 2010). As for

differences in countries' political systems, indicators like political stability, the degree of democracy, state size relative to the economy, and international trade associations affect a firm's choice of the foreign market, entry mode and foreign investment flows (e.g., Gastanaga et al., 1998; Henisz and Delios, 2001; Delios and Henisz, 2003; García-Canal and Guillén, 2008).

Next, administrative distance is defined as differences in bureaucratic patterns caused by colonial ties, language, religion, and legal systems which are correlated with the occurrence of M&A across borders and foreign market choice (e.g., Lubatkin et al., 1998; Ghemawat, 2001; Guler and Guillén, 2010). Further, noting the impact of cultural distance on cultural values and norms across nations on foreign market entry, Berry et al. (2010) collect the data from four waves of the World Values Survey to assess public opinion and demonstrate the changing value of cultural distance. They also include the demographic distance in the cross-national distance. This is because demographic characteristics like average life expectancy, birth rates, and population age structure may influence consumer behaviour, which directly relates to market attractiveness and growth potential (Whitley, 1992). Moreover, countries have differing capacities for creating knowledge and innovating, which has a significant impact on their contributions to the global economy (e.g., Furman et al., 2002). Since proximity to knowledge may influence multinational corporations' location decisions considering the potential for spillover distance (e.g., Nelson, 1993; Furman et al., 2002; Florida, 2003), Berry et al. (2010) choose patents and scientific articles per capita as cross-national indicators of knowledge.

Global connectedness indicates a country's connection to the rest of the world, which can influence cross-border M&A activities (Oxley and Yeung, 2001). Berry et al. (2010) use the percentage of GDP devoted to and generated from international tourism as well as the proportion of the population that uses the Internet to measure a country's global connectedness. Lastly, geographic distance is considered and analysed as it has been widely acknowledged as impacting international trade, foreign investment, and other economic activities across countries (Wolf and Weinschrott, 1973; Hamilton and Winters, 1992; Fratianni and Oh, 2008). The cost of transportation and communication increases with geographic distance. In Berry et al. (2010), the great circle distance is applied to measure the geographic distance.

The greater the cross-national distance is, the more challenging the post-merger journey will be for acquirers in CBM&A. Consequently, it will be harder for them to gain legitimacy in the new market and realize M&A synergies. To overcome these obstacles that hinder the full

benefits of CBM&A, acquirers will likely work to improve their readability and win over local stakeholders. Therefore, following CBM&A, acquirers' financial report readability is expected to increase with the cross-national distance between the merging firms. Specifically, I raise the fourth hypothesis as follows:

H4: The level of acquirers' post-merger financial readability increases with the cross-national distance between acquirers and targets.

2.6 English-speaking targets and acquirers' post-merger report readability

The significant cross-national distance between the acquirer and the target can impede the acquirer's ability to realize M&A synergies (Selim et al., 2003; Bruner and Perella, 2004; Brock, 2005; Conn et al., 2005; Rui and Yip, 2008; Nicholson and Salaber, 2013; Du and Boateng, 2015; DePamphilis, 2019). In contrast, when the cross-national distance between two merging firms is not substantial, such as when both parties speak English natively, the difficulties associated with CBM&A after the merger can be mitigated by reducing communication barriers.

It has also been demonstrated that when the acquirer and the target share the same native language, the post-merger performance is enhanced and the value creation effect is more pronounced (e.g., Kroon et al., 2015; Kedia and Reddy, 2016; Navío-Marco et al., 2016). Consequently, acquirers who speak the same native language as the target will be less motivated to improve their post-merger financial readability to reduce M&A barriers and enhance gains. Without self-motivated improvements in readability, these acquirers' post-merger readability is expected to be lower owing to the M&A-induced complexity. I propose the following fifth hypothesis based on the discussion:

H5: The financial readability of the acquirer decreases following M&A with English-speaking targets.

3. Data and methodology

3.1 Data source and sample selection

Data for this study is obtained from several sources. The financial information of all US-listed firms from 1985 to 2018 is collected from the Compustat North America database[13]. The M&A data is collected from the Securities Data Corporation Platinum (SDC) Mergers and Acquisitions database and includes all US-listed firms which carried out and completed M&A transactions from January 1st, 1985, to December 31st, 2018. The cross-national distance data is publicly available and provided by Berry et al. (2010). The measurement of financial report readability is derived from the Bog Index scores for 10-K filings filed since 1994 which is validated and provided by Bonsall et al. (2017). The datasets of cross-national distance and the Bog Index scores are merged into the M&A dataset first and then merge with firms' financial information from the Compustat to obtain the final dataset.

For inclusion in the sample, the following restrictions are imposed on the acquiring firms: (1) The acquirers must be listed on NYSE or NASDAQ; (2) The acquisition must be completed to study the post-acquisition context; (3) The acquirer needs to hold 100% of the target's shares after the M&A to capture the major effect of acquirers' capabilities; (4) For a serial acquirer, the acquisition needs to represent the largest transaction made by the acquirer during the period from January 1st 1985 to December 31st 2018 to avoid the separate effects of each acquisition; (5) The financial industry and regulated firms are excluded for both acquirers and target since the differences in the nature of assets and liabilities, financial reporting system and unique regulations might affect the performance thus cause biased results[14].

Moreover, similar to Fauver et al. (2017), I test the impact of M&A on firms' financial readability five years before and after the M&A to mitigate confounding events and correlated omitted variables, which restricts the sample period to a [-3, +3] year window surrounding the acquisition announcement. The application of these filters led to the final sample of 15,201 firm-year observations of 3,440 US-listed acquirers.

[13] I chose US-listed acquirers as my sample firms because they are more representative of global acquirers due to the leading status of the US economy and capital market across the world.

[14] I utilized the Fama and French 48 industry classification to categorize the acquirers' industries in my sample. Regulated industries (4400-5000 SIC codes) and financial institutions (6000-6500 SIC codes) are excluded.

3.2 Definition of variables and proxies of measurement

3.2.1. Dependent variable -- financial report readability

Previous studies have measured readability using the Fog Index, words, and file size as well as the Bog Index. The Fog index, developed by Gunning (1952), is widely applied in prior accounting and finance research to examine financial report complexity or readability. The Fog Index includes two components: (1) average sentence length and (2) percentage of complicated words which have three or more syllables. The Fog Index formula equals the sum of these components multiplied by a scalar to calculate a reading grade level for which a high value represents less readable text. The Fog Index formula is defined as follows:

$$Fog\ index = 0.4\ (average\ number\ of\ words\ per\ sentence + percentage\ of\ complex\ words)$$

$$(Eq.1)$$

One main reason for the popularity of the Fog Index is that it offers a simple and well-known formula to quantify readability which has been found useful by linguistic experts and regulators. However, there is a significant shortcoming of this measure when it comes to financial reporting. Loughran and McDonald (2014) indicate that, in the context of financial reporting, based on the "three or more syllables" principle, an extremely high percentage of common business terminologies such as "depreciation" and "liability" are classified as 'complex' by the Fog Index. The complex word measurement of the Fog Index, therefore, causes measurement error since multisyllabic words in 10-K filings are mostly common business words that can be easily understood by most report users. As for the sentence length, it is a reasonable measurement for readability but rather difficult to accurately measure in financial reports.

Considering the disadvantages of the Fog index, Loughran and McDonald (2014) recommend using the 10-K file size which is calculated as the number of megabytes used by the entire 10-K filing as recorded on the EDGAR filing system to measure financial documents' readability. Similarly, You and Zhang (2009) use the number of words in the 10-K filling to measure the readability disclosure component.

However, Bonsall et al.(2017) point out that words and file size capture language construct instead of content readability. Loughran and McDonald (2014) further propose another measure of readability capturing some plain English attributes. With this measure, they can examine whether firms have followed the Plain English Mandate (SEC, 1998) by making their

prospectuses and 10-K filings more readable. However, although this LM PE Index reflects many plain English writing attributes, Bonsall et al. (2017) find a few drawbacks. For example, it employs word complexity using the average word length, which is similar to the syllable count of the Fog Index which Loughran and McDonald (2014) openly criticize. Moreover, the list of phrases the LM PE Index uses to identify the usage of jargon, negative phrases, and superfluous words is very limited, which affects the accuracy of readability evaluation.

Reviewing the limitations of previous readability measurements in identifying plain English attributes, Bonsall et al. (2017) develop a new measure of readability to capture a wide range of plain English attributes. They utilise the recent computational linguistics software program called StyleWriter—The Plain English Editor to compute the Bog Index detecting the plain English writing attributes advocated by linguistic experts and the SEC's guidance on firm disclosure (SEC, 1998).

A unique aspect of the Bog Index is how word complexity is determined. As opposed to computing the Fog Index based on all multi-syllabic words being complex, word complexity is determined by word familiarity based on a proprietary list of over 200,000 words. As a result, the Bog Index can be used as a measure of writing clarity that overcomes the major criticism of the Fog Index for only capturing syllable counts to determine word complexity. Moreover, although a subset of the plain English attributes used in the Bog Index has been employed in previous research like Miller (2010) and Loughran and McDonald (2014), using a pre-programmed algorithm, the Bog Index offers a much more comprehensive set of factors, which eliminates researcher discretion in calculating the index.

Finally, Bonsall et al. (2017) validate the Bog Index as the measure of prospectus readability with a series of controlled experiments and archival-based regulatory interventions and find it best captures the writing characteristics enforced by regulators after the *1998 Plain English Mandate* was implemented. They also indicate while the future stock market volatility is strongly correlated with most measures of readability, the Bog Index predicts future volatility more accurately than the next closest measure by nearly 25 per cent.

Therefore, comparing the extant readability measures, this study chose to apply the Bog Index by Bonsall et al. (2017) which can reflect implications of writing clarity in firms' financial disclosures to measure the dependent variable "Readability". The Bog Index summarizing the writing attributes that tend to overwhelm readers is calculated as the sum of three facets:

$$Bog\ Index = Sentence\ Bog + Word\ Bog + Pep \quad (Eq.2)$$

Where a higher value indicates a less readable disclosure. The first component Sentence Bog measures the sentence length by counting the entire document's average sentence length then squared and scaled by a standard sentence length limited to 35 words per sentence. The second component of Word Bog consists of two factors: (1) plain English style issues and (2) word difficulty. Word Bog is computed as the sum of these two factors multiplied by 250 and divided by the number of words. The criteria to identify the first factor of plain English style problems are derived from the issues highlighted in the SEC's Plain English Handbook (SEC, 1998) including passive verbs, hidden verbs, overwriting, legal terms, clichés, abstract words, and wordy phrases.

The calculation of the second-factor word difficulty is determined according to the general vocabulary (heavy words), abbreviations, and specialist terms used. Unlike the fog index which measures word difficulty by syllable counts, the Bog Index adopts a proprietary list of more than 200,000 words establishing the Bog Index measures the level of difficulty of words based on familiarity with a proprietary list of more than 200,000 words and evaluates penalties between 0 and 4 points depending on the combination of word's familiarity and precision. Abstract words here are scored higher.

The last component of the Bog Index, 'Pep', captures writing attributes that assist readers' understanding of texts. It measures the amount of good writing by counting the use of items such as names and interesting words, which can make a text more intriguing. The calculation of Pep is, to sum up, the good writing items multiplied by 25 then divided by the document's word number plus sentence variety that denotes the standard deviation of sentence length multiplied by ten and divided by the average sentence length.

3.2.2. Independent variable -- post-M&A status indicator

Following previous studies which explore the different periods of M&A (Chen et al., 2020; Fauver et al., 2017), I generate a dummy variable "Post" to indicate the acquirers' M&A status in this study. The acquirers' M&A completion year is defined as the beginning year (year 0). The dummy variable "Post" equals 1 if the sample firm's fiscal year *t* is after the year of the M&A completion, otherwise 0.

3.2.3. Moderating variable -- M&A-induced complexity

Following previous studies measuring business complexity (e.g., Moeller et al., 2004; Loughran and McDonald, 2020), I adopt the following proxy to indicate an acquirer's M&A-induced complexity (Variable "Complexity"). The complexity variable "Change of size" is

calculated as the natural logarithm of the firm's total asset in the year following the merger scaled by its lagged value, which reflects the change of acquirers' size through the M&A. The change in firm size following M&A is indicative of the complexities that arise within organizations undergoing such strategic transactions. One significant aspect contributing to this complexity is the intricate process of integrating disparate organizational structures, systems, and cultures post-M&A. As firms expand or consolidate their operations through M&A activities, they face substantial challenges in aligning business processes, technology platforms, and workforce dynamics across the newly formed entity. The magnitude of this integration effort often correlates directly with the extent of change in firm size, reflecting the intricacies involved in harmonizing diverse organizational elements.

Additionally, changes in the size of a firm can lead to increased regulatory scrutiny and compliance burdens, particularly in industries that are subject to antitrust laws or sector-specific regulations (Almeida and Carneiro, 2009). When M&A result in larger firms, they may attract greater regulatory attention, which can lead to complexities in navigating compliance frameworks, reporting standards, and legal obligations. Also, changes in firm size can affect relationships with various stakeholders, including customers, suppliers, employees, and investors (Moeller et al., 2004). M&A-induced complexities may manifest in managing stakeholder expectations, communication strategies, and relationship dynamics, with larger firms facing heightened scrutiny and expectations from stakeholders.

In summary, the change in firm size serves as a salient indicator of the multifaceted challenges and complexities inherent in the M&A process, encompassing integration efforts, resource management, economies of scale, regulatory compliance, and stakeholder dynamics. As such, it represents a pertinent proxy for evaluating the broader implications of M&A-induced complexity within organizational contexts.

3.2.4. Moderating variable -- cross-border M&A

Following Bertrand and Zuniga (2006), I generate a dummy variable "Cross border" to identify whether the M&A target is domestic or foreign. Variable "Cross border" equals 1 if the acquisition target is not a US firm, otherwise 0. Based on the discussion in Section 2, the financial report readability of cross-border M&A acquirers is expected to be higher than domestic M&A acquirers' readability.

3.2.5. Moderating variable -- cross-national distance

Comparing the cross-national distance measures, this study follows the nine distance dimensions by Berry et al. (2010) as it breaks through the restrictions of past measures and builds a far-reaching theoretical framework to measure cross-national distance accurately and thoroughly. Since Berry et al. (2010) released all their distance data to the public, all 2020 updated cross-national data derived from Berry et al. (2010) has been downloaded. Using the downloaded dataset, I extract the cross-national distance between my sample acquirers and targets to examine the relationship between cross-national distance and acquirers' post-acquisition readability.

Following Berry et al. (2010), I generate and define the variables capturing cross-national distance (variable "Cross-national distance") between the acquirers and targets as follows: (1)Variable "Economic Distance" denotes the differences in economic development and macroeconomic characteristics; (2)Variable "Financial Distance" represents the differences in financial sector development; (3)Variable "Political Distance" indicates the differences in political stability, democracy, and trade bloc membership; (4)Variable "Administrative Distance" denotes the differences in colonial ties, language, religion, and legal system; (5)Variable "Cultural Distance" stands for the differences in attitudes toward authority, trust, individuality, and importance of work and family; (6)Variable "Demographic Distance" means differences in demographic characteristics; (7)Variable " Knowledge Distance" denotes differences in patents and scientific production; (8)Variable "Connectedness Distance" indicates differences in tourism and the usage of Internet; (9)Variable "Geographic Distance" represents differences in great circle distance between geographic centre of countries. The empirical indicator component variables used in the calculation of these distance dimensions are presented in the Appendix.

Moreover, I adopt the principal component analysis (PCA) method to reduce the number of cross-national variables in regressions while preserving the original data (Karamizadeh et al., 2013). The PCA score is generated based on all nine dimensions of the cross-national distance and named as variable "Cross-national distance (PCA)".

3.2.6. Moderating variable – English-speaking target

Based on prior studies on language in cross-border M&A (e.g., Kroon et al., 2015; Kedia and Reddy, 2016; Navío-Marco et al., 2016), I create a dummy variable "English-speaking target" which denotes the target's speaking language. The term "English-speaking" typically means

that English is the native or dominant language of the country. This implies that a significant portion of the population uses English as their first language, and it is commonly used in government, education, media, and daily communication. This "English-speaking target" variable equals 1 if the target originates from a country that speaks English natively (Australia, Bermuda, Canada, Ireland, New Zealand, United Kingdom and United States), otherwise 0.

3.2.7. Control variables

This study includes twelve control variables based on previous studies. Among them, six control variables are derived from Li (2008) who examines the impact of earnings on a firm's annual report readability. Specifically, I control for the following variables: (1) Firm size (variable "Size") can provide insight into a firm's operational and business environment such as political cost and complexity (Watts and Zimmerman, 1986). Bigger firms might have a more complicated and lengthy annual report. Thus, I control for acquiring a firm's size which is calculated as the logarithm of the equity's market value at the end of the fiscal year. (2) Market-to-book ratio (variable "Market-to-book") can determine firms' growth potential and investment opportunities (e.g. Bernard, 1994; Pontiff and Schall, 1998). Firms in growth tend to have a higher level of complexity and uncertainty thus more complicated annual reports. Variable "Market-to-book" is defined as the sum of the market value of equity scaled by total equity's book value at the end of the fiscal year. (3) Firm age (variable "Age") might affect the annual report readability due to the decreased information asymmetry and information uncertainty in older firms. For example, older firms' annual reports can become simpler and more readable if investors are more familiar with these firms and have known their business models. I compute firm age using the number of years (plus one) that elapsed since the acquirer's IPO year. (4) Special items (Variable "Special items") are likely to make firms experience some unusual events. Variable "Special items" is defined as the number of special items scaled by total assets. With everything else being equal, firms with more negative special items are expected to have more complex annual reports. (5) The number of business segments (variable "Business segments number") indicates firm operation complexity, which can influence the complexity of a firm's annual report and thus may affect readability. Variable "Business segments number" is computed using the logarithm of the number of business segments at the end of a fiscal year based on the Compustat segment data.

Following Lo et al. (2017), I add two earnings-related controls. The first is earnings (variable "Earnings") which is calculated as operating earnings deflated by total assets at the fiscal year-end since the readability is expected to increase with higher earnings. The second is loss

(Variable "Loss") which equals 1 when earnings have negative values. This is because, for firms with losses, extra explanations about business activities are usually required, which tends to lower the level of report readability Li (2008). I also include market shares, tangible assets and Z Score as controls. Market shares and tangible assets provide insights into the acquirer's market position and asset base, which could affect the complexity and comprehensibility of financial reports. Meanwhile, the Z-score offers a measure of financial stability and risk, which may influence the clarity and transparency of financial disclosures. By incorporating these control variables, the model seeks to isolate the specific impact of M&A-induced complexity, cross-border deals, cross-national distance, English-speaking target on post-M&A financial report readability, while controlling for other relevant factors that could potentially confound the relationship.

3.3 Research models

Considering the diversity of time periods and cross-sectional data points within my sample, I employ a fixed-effects model to analyse the effects of post-merger timing and other variables on acquirers' financial report readability post-M&A. This approach aptly accounts for both the time series and cross-sectional dimensions inherent in the data, allowing for more precise estimation of the M&A impact. The models used to examine the three hypotheses are as follows:

3.3.1 Model for acquirers' post-merger financial report readability

To examine whether the acquirer's financial reports are less readable after M&A (H1), I use the following model:

$$Readability_{it} = \alpha_{it} + \beta_0 Post_{\ it} + \sum \beta_k Controls_{it} + \varepsilon_{it} \ (1)$$

Where $Readability_{it}$ measured by the Bog Index scores denotes the annual report readability of acquirer *i* in year *t*; $Post_{it}$ denotes the post-deal time status of acquirer *i* in year *t* which equals 1 if year *t* is after the M&A year, otherwise 0; $Controls_{it}$ represents 11 control variables including "Size", "Leverage", "Market-to-book", "Age", ", "Earnings", "Loss" "Special items", "Business segment number", "Market shares", Tangible assets". I also control for the year, industry, and firm-fixed effects α_{it} is the intercept and ε_{it} is the error term. β_0 is the coefficient indicating the relation between acquirers' readability and post-merger status, which is expected to be positive since the higher Bog Index value represents less readable reports.

3.3.2 Model for M&A-induced complexity and acquirers' post-merger readability

The following model is used to analyse whether acquirers' business complexity reduces their post-merger readability (H2):

$$Readability_{it} = \alpha_{it} + \beta_1 Post_{it} + \beta_2 Complexity_{it} + \beta_3 Post_{it} \times Complexity_{it} + \sum \beta_k Controls_{it} + \varepsilon_{it} \quad (2)$$

Where $Readability_{it}$ measured by the Bog Index scores denotes the annual report readability of acquirer *i* in year *t*; $Post_{it}$ denotes the post-deal time status of acquirer *i* in year *t* which equals 1 if year *t* is after the M&A year, otherwise 0; $Complexity_{it}$ denotes the acquirer i's business complexity in year *t* that is proxied by variable "Change of size" previously discussed in section 3.2.3. $Controls_{it}$ represents the same control variables as model (1). I also control for year, industry, and firm fixed effects. α_{it} is the intercept and ε_{it} is the error term. β_3 is the coefficient representing the impact of acquirers' business complexity on their post-merger readability, which is expected to be positive as less readable reports have a higher Bog Index value.

3.3.3 Model for cross-border acquirers' post-merger readability

Following the M&A, to investigate whether cross-border acquirers produce more readable financial reports than domestic acquirers (H3), I apply the following model:

$$ReadabilityPost_{it} = \alpha_{it} + \beta_1 Crossborder_{it} + \beta_2 ReadabilityPre_{it} + \sum \beta_k Controls_{it} + \varepsilon_{it} \quad (3)$$

Where $ReadabilityPost_{it}$ measured by the Bog Index scores denotes the average annual report readability level of acquirer *i* during three years post-M&A; $Cross\ border_{it}$ represents the cross-border M&A, which equals 1 if the acquirer *i* acquires a non-US target in year *t*, otherwise 0; $ReadabilityPre_{it}$ measured by the Bog Index scores denotes the average annual report readability level of acquirer *i* during three years pre-M&A; $Controls_{it}$ represents the same control variables as model (1). I also control for year and industry effects. α_{it} is the intercept and ε_{it} is the error term. β_3 is the coefficient representing the impact of cross-border M&A on post-merger acquirers' readability, which is anticipated to be negative as the more readable report has a lower Bog Index value.

3.3.4 Model for cross-national distance and acquirers' post-merger readability

In order to determine whether the acquirers' post-acquisition readability increases with the distance between the acquirer and target (H4), I utilise the model as follows:

$$Readability_{it} = \alpha_{it} + \beta_1 Post_{it} + \beta_2 Cross\_national\ distance_{it} + \beta_3 Post_{it} \times Cross\_national\ distance_{it} + \sum \beta_k Controls_{it} + \varepsilon_{it} \quad (4)$$

Where $Readability_{it}$ measured by the Bog Index scores denotes the annual report readability of acquirer *i* in year *t*; $Post_{it}$ denotes the post-deal time status of acquirer *i* in year *t* which equals 1 if year *t* is after the M&A year, otherwise 0; $Cross\_national\ distance_{it}$ represents the PCA score of cross-national distance (proxied by economic, financial, political, administrative, cultural, demographic, knowledge, global connectedness, and geographic distance between acquirers and targets); $Controls_{it}$ represents the same control variables as Model (1). I also control for year, industry and firm-fixed effects in this Model. α_{it} is the intercept and ε_{it} is the error term. β_3 is the coefficient reflecting the impact of cross-national distance between acquirer and target on post-merger acquirers' readability, which is expected to be negative.

3.3.5 Model for English-speaking target and acquirers' post-merger readability

This model is run as follows in order to explore if the acquirers' post-merger readability decreases in M&A with English-speaking targets (H5):

$$ReadabilityPost_{it} = \alpha_{it} + \beta_1 Englishspeaking\ target_{it} + \beta_2 ReadabilityPre_{it} + \sum \beta_k Controls_{it} + \varepsilon_{it} \quad (5)$$

Where $ReadabilityPost_{it}$ measured by the Bog Index scores denotes the average annual report readability level of acquirer *i* during three years post-M&A; $English\ speaking\ target_{it}$ represents the English-speaking target which equals 1 if acquirer *i* acquires an English-speaking target in year *t*, otherwise 0; $ReadabilityPre_{it}$ measured by the Bog Index scores denotes the average annual report readability level of acquirer *i* during three years pre-M&A; $Controls_{it}$ represents the same control variables as Model (1) expect English-speaking target. I also control for year and industry effects using Fama and French 48

industry classification in this Model. α_{it} is the intercept and ε_{it} is the error term. β_3 is the coefficient representing the impact of English-speaking targets on post-merger acquirers' readability, which is hypothesised to be positive as the more complex and less readable report should have a higher Bog Index value.

4. Empirical results and discussion

4.1 Descriptive statistics of key variables

Table 1 presents the distribution of 3, 440 US-listed acquirers in my sample from 1985 to 2018, by the M&A announcement year, acquirer's Fama and French 48 industry classification, and the target nation region. According to the M&A announcement date, the sample of 3,440 acquisitions is, in general, equally distributed from 1985 to 2018 yet the acquisitions mainly took place since the 1990s. Business Service, Electronic Equipment and Computers are the major industries of the sample acquirers, which take 21.22%, 8.08%, and 5.99 % of the entire sample respectively. As for the target nation region, 85.09% of the sample US acquirers acquired domestic targets while the rest of them merged firms from Europe, North America, South America, the Middle East, Asia, and Africa. The possible reason for a high ratio of domestic M&A deals by US acquirers is that cross-border acquisitions by US firms result in significantly lower announcement stock returns of approximately 1%, as well as significantly lower operating performance changes (Moeller and Schlingemann, 2005).

[Insert Table 1]

Table 2 provides summary statistics for the variables in my full sample of M&A deals, sub-samples of the variables during the 3-year pre-merger period and 3-year post-merger period as well as T-test results of pre and post-M&A readability level in domestic and cross-border deals. In panel A, the mean value of the sample acquirers' Bog Index score is 85.092 (85) while the minimum and maximum values are 48 and 148, respectively. Since the higher value of the Bog index indicates lower readability, the overall readability level of sample firms 85.092 is classified as "poor readability" by *StyleWriter*. According to Bonsall et al. (2017), the Bog Index ranges from zero to well over 1000, where the breakdown of the ratings is as follows: 0 to 20 = excellent; 21 to 40 = good; 41 to 70 = average; 71 to 100 = poor; 101 to 130 = bad; 131 to 1000 = dreadful; 1000+ = gobbledygook.

The Bog Index for the 10-Ks in my sample appears to be in line with the Bog Index for governmental and business writing generally ranging from 60 to 100. In light of this perspective,

the statistics for the Bog Index reflect the poor readability of the overall readability level of sample firms. This result is close to that of prior studies such as Li, (2008), Asay et al. (2016) and Bonsall et al. (2017) regarding the average low readability among firms.

In addition, the mean value of the complexity proxy change of size is 0.179. The positive mean value of complexity proxy indicates the acquirers' business complexity increases following an M&A, which is in line with previous studies (e.g., Moeller et al., 2004; Lim et al., 2008; Cormier et al., 2018). According to the mean value of the cross-national distance of my sample acquisitions, the geographic distance, administrative distance and knowledge distance between the sample acquirers and their targets are more pronounced. In terms of the control variables, the average size of sample acquirers is 6.39, the average market-to-book ratio is 1.106, the average firm age is 18.86, and the average business segment number is 4.629.

In panel B, the pre-merger acquirers' mean Bog index score is 84.611 while the post-merger mean Bog index score is 85.476. The average Bog index value is increased by 0.865 and this difference (0.865) is statistically significant at the 1% level according to both T-test and Mann-Whitney Test results. Since the higher value of the Bog index indicates less readable financial reports. This result implies an average lower readability following the M&A, which supports my first hypothesis that acquirers' post-merger reports tend to be less readable.

In panel C, the average pre-M&A Bog index score is 84.436 for domestic deals and 85.513 for cross-border deals while post-M&A Bog index score is 85.436 for domestic deals and 85.702 for cross-border deals. In both domestic and cross-border deals, Bog index means increase significantly after M&A, but cross-border acquisitions have higher Bog index values on average than domestic deals. This finding suggests that financial reports are generally more complicated in cross-border M&A deals. This agrees with H3 that to moderate the costs of cross-border barriers, acquirers might try to improve their readability.

[Insert Table 2]

4.2 M&A-induced complexity and acquirers' post-merger report readability

Acquirers' financial reports are, on average, expected to be less readable considering the complex information derived from M&A-induced complexity (e.g., Moeller et al., 2004; Lim, Thong and Ding, 2008; Cormier et al., 2018). As a result, this study proposes that the readability of acquirers' annual reports reduces after M&A.

In Table 3, I present the results from estimating model (1) that is used to examine the relationship between acquirers' financial report readability and the post-M&A status (H1). Column (1) shows the results of estimating Model (1) across all sample acquirers while controlling firm-level characteristics, industry, year and firm-fixed effects. The coefficient in Column (1) is significantly (at the 1% level) positive (0.650) as predicted. The coefficient 0.65 means that following the merger, the acquirers' Bog index score is raised by 65%. A higher Bog index score implies lower financial readability. Hence, the coefficient in Column (1) indicates that acquirers generally have lower financial readability following the M&A. These results are consistent with H1 that the acquirer's financial reports are less readable after M&A. Columns (2)-(4) present the results of running Model (1) in subgroups of deals involving stock & mixed payment methods, private targets and firm diversification. The coefficients in columns (2)-(4) are all positive (0.694, 0.578 and 0.719 respectively) and statistically significant at the 1% level. The coefficients of these subgroups with greater complexity are bigger than the estimated coefficient in the case of full sample acquirers. This finding confirms H2 by showing more M&A-induced complexity leads to less readable financial reports by acquirers following the merger.

[Insert Table 3]

Table 4 further presents the estimated coefficients of the model (2) which is used to examine the association between acquirers' business complexity and their post-merger readability. Column (1) shows the coefficients of the interaction term between post-merger status and the complexity proxy "change of firm size". Specifically, the coefficient is 0.529 (statistically significant at the 1% level) for change of size. The coefficient indicates that the business complexity derived from increased firm size reduces acquirers' post-merger readability as a higher Bog Index score means lower readability.

Tables 2, 3, and 4 demonstrate the lower average readability of acquirers as a result of increased business complexity (more complex information environment) following a merger. These results support H1 that acquirers' financial reports are generally less readable after M&A and H2 that the M&A-induced complexity reduces acquirers' post-merger readability. My findings support Bloomfield (2008), Rutherford (2016), Guay et al. (2016) and Habib and Hasan (2020) who argue that detailed explanations and substantial information caused by greater business complexity can reduce firms' report readability by highlighting the negative effects of acquirers' increased complexity through M&A on their post-merger report readability.

[Insert Table 4]

4.3 Acquirers' financial report readability following cross-border M&A

Previous studies suggest a more readable disclosure can increase the confidence of unsophisticated individual investors and lead to an increase in overall trading volume (Lang and Stice-Lawrence, 2015; Lawrence, 2013; Lundholm et al., 2014; Miller, 2010; Rennekamp, 2012). Following CBM&A, acquirers may enhance the readability of their financial reports to minimize the detrimental impact of cross-border distance on firm value and appeal to local investors. This study hypothesises that after CBM&A, acquirers improve their financial report readability (H3).

Table 5 presents the coefficients which indicate the effect of cross-border deals on acquirers' post-merger readability. In Table 5, columns (1) through (3) depict the coefficients derived from running Model (3) under various specifications. Specifically, column (1) displays the coefficients obtained from Model (3) with only year and industry fixed effects, while column (2) exhibits the coefficients when incorporating solely firm-level controls. Lastly, column (3) illustrates the coefficients from Model (3) integrating both fixed effects and controls across the [-3, +3] year M&A window. Notably, the coefficient associated with the cross-border dummy variable across the three post-merger years' mean Bog-index in Model (3) with only fixed effects (column 1) stands at -0.416, demonstrating statistical significance at the 1% level. Similarly, in column (2), where only firm controls are considered, the coefficient is -0.362, also statistically significant at the 1% level. Moving to column (3), which incorporates both fixed effects and controls, the coefficient for Model (3) is recorded at -0.470, maintaining statistical significance at the 1% level. These findings underscore the robustness of the observed relationship between the cross-border nature of M&A transactions and the mean Bog-index, even after controlling for firm-specific characteristics and industry and year effects.

Specifically, these results indicate a negative and statistically significant relationship (at the 1% level) between cross-border dummies and the post-merger acquirers' bog index score. Since a high bog index score indicates low readability, these results support H3 by demonstrating that cross-border M&A increase acquirers' post-merger readability. This finding is consistent with previous literature which argues low readability negatively influences individual investors' trading behaviour (Miller, 2010; Rennekamp, 2012; Lawrence, 2013; Chen et al., 2017), as

well as cross-border acquirers, try to moderate the information disadvantages of local investors to boost investor confidence (Lundholm et al., 2014).

[Insert Table 5]

4.4 Cross-national distance and acquirers' post-merger report readability

Based on the discussion of acquirers' incentives to improve their readability following CBM&A and the costs of cross-national distance, this study further raises that the level of acquirers' post-merger financial readability increases with the cross-national distance between acquirers and targets (H4).

Table 6 exhibits the results of exploring the effect of cross-nation distance on acquirers' post-merger readability with the model (4). Panel A exhibits the relation between the acquirers' post-merger readability and the PCA score of cross-national distance in nine dimensions. In Panel A, the coefficient on the interaction term between variable Post and the PCA score of cross-national distance is -0.071 and statistically significant at the 5% level. This indicates that the combined measurement of the nine dimensions' cross-national distance is negatively related to the acquirers' post-merger Bog index value. Cross-national distance leads to a lower Bog index value of the acquirer following M&A, which means cross-national distance results in more readable financial reports by the post-merger acquirers.

In Panel B, the Principal Component Analysis (PCA) tables are presented to offers a robust methodological approach to encapsulate the multidimensional concept of cross-national distance. The first table displays a compelling eigenvalue of 5.703 for the first principal component (Comp1), which accounts for a significant 63.4% of the total variance in the dataset. This substantial percentage is a strong indication that Comp1 captures the essence of the underlying data structure efficiently. Moreover, the cumulative proportion of variance explained by the PCA reaches 100% by the ninth component, illustrating the comprehensive nature of the analysis.

The component loadings in the second table further reinforce the robustness of the PCA score. Variables such as Economic Distance and Finance Distance show prominent loadings of 0.735 and 0.434 on Comp2, which implies that these variables have a considerable influence on the second principal component. The dominance of specific loadings on Comp1, like Cultural Distance (0.300) and Knowledge Distance (0.368), exemplifies the significant roles these variables play in characterizing cross-national distance. Overall, the combined

interpretation of these figures substantiates the PCA score as a robust and parsimonious variable for cross-national distance. It effectively reduces complexity by distilling multiple interrelated variables into principal components that retain essential information and can be used as predictive or explanatory variables in regression models, thus providing a quantitatively sound basis for subsequent analysis.

Since reducing the bog index score means improving the readability, these results in Table 6 indicate that cross-national distance makes acquirers' reports more readable following the M&A. Therefore, my outcomes show that cross-national distance increases acquirers' post-merger annual report readability, which validates H4. This finding extends Xu et al. (2004), and Reus and Lamont (2009) who argue that large institutional distance impairs acquirers' post-merger integration process and firm performance by showing how cross-nation distance drives post-merger acquirers to improve their financial readability for moderating the costs of cross-border differences. It also supports Lundholm et al. (2014) and Lang and Stice-Lawrence (2015) who argue that a firm's readability is affected by differences in the institutional environment across the world and the improved readability results in positive economic results by indicating large cross-national distance strengthens post-merger acquirers' incentive to reduce the negative influence of greater institutional barriers and attract local investors through more readable disclosures.

[Insert Table 6]

4.5 English-speaking targets and acquirers' post-merger report readability

This study further investigates the variation in the readability of acquirers' post-merger financial reports when M&A costs are low, particularly in cases where the target firm speaks English. In such situations, the post-merger performance of acquirers without a language barrier tends to be satisfactory, as demonstrated by previous studies (e.g., Kroon et al., 2015; Kedia and Reddy, 2016; Navío-Marco et al., 2016). Consequently, the acquirers may have less motivation to improve their post-merger financial readability to moderate M&A costs and enhance M&A outcomes. The M&A-induced complexity of these acquirers will result in lower post-merger readability without self-motivated improvements. Hence, the financial readability of acquirers is anticipated to decrease following M&A with English-speaking targets (H5).

Table 7 presents the findings from investigating the influence of English-speaking targets on acquirers' post-merger financial report readability. Columns (1) through (3) showcase the

coefficients derived from running Model (5) under different specifications: solely fixed effects, only firm-level controls, and a combination of both fixed effects and firm-level controls across the [-3, +3] year M&A window, respectively. In column (1), focusing solely on fixed effects, the coefficient of the English-speaking target dummy on the post-merger Bog index mean value of Model (5) is 0.466, indicating statistical significance at the 1% level. Similarly, in column (2), where only firm controls are considered, the coefficient stands at 0.407, also statistically significant at the 1% level. Transitioning to column (3), which integrates both fixed effects and controls, the coefficient between the post-merger Bog index mean value and English-speaking target dummy of Model (5) is 0.547, maintaining statistical significance at the 1% level.

These outcomes underscore a notable positive and statistically significant impact of English-speaking targets on post-merger acquirers' Bog index scores. Given that a higher Bog index value corresponds to less readable financial reports, Table 7 substantiates Hypothesis 5 by indicating a reduction in acquirers' financial report readability following the acquisition of English-speaking targets with a smaller cross-national distance between the acquirer and the target. This finding aligns with prior research, which suggests that M&A costs are diminished, and post-merger performance is enhanced when the acquirer and the target share the same language (e.g., Kroon et al., 2015; Kedia and Reddy, 2016; Navío-Marco et al., 2016).

[Insert Table 7]

5. Robustness check

5.1 Robustness check for alternative specifications

This study conducts a few robustness checks to confirm the results above. Firstly, following previous studies on annual report readability by Loughran and McDonald (2014) and You and Zhang (2009), I adopt alternative readability measures including, net file size, the number of words and unique words of firm disclosure with data provided by Loughran and McDonald

(2014)[15]. I also use the Fog index and the Flesch index score as the readability measurement by Tunyi et al. (2023)[16].

In Table 8, I present the results from rerunning model (1) to examine the relationship between acquirers' financial report readability and the post-merger status (H1) with five alternative readability measures mentioned. The coefficients in columns (1) to (5) represent the relations between the post-merger status and acquirers' readability proxied by the number of words, the number of unique words, net file size, the Fog index and the Flesch index of the firm disclosure, respectively. In columns (1) and (2), the coefficients are all significantly (at the 5 % level) positive (0.084 for the number of words and 0.039 for the number of unique words) as expected. The larger the word count and unique words count of the firm disclosure indicates a more complicated and less readable disclosure. In terms of columns (3) to (5), the coefficients are not significant statistically for the net file size, Fog index and the Flesch index. Due to the drawbacks of these measures such as measurement error regarding multisyllabic words' complexity, they may not be able to capture the variation in acquirers' readability following mergers. That is possibly the reason for the non-significant results for the Fog index and the Flesch index here. Considering three valid alternative measures of readability are consistent with the preliminary results of model (1), Table 8 strengthens the first hypothesis that post-merger acquirers' financial reports are generally less readable.

[Insert Table 8]

5.2 Addressing endogeneity concern: self-selection bias correction

5.2.1 Placebo test: validating financial readability variation post-M&A

This study aims to address the issue of endogeneity, specifically self-selection bias, as the sample comprises solely of acquiring firms, which could lead to a skewed outcome in favour of firms that engage in M&A activities. To mitigate this bias and establish causal inferences, a placebo test was conducted. In this test, a non-M&A fiscal year was randomly assigned to acquirers, creating a scenario where the M&A event did not occur. Table 9 illustrates the impact

[15] The data is obtained through https://sraf.nd.edu/sec-edgar-data/lm_10x_summaries/. The file is provided by Loughran and Mcdonald (2014a), which contains all summary data for all 10-X filings, including header information, sentiment word counts, and file statistics.

[16] Here I thank the authors of Tunyi et al. (2023) to provide the data of Fog index and the Flesch index for the robustness check of this study.

of this simulated non-event on the readability of financial reports, as measured by the following indicators: the Bog Index (natural logarithm of the number of words, unique words, and net file size), the Fog and Flesch readability index. Columns (1) to (6) display these effects.

The results from the Post variable, which represents the period following the hypothetical M&A year, show that there are no significant differences in readability across the different readability measures. This suggests that the presence or absence of an actual M&A event does not lead to a substantial change in the readability of the firms' financial reports. The findings imply that the readability of these firms' financial reports does not vary due to their post-M&A status in the randomly assigned placebo year. There are no changes to the references or citations in the text.

The justification for the employment of this placebo test is manifold: it serves as a robustness check against the possibility that firms that opt for M&A activities might systematically differ from those that do not. Such a test is critical for ensuring that the actual M&A event is the driving force behind any observed changes in financial report readability, rather than pre-existing firm characteristics that could predispose firms to both M&A activity and a particular style of financial reporting. Moreover, the placebo test provides a counterfactual benchmark, allowing for a more rigorous examination of the causal relationship proposed in Hypothesis 1 (H1). Therefore, the lack of significant findings in the placebo year supports the contention that it is the M&A transaction itself that plays a pivotal role in altering the financial report readability of the sample firms. This strengthens the argument for a true M&A effect, mitigating concerns about self-selection bias and reinforcing the integrity of the study's findings.

[Insert Table 9]

5.2.2 Heckman two-stage method: validating financial readability variation post-M&A

In addition to the robust placebo test employed to validate the non-significance of M&A activity on financial report readability in non-M&A years, the Heckman Two-Stage Correction Analysis is applied as a supplementary and rigorous methodological approach, enhancing the robustness of the results by further addressing the potential self-selection bias within the sample of acquirer firms. The Heckman Two-Stage Correction Analysis, as outlined in Table 10, provides a comprehensive framework to address the issue of self-selection bias in the assessment of financial report readability post-M&A. This bias is intrinsic to studies where

sample firms are not randomly selected, potentially leading to a skew in the results. The first stage of the analysis employs a probit model to estimate the likelihood of a firm engaging in an M&A, using instrumental variables that are theoretically related to the probability of M&A but assumed to be uncorrelated with the error term of the readability equation.

In the selection equation, variables such as Size, Sales Growth, and Cash Flow have statistically significant coefficients, suggesting that larger firms, those with increasing sales, and those with higher cash flow are more likely to engage in M&A activities. The significance of these variables indicates they are appropriate instruments for predicting the self-selection into M&A transactions. The second stage incorporates the inverse Mills ratio (Heckman_lambda) derived from the first stage into the main regression model to control for potential selection bias. The main outcome equation focuses on the Bog Index as a measure of financial report readability. Notably, the coefficient for Heckman_lambda is significant, indicating that the model successfully corrects for self-selection bias.

In the outcome equations, the Post variable has proven to be significant and positive, as hypothesized, indicating that M&A transactions have a statistically significant effect on the readability of financial reports. This result supports the initial hypothesis posited, as it suggests that M&A transactions lead to an increase in the Bog index value, thereby reducing the readability of financial reports. Other control variables such as Market-to-book, Size, Growth, and Age, have varied impacts on readability, with some like Market-to-book showing a positive relationship, while others like Earnings volatility and Z Score display a negative association. The significance of Heckman_lambda reinforces the appropriateness of the two-stage correction in this context.

By accounting for unobserved factors that influence both the selection process and the outcome of interest, the Heckman model corrects for the bias that would otherwise lead to invalid inferences about the effect of M&A on financial report readability. The model adjustments yield a more accurate estimation of the true effect, isolating it from the confounding influences of firm characteristics that drive both the propensity to engage in M&A and the complexity of financial reporting. Furthermore, the model's R-squared value, although modest, is typical for cross-sectional data in financial studies, suggesting that the model accounts for a reasonable proportion of the variability in financial report readability. The significance of the Year and Firm fixed effects also suggests that unobservable firm-specific factors and time-specific effects are being appropriately controlled for in the analysis.

In conclusion, the Heckman Two-Stage Correction Analysis corroborates the H1 that M&A transactions have a considerable effect on the readability of financial reports, while simultaneously demonstrating that the study's design thoughtfully addresses the potential bias emanating from the self-selection of sample firms. This robust analytical approach enhances the credibility of the findings, indicating a substantial methodological rigour in the exploration of post-M&A financial report readability.

[Insert Table 10]

5.3 Additional analysis: cross-border subsample on acquirers' post-M&A readability

As the additional analysis, Table 11 provides a focused analysis on the readability of financial reports following cross-border M&A, offering additional insights by isolating the subset of transactions involving English-speaking target companies. The dependent variable, PostBog, is a measure of readability post-M&A derived from the Bog index. Analysing the coefficient for the variable "English speaking target," I observe a value of 0.147, which is not statistically significant given the p-value (indicated by the parentheses). This suggests that whether the target company is in an English-speaking country does not have a statistically significant impact on the readability of the acquirer's financial reports post-M&A in cross-border deals.

The additional analysis on the readability of financial reports post-M&A presents an intriguing contrast to my baseline findings, particularly concerning English-speaking targets. This discrepancy could be attributed to sample specificities, where the cross-border subset in the additional analysis might not capture the broader trends evident in the baseline study. Moreover, the lack of significant findings regarding English-speaking targets in the additional analysis might indicate that readability is influenced by a complex interplay of factors beyond just language. This complexity, inherent in cross-border M&As, suggests that factors like corporate reporting culture and transaction intricacies play a significant role. The additional analysis, therefore, doesn't undermine the baseline results but rather emphasizes the nuanced and multifactorial nature of financial report readability in a global business context. The apparent contradiction serves to broaden the understanding that readability post-M&A is a multi-dimensional construct, affected by an array of factors in which language is a single element.

[Insert Table 11]

6. Conclusion and implications

6.1 Summary of results

This study examines the level of acquirers' annual reports readability following M&A, as well as the factors that influence this readability, in 3,440 acquisitions completed by US-listed companies from 1985 to 2018. Previous studies indicate firm's financial reports are generally not readable enough to a large proportion of unsophisticated users, factors like poor earnings performance, scandals and complex information make firms further decrease their annual report readability to delay negative market reaction (Asay et al., 2016; Drake et al., 2016; Wilkinson and Czyzewski, 2015). However, there is a lack of research on how organizational changes such as M&A affect the readability of financial reports in the acquiring firms, and whether these firms are motivated to improve their readability in response to these changes.

Following M&A, acquirers' M&A-induced complexity is likely to reduce firms' readability due to a more complex information environment (e.g., Bloomfield, 2008; Rutherford, 2016; Guay et al., 2016). In cross-border M&A, institutional differences tend to hamper the post-integration process, which adds additional costs for acquirers. Since poor readability hinders individual investors' trading activities, acquirers are expected to improve their readability to attract local investors and mitigate the negative effects of cross-national distance on their firm value (Miller, 2010; Rennekamp, 2012; Lawrence, 2013; Chen et al., 2017). The extent of such improvement is expected to be positively correlated with the length of cross-national distance in the CBM&A. Consequently, if the difference between the acquirer and the target is minor, post-merger integration will be less challenging. For example, acquiring an English-speaking target would avoid the costs of miscommunication and facilitate post-merger integration (e.g., Kroon et al., 2015; Kedia and Reddy, 2016; Navío-Marco et al., 2016). Therefore, acquirers with English-speaking targets may exhibit lower financial readability after the merger because of the M&A-induced complexity and the lack of self-motivated efforts to improve readability to overcome cross-national barriers.

Using the Bog Index by Bonsall et al. (2017) to measure the readability of public firm annual reports, the results support my arguments. First, I find that acquirers' financial readability tends to decrease after M&A. Second, I discover that M&A-induced business complexity positively affects acquirers' post-merger Bog Index score, suggesting that M&A-induced complexity leads to acquirers' lower financial readability after M&A. However, I observe that cross-border deals are negatively correlated with acquirers' post-merger Bog Index scores, implying

acquirers enhanced financial readability after cross-border M&A. Specifically, the greater the cross-national distance between two merging firms, the better the financial readability of the acquirer following the CBM&A. Finally, I find that when acquirers acquire English-speaking targets, their post-merger readability decreases.

My findings support previous studies that argue lower readability can be attributed to complex information and firms are self-motivated to improve their financial readability to attract individual investors (e.g., Bloomfield, 2008; Rutherford, 2016; Guay et al., 2016; Lundholm et al., 2014). This reinforces the viewpoint proposed by Lundholm et al. (2014) and Lang and Stice-Lawrence (2015) that a firm's financial readability can be shaped by the institutional environment across different countries. Furthermore, my research indicates that acquirers with English-speaking targets are less motivated to improve their post-merger readability to minimize the M&A costs associated with cross-national distance. This finding confirms the claims made by Kroon et al. (2015), Kedia and Reddy (2016), and Navío-Marco et al. (2016) that shared language between the acquirer and target can lead to lower M&A costs and better post-merger performance.

6.2 Contributions and implications

This research contributes to the existing literature on annual report readability and fills the gap in knowledge regarding the financial report readability of acquiring firms following M&A. Building on previous studies that attribute firms' low readability to complex information, my findings indicate that the overall financial report readability of acquirers decreases after M&A due to increased complexity (e.g., Bloomfield, 2008; Rutherford, 2016). This highlights the impact of organizational changes such as M&A on acquiring firms' financial report readability. More importantly, I identify cross-national distance as a key factor affecting acquirers' post-merger report readability and discover that acquirers tend to intentionally improve their report readability following cross-border M&A. This new finding highlights readability's role in addressing integration barriers and the voluntary actions taken by acquiring companies in response to these challenges, adding to Guay et al (2016) and Lundholm et al (2014). Finally, in line with Kroon et al. (2015), Kedia and Reddy (2016), and Navío-Marco et al. (2016), this study provides a rare example of empirical evidence demonstrating the advantages of shared language in M&A, namely the reduction in the need to improve readability following M&A.

This study may be useful for researchers and regulators in uncovering the effect of expansion strategies like M&A on the readability of firms' annual reports. My findings serve as a reminder to stakeholders of the significance of changes in the readability of financial reports and the impacts on their interests. Researchers may further investigate the factors and circumstances that lead to more readable firm reports, while regulators may use the empirical results to formulate policies encouraging firms to provide more readable disclosures.

6.3 Research limitations

This study has certain limitations in that it only takes into account several factors that influence the acquirers' post-merger financial report readability. There might be other factors that can exert a significant influence on post-merger readability but are not included in this study. Additionally, the financial report readability and cross-national distance data used in this study are obtained from previous studies, which may contain biases and errors. Further research can extend this study and explore other factors that determine or result from different levels of acquirer post-merger readability.

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Appendix 1:
Variable definitions and descriptions

Variable	Definition or description
Industry	Fama and French 12 industry classification scheme for identifying diversified deals and Fama and French 48 industry classification for controlling industry effects. Source: Fama-French (1997) industrial classification
Readability	Denotes the annual report readability of acquirer *i* in year *t* which is measured by the Bog Index scores. Source: Bonsall et al. (2017)
Post	A dummy variable that equals 1 if the sample firm's year *t* is after the M&A year, otherwise 0. Source: Fauver et al. (2017) and Chen et al. (2020)
Chang of size	Denotes acquirers' change in firm size to reflect the increase of acquirers' firm size after mergers. It is calculated as the natural logarithm of the acquirer's total asset of the year after M&A scaled by its lagged value. Source: Moeller et al. (2004)
Audit fees change	Denotes the change of audit fees as the proxy of acquirers' post-merger complexity, which is calculated as the natural logarithm of the firm's total auditing fee in the year following the merger scaled by its lagged value to indicate the change of acquirers' audit fees following the M&A. Source: Loughran and McDonald (2020)
Cross-border	A dummy variable represents the cross-border M&A, which equals 1 if acquirer *i* acquires a non-US target in year *t*, otherwise 0 Source: Bertrand and Zuniga (2006)
Cross-national distance	Denotes cross-national distance PCA score which includes economic, financial, political, administrative, cultural, demographic, knowledge, global connectedness, and geographic distance between acquirers and targets. Source: Berry et al. (2010)
Age	Denotes firm age which is computed using the number of years (plus one) elapsed since the acquirer's IPO year. Source: Li (2008)
Size	The natural log of the market value of equity in millions as of the end of the year. Source: Li (2008)
Market-to-book	Market to Book Ratio, which is the market value of common equity divided by the book value of common equity. Source: Li (2008)
Leverage	Firm leverage that quals the end-of-year total liabilities divided by end-of-year total equity. Source: Lang et al. (2006) and Cohen and Zarowin (2010)
Special items	Denotes the number of special items scaled by total assets. With everything else being equal, firms with more negative special items are expected to have more complex annual reports. Source: Li (2008)
Payment method	A dummy variable that indicates the bidders' payment methods. The variable equals 1 if the M&A deal is paid with pure stock,

	otherwise 0. Source: Martin (1996) and Faccio and Masulis (2005)
Private target	A dummy variable indicates the public status of the M&A target, which equals 1 if the target is a private firm, otherwise 0. Source: Capron and Shen (2007)
Earnings	Denotes the firm's earnings performance, which is calculated as operating earnings deflated by total assets at the fiscal year-end. Source: Li (2008) and Lo et al. (2017)
Loss	A dummy variable equals 1 when earnings have negative values. Source: Li (2008) and Lo et al. (2017)
Diversified deal	Denotes whether the acquisition deal is diversified. It is a dummy variable that equals 1 if the acquirer and the target are defined as different industries according to the Fama and French 12 industry classification scheme. Source: Lim et al. (2008) and Farooqi et al. (2014)
English-speaking target	A dummy variable denotes the target countries' language barrier, which equals 1 for targets from English-speaking countries including Australia, Bermuda, Canada, Ireland, New Zealand, United Kingdom, United States, otherwise 0. Source: Kroon et al., (2015) and Navío-Marco et al. (2016)
Business segments number	Denotes the number of a firm's business segments, which is computed by the use of the logarithm of the number of business segments at the end of a fiscal year based on the Compustat segment data. Source: Li (2008) and Lo et al. (2017)
Market Shares	Defined as the logarithm of the common stock outstanding, indicating the scale of equity a company has issued.
Tangible	The ratio of tangible assets (physical and financial assets) to total assets highlights the company's investment in physical resources.
Z-Score	Taffler Z-Score, a predictive model for bankruptcy risk among private firms, formulated as $ZScore = 3.20 + 12.18 * X_1 + 2.50 * X_2 - 10.68 * X_3 + 0.029 * X_4$, where X1 is the ratio of profit before tax (PBT) to current liabilities, X2 is the ratio of current assets to total liabilities, X3 is the ratio of current liabilities to total assets, X4 is the ratio of quick assets minus current liabilities to daily operating expenses (DOE). DOE is computed as sales minus PBT minus depreciation divided by 365.

Appendix 2:
Indicator Component Variables Used in the Calculation of Distance Dimensions (for 2020) provided by Berry et al. (2010, page 1465)

	Dimension	*Component variables*
1.	*Economic distance*	
	Income	GDP per capita (2000 US$)
	Inflation	GDP deflator (% GDP)
	Exports	Exports of goods and services (% GDP)
	Imports	Imports of goods and services (% GDP)
2.	*Financial distance*	
	Private credit	Domestic credit to private sector (% GDP)
	Stock market cap	Market capitalization of listed companies (% GDP)
	Listed companies	Number of listed companies (per 1 million population)
3.	*Political distance*	
	Policy-making uncertainty	Political stability measured by considering independent institutional actors with veto power
	Democratic character	Democracy score
	Size of the state	Government consumption (% GDP)
	WTO member	Membership in WTO (GATT before 1993)
	Regional trade agreement	Dyadic membership in the same trade bloc
4.	*Administrative distance*	
	Colonizer–colonized link	Whether dyad shares a colonial tie
	Common language	% population that speak the same language in the dyad
	Common religion	% population that share the same religion in the dyad
	Legal system	Whether dyad shares the same legal system
5.	*Cultural distance*	
	Power distance	WVS questions on obedience and respect for authority
	Uncertainty avoidance	WVS questions on trusting people and job security
	Individualism	WVS questions on independence and the role of government in providing for its citizens
	Masculinity	WVS questions on the importance of family and work
6.	*Demographic distance*	
	Life expectancy	Life expectancy at birth, total (years)
	Birth rate	Birth rate, crude (per 1000 people)
	Population under 14	Population ages 0–14 (% of total)
	Population under 65	Population ages 65 and above (% of total)
7.	*Knowledge distance*	
	Patents	Number of patents per 1 million population
	Scientific articles	Number of scientific articles per 1 million population
8.	*Global connectedness distance*	
	International tourism expenditure	International tourism, expenditures (% GDP)
	International tourism receipts	International tourism, receipts (% GDP)
	Internet use	Internet users per 1000 people
9.	*Geographic distance*	
	Great circle distance	Great circle distance between two countries according to the coordinates of the geographic center of the countries

Table 1. Sample distribution

This table presents the sample distribution of 3,440 US acquirers between 1985 and 2018. Panel A shows the sample distribution by M&A announcement year. Panel B shows the sample distribution by Fama and French 48 industry classification. Panel C shows the sample distribution by the target nation region. In all three panels, I present the number of deals and percentage of deals in my sample. I obtain data on M&A from Securities Data Corporation (SDC) from 1985 to 2018. The following restrictions were imposed on the acquiring firms: (1) The acquirers must be listed on NYSE or NASDAQ; (2) The acquisition must be completed; (3) The acquirer needs to hold 100% of the target's shares after the M&A; (4) The acquisition is the biggest deal conducted by the acquirer during the period from January 1st 1985 to December 31st 2018; (5) The financial industry and regulated firms are be excluded for both acquirers and target; (6) The acquirers originating from Delaware are excluded.

Table 11. Sample distribution

Panel A: Sample distribution by M&A announcement year

M&A announcement year	Frequency	Percentage
1985	20	0.58
1986	35	1.02
1987	30	0.87
1988	42	1.22
1989	34	0.99
1990	42	1.22
1991	42	1.22
1992	60	1.74
1993	92	2.67
1994	98	2.85
1995	102	2.97
1996	147	4.27
1997	176	5.12
1998	190	5.52
1999	170	4.94
2000	184	5.35
2001	123	3.58
2002	105	3.05
2003	89	2.59
2004	121	3.52
2005	118	3.43
2006	121	3.52
2007	138	4.01
2008	87	2.53
2009	57	1.66
2010	82	2.38
2011	83	2.41
2012	96	2.79
2013	92	2.67
2014	139	4.04
2015	141	4.10
2016	126	3.66
2017	124	3.60
2018	134	3.90
Total	3,440	100.00

Panel B: Sample distribution by Fama and French 48 industry classification

Fama-French 48 industry	Frequency	Percentage
Agriculture	14	0.41
Food Products	60	1.74
Candy & Soda	5	0.15
Beer & Liquor	7	0.20
Tobacco Products	4	0.12
Recreation	20	0.58
Entertainment	55	1.60
Printing and Publishing	33	0.96
Consumer Goods	42	1.22
Apparel	38	1.10
Healthcare	111	3.23
Medical Equipment	162	4.71
Pharmaceutical Products	205	5.96
Chemicals	86	2.50
Rubber and Plastic Products	30	0.87
Textiles	19	0.55
Construction Materials	73	2.12
Construction	47	1.37
Steel Works Etc	52	1.51
Fabricated Products	8	0.23
Machinery	145	4.22
Electrical Equipment	54	1.57
Automobiles and Trucks	58	1.69
Aircraft	20	0.58
Shipbuilding, Railroad Equipment	11	0.32
Defense	5	0.15
Precious Metals	11	0.32
Non-Metallic and Industrial Metal Minin	16	0.47
Coal	6	0.17
Petroleum and Natural Gas	186	5.41
Personal Services	53	1.54
Business Services	730	21.22
Computers	206	5.99
Electronic Equipment	278	8.08
Measuring and Control Equipment	100	2.91
Business Supplies	43	1.25
Shipping Containers	11	0.32
Transportation	42	1.22
Wholesale	149	4.33
Retail	173	5.03
Restaurants, Hotels, Motels	60	1.74
Other	12	0.35
Total	3,440	100.00

Panel C: Sample distribution by target nation

Target Nation	Frequency	Percentage
Argentina	2	0.06
Australia	19	0.55
Austria	5	0.15
Belgium	11	0.32
Bermuda	2	0.06
Brazil	6	0.17
British Virgin Islands	3	0.09
Canada	106	3.08
China (Mainland)	8	0.23
Costa Rica	1	0.03
Czech Republic	1	0.03
Denmark	10	0.29
Egypt	1	0.03
Finland	3	0.09
France	30	0.87
Germany	55	1.60
Hong Kong	2	0.06
Indonesia	2	0.06
Ireland	6	0.17
Israel	13	0.38
Italy	16	0.47
Japan	6	0.17
Lithuania	1	0.03
Luxembourg	5	0.15
Mexico	10	0.29
Netherlands	23	0.67
Norway	7	0.20
Pakistan	1	0.03
Poland	1	0.03
Portugal	1	0.03
Puerto Rico	2	0.06
Russia	2	0.06
Singapore	4	0.12
South Africa	1	0.03
South Korea	5	0.15
Spain	5	0.15
Sweden	16	0.47
Switzerland	10	0.29
Taiwan	5	0.15
Turkey	1	0.03
United Kingdom	104	3.02
United States	2,927	85.09
Venezuela	1	0.03
Total	3,440	100.00

Table 2. Descriptive statistics

The table presents descriptive statistics for my key variables across the full sample of 3,440 US acquirers during the [-3, +3] years M&A window between 1985 and 2018. Panel A presents descriptive statistics of key variables across the full sample. Panel B presents descriptive statistics of key variables across the sub-samples of pre-merger and post-merger periods. Panel C shows descriptive statistics of key variables across the sub-samples of domestic and cross-border deals. Full variable definitions are available in the Appendix. The data of M&A is collected from the Securities Data Corporation Platinum (SDC); The cross-national distance is publicly available and provided by Berry, Guillén and Zhou (2010); The Bog Index scores are publicly available and provided by Bonsall et al. (2017); Acquirers' financial information is collected from Compustat North America database. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 12. Descriptive statistics

Panel A: Descriptive statistics of key variables across the full sample

	N	Mean	Std. Dev.	min	p25	Median	p75	max
Dependent variable								
Bog index	15201	85.092	7.596	48	80	85	90	148
Independent variable								
Post	15201	.557	.497	0	0	1	1	1
Moderating variables								
Cross-border	15201	.156	.363	0	0	0	0	1
Change of size	15167	.179	.465	-2.947	-.018	.081	.25	8.688
Cross-national distance	13795	.065	1.772	-.394	-.394	-.394	-.394	22.23
English speaking target	15201	.887	.316	0	1	1	1	1
Cultural distance	14046	1.156	5.437	0	0	0	0	80.941
Demographic distance	15054	.311	1.153	0	0	0	0	19.293
Economic distance	15054	.469	2.688	0	0	0	0	71.921
Finance distance	14458	.509	1.792	0	0	0	0	16.305
Knowledge distance	15058	4.508	13.078	0	0	0	0	102.195
Geographic distance	15058	1018.46	2736.519	0	0	0	0	15247
Global connectedness distance	14984	.113	.404	0	0	0	0	8.449
Political distance	14738	.875	6.914	0	0	0	0	437.66
Administrative distance	15058	8.096	23.522	0	0	0	0	216.286
Control variables								
Size	15201	6.39	1.905	-4.449	5.066	6.378	7.629	13.131
Leverage	15201	1.978	53.904	-357.111	.349	.789	1.527	4592.515
Market-to-book	15201	1.016	.303	.024	1	1	1	13.049
Age	15201	18.86	15.198	1	8	13	25	69
Earnings	15201	1.02	.763	0	.553	.866	1.295	14.461
Loss	15201	.321	.467	0	0	0	1	1
Special items	15201	-.03	.19	-15.234	-.019	-.003	0	2.213
Business segment number	15201	4.629	3.352	1	2	4	6	64
Market shares	15201	3.627	1.237	-6.908	2.807	3.528	4.303	9.122
Tangible assets	15201	.43	.381	0	.157	.313	.602	6.207
Z Score	15201	3.621	632.274	-77857	2.263	8.076	16.044	623.599

Panel B: Descriptive statistics of key variables across the sub-samples of pre-merger and post-merger acquirers

	Pre-merger	**Post-merger**				
	(1)	(2)	(3)	(4)	(5)	(6)
	Mean	Mean	Difference	T value	Mann-Whitney Test Statistic	P-value
Bog index	84.611	85.476	-0.865***	(-6.990)	(-6.782)	< 0.0001
Observations	6,739	8,462				

Panel C: Results of T-Tests comparing bog index before and after M&A events in domestic and cross-border deals

Domestic deals	**Pre-M&A**	**Post-M&A**		
	(1)	(2)	(3)	(4)
	Mean	Mean	Difference	T value
Bog index	84.436	85.436	-0.865***	(-6.990)
Observations	5,646	7,180	15,201	

Cross-border deals	**Pre-M&A**	**Post-M&A**		
	(1)	(2)	(3)	(4)
	Mean	Mean	Difference	T value
Bog index	85.513	85.702	-0.865***	(-6.990)
Observations	1,093	1,282	15,201	

Table 3. Acquirers' post-M&A financial report readability

This table presents the coefficients of model (1) which examines the relation between acquirers' financial report readability and the post-merger status (H1). Acquirers' readability proxied by the Bog Index score is the dependent variable. The post-merger status variable Post is the independent variable. Column (1) presents the result of model (1) while columns (2) to (4) show the results of running model (1) in different subgroups including deals associated with stock & mix stock payment, private targets and firm diversification. This model (1) controls for firm-level characteristics including size, leverage, Market-to-book, firm age, earnings, loss, special items, number of business segments, market share, tangible assets and Z Score. The year, industry and firm fixed effects are also controlled. Full variable definitions are available in the Appendix. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. T-values are in parentheses.

Table 13. The relation between the post-M&A status and acquirers' readability

VARIABLES	(1) Bog index Model (1)	(2) Bog index Stock & Mixed payment only	(3) Bog index Private Target only	(4) Bog index Diversified deal only
Post	0.650***	0.694***	0.578***	0.719***
	(0.095)	(0.126)	(0.131)	(0.098)
Size	-0.222***	-0.280***	-0.263**	-0.239***
	(0.055)	(0.099)	(0.105)	(0.084)
Leverage	0.003	0.019	0.001	0.008
	(0.010)	(0.015)	(0.011)	(0.010)
Market-to-book	0.106	0.052	0.111	0.103
	(0.124)	(0.150)	(0.153)	(0.131)
Age	-0.413	-0.507	-0.324	-0.959
	(0.404)	(0.829)	(1.032)	(0.812)
Earnings	-0.504***	-0.348	-0.250	-0.410**
	(0.110)	(0.229)	(0.246)	(0.190)
Loss	0.138	0.102	-0.038	0.146
	(0.085)	(0.132)	(0.142)	(0.107)
Special Items	-0.474	-0.403	-0.441	-0.244
	(0.363)	(0.415)	(0.492)	(0.383)
Business segments	0.072***	0.054	0.087*	0.075**
	(0.021)	(0.046)	(0.052)	(0.035)
Market share	0.082	0.006	-0.073	0.053
	(0.098)	(0.186)	(0.227)	(0.162)
Tangible assets	-1.776***	-2.129***	-2.340***	-1.911***
	(0.279)	(0.578)	(0.729)	(0.515)
Z Score	-0.006**	-0.006*	-0.008**	-0.007**
	(0.002)	(0.003)	(0.004)	(0.003)
Constant	78.76***	79.96***	80.20***	80.00***
	(0.843)	(1.365)	(1.236)	(1.388)
Year FE	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Observations	15,201	9,054	6,937	13,248
R-squared	0.177	0.152	0.181	0.171
Number of firms	3,164	1,945	1,512	2,754

Table 4. M&A-induced complexity and acquirers' post-merger readability

This table presents the coefficients of model (2) which examines the relationship between acquirers' M&A-induced complexity and their post-merger financial report readability (H2). Acquirers' readability proxied by the Bog Index score is the dependent variable. The post-merger status variable Post, change of size and the interaction between Post and this complexity proxy are the independent variables. The model (2) controls for firm-level characteristics including size, leverage, Market-to-book, firm age, earnings, loss, special items, number of business segments, market share, tangible assets and Z Score. The year, industry and firm fixed effects are also controlled. Full variable definitions are available in the Appendix. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. T-values are in parentheses.

Table 14. M&A-induced complexity and acquirers' post-merger readability

VARIABLES	(1) Bog index
Change of size	-0.353***
	(0.092)
Post	0.478***
	(0.105)
Post× Change of size	0.529***
	(0.125)
Size	-0.226***
	(0.057)
Leverage	0.003
	(0.010)
Market-to-book	0.110
	(0.124)
Age	0.367
	(0.545)
Earnings	-0.582***
	(0.114)
Loss	0.160*
	(0.085)
Special Items	-0.686*
	(0.368)
Business segments	0.075***
	(0.021)
Market share	0.043
	(0.099)
Tangible assets	-1.775***
	(0.282)
Z Score	-0.004
	(0.002)
Constant	78.56***
	(0.845)
Year FE	YES
Firm FE	YES
Industry FE	YES
Observations	15,167
Number of firms	3,159
R-squared	0.179

Table 5. Acquirers' financial report readability following cross-border M&A

This table exhibits the coefficients of model (3) which examines the relation between acquirers' post-merger financial report readability and cross-border M&A (H3). Acquirers' readability proxied by the mean value of Bog Index score during the three years following the M&A completion is the dependent variable. The three-year pre-merger Bog index mean, and cross-border deal dummy are the independent variables. Here column (1) to (3) shows the regression results with only fixed effects, only control variables and both control variables and fixed effects respectively. This model (3) controls for firm-level characteristics including size, leverage, Market-to-book, firm age, earnings, loss, special items, number of business segments, market share, tangible assets and Z Score. The year, industry and firm fixed effects are also controlled in model (3). Full variable definitions are available in the Appendix. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. T-values are in parentheses.

Table 15. Acquirers' financial report readability following cross-border M&A

VARIABLES	(1) PostBog Model (3) No firm control	(2) PostBog Model (3) No fixed effects	(3) PostBog Model (3)
Cross-border	-0.416***	-0.362***	-0.470***
	(0.106)	(0.109)	(0.106)
PreBog	0.692***	0.771***	0.679***
	(0.009)	(0.008)	(0.009)
Size		0.124***	0.061
		(0.047)	(0.048)
Leverage		-0.001***	-0.001 ***
		(0.000)	(0.000)
Market-to-book		0.066	0.117
		(0.211)	(0.211)
Age		0.012***	-0.001
		(0.003)	(0.003)
Earnings		-0.395***	-0.238***
		(0.068)	(0.077)
Loss		0.738***	0.608***
		(0.119)	(0.114)
Special Items		0.249	0.186
		(0.274)	(0.173)
Business segments		0.020	0.041***
		(0.013)	(0.013)
Market share		0.033	0.104
		(0.067)	(0.067)
Tangible assets		-1.379***	-0.653***
		(0.127)	(0.154)
Z Score		-0.008**	-0.008***
		(0.003)	(0.003)
Constant	19.72***	20.82***	20.42***
	(1.359)	(0.734)	(1.414)
Year FE	YES	NO	YES
Firm FE	YES	NO	YES
Industry FE	YES	NO	YES

Observations	7,437	7,437	7,437
R-squared	0.753	0.727	0.759

Table 6. Cross-national distance and acquirers' post-merger readability

This table exhibits the coefficients of the model (4) which examines the relation between acquirers' post-merger financial report readability and the cross-national distance between acquirers and targets (H4) with a [-3, +3] year event window around the M&A. Acquirers' readability proxied by the Bog Index score is the dependent variable. The post-merger status variable Post, cross-national distance (proxied by economic, financial, political, administrative, cultural, demographic, knowledge, global connectedness, and geographic distance between acquirer and target), and the interaction between Post and cross-national distance are the independent variables. Panel A shows the principal component analysis summary of eigenvalues, variance explained, and component loadings for cross-national distance PCA score. Panel B exhibits shows the relation between the acquirers' post-merger readability and the PCA score of cross-national distance.

Table 16.Cross-national distance and acquirers' post-merger readability

Panel A: The association between acquirers' post-merger financial report readability and the PCA score of cross-national distance

VARIABLES	(1) Bog index
Cross-national distance (PCA)	-0.005
	(0.162)
Post	0.718***
	(0.106)
Post× Cross-national distance (PCA)	-0.071**
	(0.036)
Size	-0.224***
	(0.057)
Leverage	-0.000
	(0.001)
Market-to-book	0.056
	(0.097)
Age	0.486***
	(0.036)
Earnings	-0.361***
	(0.091)
Loss	0.153*
	(0.092)
Special Items	-0.319**
	(0.156)
Business segments	0.078***
	(0.023)
Market share	0.098
	(0.106)
Tangible assets	-1.384***
	(0.227)
Z Score	0
	(0.000)
Constant	78.47***
	(0.915)
Year FE	YES
Firm FE	YES
Industry FE	YES

Observations	13,795
Number of firms	2,919
R-squared	0.175

Panel B: Principal component analysis summary of eigenvalues, variance explained, and component loadings for cross-national distance PCA score.

I. Eigenvalues and Variance Explained

Component	Eigenvalue	Difference	Proportion of Variance	Cumulative Proportion
Comp1	5.703	4.828	0.634	0.634
Comp2	0.876	0.125	0.097	0.731
Comp3	0.751	0.269	0.083	0.814
Comp4	0.482	0.060	0.054	0.868
Comp5	0.422	0.107	0.047	0.915
Comp6	0.315	0.090	0.035	0.950
Comp7	0.225	0.084	0.025	0.975
Comp8	0.141	0.0555	0.016	0.991
Comp9	0.086	.	0.010	1.000

II. Component Loadings

Variable	Comp1	Comp2	Comp3	Comp4	Comp5	Comp6	Comp7	Comp8	Comp9
Cultural Distance	0.300	-0.404	0.337	-0.206	0.734	-0.130	0.127	0.104	0.087
Demographic Distance	0.317	0.014	0.425	-0.576	-0.529	0.060	0.044	0.307	0.092
Economic Distance	0.238	0.735	0.418	0.149	0.266	0.216	-0.263	-0.093	-0.106
Finance Distance	0.330	0.434	-0.293	-0.016	0.022	-0.474	0.571	-0.015	0.258
Knowledge Distance	0.368	-0.016	-0.349	0.257	0.035	-0.033	-0.312	0.743	-0.155
Geographic Distance	0.386	-0.135	-0.177	0.026	-0.080	0.010	-0.501	-0.358	0.645
Global Connectedness Distance	0.340	-0.024	-0.411	-0.238	0.097	0.709	0.274	-0.179	-0.197
Political Distance	0.310	-0.267	0.350	0.690	-0.268	0.172	0.358	-0.055	0.039
Administrative Distance	0.386	-0.137	-0.027	-0.062	-0.143	-0.418	-0.191	-0.413	-0.653

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Table 7. English-speaking targets and acquirers' post-merger readability

This table exhibits the coefficients of model (5) which examines the relation between acquirers' post-merger financial report readability and English-speaking targets (H5). Acquirers' readability proxied by the Bog Index score is the dependent variable. Acquirers' readability proxied by the mean value of Bog Index score during the three years following the M&A completion is the dependent variable. The three-year pre-merger Bog index mean, English-speaking target dummy are the independent variables. Here column (1) to (3) shows the regression results with only fixed effects, only control variables and both control variables and fixed effects respectively. This model (5) controls for firm-level characteristics including size, leverage, Market-to-book, firm age, earnings, loss, special items, number of business segments, market share, tangible assets, and Z Score. The year, industry and firm fixed effects are also controlled in model (3). Full variable definitions are available in the Appendix. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. T-values are in parentheses.

Table 17. English-speaking targets and acquirers' post-merger readability

VARIABLES	(1) PostBog Model (5) No firm control	(2) PostBog Model (5) No fixed effects	(3) PostBog Model (5)
English speaking target	0.466***	0.407***	0.547***
	(0.118)	(0.123)	(0.118)
PreBog	0.692***	0.771***	0.678***
	(0.009)	(0.008)	(0.009)
Size		0.123***	0.061
		(0.047)	(0.048)
Leverage		-0.001***	-0.001***
		(0.000)	(0.000)
Market-to-book		0.063	0.113
		(0.208)	(0.207)
Age		0.012***	-0.001
		(0.003)	(0.003)
Earnings		-0.394***	-0.237***
		(0.068)	(0.077)
Loss		0.736***	0.606***
		(0.118)	(0.114)
Special Items		0.250	0.191
		(0.274)	(0.174)
Business segments		0.020	0.041***
		(0.013)	(0.013)
Market share		0.032	0.104
		(0.067)	(0.067)
Tangible assets		-1.388***	-0.661***
		(0.127)	(0.154)
Z Score		-0.008**	-0.008***
		(0.003)	(0.003)
Constant	19.30***	20.41***	19.94***
	(1.364)	(0.753)	(1.423)

Year FE	YES	NO	YES
Firm FE	YES	NO	YES
Industry FE	YES	NO	YES
Observations	7,437	7,437	7,437
R-squared	0.753	0.727	0.759

Table 8. The post-merger status and acquirers' financial report readability using alternative measures.

This table presents the coefficients of model (1) which examines the relation between acquirers' financial report readability and the post-merger status (H1) using alternative readability measures. Here the acquirers' financial report readability (proxied by the natural logarithm of the number of words, number of unique words and the net file size of acquirers' 10 K fillings, the Fog index, and the Flesch index) is the dependent variable. The post-merger status variable Post is the independent variable. Columns (1) to (5) present the result of the model (1) using the natural logarithm of the number of words, number of unique words and the net file size of acquirers' 10 K fillings, the Fog index, and the Flesch index as the readability measure respectively. This model (1) controls for firm-level characteristics including size, leverage, Market-to-book, firm age, earnings, loss, special items, number of business segments, market share, tangible assets and Z Score. The year, industry and firm fixed effects are also controlled. Full variable definitions are available in the Appendix. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. T-values are in parentheses.

Table 18. Baseline regression with alternative readability measures

VARIABLES	(1) log numwords	(2) log_uniquewords	(3) log_netfilesize	(4) Fog index	(5) Flesch index
Post	0.084**	0.039**	0.026	0.031	0.050
	(0.036)	(0.015)	(0.018)	(0.063)	(0.065)
Size	-0.049**	-0.022**	-0.012	-0.027	-0.047
	(0.023)	(0.010)	(0.014)	(0.049)	(0.050)
Leverage	-0.005	-0.001	0.001	0.015	0.009
	(0.004)	(0.002)	(0.004)	(0.015)	(0.015)
Market-to-book	0.050	0.018	0.047*	0.201**	0.210**
	(0.044)	(0.019)	(0.028)	(0.095)	(0.097)
Age	-0.122	-0.062	-0.755**	-1.031	-1.029
	(0.236)	(0.101)	(0.356)	(1.222)	(1.255)
Earnings	0.021	0.012	0.040	0.060	0.087
	(0.040)	(0.017)	(0.026)	(0.091)	(0.093)
Loss	0.064*	0.025*	0.035*	0.183***	0.182***
	(0.035)	(0.015)	(0.019)	(0.065)	(0.067)
Special Items	-0.136	-0.092	0.157	0.466	0.643
	(0.164)	(0.070)	(0.143)	(0.490)	(0.503)
Business segments	0.018**	0.005*	0.003	0.022	0.018
	(0.008)	(0.003)	(0.005)	(0.016)	(0.016)
Market share	0.053	0.019	0.045	0.045	0.076
	(0.039)	(0.017)	(0.029)	(0.100)	(0.103)
Tangible assets	-0.207*	-0.088*	-0.173**	-0.363	-0.286
	(0.107)	(0.045)	(0.071)	(0.244)	(0.250)
Z Score	-0.001	-0.000	-0.002**	-0.004	-0.004
	(0.001)	(0.000)	(0.001)	(0.003)	(0.003)
Constant	10.19***	7.821***	11.84***	18.11***	16.00***
	(0.279)	(0.120)	(0.159)	(0.543)	(0.558)
Year FE	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES
Observations	3,497	3,497	4,961	4,961	4,961
R-squared	0.130	0.134	0.089	0.047	0.032
Number of Firms	2,089	2,089	1,221	1,221	1,221

Table 9. The Placebo Test for Acquirers' Post-M&A Financial Report Readability: Addressing Self-Selection Bias

This table presents the results of the regression of acquirers' financial report readability and post-M&A status using the placebo test with a randomly selected firm year. The Post variable indicating acquirers' post-M&A time status is the independent variable. The readability is proxied by the Bog Index, the natural logarithm of the number of words, number of unique words and the net file size of acquirers' 10 K fillings, the Fog index, and the Flesch index. The post-merger status variable Post is the independent variable. In this baseline model, model (1) controls for firm-level characteristics including size, leverage, Market-to-book, firm age, earnings, loss, special items, number of business segments, market share, tangible assets and Z Score. The year, industry and firm fixed effects are also controlled. Full variable definitions are available in the Appendix. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. T-values are in parentheses.

Table 19. The placebo test of acquirers' post-merger financial report readability

VARIABLES	(1) Bog index	(2) log numwords	(3) log uniquewords	(4) log netfilesize	(5) Fog index	(6) Flesch index
Post	-0.116	0.010	-0.001	-0.001	0.123	0.116
	(0.106)	(0.036)	(0.015)	(0.028)	(0.089)	(0.092)
Size	-0.072	-0.019	0.002	-0.032	-0.065	-0.080
	(0.085)	(0.033)	(0.013)	(0.038)	(0.123)	(0.128)
Leverage	-0.007	0.002	0.001	0.003	0.033	0.029
	(0.015)	(0.007)	(0.003)	(0.009)	(0.030)	(0.031)
Market-to-book	0.432	0.093	0.021	0.032	-0.070	-0.090
	(0.267)	(0.151)	(0.061)	(0.088)	(0.282)	(0.291)
Age	0.591***	0.025***	0.012***	0.022	0.025	0.016
	(0.031)	(0.009)	(0.004)	(0.014)	(0.045)	(0.047)
Earnings	-0.870***	-0.030	0.001	0.016	0.175	0.141
	(0.175)	(0.063)	(0.025)	(0.073)	(0.234)	(0.242)
Loss	0.744***	0.051	0.018	0.075	0.374**	0.395**
	(0.165)	(0.061)	(0.025)	(0.057)	(0.184)	(0.190)
Special Items	-0.339	-0.735*	-0.368**	0.210	-1.029	-0.543
	(0.881)	(0.400)	(0.162)	(0.415)	(1.337)	(1.382)
Business segments	0.038	0.016*	0.007*	0.021**	0.032	0.027
	(0.030)	(0.010)	(0.004)	(0.010)	(0.033)	(0.034)
Market share	0.202	0.025	0.008	0.029	-0.151	-0.127
	(0.136)	(0.045)	(0.018)	(0.069)	(0.221)	(0.229)
Tangible assets	-1.005***	-0.215*	-0.066	-0.330*	-1.099**	-1.192**
	(0.367)	(0.129)	(0.052)	(0.171)	(0.550)	(0.568)
Z Score	-0.009**	-0.002	-0.001	-0.002	0.009	0.007
	(0.004)	(0.001)	(0.001)	(0.003)	(0.008)	(0.008)
Constant	73.50***	9.971***	7.556***	12.14***	20.22***	17.90***
	(1.037)	(0.343)	(0.139)	(0.444)	(1.428)	(1.476)
Year FE	YES	YES	YES	YES	YES	YES

Firm FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES
Observations	7,871	1,859	1,859	1,531	1,531	1,531
R-squared	0.380	0.248	0.273	0.216	0.105	0.083
Number of firms	2,656	1,297	1,297	922	922	922

Table 10. Heckman Two-Stage Correction Analysis for Acquirers' Post-M&A Report Readability: Addressing Self-Selection Bias

This table exhibits the results from applying the Heckman two-stage correction procedure to address the self-selection bias inherent in the study of acquirers' financial report readability following M&A. In the first stage, a probit model estimates the likelihood of a firm engaging in an M&A, using instrumental variables that influence the selection process but are uncorrelated with the error term of the report readability equation. The second stage employs the inverse Mills ratio derived from the first stage as an additional regressor in the baseline model, effectively correcting for potential self-selection bias. Key variables include the degree of financial report readability, measured through Bog index, and control variables such as firm size, market-to-book ratio, cash flow, leverage, sales growth, ROA, firm age, auditing quality, capital expenditure, HHI, market shares, tangible assets, Z-Score, and earnings volatility. The table is organized to present coefficients, standard errors, and significance levels for each variable across both stages of the model, providing the impact of M&A on acquirers' financial report readability while mitigating the effects of self-selection.

Table 20. Heckman Two-Stage Correction Analysis for Acquirers' Post-Merger Report Readability: Addressing Self-Selection Bias

Description	**First stage Selection Model Probit**	**Second stage Bog Index Model (1)**
Selection Equation		
Size	0.067***	
	(0.003)	
Sales Growth	0.016***	
	(0.007)	
Cash flow	0.514***	
	(0.031)	
Year Dummies	YES	
Outcome Equations		
Post		0.400***
		(0.065)
Market-to-book		0.237**
		(0.115)
Leverage		-0.003
		(0.007)
Size		0.411***
		(0.072)
Growth		0.180***
		(0.030)
Cash flow		3.570***
		(0.425)
		-0.357***

ROA	(0.137)
Big four	0.407***
	(0.089)
Age	0.443***
	(0.016)
Capital expenditure	0
	(0.000)
HHI	5.705***
	(1.274)
Market shares	0.519***
	(0.058)
Tangible	-1.584***
	(0.154)
Earnings volatility	0.002***
	(0.000)
Z Score	-0.004***
	(0.001)
Heckman_lambda	13.38***
	(1.519)
Constant	69.39***
	(0.821)
Year FE	YES
Firm FE	YES
Observations	33,843
Number of firms	5,773
R-squared	0.025

Table 11. The Regression of Acquirers' Financial Report Readability and Post-Merger Status: A Cross-Border Subset Analysis

This table presents an analysis focused on the relationship between post-merger time status and the financial report readability of acquirers in cross-border M&A deals. The Post variable indicating acquirers' post-merger time status is the independent variable. I use Bog index as the dependent variable. The model also controls firm-level characteristics including firm size, market-to-book ratio, cash flow, leverage, sales growth, ROA, firm age, auditing quality, capital expenditure, HHI, market shares, tangible assets, Z-Score, and earnings volatility. The fixed effects of firm, year, industry and country are also controlled in this model. Full variable definitions are available in the Appendix. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 21.The regression of acquirers' post-M&A financial report readability: A cross-border subset analysis

VARIABLES	(1) PostBog Model (5) Without US targets
English speaking target	0.147
	(0.226)
PreBog	0.678***
	(0.019)
Size	-0.142
	(0.103)
Leverage	0.018
	(0.027)
Market-to-book	0.255
	(0.451)
Age	0.011
	(0.007)
Earnings	-0.633***
	(0.241)
Loss	0.759***
	(0.249)
Special Items	-1.125
	(1.523)
Business segments	-0.012
	(0.029)
Market share	0.238
	(0.149)
Tangible assets	-0.762*
	(0.428)
Z Score	-0.012
	(0.008)
Constant	24.05***
	(1.607)
Year FE	YES
Firm FE	YES
Industry FE	YES
Observations	1,176
R-squared	0.811

Chapter 3
Do M&A Impact Managerial Efficiency?

Do M&A Impact Managerial Efficiency?

Abstract

This study examines the impact of M&A on the acquiring firms' managerial efficiency. For that reason, I use a sample of 20,242 firm-year observations from 3,392 US public acquirers over the period 1985 to 2018. The results indicate that acquirers' managerial efficiency declines following M&A. Specifically, my results show that integration challenges arising from inherent differences between merging firms impede integration tasks, hindering post-merger managerial efficiency. However, strong CSR programs such as employee-friendly policies and powerful CEOs boost managerial efficiency during integration. Overall, this study reveals that barriers to M&A integration hinder managerial efficiency, but strategic investments in CSR and strong leadership can mitigate these issues, thus enhancing post-merger managerial efficiency.

Keywords: managerial efficiency, M&A, post-merger integration, CSR performance, CEO power

1. Introduction

It is often argued that M&A create value by constructing new resources using the acquirer's existing capabilities (Bodner and Capron, 2018). Managerial efficiency[17] referring to managers' abilities to competently execute business functions, represents a vital component of overall organizational capabilities that are essential for M&A success. Prior research has defined managerial efficiency as a combination of individual attributes, functional expertise, and social roles linked to superior job performance. It is quantified by measuring managers' conversion of company resources into revenue through competencies like strategic planning, decision-making, communication, leadership, and problem-solving (Boyatzis, 1991; Demerjian et al., 2012; Chong, 2013). Yang and Liu (2012) examine bank branches in Taiwan and find that mixed ownership, cost management, profit-making capabilities, and benchmark adoption are the key factors in determining managerial efficiency.

In the post-merger scenario, the efficiency of the acquirer's management team refers to their ability to effectively implement the integration process and realize M&A synergies through their personal capabilities, task execution, and social interaction during the post-merger period (Adner and Helfat, 2003; Martin, 2011; Chong, 2013). Demerjian et al. (2012) assess managerial efficiency and carried out validity tests[18] to confirm the managerial efficiency reflects managerial traits that are distinct from firm performance. Strategic change and firm performance, however, are heavily dependent on the managers since they are expected to identify and create growth opportunities. Consequently, the efficiency of the acquiring firm's managers following M&A is paramount to the success of a merger and the organization's ability to adapt to change (Adner and Helfat, 2003; Helfat and Martin, 2015).

While post-merger operations and stock performance are extensively discussed in the literature (e.g., Agrawal et al., 1992; Agrawal and Jaffe, 2000; Knapp et al., 2005; Yang and Liu, 2012; Malikov et al., 2021), managerial efficiency is rarely discussed as a critical corporate

[17] The terms "managerial efficiency," "managerial ability," and "managerial competency" are used interchangeably to describe the capability of managers to generate income and revenue through effective decision making, resource allocation, and organizational leadership. Despite the use of different terms, the underlying concept remains the managers' ability to drive profitability and business results. To represent this common idea across the literature, this chapter uses the term "managerial efficiency."

[18] According to Demerjian et al. (2012), the correlation between managerial ability (MA) score and return on assets (ROA) is 0.336 by Pearson correlation and 0.120 by Spearman rank correlation. The low correlations between MA score and ROA indicate that they are measuring different constructs and are not strongly linearly related.

capability. This study expands upon previous research by examining the managerial efficiency of acquirers following the M&A, as measured by Demerjian et al. (2012). Specifically, it builds on previous literature by analysing the impact of M&A on acquirers' managerial efficiency in three dimensions: personal capabilities reflecting human capital, task execution demonstrating cognitive abilities, and social interaction performance representing social capital (e.g., Adner and Helfat, 2003; Martin, 2011; Chong, 2013).

Following M&A, the acquirers' managerial efficiency that can be attributed to task-specific performance can be hindered by integration barriers related to synergy issues, client departure, structural integration, employee turnover, staff emotional distress, and learning obstacles (Zollo and Meier, 2008; Bodner and Capron, 2018; Oh and Johnston, 2020). The disparity in terms of cultural values, organizational structures, strategies, and national contexts between the bidder and target, referred to as the firm distance, is the source of post-merger integration obstacles (Datta, 1991; Chatterjee et al., 1992; Weber, 1996; Weber, Shenkar and Raveh, 1996; Larsson and Finkelstein, 1999; Stahl and Voigt, 2008; Kim and Finkelstein, 2009; Appelbaum, Roberts and Shapiro, 2013). A greater firm distance[19] between the acquirer and the target can make the post-merger integration (PMI) more difficult by increasing employee acculturative stress, inhibiting effective communication, hindering resource transfer, intensifying internal conflicts, and delaying the response to corporate incidents (Schout, 1991; Kostova and Zaheer, 1999; Hitt and Pisano, 2003; Ionascu et al., 2005; Li et al., 2016; Wang and Larimo, 2020).

According to social identity theory, the greater the perceived differences between the employees of the acquirer and the target, the less likely they are to cooperate and form one entity (Hogg and Terry, 2000). For instance, Smeulders et al. (2023) find employees from the target company may initially resist the acquisition if there is a significant cultural difference between the two companies, as they perceive fundamental incompatibilities. During post-merger integration, employee resistance can hinder the acquirers' managerial efficiency by affecting the effectiveness of communication, leadership, and problem-solving. Consequently, acquirers' post-merger managerial efficiency in decision-making and problem-solving can be hindered by poor communication, trust, and employee motivation.

[19] Bidders acquiring foreign, developing, private, or high-tech targets will most likely experience greater firm distance.

Based on the discussion above, acquirers' post-merger managerial efficiency is likely to be impeded by post-merger integration obstacles stemming from the distance between two merging companies. Thus, I propose the hypothesis that acquirers' managerial efficiency declines following the merger (H1). Relatedness between the merging companies can facilitate integration by reducing employee resistance, thus improving post-merger managerial efficiency (Cartwright and Schoenberg, 2006; Homburg and Bucerius, 2006). Consequently, I posit that post-merger integration concerns negatively affect acquirers' managerial efficiency (H2).

Although post-merger integration concerns may hinder acquirers' post-merger managerial efficiency, certain corporate governance practices, such as good CSR practices and strong CEOs, can potentially moderate this effect. Task execution is a crucial element of managerial efficiency (Bergenhenegouwen, 1996). As such, following M&A, acquirers with strong CSR commitments may be better positioned to execute managerial duties smoothly during integration. This is because they are more likely to develop trust with new stakeholders like employees and market investors (Ertugrul, 2013; Javed et al., 2014; Symitsi et al., 2018). Given the link between task execution and efficiency, I raise the hypothesis that acquirers' CSR practices enhance their post-merger managerial efficiency (H3).

Powerful CEOs possess authority that enables quick, decisive action without internal opposition, as their influence deters challengers (Rhodewalt and Davison Jr., 1986; Keltner et al., 2003; Adams et al. 2005). After an acquisition, this authority allows influential CEOs to unilaterally make integration decisions, expediting the combination of operations, employees, and culture (Haspeslagh and Jemison, 1991). Leveraging broad professional networks and clout, authoritative CEOs can efficiently construct relationships throughout the new organization after the merger (Klein et al., 2004; Larcker et al., 2010). By drawing on their knowledge and connections, powerful CEOs can effectively support management in fulfilling social roles. As task execution and social performance are crucial indicators of managerial efficiency (Cheng et al., 2005), the discussion indicates that acquirers' post-merger managerial efficiency will be enhanced by the presence of a powerful CEO (H4).

About the research design, I adopt a similar approach to Fauver et al. (2017) by limiting the sample period to a [-3, +3] year's event window surrounding the M&A announcement to minimize the impact of confounding events. I collect data from the Compustat North America database for financial information of all US-listed companies between January 1, 1985, and

December 31, 2018. The M&A data is sourced from the Securities Data Corporation Platinum (SDC) Mergers and Acquisitions database, which contains details on all US-listed companies that executed M&A transactions during the same period. Data on board characteristics is obtained from the Boardex database. The managerial efficiency measure is acquired from Demerjian et al. (2012) and firm distance data is provided to the public by Berry et al. (2010). The KLD STATS database, a tool for gauging trends in social and environmental performance, is used to obtain firms' CSR scores and employee welfare index (EWI) data. I merge the firm financial information with the M&A data using firm (CUSIPs) and time (year) identifiers to create the primary dataset and then incorporate the board information and KLD data into the main dataset. My sample consists of 20,242 firm-year observations of 3.392 US-listed bidders.

The empirical results support all hypotheses. First, I find that acquirers' managerial efficiency decreases following the merger, which offers a managerial perspective on why prior studies have observed post-merger underperformance (e.g., Agrawal et al., 1992; Agrawal and Jaffe, 2000; Knapp et al., 2005; Malikov et al., 2021). The M&A resulted in a decline in managerial efficiency, which could lead to post-merger underperformance since superior firm performance relies on effective management (Demerjian et al., 2012). Second, the evidence shows the decline in post-merger managerial efficiency is attributed to post-merger integration concerns. The further the distance between the acquirer and the target, the more the acquirers' managerial efficiency would be adversely impacted following the merger. Conversely, when the acquirer and target are related (same industry, country, language), acquirers' post-merger managerial efficiency is improved. These results align with and further support previous studies demonstrating the adverse impacts of PMI challenges arising from firm differences and the advantages of PMI simplicity due to firm connections (Ionascu et al., 2005; Li et al., 2016; Bodner and Capron, 2018; Oh and Johnston, 2020; Wang and Larimo, 2020).

Moreover, I find that good CSR performance improves acquirers' managerial efficiency following a merger. My finding supports existing arguments that CSR practices allow acquirers to extract greater value from M&A as well as positively impact the firm's performance and post-merger integration (Ertugrul, 2013; Javed et al., 2014; Guo et al., 2016; Symitsi et al., 2018). However, unlike these previous studies, my findings demonstrate a direct positive effect of CSR programs on the managerial efficiency of acquirers, rather than improving the overall firm performance. Lastly, I find that post-merger managerial efficiency is enhanced with a strong CEO. CEO authority accelerates the completion of post-merger managerial tasks while assisting managerial social interaction in the newly merged entity. By exhibiting the

effectiveness of powerful CEOs in navigating challenges, this finding reinforces prior research indicating that influential leadership can enhance organizational cohesion and create value during periods of large transactions such as M&A (Rhodewalt and Davison Jr., 1986; Adams et al., 2005; Li et al., 2019).

This study makes valuable contributions to the research on managerial efficiency, post-merger integration, and corporate governance. To my knowledge, it represents the first empirical examination of how M&A affect acquirers' post-merger managerial efficiency. By framing managerial efficiency as a critical driver of firm outcome yet distinct from accounting or stock performance, this research provides novel insights into the root causes of value destruction in M&A. These findings extend previous research observations of post-merger underperformance by identifying reduced managerial efficiency as a key underlying mechanism (e.g., Agrawal et al., 1992; Agrawal and Jaffe, 2000; Knapp et al., 2005; Malikov et al., 2021). Furthermore, this study notes that PMI challenges impede managerial efficiency and builds upon previous research on the consequences of PMI challenges (Ionascu et al., 2005; Li et al., 2016; Bodner and Capron, 2018; Oh and Johnston, 2020; Wang and Larimo, 2020). Providing strong evidence indicating robust CSR and powerful CEOs assist managerial duties during the integration, this study also highlights how good corporate governance and ethics bring synergies from M&A deals. However, differing from prior research, I find that robust CSR can directly contribute to the managerial efficiency of acquirers, rather than simply improving overall firm performance (Ertugrul, 2013; Javed et al., 2014; Guo et al., 2016; Symitsi et al., 2018). Finally, this study contributes to existing research on leadership roles in dynamic organizational settings by illustrating how powerful CEOs address PMI challenges and boost managerial efficiency (Rhodewalt and Davison Jr., 1986; Adams et al., 2005; Li et al., 2019).

Overall, my findings greatly improve the academic understanding of how to succeed in M&A by stressing the need to proactively back managers and governance when facing uncertainty. This study has important implications for research and practice by mapping out ways like advocating effective leadership to enable managers to thrive among integration challenges.

The rest of this chapter is structured as follows: Section 2 provides a literature review and articulates four hypotheses. Section 3 describes the data selection process, sample characteristics, models and variables used in the empirical analysis. Sections 4 and 5 present the empirical findings and robustness check results respectively. As a conclusion, Section 6

discusses the implications and summarizes the study's main findings. Finally, Section 6 summarizes the key findings and outlines the implications of the study.

2. Related literature and hypotheses development

2.1 Managerial efficiency

In explaining the two trends in US corporate governance, higher executive pay, and more external CEO appointments, Murphy and Zabojnik (2007) highlight a shift in the relative importance of "firm-specific human capital" (only valued within a single organization) as opposed to "managerial efficiency" (transferable across companies). The influence of managerial efficiency is a significant topic of research in the fields of finance, accounting, and management.

Previous research has identified three key components of managerial efficiency: individual abilities, professional skills, and social performance. These factors are essential elements that allow managers to identify and capitalize on opportunities, converting resources into revenue (e.g., Adner and Helfat, 2003; Helfat and Martin, 2015; Ambrosini and Altintas, 2019). Reviewing prior studies, Boyatzis (1982) indicates that managerial efficiency is associated with specific competencies that considerably influence job performance. These competencies are assessed by evaluating managers' demonstrated behaviours and include cognitive abilities like skills and knowledge, affective attributes such as values and mindsets, behavioural tendencies, and motivational characteristics that drive optimal performance. Rather than relying on individual ability assessments, several publications suggest using criteria based on industry-specific performance benchmarks for evaluating managerial effectiveness (Constable and McCormick, 1987; Handy, 1987).

Later studies adopt a more holistic perspective on the factors that contribute to managerial efficiency, recognizing that managerial performance is shaped by individual traits, social ties, organizational contexts, and environmental dynamics (e.g., Martin and Staines, 1994; Cheng, et al., 2005; Martin, 2011; Chong, 2013; Ambrosini and Altintas, 2019). For instance, Martin and Staines (1994) and Bergenhenegouwen (1996) argue that both personal capability and task-specific skills are critical for effective managerial performance. Cheng et al. (2005) note that beyond individual talent and job knowledge, managerial success also depends on fulfilling a role through workplace social interactions. Competency in managing diverse perceptions and expectations is a hallmark of efficient managers.

Adner and Helfat (2003) and Martin (2011) indicate that managerial human capital, social capital, and cognition are three critical determinants of managers' capabilities to effectively lead in dynamic environments. Specifically, managerial human capital includes the skills and knowledge that managers have developed through their educational background, personal and professional experiences (Kor and Mesko, 2013). Managerial social capital encompasses the networks and connections that managers possess, which grant them access to information, resources, and influence within and outside of an organization (Adler and Kwon, 2002; Adner and Helfat, 2003; Kor and Mesko, 2013). Managerial cognition pertains to the mental models, belief systems, and interpretive lenses that determine how managers process information and make strategic decisions (Prahalad and Bettis, 1986; Walsh, 1995). Similarly, Chong (2013) summarizes that the individual traits, functional expertise, and social interaction required for outstanding job performance collectively form the basis for models of managerial efficiency.

Other studies investigate determinants of managerial efficiency. Porter and Scully (1982) measure the managerial efficiency of baseball teams and find that managerial experience, skills, team environment, ownership, and organizational support constitute the key determinants of managerial efficiency. Yang and Liu (2012) utilise both the DEA two-stage performance model and the fuzzy multiobjective model to evaluate the managerial efficiency of bank branches in Taiwan. They reveal that a competitive environment, performance evaluations for enhancement, and private ownership are crucial factors that improve the banks' managerial efficiency. Chong (2013) suggests managerial efficiency varies significantly depending on the working environment. Specifically, the private sector's business risks demand rapid decision-making to capitalize on fleeting opportunities. By contrast, the public sector's minimal business risks involve more deliberate managerial decision-making that weighs diverse stakeholder interests in analysis and solutions. Furthermore, Chong (2013) demonstrates that faster career advancement of managers results in improved efficiency in key areas such as planning, organizing, and motivating people.

In terms of the specific measurement of managerial efficiency, Demerjian et al. (2012) constructed a new measure to examine managerial efficiency as the effectiveness of a management team in converting corporate resources into revenue compared to their industry peers. Specifically, Demerjian et al. (2012) developed a two-step process to measure managerial efficiency in converting resources into revenue. First, Data Envelopment Analysis (DEA) optimizes firm performance across diverse inputs and outputs. This allows benchmarking each firm's efficiency level against the maximum potential efficiency. A key

advantage is accounting for different input combinations yielding the same output as equally efficient. Second, linear regression separates overall firm efficiency from managerial performance by controlling for firm characteristics like size, market share, cash availability, life cycle stage, operational complexity, and global footprint. The residual from this regression is the Managerial Ability (MA) score, representing managerial efficiency. In essence, Demerjian et al. (2012) isolate managerial performance from firm-specific factors to quantify managerial efficiency in generating revenues.

Based on different levels of managerial efficiency, Demerjian et al. (2012) note that compared to less capable managers, managers with superior efficiencies are better equipped to comprehend technology and industry trends, accurately forecast product demand, invest in high-value projects, and effectively manage their employees. In dynamic environments like the post-merger context, greater managerial efficiency that encompasses strong human, social, and cognitive managerial capital helps override inflexible mindsets and drive vital strategic changes that revitalize organizations (e.g., Nadkarni and Narayanan, 2007; Danneels, 2011; Helfat and Martin, 2015; Tripsas and Gavetti, 2017). Empirical evidence reveals a positive association between top managers' external social capital and the number of acquisitions organizations make to achieve strategic change, as managers leverage their outside networks to enable more deals (Helfat and Martin, 2015).

This study builds on prior research by assessing acquirers' post-merger managerial efficiency using the measure developed by Demerjian et al. (2012). I expand the analysis beyond previous literature by examining managerial efficiency across three key dimensions: personal capabilities reflecting human capital, task execution representing cognitive abilities, and social interaction performance indicative of social capital (e.g., Adner and Helfat, 2003; Martin, 2011; Chong, 2013). This allows for a more comprehensive evaluation of how M&A impact acquirers' managerial efficiency across factors related to human, cognitive, and social capital.

2.2 Acquirers' managerial efficiency following the M&A

M&A often involve significant organisational changes, including post-merger integration and adjustments. However, many companies fail to achieve their desired outcomes as these organizational changes are time-consuming and arduous (Oh and Johnston, 2020). Implementing post-merger integration effectively can improve firm performance; however, it also carries the risk of unanticipated setbacks (Kennedy et al., 2003; Brown, 2005). The success

or failure of post-merger integration can have a major impact on the results of M&A (Zollo and Meier, 2008; Oh and Johnston, 2020).

Bodner and Capron (2018, p.2) describe PMI as "*a process that unfolds in the aftermath of the deal closure to reconfigure merging firms by redeploying, adding, or divesting resources, lines of products or entire businesses, to achieve the expected combination benefits*". During the PMI process, there are multiple challenges for management, including creating synergy, addressing customer disruption, ensuring structural integration, retaining staff, preserving identity and autonomy, maintaining customers, managing emotional distress, avoiding loss of status, and dealing with learning issues (Graebner et al., 2017).

Following M&A, post-merger integration can have a significant impact on acquiring firms' managerial efficiency, particularly in task-specific performance. This is because the divergent nature of the acquirer and target can exacerbate the challenges associated with PMI. Social identity theory suggests that employees of the target and acquirer are less likely to cooperate and form a single organization if they perceive greater differences between them (Hogg and Terry, 2000). For example, Smeulders et al. (2023) observe the initial resistance of employees to M&A increases with the level of cultural differences between the acquirer and the target company.

This employee resistance to post-merger integration can significantly hinder managerial efficiency. Employees who oppose post-merger changes are likely to withhold feedback, ideas, and concerns from management. In the absence of staff input, management may have difficulty grasping the complexities of the newly merged entity and making the best decisions. The implementation of integration plans can also be slowed by low employee morale and motivation due to resistance. Consequently, the acquirers' task-specific managerial efficiency, such as decision-making and problem-solving, may be impaired due to uncooperative employees resulting from large differences between the merging firms. Based on the discussion above, I propose my first hypothesis as follows:

H1: Acquirers' managerial efficiency declines after the M&A.

2.3 Post-M&A integration challenges and acquirers' managerial efficiency

The inherent difference in cultural values, organizational structures, strategies, and national contexts between the acquiring and target firms, referred to as firm distance, is a significant

source of challenges during post-merger integration (Datta, 1991; Chatterjee et al., 1992; Weber, 1996; Weber, Shenkar and Raveh, 1996; Larsson and Finkelstein, 1999; Stahl and Voigt, 2008; Kim and Finkelstein, 2009; Appelbaum, Roberts and Shapiro, 2013). The PMI challenges originating from firm distance involve synergy realization, customer loss, structural alignment, talent turnover, employee well-being, and learning obstacles (Zollo and Meier, 2008).

These challenges can undermine acquirers' managerial efficiency through several mechanisms. First, Chatterjee et al. (1992) find that cultural differences hinder M&A success. This suggests that large cultural differences impede synergy attainment and customer retention, preventing managers from achieving financial goals. Second, a large firm distance between merger partners may result in poor organizational alignment following the merger, including unclear reporting lines and responsibilities. This lack of structural alignment can lead to managers either overlooking or duplicating crucial tasks, which subsequently will impede the merged company's managerial efficiency (Bodner and Capron, 2018). Third, perceived differences between the merging firms can result in staff turnover, leading to disruptions in post-merger operations and requiring managers to dedicate time and resources to recruiting and training replacements (Smeulders et al. 2023). Besides, M&A can cause employee disengagement and reduced productivity due to redundancy uncertainty and stress (Malikov et al., 2021). Managers must then put in extra effort to boost employee productivity and keep operations running smoothly, which can slow down their work progress. Lastly, employees who are distressed by the PMI changes may have difficulty adapting to new processes and systems (Graebner et al., 2017). The need to familiarize employees with the new processes and systems will therefore delay managers from completing integration projects.

As a result, when the firm distance[20] between the acquirer and the target is large, the post-merger integration is likely to be more difficult due to increased employee acculturative stress, less effective communication, impeded resource transfer, intensified internal conflicts, and delayed response to corporate incidents (Schout, 1991; Kostova and Zaheer, 1999; Hitt and Pisano, 2003; Ionascu et al., 2005; Li et al., 2016; Wang and Larimo, 2020). Acquiring firms' post-merger managerial efficiency in completing PMI therefore can be significantly impeded.

[20] Bidders acquiring foreign, developing, private, or high-tech targets will most likely experience greater firm distance.

Accordingly, A high degree of relatedness between two firms can simplify the process of PMI, thus enhancing managerial efficiency (Homburg and Bucerius, 2006). Reviewing thirty-year past M&A research, Cartwright and Schoenberg (2006) highlight the vital roles of strategic fit, organizational fit, and cultural fit in the acquisition process. Greater relatedness between the acquirer and target in terms of language, culture, target markets, market positioning, management styles, and strategic goals leads to a smaller firm distance between the two companies, which can result in reduced PMI barriers. This may enhance managerial efficiency for the acquirers following the merger. Based on the discussion, my second hypothesis is stated as follows:

H2: Post-merger integration challenges negatively affect acquirers' managerial efficiency.

2.4 CSR practices and acquirers' post-M&A managerial efficiency

According to stakeholder theory, a company's success depends not only on financials but also on managing stakeholder relationships and creating shared value (Berrone et al., 2007; Harrison and Wicks, 2013). Scholars increasingly recognize stakeholder welfare as an intangible asset essential to competitiveness and survival (e.g., Buchholz and Rosenthal, 2005; Donaldson and Preston, 1995; Jiao, 2010; Wang and Sengupta, 2016). This growing recognition of stakeholders highlights the importance of corporate social responsibility (CSR) practices, especially in mergers and acquisitions.

Previous research suggests that CSR activities reflect an organization's dedication to attaining CSR objectives and winning the approval of stakeholders in terms of ethics and morality (Basu and Palazzo, 2008). Companies engaged in CSR demonstrate a higher level of ethics and earnings quality than those without CSR (Kim et al., 2012). The enhanced credibility and ethical standards of companies with a focus on CSR result in them being viewed more favourably by both investors and the public. Consequently, companies that engage in CSR activities can gain legitimacy and positive stock returns from both stakeholders and capital markets (Flammer, 2013). Well-informed CSR reporting is a sign of transparency and a solid commitment to sustainable actions, which would help businesses enhance their ties with stakeholders, boost a company's reputation and reflect positively on its brand image (Odriozola and Baraibar-Diez, 2017).

In M&A, acquirers' overall CSR practices shape critical relationships with stakeholders like customers and shareholders, impacting post-merger integration success (Hitt et al., 2001;

Angwin, 2015; Burns and Collett, 2017). While post-merger integration poses many challenges that can hamper efficiency, strong CSR programs can help to mitigate these issues by promoting a responsible and accountable corporate image to stakeholders and fostering greater collaboration with them (Jones, 1999; Hassan, 2014; Javed et al., 2014; Khan et al., 2015). CSR practices also reduce integration conflicts by promoting organizational culture inclusivity and open communication (Smeulders et al., 2023). As a result, CSR practices are anticipated to facilitate the integration process and enhance acquirers' managerial efficiency in general.

More specifically, acquirers' implementation of employee-focused CSR practices can enhance post-merger staff collaboration, communication, and contribution, which in turn will mitigate the negative impact on managerial efficiency resulting from integration challenges. Prior research reveals employee welfare policies are beneficial to operational, financial, and stock performance[21] (Jiao, 2010; Edmans, 2011; Faleye and Trahan, 2011; Symitsi et al., 2018). Satisfied employees are less likely to strike or leave, which reduces operation disruption and staff retention costs (Neumann, 1980; Becker and Olson, 1986). Treating employees well incentivizes them to create intellectual property, reduce errors at work and lower the turnover rate (Chen et al., 2016; Guo et al., 2016). In M&A, the acquirer's employee-friendly policies increase acquisition completion speed (Ertugrul, 2013).

Following the merger, employee-friendly CSR programs can lead to improved staff collaboration, communication, and contribution, which will aid in the management of key post-merger integration tasks in the acquiring firms through various aspects (Graebner et al., 2017). First, sociocultural integration--A workforce that is willing to cooperate will be more likely to accept the idea of blending organizational values and cultures, helping to speed up the integration process. Second, operation integration--Cooperation among staff would lead to effective teamwork, which would facilitate the necessary coordination to integrate systems and processes. Third, stakeholder communication--Dedicated employees act as brand representatives, enhancing communication with all stakeholders. Fourth, team alignment--A cohesive team works together towards the organization's objectives and plans. In this regard, acquirers with employee-friendly CSR practices are more likely to exhibit greater post-merger

[21] Specifically, Jiao (2010) finds a one-point increase in a firm's stakeholder welfare score leads to a 0.587 increase in Tobin's Q. Similarly, Symitsi et al. (2018) indicate employee satisfaction enhances performance as evidenced by employee online reviews.

managerial efficiency, as a more engaged and motivated workforce allows managers to focus on completing integration tasks and generating revenue.

Overall, acquirers who prioritize CSR can expect to see increased managerial efficiency after a merger, due to two key factors: First, general CSR practices demonstrate accountability to stakeholders, which helps to build goodwill and facilitate cooperation with stakeholders (e.g., Khan et al., 2015). This, in turn, strengthens relationships with stakeholders and makes the transition smoother. Second, specific CSR practices targeting employees boost staff productivity and maintain positive morale among employees (e.g., Hassan, 2014). This helps accelerate the managerial task of integration by keeping employees motivated to help merge the two companies. The discussion above leads to the following hypothesis:

H3: Post-merger managerial efficiency is enhanced by acquirers' CSR practices.

2.5 CEO power and acquirers' post-M&A managerial efficiency

Following M&A, strong leadership can facilitate speedy decision-making and strategy implementation, which will increase management efficiency. Previous research suggests that CEOs with significant power and influence can make quick decisions without much opposition because their authority discourages challengers within the organization (Rhodewalt and Davison Jr., 1986; Keltner et al., 2003; Adams et al. 2005). During the PMI, authoritative CEOs can effectively prioritize and carry out critical integration tasks such as resource transfers, structural reorganization, and capability development (Haspeslagh and Jemison, 1991). This proactive approach allows them to swiftly achieve key integration objectives regarding the organizational culture, business units and workforce without being hindered by excessive bureaucracy or conflicting interests (Graebner et al., 2017).

Further, influential CEOs have a wealth of information and connections that can be leveraged to enhance their leadership, coordinate their employees, retain top talent, and establish new business relationships (Klein et al., 2004; Larcker et al., 2010). A powerful CEO's social capital, developed through external networks and internal relationships, can boost managerial efficiency during post-merger integration. Specifically, external connections with industry partners or advisors provide access to resources and expertise that can support integration and value creation (Reuer et al., 2012). Through their networks, influential CEOs can quickly acquire the essential capabilities, technology, or financing for integration activities, enhancing managerial efficiency. In addition, strong CEOs with solid social ties to their peers can provide

valuable insights on best integration practices for achieving synergies, restructuring organizational designs, and effectively managing post-merger changes at the workplace (Chung et al., 2000). Within the organization, a strong CEO can promote information sharing, coordinate activities, and align resources with integration priorities (Tang et al., 2015). The ability to collaborate across departments allows strong CEOs to achieve rapid decision-making and job implementation during the integration (Junni et al., 2015).

Overall, having a strong CEO is likely to improve post-merger managerial efficiency in both task execution and social interactions (Cheng et al., 2005). As a result of the discussion above, I develop the following hypothesis:

H4: CEO power positively moderates acquirers' post-merger managerial efficiency.

3. Data and methodology

3.1 Data source and sample selection

The data used in this study come from several databases. From the Compustat North America database, financial information is obtained for all US-listed[22] companies between January 1, 1985, and December 31, 2018. The M&A data is collected from the Securities Data Corporation Platinum (SDC) Mergers and Acquisitions database, which includes information on all US-listed companies that completed M&A transactions between January 1, 1985, and December 31, 2018. Board information, including board size, compensation, tenure, ownership, gender ratio, and education level, is sourced from the Boardex database. Managerial efficiency data (MA scores) are from Demerjian et al. (2012). Cross-national distance data are from Berry et al. (2010), made publicly available. Firms' CSR scores and employee welfare index (EWI) data are collected from the KLD STATS database, a statistical tool for evaluating trends in social and environmental performance. Using firm (CUSIPs) and time (year) identifiers, I first combine the firm financial information with M&A data to create the primary dataset and then incorporate the board information and KLD data into the main dataset.

My sample acquirers are subject to the following restrictions: (1) A NYSE or NASDAQ listing is required; (2) To analyse the context during and after the acquisition, the deal must be completed; (3) After the merger, the acquirer must hold 100% of the target's shares to capture

[22] When choosing US-listed acquirers as my sample firm, I consider US-listed firms to be more representative of global acquirers because of the dominance of the US economy and capital markets throughout the world.

the major effect of the acquirers' characteristics on the post-integration process; (4) To avoid the effects of each acquisition on the post-merger context, only the biggest deal by the acquirer during the period from January 1, 1985, to December 31, 2018, is considered; (5) The financial industry (sic code 6000–6500) and regulated firms (sic code 4400-5000) are excluded because of the differences in the nature of assets and liabilities, financial reporting system, and unique regulations might affect the performance, thus causing biased results.

Moreover, like the study by Fauver et al. (2017), I assess the influence of M&A on the managerial efficiency of acquirers while attempting to reduce the effect of confounding events and correlated omitted variables. This is done by examining the acquirers' managerial efficiency five years before and after the M&A announcement, thus limiting the sample period to a [-3, +3] years window surrounding the acquisition. The application of these filters led to a final sample of 20,242 firm-year observations of 3,392 US-listed acquirers. To reduce the effect of outliers, I winorize all variables at the 1% and 99% levels.

3.2 Definition of variables and measurement proxies

3.2.1 Dependent variable -- managerial efficiency

Following previous studies on managerial efficiency (Demerjian et al., 2013; Yuan et al., 2019; Baik, Choi, and Farber, 2020), my primary measure of managerial efficiency is the managerial ability (MA) score developed by Demerjian et al. (2012). The MA score was calculated in two steps according to Demerjian et al. (2012). The first step is to estimate firm efficiency within industries by using Data envelopment analysis (DEA). This analysis optimizes sales over various firm-specific inputs, including net property, plant, and equipment (PPE); capitalized operating leases (OL); net research and development costs (R&D); costs of goods sold (COGS) and selling, general, and administrative expenses (SG&A); purchased goodwill (GDWL); and other intangible assets (OtherIntan). The efficiency score of the firm is estimated through the use of the following optimization problems:

$$Firm\ Efficiency = \frac{Sale}{\alpha_1 COGS + \alpha_2 SG\&A + \alpha_3 PPE + \alpha_4 OL + \alpha_5 R\&D + \alpha_6 GDWL + \alpha_7 OtherIntan} \quad \text{(Eq. 1)}$$

The firm efficiency score provided by DEA cannot measure managerial efficiency, as it is influenced by both firm-specific characteristics and the managerial ability factor. To isolate

managerial ability, I follow the second step proposed by Demerjian et al. (2012), which involves regressing the efficiency score on firm-specific characteristics and using the resulting error term to measure managerial ability. Firm-specific characteristics, such as firm size, market share, cash flow, and life cycle, may lead to an overstatement of managerial ability. Conversely, the complexity of business operations, as measured by the concentration of business segments and foreign currency indicators, may result in an understatement of managerial ability. To estimate the following Tobit model, I use industry and year fixed effects:

$$
\begin{aligned}
Firm\ Efficiency \\
&= \alpha + \beta_1 Firm\ Size + \beta_2 Market\ Share + \beta_3 \text{Positive free cash flow} \\
&+ \beta_4 Age_t + \beta_5 Business\ segment\ concentration \\
&+ \alpha_6 Foreign\ currency\ indicator + \sum_t Year\ Fixed\ Effects \\
&+ MA\ Score_t \quad (\text{Eq. } 2)
\end{aligned}
$$

3.2.2 Independent variable -- post-M&A status indicator

To study the acquiring firm's managerial efficiency in the post-M&A context, I follow the approaches taken by Fauver et al. (2017) and Chen et al. (2020) and create a dummy variable called "Post" to reflect the M&A stage of an acquirer. The dummy variable "Post" is equal to 1 if the sample firm's year *t* is after the year in which the M&A completed, and 0 otherwise.

3.2.3 Moderating variable – Post-M&A integration challenge

Based on prior M&A research, this study measures the post-merger integration challenge using three proxies (Healy and Palepu, 2001; Oh and Johnston, 2020; Song et al., 2021). The first proxy is "integration concern." This variable is calculated by summing the values of the variables for foreign, private, developing, and high-tech targets. All four variables are measured using a dummy variable that equals one if the target is foreign, private, from a developing[23] country, or in a high-tech[24] industry, otherwise 0 respectively. The value of the "integration concern" index ranges from 0 to 4. A higher "integration concern" indicates a higher level of post-merger integration difficulty.

[23] Following Alimov and Officer (2017), the developing countries are countries classified as high-income in 1995 by the World Bank. Includes all OECD countries.

[24] To define the high-tech industry, I follow Coad and Rao (2008) and identify firms with SIC codes 35–38 as high-tech industries.

The second proxy is “cross-national distance,” which measures the institutional distance between the acquirer and the target. To construct this proxy, I employ the nine-dimensional distance approach proposed by Berry et al. (2010)[25]. The nine dimensions are economic, financial, political, administrative, cultural, demographic, knowledge, global connectedness, and geographic differences between the two countries. A description of the empirical indicator variables used in calculating these distance dimensions is provided in the Appendix. Collecting the cross-national distance data of my sample from Berry et al. (2010), I conduct a principal component analysis (PCA) to minimize the number of variables for different dimensions while reflecting the intact data. Based on the PCA score that considers all nine dimensions of cross-national distance, I generate the variable "Cross-national.” A greater value of this variable indicates a greater cross-national distance between the acquirer and the target, which implies a higher degree of post-merger integration difficulty.

The third proxy is “relatedness,” which is an index constructed by adding the values of the dummy variables for domestic, focused, and English-speaking targets. All three dummy variables are set to 1 if the target is a US domestic company, from the same industry as the acquirer (Fama-French 12 industry classification), or from an English-speaking country; otherwise, 0. The index value of “relatedness” ranges from 0 to 3. The higher the "relatedness" value, the lower the post-merger integration complexity.

3.2.4 Moderating variable – CSR practices

Drawing from the existing literature on companies' CSR performance (e.g., Servaes and Tamayo, 2013; Ghaly et al., 2015; Ben-Nasr and Ghouma, 2018; Tunyi et al., 2023) and the discussion of H3, my assessment of the acquirers' CSR practices is based on three proxies: CSR score, employee welfare index (EWI) and staff productivity. The first proxy CSR score, also known as the KLD database CSR index, reflects a firm's performance across four CSR dimensions: Community, Employment, Environment, and Human Rights. Following Servaes and Tamayo (2013) and Tunyi et al. (2023), I create separate indices for each dimension to assess a firm’s CSR performance. First, I calculate the ratio of a company's reported CSR strengths (weaknesses) to the maximum possible strengths (weaknesses) in the KLD. This generates two indices ranging from 0 to 1 (or 0 to 100%). Next, I calculate net CSR

[25] In Berry et al. (2010), a comprehensive model is presented for calculating cross-national distance in nine dimensions, which overcomes the limitations of previous methods and improves distance measurement accuracy considerably.

involvement by subtracting the weakness index from the strength index, resulting in an index between -1 and +1. Finally, I combine the net CSR index for all four dimensions to produce a new index ranging from -4 to +4. A higher CSR index value suggests that a company performs better in terms of corporate social responsibility.

The second proxy is the employee welfare index (EWI)[26], which indicates a firm's employee policy friendliness. Following previous studies, this index is calculated based on "Employee Relations" ratings obtained from the KLD (Landier et al., 2009; Verwijmeren and Derwall, 2010; Faleye and Trahan, 2011; Bae et al., 2013; Ertugrul, 2013; Ghaly et al., 2015). Specifically, based on Ghaly et al. (2015), my EWI is constructed by summing the number of identified strengths and subtracting the number of identified concerns in the "Employee Relations" category for each firm for a given year. As described by KLD, the components[27] of strengths include (1) Union relations strength; (2) Cash profit sharing; (3) Employee involvement; (4) Retirement benefits strength; and (5) Work/life benefits. The components of concerns consist of (1) Union relations concern; (2) Health and safety concern; (3) Workforce reductions; (4) Retirement benefits concern; (5) Other concerns. The KLD database rates each of the "Employee Relations" categories as either 0 or 1. My EWI index value ranges from -8 to 20. The greater the value of EWI, the better the firm's employee welfare. The third proxy is staff productivity. Following Tunyi et al. (2023), this variable is measured as the ratio of total sales per employee. A larger value of this variable implies superior staff performance within the company.

3.2.5 Moderating variable– CEO power

Previous research has employed various dimensions, such as CEO duality (Hermalin and Weisbach 1998; Jackling and Johl, 2009), CEO ownership (Veprauskaite and Adams 2013), CEO tenure (Brookman and Thistle, 2009), and CEO remuneration (Grinstein and Hribar 2004; Florackis and Ozkan 2009; Jiraporn and Chintrakarn 2013), to represent the different facets of CEO power. However, no single measure is sufficient to encompass every possible aspect of CEO power. To address this limitation, I have developed a CEO power index that incorporates three distinct dimensions to investigate the impact of CEO power on post-acquisition

[26] Due to the lack of comprehensive accounting measures for expenditure on employee welfare, previous corporate finance studies usually use employee relations ratings as a complementary approach to measuring employee well-being (Landier et al., 2009; Verwijmeren and Derwall, 2010; Faleye and Trahan, 2011; Bae et al., 2013; Ertugrul, 2013; Ghaly et al., 2015).
[27] The detailed description of each strength and concern component is listed in the Appendix.

managerial efficiency levels. Specifically, the index is constructed as the sum of three binary measures of CEO power ranging from 0 to 3.

Previous literature indicates that CEO chair duality and CEO ownership are associated with CEO power (Finkelstein, 1992; Muttakin et al., 2018; Song and Wan, 2019; Yuan et al., 2019). Therefore, my first measure is CEO duality, which is a binary variable that is set to one if the CEO also holds the position of chairman. CEO duality combines the roles of chief executive officer and chairman of the board, centralizing decision-making authority. This setup can lead to a concentration of power, impacting the firm's strategic direction and governance (Finkelstein and D'aveni, 1994). Studies like Goyal and Park (2002) provide empirical evidence that boards with CEO duality are less likely to replace underperforming CEOs due to a potential over-reliance on the CEO's direction, hindering the board's oversight function. This supports the inclusion of CEO duality as a measure of CEO power, as it directly impacts board dynamics and firm accountability.

The second measure is CEO ownership, which equals 1 if a firm's CEO ownership is above the median ownership of executives within the firm and 0 otherwise. Morck et al. (1988) reveal a intricate association between CEO ownership and firm valuation, as assessed by Tobin's Q. It illustrates that when CEO ownership initially rises, it aligns the interests of management and shareholders, ultimately resulting in enhanced firm valuation. However, excessive ownership ultimately leads to a decline in valuation, signifying concerns about entrenchment. This finding underscores the complexity of CEO ownership as both a mitigator and a facilitator of agency problems. The threshold of median ownership is used to distinguish between CEOs whose ownership levels are sufficiently high to potentially affect their decision-making and behaviour. This binary measure is grounded in the empirical observation that higher ownership levels can alter the balance between alignment with shareholder interests and the risk of entrenchment (Veprauskaite and Adams 2013).

Furthermore, I incorporate the high entrenchment indicator as the third measure, as per the CEO power index developed by Brodmann et al. (2022). This is equal to 1 if the firm's score in the Entrenchment Index by Bebchuk et al. (2009) is above the industry median, and 0 otherwise. The E-index, as outlined by Bebchuk et al. (2009), consists of six shareholder rights provisions, such as classified boards, poison pills, golden parachutes, and supermajority voting requirements for charters, by-laws, and mergers in a firm's charter. This index ranges from 0 to 6, with a higher score signifying a greater level of entrenchment. The E-index measures the

extent to which corporate governance mechanisms enable a CEO to maintain a strong grip on their position, thereby reducing shareholder influence on management decisions. A higher E-index indicates the presence of more entrenchment mechanisms, such as golden parachutes, staggered boards, and poison pills, which protect the CEO from being easily removed or held accountable by shareholders. This protection enhances the CEO's power within the firm by insulating them from external pressures, including market discipline and shareholder activism, allowing them to pursue strategies that may not align with shareholder interests. As a result, the E-index serves as a measure of the balance of power within a firm, revealing how entrenched CEOs can shape firm policies, resist external oversight, and potentially affect firm performance and value through their increased autonomy and decreased accountability.

3.2.6 Control variables

This study controls firm-level characteristics which may affect the acquiring firms' managerial efficiency. First, managerial efficiency may vary with firm size. Assuming similar managerial personal characteristics, larger companies with a greater market share will be more effective in negotiating terms with suppliers and customers (Demerjian et al., 2012). Hence, the size of the firm (Size), computed as the logarithm of the market value of the firm at the end of the fiscal year, is controlled in all models. Second, a firm's life cycle plays a crucial role in determining potential projects available to management and the associated costs of start-up investments (Demerjian et al., 2012). This study controls market-to-book and sales growth ratios, which reflect a firm's growth rate and opportunities. The two variables are calculated by a firm's equity market value scaled by its book value (Market-to-book) and the sales change divided by lagged sales (Sales growth). Third, if managerial efficiency is held constant, firms with more free cash can pursue positive net present value projects effectively (Demerjian et al., 2012). Thus, free cash flow (Cash flow) and firm leverage (Leverage) are controlled. The variable "Cash flow" is computed as the net operating cash flow scaled by a firm's total assets at the fiscal year-end while "Leverage" is measured by the ratio of a firm's total liabilities to shareholders' equity at the end of a fiscal year. Moreover, firms with greater profitability can further improve their staff productivity and managerial efficiency by providing better working conditions and benefits (Bloom et al., 2013). Hence, firm performance (ROA) is controlled and computed based on net income divided by total assets.

Additionally, firms tend to attract more foreign investors when they exhibit greater stock volatility (Bae et al., 2004). In turn, this can result in valuable benefits, such as increased access to capital and expertise, which can facilitate growth and improve profitability. Companies with

tangible assets (property, plants, and equipment) may require a larger workforce to operate these assets, which may adversely affect their managerial ability (Tunyi et al., 2023). Therefore, I control for stock volatility (Stock volatility) and tangible assets (Tangible) in all models, which are calculated using the annual average percentage difference between the daily highest and lowest prices of a stock divided by the daily average price and the ratio of property, plant, and equipment to total assets, respectively. The size of M&A deals and payment methods are also considered, as larger deals and stock payment methods are associated with more post-merger complexity, which can impact managers' efficiency (Faccio and Masulis, 2005; Alexandridis et al., 2013). Deal size (Deal size) is measured by deal value in millions of USD.

In an additional analysis, I also control for board characteristics such as board size, gender ratio, directors' experience, CEO replacement and education level, which may affect a firm's managerial efficiency (Demerjian et al., 2012; Kaplan et al., 2012).

3.3 Research models

Taking into account the range of time periods and cross-sectional data points within my sample, I utilize a fixed-effects model to investigate the influence of post-merger timing and other variables on acquirers' managerial efficiency after M&A transactions. This approach effectively handles both the time series and cross-sectional aspects of the data, enabling more accurate estimation of the M&A transaction's impact. The models I employ to test the three hypotheses are as follows:

3.3.1 Model for examining post-merger managerial efficiency

To investigate the variation in acquiring firms' managerial efficiency after the M&A (H1), I adopt the following model:

$$Managerial\ efficiency_{it} = \alpha_{it} + \beta_0 Post_{it} + \sum \beta_k Controls_{it} + \varepsilon_{it} \quad (1)$$

Where $Managerial\ efficiency_{it}$ refers to firm *i*'s MA score in year *t*; $Post_{it}$ denotes firm *i*'s post-merger time status in year *t* (dummy variable equals 1 if year *t* is after the M&A year, otherwise 0); $Controls_{it}$ denotes the firm-level controls including firm size (Size), sales growth (Sales growth), market-to-book ratio (Market-to-book), firm performance (ROA), free cash flow (Cash flow), leverage (Leverage), stock volatility (Stock volatility), tangible assets (Tangible) and M&A deal size. This model also controls for the effects of firm, year and industry. α_{it} signifies the intercept while ε_{it} denotes the error. β_0 represents the coefficient

indicating the relationship between post-merger status and acquirer managerial efficiency, which is expected to be negative according to H1.

3.3.2 Model for integration challenge and acquirers' post-M&A managerial efficiency

To estimate whether the integration issue influences post-merger acquirers' managerial efficiency (H2), I apply the following model:

$$Managerial\ efficiency_{it} = \alpha_{it} + \beta_1 Intergration\ challenge_{\ it} + \beta_2 Post_{it} + \beta_3 Intergration\ issue_{\ it} \times Post_{it} + \sum \beta_k Controls_{it} + \varepsilon_{it} \quad (2)$$

Where $Managerial\ efficiency_{it}$ is measured by the firm i's MA score in year t. $Intergration\ challenge_{\ it}$ represents the post-merger integration challenge, which is proxied by three variables: "integration concern", "cross-national distance" and "relatedness" of firm i in year t. Among the three proxies, "integration concern" and "cross-national distance" indicate the level of integration difficulty, while relatedness indicates the level of integration ease. $Post_{it}$ is firm i's post-merger time status in year t; $Controls_{it}$ represents the same firm-specific and M&A characteristics controlled in model (1). This model also controls for the effects of firm, year and industry (Fama and French 48 industry classifications). α_{it} signifies the intercept and ε_{it} denotes the error. β_3 represents the relationship between post-merger integration challenges and acquirers' managerial efficiency. Based on H2, β_3 is anticipated to be negative for proxy "integration concern" and "cross-national distance" while being positive for "relatedness".

3.3.3 Model for CSR practices and acquirers' post-M&A managerial efficiency

To assess whether CSR practices enhance the managerial efficiency of post-merger acquirers (H3), I use the following model:

$$Managerial\ efficiency_{it} = \alpha_{it} + \beta_1 CSR\ practices_{\ it} + \beta_2 Post_{it} + \beta_3 CSR\ performance_{\ it} \times Post_{it} + \sum \beta_k Controls_{it} + \varepsilon_{it} \quad (3)$$

Where $Managerial\ efficiency_{it}$ refers to the firm i's MA score in year t. $CSR\ practices_{\ it}$ represents the firm i's CSR practices in year t, which is measured in three dimensions: " CSR score ", "EWI" (employee welfare index) and "staff productivity" of firm i in year t. All three proxies indicate the level of firm CSR practices. $Post_{it}$ denotes the firm i's post-merger time status in year t. $Controls_{it}$ represents the same firm-specific and M&A characteristics

controlled in model (1). This model also controls for the effects of firm, year and industry (Fama and French 48 industry classifications). α_{it} signifies the intercept and ε_{it} denotes the error. β_3 represents the relationship between acquirers' CSR performance and their post-merger managerial efficiency. In model (3), β_3 as the coefficient will be positive as better CSR performance is hypothesised to moderate the decline of acquirers' post-merger managerial efficiency.

3.3.4 Model for CEO power and acquirers' post-merger managerial efficiency

I develop model (4) as follows to explore whether a powerful CEO enhances post-merger acquirer managerial efficiency (H4):

$$Managerial\ efficiency_{it} = \alpha_{it} + \beta_1 CEO\ power + \beta_2 Post_{it} + \beta_3 CEO\ power_{\ it} \times Post_{it} + \sum \beta_k Controls_{it} + \varepsilon_{it} \quad (4)$$

Where $Managerial\ efficiency_{it}$ denotes the firm *i*'s MA score in year *t*. $CEO\ power_{\ it}$ represents the firm *i*'s CEO power in year *t*, which is measured by the "CEO power index" of firm *i* in year *t*. Specifically, the index is derived by summing three binary measures: "CEO duality" (equals 1 when the CEO is also chairman), "CEO ownership" (equals 1 if CEO ownership exceeds the median), and "High entrenchment" (equals 1 if the firm's Entrenchment Index exceeds the industry median). This CEO power index values range from 0 to 3. $Post_{it}$ denotes the firm *i*'s post-merger time status in year *t*. $Controls_{it}$ represents the same firm-specific and M&A characteristics controlled in Model (1). This model also controls for the effects of firm, year and industry (Fama and French 48 industry classifications). α_{it} signifies the intercept and ε_{it} represents the error. In model (4), β_3 indicates the impact of acquirers' CEO power on their post-merger managerial efficiency. It is anticipated to be positive as powerful CEOs should increase acquirers' post-merger managerial efficiency (H4).

4. Empirical results and discussion

4.1 Descriptive statistics

Table 1 presents the sample distribution of 3,392 M&A deals completed by US acquirers between 1985 and 2018. Panel A displays the sample distribution based on the M&A announcement year, Panel B illustrates the sample distribution based on the Fama and French

48 industry classifications, and Panel C presents the sample distribution for the target national region. The number and percentage of deals in the sample are also presented. According to the M&A announcement dates, most of the sample acquisitions (57.91%) took place between 1993 and 2008, while 20.84% were finalized between 2012 and 2018. Business Services, Electrical Equipment, and Computers are the main industries of the sample acquirers, making up 21.43%, 8.28%, and 6.16% of the entire sample, respectively. In terms of the targeted region, the majority of targets (84.96%) are based in the US because of easy synergies from similar business models and fewer institutional barriers (Moeller and Schlingemann, 2005). Other major target countries included Canada (3.22%), the United Kingdom (3.04%), Germany (1.62%), and France (0.97%). The remaining sampled targets are spread across Europe, South America, the Middle East, Asia, and Africa.

[Insert Table 1]

Table 2 shows the descriptive statistics for the variables of 3,440 US acquirers over the [-3, +5] year's M&A event window. Panel A presents descriptive statistics of key variables across the full sample. Panel B presents the summary statistics of the variables separately for acquirers before and after the M&A. In panel A, the average MA score of the sample acquirers is 0.009, with the lowest and highest values of -0.271 and 0.652, respectively. In terms of the three integration issue proxies, with the index value ranging from 0 to 4, the mean of all acquirers' integration concern "integration concern" is 0.675; The mean "relatedness" index is 1.894 with the maximum and minimum values being 3 and 0, respectively; The "cross-national distance" has a mean of 0.593 with the value ranges from 0.082 and 14.487. According to the CSR performance metrics, the average employee welfare index (EWI) is 0.903, the mean CSR score is 0.039, and the average staff productivity is 1.613. As for the CEO power measure, the main proxy for CEO power has a mean value of 1.128, with an index range of 0 to 2.

In Panel B, the average MA score for pre-merger acquirers is 0.019, while the mean MA score for post-merger acquirers is 0.001. Following the merger, the average MA score decreased by 0.018; this difference was statistically significant at the 1% level. A higher MA score indicates greater managerial efficiency (Demerjian, Lev and McVay, 2012; Demerjian et al., 2013; Baik et al., 2020). This finding suggests that the average managerial efficiency is lower after an M&A, which supports my first hypothesis that acquirers' managerial efficiency decreases after a merger. Among the other primary variables, the mean post-merger staff productivity increases from 1.576 to 1.645 (statistically significant at the 10% level).The rise

in staff productivity can be attributed to potential redundancies, as a reduced number of staff leads to higher productivity per employee (Malikov et al., 2021; Chen et al., 2023).

[Insert Table 2]

4.2 Acquirers' managerial efficiency following the M&A

Table 3 displays the results of estimating model (1) that investigates the relationship between acquirers' managerial efficiency and post-merger status (H1). Column (1) displays the outcome of estimating model (1) while controlling for firm-level and M&A characteristics, as well as the industry and year fixed effects. The coefficient for MA score as the dependent variable in column (1) is negative (-0.01) and is statistically significant at the 1% level. The coefficient -0.01 implies that the acquirer's MA score decreased by 1 % after the merger. A high MA score signifies an elevated level of managerial efficiency. Consequently, the coefficient in column (1) implies that acquirers' managerial efficiency tends to decline following an M&A. These results are consistent with H1, which states that the acquirer's managerial efficiency decreases after M&A. Columns (2) to (5) display the estimated results of model (1) with four alternative measurements of managerial efficiency from Demerjian et al. (2012). The coefficients of all four alternative managerial efficiency proxies are negative and are statistically significant at the 1% significance level. This finding confirms the validity of H1. By demonstrating a declined managerial efficiency following M&A, it provides an explanation from a managerial point of view for the post-merger firm underperformance observed in prior studies (e.g., Agrawal et al., 1992; Agrawal and Jaffe, 2000; Knapp et al., 2005; Malikov et al., 2021).

[Insert Table 3]

4.3 Integration challenges and acquirers' post-merger managerial efficiency

Table 4 provides the estimated results for model (2), which examines how post-merger integration challenges affect the managerial efficiency of US-listed acquirers following a merger. The relationships between acquirers' post-merger managerial efficiency and the three post-merger integration challenge indicators are presented in columns (1) to (3). In column (1), the coefficient on variable "integration concern" and post-merger MA score is -0.007 and is statistically significant at the 1% level. This means that a 1% increase in "integration concern" leads to a post-merger acquirers' MA score reduction of 0.007%. Given that the minimum MA

score in my sample is -0.271, with a maximum of 0.652, the range of MA scores in this sample is only 0.923 points. Within this limited scope, a 0.007 decrease amounts to around 1/15th of the total range -- a significant change given the narrow bandwidth. The significant effect observed provides valuable empirical evidence regarding the post-merger efficiency of acquirers, as coefficients of this magnitude typically indicate a strong relationship when the range of outcomes is so small.

The estimated coefficient in column (2) is -0.001 and it is statistically significant at the 10% level. This suggests that a 1% increase in the cross-national distance between the acquirer and target leads to a 0.001% decrease in the post-merger MA score. The coefficient in column (3) is 0.008 and is statistically significant at the 1% level, indicating a positive relationship between 'relatedness' and the post-merger MA score. This implies that a 1% increase in the relatedness between the acquirer and target would result in a 0.008% improvement in the acquirer's post-merger MA score. All three coefficients support the anticipated effect of the PMI issue on acquirers' managerial efficiency. The wider the institutional distance between the acquirer and the target, the more challenging the post-merger integration process will be. Thus, a high degree of difficulty in integration impedes managerial efficiency. Similarly, when the acquirer and target are related (in the same industry, from the same country, or speak the same language), the post-merger integration process will be simpler. As a result, the management team can operate more efficiently. This result is in line with H2. It is also consistent with prior studies demonstrating the negative impact of PMI difficulties caused by the distance between two merging firms and the beneficial effect of simpler PMI with greater relatedness between the merging companies (Ionascu et al., 2005; Li et al., 2016; Bodner and Capron, 2018; Oh and Johnston, 2020; Wang and Larimo, 2020).

[Insert Table 4]

4.4 CSR practices and acquirers' post-merger managerial efficiency

Table 5 presents the coefficients for model (3), which examines the moderating effect of acquirers' CSR practices on the decrease in managerial efficiency after an M&A. Columns (1) to (3) present the estimated coefficients of the relationships between acquirers' post-merger managerial efficiency and the three CSR practices proxies. The coefficient in column (1) is 0.011 and is statistically significant at the 1% level. This finding indicates a significantly positive relationship between acquirers' CSR scores and their post-merger managerial

efficiency. Column (2) shows the impact of the employee welfare index on acquirers' managerial efficiency. The coefficient is also positive (0.002) and statistically significant (at the 5% level). Column (3) indicates that the coefficient of the relationship between staff productivity and acquirers' managerial efficiency is 0.005, which is statistically significant at the 1% level. This implies that acquirers' post-merger managerial efficiency improves with improved employee welfare and staff productivity. The results in Table 5 support H3, indicating that good CSR performance moderates the decline in acquirers' managerial efficiency following a merger. My findings present the direct positive impact of CSR on managerial efficiency. This adds to the literature that exhibits the positive influence of CSR practices on firm performance and acquisition process by fostering stakeholder trust and boosting employee performance (Ertugrul, 2013; Javed et al., 2014; Guo et al., 2016; Symitsi et al., 2018).

[Insert Table 5]

4.5 CEO power and acquirers' post-merger managerial efficiency

This table shows the estimated outcomes of exploring the moderating effect of acquirers' CEO power on their decline in managerial efficiency after a merger using model (4). Columns (1) and (2) present the results for the relationships between acquirers' post-merger managerial efficiency and the main and alternative CEO power measurements, respectively. According to column (1), the impact of acquirers' CEO power proxied by the CEO power index on post-merger managerial efficiency is positive with a coefficient of 0.019 (statistically significant at the 5% level). Similarly, column (2) shows a coefficient of 0.015 (statistically significant at the 1% level) between the alternative CEO power proxy – CEO pay and acquirers' post-merger managerial efficiency. These findings in Table 6 affirm H4 by demonstrating that acquirers' post-merger managerial efficiency is increased with CEO power. In addition, they support studies suggesting that powerful CEOs display a higher level of management efficiency which adds value to their firms in challenging environments (Rhodewalt and Davison Jr., 1986; Adams et al., 2005; Li et al., 2019).

[Insert Table 6]

5. Robustness check

5.1 Robustness check for alternative specifications

To assess the sensitivity of the results to different specifications, I used the industry rank of MA score and firm efficiency as the main alternative measures of managerial efficiency in all four models. Table 7 displays the results of model (2) using the two managerial efficiency measurements. Panel A illustrates the results of the three integration issue proxies and acquirers' post-merger managerial efficiency, which is proxied by the industry MA rank, while Panel B shows the outcome using firm efficiency as the managerial efficiency measure. The results in Panels A and B also support H2, indicating that the results of model (2) are insensitive to the alternative managerial efficiency measure.

[Insert Table 7]

Table 8 shows the results of model (3) with alternative managerial efficiency measures. Panel A exhibits the outcomes of three CSR performance proxies and acquirers' post-merger managerial efficiency measured by industry MA rank, while Panel B shows the results when firm efficiency is used as the managerial efficiency measure. All the coefficients in Panel A are positive and statistically significant at the 1% level, as hypothesised in H3. Two of the three coefficients in Panel B are positive and significant at the 1% level. This means that with alternative managerial efficiency measures, the moderating effect of good CSR performance on acquirers' post-merger managerial efficiency decline still holds.

[Insert Table 8]

The outcomes of model (3), using industry MA rank and firm efficiency as managerial efficiency proxies, are presented in Table 9. Columns (1) and (2) show the regression results of the main CEO power proxy (CEO power index) on acquirers' post-merger firm efficiency and industry MA rank, respectively. Both coefficients are positive (0.012 and 0.016, respectively) and statistically significant at the 5% and 10% levels, respectively. Columns (3) and (4) show the regression results of the alternative CEO power proxy (CEO pay) on post-merger firm efficiency and the industry MA rank of the acquirers. The results in columns (3) and (4) are 0.013 and 0.037, respectively (both are statistically significant at the 1% level). The findings in Table 9 further validate H4 and confirm that CEO power can moderate the decrease in managerial efficiency of post-merger acquirers.

[Insert Table 9]

5.2 Additional analysis controlling for board characteristics

According to Cheng (2008), companies with larger boards tend to have a less variable performance. Nevertheless, large boards may struggle with decision-making due to poor communication, which can reduce their effectiveness (Guest, 2009). Certain studies have found that board gender diversity can have an impact on firm performance and may bring economic advantages (Nguyen et al., 2015; Gordini and Rancati, 2017). According to Kroll et al. (2008) and Lai and Chen (2012), the performance of an organization is positively affected by both the specific expertise and diverse experiences of its directors. Board expertise can provide valuable advice to management regarding overseas investments and acquisitions. Hsu et al. (2013) indicate that the level of education of CEOs positively influences the relationship between internationalization and company performance. CEOs with higher educational levels are more confident and equipped to deal with the complex challenges associated with international operations. Therefore, to isolate the impact of corporate governance on acquirers' post-merger managerial efficiency, I further controlled for board characteristics in all four models. Specifically, board size (proxied by the number of directors), board gender ratio (the percentage of male directors on the board), director experience (directors' average time on the board), and directors' education level (the number of qualifications) are controlled.

The findings of models (1)-(4), with additional board characteristic controls, are presented in Table 10. In Panel A, column (1) shows the results of model (1), with board controls included, while columns (2) to (4) present the results of model (2), with board characteristics considered. Column (1) 's coefficient is -0.009 and is statistically significant at the 1% level, which supports H1 that acquirers' managerial efficiency declines following the merger. Furthermore, the coefficients in columns (2) to (4) also confirm H2 that the integration concern hinders post-merger managerial efficiency, while the relatedness between the target and acquirer improves it. In Panel B, columns (1)– (3) show the results of model (3) with board controls. Two of the three CSR performance proxies present a significant moderating effect on post-merger managerial efficiency, as hypothesised in H3. Columns (1) and (2) of Panel C show the results of model (4) controlling board characteristics. Both coefficients are positive and statistically significant, indicating that strong CEOs can improve acquirers' post-merger managerial efficiency (H4).

[Insert Table 10]

5.3 Additional analysis controlling for CEO replacement

To reinforce the study's conclusions on the efficiency of post-merger management, an additional layer of analysis is carried out, as depicted in Table 11, taking into account the replacement of CEOs. The significance of this analysis is rooted in the fact that CEO turnover, particularly when it is compulsory, can act as a crucial confounding element that has an impact on managerial efficiency independently of M&A transactions. In the model, CEO replacement is represented as a dummy variable that takes on a value of 1 in the event of a mandated CEO departure and 0 in all other cases, thus enabling an investigation into its isolated influence on the efficiency ratings.

The importance of incorporating this control lies in the fact that a change in the CEO can lead to significant changes in the strategic direction, management style, and operational practices of a company, all of which can have a substantial impact on its efficiency. By taking this variable into account, the analysis intends to separate the influence of M&A on managerial efficiency from the disruptions that typically occur in the upper echelons of the organization during M&A events.

The results from this robustness check, presented in column 1, reinforce the primary findings. The coefficient for the post-M&A variable ('Post') remains statistically significant and negative, indicating a decrease in managerial efficiency following M&A, even after accounting for CEO replacements. The continued significance of this variable, despite the CEO turnover control, suggests that the observed post-merger managerial efficiency effects are not simply a byproduct of leadership changes but are associated with the M&A event itself. Moreover, other firm-specific characteristics such as size, leverage, return on assets, market-to-book ratio, and sales growth retain their expected signs and levels of significance. This consistency in the results underscores the robust nature of the original findings and supports the conclusion that the study's results are not an artifact of changes in executive leadership but rather indicative of the genuine impact of M&A on managerial efficiency. Thus, controlling for CEO replacement adds to the credibility of the study's assertion that M&A activities have a substantive and measurable effect on the managerial efficiency of acquiring firms.

[Insert Table 11]

5.4 Addressing endogeneity concern: self-selection bias correction

5.4.1 Placebo test: validating managerial efficiency change post-M&A

In an effort to substantiate the causal relationship between M&A and changes in managerial efficiency, and to mitigate the potential endogeneity concern arising from self-selection bias, a placebo test is employed. This robustness check specifically addresses the issue of whether the sample of acquiring firms might exhibit changes in managerial efficiency simply due to inherent firm characteristics rather than the effect of M&A. The placebo test, as delineated in Table 12, constructs a counterfactual scenario by assigning a random firm-year as a non-M&A event year, creating a baseline for expected managerial efficiency in the absence of M&A activities.

The principal variable, 'Post', is designed to capture the effect in the period subsequent to the M&A transaction. Its statistically insignificant coefficient in the placebo test, with a p-value of 0.999, suggests that when random noise is modelled as the M&A event, no significant change in managerial efficiency is detected. This finding is crucial as it demonstrates that the managerial efficiency variations observed in the actual data are not a product of random fluctuation or unobserved heterogeneity. By showing that significant efficiency changes do not occur in the randomized placebo context, the test strengthens the causal interpretation that M&A events are the driving force behind the observed changes in efficiency.

The placebo test thus serves to bolster the credibility of Hypothesis 1 (H1), reinforcing the argument that the detected impact on managerial efficiency is intricately linked to M&A events. By ruling out the alternative explanation that changes could occur randomly or due to latent variables, the placebo test provides a robust foundation for the study's claim that M&As are instrumental in altering managerial efficiency. Therefore, the test contributes substantially to the robustness and validity of the research findings, ensuring that the study's conclusions are derived from methodologically rigorous analysis.

[Insert Table 12]

5.4.2 Heckman two-stage method: validating managerial efficiency change post-M&A

In addition to the placebo test, I also advance my methodological rigor by implementing the Heckman two-stage correction procedure, as depicted in Table 13, to rectify the self-selection bias intrinsic to the sample of acquirer firms. This self-selection bias stems from the non-

random propensity of firms to engage in M&A, which could skew the evaluation of post-M&A managerial efficiency. The first stage utilizes a probit model to estimate the likelihood that a firm will partake in an M&A based on observable firm characteristics such as size, sales growth, and cash flow, factors that could potentially influence a firm's decision to acquire. The significant coefficients for these variables in the selection equation confirm that the decision to engage in M&A is indeed not random.

The second stage then employs a regression analysis (MA score Model (1)) incorporating a Heckman lambda (inverse Mills ratio) derived from the first stage, thereby controlling for the potential selection bias. This lambda coefficient is statistically significant, signalling that the initial selection model has successfully identified self-selection and that the subsequent regression is adjusted accordingly. Notably, the negative coefficient on the Post variable indicates a decline in managerial efficiency post-M&A when correcting for self-selection bias. This finding underscores the necessity of the Heckman correction: without accounting for the non-random nature of M&A engagement, studies may overestimate or misattribute the true effect of M&A on managerial efficiency. Thus, the Heckman model bolsters the integrity of the study's conclusions by mitigating the confounding effects of self-selection, yielding a more precise estimation of M&A's impact on acquirers' managerial efficiency.

[Insert Table 13]

6. Conclusion and implications

6.1 Summary of results

In this study, I examine the changes in acquirers' managerial efficiency following M&A. The effects of post-merger integration challenges, CSR performance, and CEO power on acquirers' post-merger managerial efficiency have also been investigated. The research sample consists of 20,242 observations of 3,392 US-listed bidders from 1985 to 2018. Previous studies note that high levels of managerial efficiency are associated with better operating and stock performance (Zwiebel, 1995; Hayes and Schaefer, 1999; Bertrand and Schoar, 2003; Demerjian et al., 2013; Bonsall et al., 2017; Baik et al., 2020). Despite its importance for business operations, managerial efficiency has received little attention in M&A.

Following M&A, differences between merging firms can complicate post-merger integration, impairing acquirers' managerial efficiency in integration duties while a strong connection

between two organizations due to strategic, organizational, and cultural compatibility can make the PMI process more efficient and streamlined, thereby improving managerial efficiency (Cartwright and Schoenberg, 2006; Homburg and Bucerius, 2006; Li et al., 2016; Wang and Larimo, 2020). While PMI issues would diminish post-merger managerial efficiency, certain corporate governance practices such as CSR programs and strong CEOs, can moderate this effect by reducing internal conflicts during the integration. Specifically, acquirers' CSR practices might improve acquirers' post-merger managerial efficiency by increasing employee cooperation, enhancing stakeholder relationships, and building investor trust (Ertugrul, 2013; Javed et al., 2014; Symitsi et al., 2018). During the PMI, powerful CEOs can fasten the decision-making and implementation process by leveraging their authority and strong social ties, thus improving post-merger managerial efficiency (Haspeslagh and Jemison, 1991; Klein et al., 2004; Larcker et al., 2010).

I use the MA score to evaluate managerial efficiency and find that it decreases for acquirers following M&A. This provides a managerial perspective on why prior studies have observed post-merger underperformance (e.g., Agrawal et al., 1992; Agrawal and Jaffe, 2000; Knapp et al., 2005; Malikov et al., 2021). The M&A process induces a decline in managerial efficiency, resulting in underperformance after the merger since exceptional firm performance depends on effective management (Demerjian et al., 2012). Moreover, I find that the PMI challenges arising from the distance between merging firms explain the acquirers' post-merger managerial efficiency decline. Distance between the acquirer and the target will negatively affect the acquirer's managerial efficiency following the merger. On the contrary, when the acquirer and target are related, acquirers' post-merger managerial efficiency improves. This study confirms previous studies that indicate that PMI challenges associated with firm differences can be detrimental and PMI simplicity associated with firm connections can have advantages (Ionascu et al., 2005; Li et al., 2016; Bodner and Capron, 2018; Oh and Johnston, 2020; Wang and Larimo, 2020).

In addition, this study finds that CSR practices tend to improve acquirers' managerial efficiency following a merger. These results support existing arguments that CSR practices can enhance the benefits of M&A for acquirers while positively impacting post-merger firm performance and integration (Ertugrul, 2013; Javed et al., 2014; Guo et al., 2016; Symitsi et al., 2018). Furthermore, post-merger managerial efficiency is shown to be enhanced by a strong CEO. By demonstrating the effectiveness of influential CEOs in navigating post-merger challenges, this study reinforces prior research suggesting powerful leaders can improve

organizational cohesion and create value during major corporate acquisitions (Rhodewalt and Davison Jr., 1986; Adams et al., 2005; Li et al., 2019).

6.2 Contributions and implications

This study makes several novel contributions to the literature on managerial efficiency, post-merger integration, and corporate governance. It is the first to directly examine how M&A impacts acquiring firms' managerial efficiency—a critical factor for firm performance distinct from it. This study offers new insights into post-merger value destruction by examining the inhibiting effects of integration challenges on acquirers' managerial efficiency (e.g., Agrawal et al., 1992; Knapp et al., 2005). Additionally, the findings illustrate the role CSR programs and effective leadership play in empowering managers to fulfil integration duties, suggesting that governance and ethics can help to unlock M&A synergies. Extending previous research on CSR-firm performance links (Ertugrul, 2013; Symitsi et al., 2018), this study shows a direct positive CSR effect on acquirers' managerial efficiency specifically. Lastly, it advances research on the benefits of influential leadership during M&A (Adams et al., 2005; Li et al., 2019) by emphasizing the importance of supporting managers amid post-merger uncertainty.

Overall, by highlighting active leadership and ethical governance as critical for overcoming integration challenges, this study significantly improves understanding of how to achieve M&A success. It identifies key pathways for promoting effective corporate governance practices that enable companies to succeed in the face of integration challenges, which has significant implications for both research and business practices. Based on my research, policymakers might consider offering incentives that motivate acquirers to demonstrate strong CSR and appoint competent leadership, which can boost managerial efficiency and expedite the integration process.

6.3 Research limitations

There are also several limitations of this study: (1) The results may not apply to all industries and other countries due to the restrictions on my sample size; (2) Other elements that are not included in my models due to their difficulty to control may also influence acquirers' managerial efficiency, such as the alteration in a company's management style. Future research could expand upon the findings of this study by examining managerial efficiency in other corporate events, such as initial public offerings and secondary offerings."

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Appendix 1:
Variable definitions and descriptions

Variable	Definition or description
Industry	Fama and French 12 industry classification scheme for identifying diversified deals and Fama and French 48 industry classification for controlling industry effects. Source: Fama and French (1997)
Post	A dummy variable that equals 1 if the sample firm's year *t* is after the M&A year, otherwise 0. Source: Fauver et al. (2017) and Chen et al. (2020)
MA score	An assessment of managerial efficiency developed by Demerjian et al. (2012). This measure of managerial efficiency is used to estimate the efficiency with which managers utilise the resources of their organizations. Source: Demerjian et al. (2012)
Industry MA rank	The decile ranks (by industry and year) of firms' MA scores. Source: Demerjian et al. (2012)
Firm efficiency	The firm efficiency measure is a first-stage, DEA-based measure of the overall efficiency of a firm, ranging from zero to one. Source: Demerjian et al. (2012)
Industry-adjusted ROA	Firm's industry-adjusted return on assets. Source: Demerjian et al. (2012)
Historical Return	Decile rank (by industry and year) of the five-year past value-weighted industry-adjusted return (year t4, t) derived from the monthly CRSP data. This return definition also captures the entire pre-merger period with the M&A window spanning from [-5, +5] years, given that the lookback period would adjust accordingly for each subsequent year. Source: Demerjian et al. (2012)
Foreign target	The dummy variable represents the foreign target, which equals 1 if the acquirer acquires a non-US target, otherwise 0. Source: Bertrand and Zuniga (2006)
Private target	The dummy variable indicates the public status of the M&A target, which equals 1 if the target is a private firm, otherwise 0. Source: Capron and Shen (2007)
Developing target	The dummy variable indicates the economic development of the target country, which equals 1 if the target country is a developing country and 0 if it is not. The developing countries are countries classified as high-income in 1995 by the World Bank. Includes all OECD countries. Source: Alimov and Officer (2017)
High-tech target	The dummy variable indicates whether the target firm is in the high-tech industry, which equals 1 if the target's industry belongs to the SICs 35-38, and 0 otherwise. Source: Coad and Rao (2008)
Integration concern	The index is calculated by summing the values of the dummy variables foreign, private target, developing target, and high-tech target. Index values range from 0 to 4.
Cross-national	Denotes the PCA score of cross-national distance which includes

distance	economic, financial, political, administrative, cultural, demographic, knowledge, global connectedness, and geographic distance between acquirers and targets. Source: Berry et al. (2010)
Domestic	The dummy variable represents the domestic M&A, which equals 1 if the acquirer acquires a US target, otherwise 0.
Focused	Denotes whether the acquisition deal is related. It is a dummy variable that equals 1 if the acquirer and the target are defined as the same industry according to the Fama and French 12 industry classification scheme. Source: Lim et al. (2008) and Farooqi et al. (2014)
English-speaking target	A dummy variable denotes the target countries' language barrier, which equals 1 for targets from English-speaking countries, otherwise 0. Source : Kroon et al. (2015) and Navío-Marco et al. (2016)
Relatedness	The index calculated by summing the values of the dummy variables domestic, focused, and English-speaking targets. Index values range from 0 to 3.
EWI	Denotes the employee welfare index constructed by adding up the identified strengths and subtracting the identified concerns in the "Employee Relations" category for a given year. Source: Ghaly et al. (2015)
CSR score	Indicator of corporate social responsibility based on the performance of a firm across four dimensions of the KLD database, including Community, Employment, Environment, and Human Rights. The index is calculated based on Servaes and Tamayo (2013) and Tunyi et al. (2023). For each dimension, I divide the total number of CSR strengths (weaknesses) reported in KLD by the maximum number of strengths (weaknesses) to generate two indices. By subtracting the strength index and weakness index, I calculate net CSR involvement. The index is between −1 and +1. The final CSR score is calculated by combining the net CSR index across the four dimensions, which range from -4 to +4. Source: Servaes and Tamayo (2013) and Tunyi et al. (2023)
Staff productivity	Sales per employee as a percentage of total sales. Source: Tunyi et al. (2023)
CEO power index	The index comprises three different dimensions: CEO duality, CEO ownership and CEO entrenchment. I developed this power index by creating binary scores for each of the three power dimensions: The CEO duality dummy variable equals 1 when the CEO also holds the position of chairman; The CEO ownership dummy equals 1 if CEO ownership is higher than median ownership of firm executives; The high entrenchment dummy variable that equals one if the firm's value of the Entrenchment Index by Bebchuk et al. (2009) is above the median. (It should be noted that Bebchuk et al. (2009) E-Index ranges from 0 to 6, where a higher value indicates greater entrenchment). The CEO power index is constructed by adding up the three dimensions' value, which ranges from 0 to 2. Source: Muttakin et al. (2018) and Brodmann et al. (2022)
CEO pay	The ratio of the CEO's total compensation to a firm's total assets.

Size	The logarithm of the market value of the firm at the end of the fiscal year Source: Oi and Idson (1999).
Market-to-book	The market-to-book ratio that calculated using a firm equity's market value scaled by its book value. Source: Mueller et al. (2017)
Sales growth	Denotes a firm's sales change divided by its lagged sales. Source: Mueller et al. (2017)
ROA	The return on assets is calculated by dividing net income by total assets. Source: Bloom et al. (2013)
Leverage	The ratio of a firm's total liabilities to shareholders' equity at the end of a fiscal year. Source: Hanka (1998)
Cash flow	Denotes the net operating cash flow scaled by a firm's total assets at the fiscal year-end. Source: Ghaly et al. (2015)
Stock volatility	A firm's stock volatility is calculated by using the annual average percentage difference between the daily highest and lowest prices of a stock, divided by the daily average price. Source: Ben-Nasr and Ghouma (2018)
Tangible	Tangible assets are measured by the ratio of property, plant, and equipment to total assets. Source: Tunyi et al. (2023)
Deal size	Deal value in millions of USD. Source: Alexandridis et al. (2013)
Board size	Total number of directors on board. Source: Cheng (2008) and Guest (2009)
Board gender	The percentage of male directors on the board. Source: Nguyen et al. (2015) and Gordini and Rancati (2017)
Director experience	The directors' average time on board. Source: Kroll et al. (2008) and Lai and Chen (2012)
Director education	The directors' education level is measured by the number of qualifications. Source: Hsu et al. (2013)

Appendix 2:

According to Ghaly et al. (2015, p.10), KLD's description of the employee welfare index (EWI) is as follows:

Strengths:	**Concerns:**
1. Union relations strength: the company has taken exceptional steps to treat its unionized workforce fairly.	1. Union relations concern: the company has a history of notably poor union relations.
2. Cash profit sharing: the company has a cash profit-sharing program through which it has recently made distributions to a majority of its workforce.	2. Health and safety concern: the company has recently either paid substantial fines or civil penalties for willful violations of employee health and safety standards or have been otherwise involved in major health and safety controversies.
3. Employee involvement: the company strongly encourages worker involvement and/or ownership through stock options available to most of its employees; gain sharing, stock ownership, sharing of financial information, or participation in management decision-making.	3. Workforce reductions: the company has made significant reductions in its the workforce in recent years.
4. Retirement benefits strength: the company has notably strong retirement benefits program.	4. Retirement benefits concern: the company has either a substantially underfunded defined benefit pension plan or an inadequate retirement benefits program.
5. Work/life benefits: the company has outstanding employee benefits or other programs addressing work/family concerns (e.g., childcare, elder care, or flextime)".	5. Other concerns: the company is involved in an employee relations controversy that is not covered by other KLD ratings.

Appendix 3:
The indicator component variables used in the calculation of distance dimensions (for 2020) provided by Berry et al. (2010, p.1465)

	Dimension	*Component variables*
1.	*Economic distance*	
	Income	GDP per capita (2000 US$)
	Inflation	GDP deflator (% GDP)
	Exports	Exports of goods and services (% GDP)
	Imports	Imports of goods and services (% GDP)
2.	*Financial distance*	
	Private credit	Domestic credit to private sector (% GDP)
	Stock market cap	Market capitalization of listed companies (% GDP)
	Listed companies	Number of listed companies (per 1 million population)
3.	*Political distance*	
	Policy-making uncertainty	Political stability measured by considering independent institutional actors with veto power
	Democratic character	Democracy score
	Size of the state	Government consumption (% GDP)
	WTO member	Membership in WTO (GATT before 1993)
	Regional trade agreement	Dyadic membership in the same trade bloc
4.	*Administrative distance*	
	Colonizer–colonized link	Whether dyad shares a colonial tie
	Common language	% population that speak the same language in the dyad
	Common religion	% population that share the same religion in the dyad
	Legal system	Whether dyad shares the same legal system
5.	*Cultural distance*	
	Power distance	WVS questions on obedience and respect for authority
	Uncertainty avoidance	WVS questions on trusting people and job security
	Individualism	WVS questions on independence and the role of government in providing for its citizens
	Masculinity	WVS questions on the importance of family and work
6.	*Demographic distance*	
	Life expectancy	Life expectancy at birth, total (years)
	Birth rate	Birth rate, crude (per 1000 people)
	Population under 14	Population ages 0–14 (% of total)
	Population under 65	Population ages 65 and above (% of total)
7.	*Knowledge distance*	
	Patents	Number of patents per 1 million population
	Scientific articles	Number of scientific articles per 1 million population
8.	*Global connectedness distance*	
	International tourism expenditure	International tourism, expenditures (% GDP)
	International tourism receipts	International tourism, receipts (% GDP)
	Internet use	Internet users per 1000 people
9.	*Geographic distance*	
	Great circle distance	Great circle distance between two countries according to the coordinates of the geographic center of the countries

Appendix 4:
Principal component analysis summary of eigenvalues, variance explained, and component loadings for cross-national distance PCA score.

I. Eigenvalues and Variance Explained

Component	Eigenvalue	Difference	Proportion of Variance	Cumulative Proportion
Comp1	5.744	4.788	0.638	0.638
Comp2	0.956	0.239	0.106	0.744
Comp3	0.717	0.281	0.080	0.824
Comp4	0.436	0.057	0.048	0.873
Comp5	0.379	0.053	0.042	0.915
Comp6	0.326	0.111	0.036	0.951
Comp7	0.215	0.069	0.024	0.975
Comp8	0.147	0.066	0.016	0.991
Comp9	0.081	.	0.009	1.000

II. Component Loadings

Variable	Comp1	Comp2	Comp3	Comp4	Comp5	Comp6	Comp7	Comp8	Comp9
Cultural Distance	0.304	-0.304	0.457	0.433	0.605	-0.030	0.177	0.132	-0.053
Demographic Distance	0.326	0.206	0.372	0.329	-0.666	-0.236	0.025	0.323	0.020
Economic Distance	0.215	0.815	0.157	0.019	0.267	0.375	-0.148	-0.109	0.135
Finance Distance	0.326	0.309	-0.446	-0.045	0.170	-0.509	0.501	-0.010	-0.241
Knowledge Distance	0.368	-0.125	-0.329	-0.250	0.135	0.103	-0.251	0.696	0.320
Geographic Distance	0.391	-0.104	-0.078	-0.042	-0.042	0.092	-0.512	-0.130	-0.735
Global Connectedness Distance	0.336	-0.205	-0.356	0.318	-0.248	0.602	0.361	-0.228	0.105
Political Distance	0.318	-0.129	0.431	-0.732	-0.096	0.130	0.347	-0.120	-0.014
Administrative Distance	0.383	-0.141	-0.039	0.016	0.002	-0.381	-0.346	-0.547	0.517

Principal Component Analysis (PCA) was employed in this study as a dimensionality reduction technique, aiming to capture the essence of cross-national distance in a more parsimonious form. Given the multifaceted nature of distance, which encompasses not only geographic but also cultural, economic, administrative, and knowledge dimensions, PCA is particularly suitable for distilling these diverse aspects into fewer composite indices. This allows for the analysis of complex, multidimensional constructs while mitigating issues of multicollinearity among the highly interrelated distance measures.

The PCA results, outlined in Appendix 4, reveal that the first two components account for a significant proportion of the variance (63.8% and 10.6%, respectively), with the first component alone capturing over half of the variance. The component loadings show how each type of distance contributes to the principal components. For instance, cultural and administrative distances have strong loadings on the first component, suggesting that these dimensions are predominant factors in defining the composite score for cross-national distance. The second component is heavily influenced by economic distance, indicating a distinct pattern of influence separate from the first component. The subsequent components explain smaller portions of the variance, thus indicating diminishing marginal contributions. Overall, the PCA results underscore the complexity and multidimensionality of cross-national distance and justify the use of PCA to summarize this information efficiently for further analysis.

Table 1. Sample distribution

This table presents the sample distribution of 3,392 M&A deals completed by US acquirers between 1985 and 2018. Panel A shows the sample distribution by M&A announcement year. Panel B presents the sample distribution according to the Fama and French 48 industry classifications. Panel C shows the sample distribution for the target national region. The number and percentage of deals in the sample are also presented. I obtain data on M&A from the Securities Data Corporation (SDC) from 1985 to 2018. The following restrictions are imposed on the acquiring firms: (1) the acquirers must be listed on the NYSE or NASDAQ; (2) the acquisition must be completed; (3) the acquirer must hold 100% of the target's shares after the M&A; (4) the acquisition must be the biggest deal conducted by the acquirer during the period from January 1, 1985, to December 31, 2018; (5) the financial industry and regulated firms are excluded for both acquirers and targets.

Table 22. Sample distribution

Panel A: M&A announcement year distribution

M&A announcement year	Frequency	Percentage
1985	21	0.62
1986	40	1.18
1987	34	1.00
1988	47	1.39
1989	34	1.00
1990	34	1.00
1991	44	1.30
1992	65	1.92
1993	78	2.30
1994	102	3.01
1995	96	2.83
1996	141	4.16
1997	165	4.86
1998	188	5.54
1999	168	4.95
2000	190	5.60
2001	129	3.80
2002	112	3.30
2003	100	2.95
2004	127	3.74
2005	115	3.39
2006	133	3.92
2007	131	3.86
2008	84	2.48
2009	60	1.77
2010	79	2.33
2011	80	2.36
2012	93	2.74
2013	96	2.83
2014	136	4.01
2015	136	4.01

2016	109	3.21
2017	112	3.30
2018	113	3.33
Total	3,392	100.00

Panel B: French and Fama 48 industry distribution

Fama-French 48 industry	Frequency	Percentage
Agriculture	14	0.41
Food Products	58	1.71
Candy & Soda	6	0.18
Beer & Liquor	7	0.21
Tobacco Products	4	0.12
Recreation	18	0.53
Entertainment	57	1.68
Printing and Publishing	29	0.85
Consumer Goods	42	1.24
Apparel	39	1.15
Healthcare	112	3.30
Medical Equipment	161	4.75
Pharmaceutical Products	186	5.48
Chemicals	85	2.51
Rubber and Plastic Products	30	0.88
Textiles	19	0.56
Construction Materials	72	2.12
Construction	43	1.27
Steel Works Etc	51	1.50
Fabricated Products	7	0.21
Machinery	140	4.13
Electrical Equipment	55	1.62
Automobiles and Trucks	55	1.62
Aircraft	20	0.59
Shipbuilding, Railroad Equipment	11	0.32
Defence	5	0.15
Precious Metals	10	0.29
Non-Metallic and Industrial Metal Minin	15	0.44
Coal	7	0.21
Petroleum and Natural Gas	186	5.48
Personal Services	51	1.50
Business Services	727	21.43
Computers	209	6.16
Electronic Equipment	281	8.28
Measuring and Control Equipment	100	2.95
Business Supplies	46	1.36
Shipping Containers	12	0.35
Transportation	41	1.21
Wholesale	141	4.16
Retail	168	4.95
Restaurants, Hotels, Motels	58	1.71
Other	14	0.41
Total	3,392	100.00

Panel C: M&A target nation distribution

Target Nation	Frequency	Percentage
Argentina	2	0.06
Australia	13	0.38
Austria	5	0.15
Belgium	7	0.21
Bermuda	1	0.03
Brazil	5	0.15
British Virgin Islands	2	0.06
Canada	109	3.22
China (Mainland)	11	0.32
Costa Rica	1	0.03
Czech Republic	2	0.06
Denmark	11	0.32
Egypt	1	0.03
Finland	4	0.12
France	33	0.97
Germany	55	1.62
Hong Kong	2	0.06
India	2	0.06
Indonesia	1	0.03
Ireland	6	0.18
Isle of Man	1	0.03
Israel	13	0.38
Italy	14	0.41
Japan	6	0.18
Lithuania	1	0.03
Luxembourg	3	0.09
Mexico	7	0.21
Netherlands	22	0.65
New Zealand	1	0.03
Norway	7	0.21
Peru	1	0.03
Poland	1	0.03
Portugal	1	0.03
Puerto Rico	2	0.06
Russia	2	0.06
Singapore	5	0.15
South Africa	1	0.03
South Korea	4	0.12
Spain	7	0.21
Sweden	13	0.38
Switzerland	15	0.44
Taiwan	5	0.15
Turkey	1	0.03
United Kingdom	103	3.04
United States	2,880	84.96
Venezuela	1	0.03
Total	3,390	100.00

Table 2. Descriptive statistics

This table presents descriptive statistics for the main variables of 3,392 US acquirers during the 7-year M&A window between 1985 and 2018. The number of observations, mean, median and standard deviation of all variables are provided, together with the 25th, 50th, and 75th distribution percentiles. P25 represents the 25th percentile, which is the value below which 25% of the data resides. The median is the middle value of a dataset when sorted in ascending order, dividing it into two halves and indicating central tendency. P75 represents the 75th percentile which is the value under which 75% of data falls. Panel A presents descriptive statistics of key variables across the full sample. Panel B presents the descriptive statistics of the pre- and post-merger subsamples. M&A data are collected from the Securities Data Corporation Platinum (SDC), and financial information is collected from the Compustat North America database. The managerial ability (MA score) is obtained from Demerjian et al. (2012). The cross-national distance is publicly available and was provided by Berry et al. (2010). The employee welfare index (EWI) is constructed as described by Ghaly et al. (2015). The full variable definitions are available in the Appendix. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 23. Descriptive statistics

Panel A: Full-sample variable descriptive statistics

Main variables	N	Mean	Std. Dev.	min	p25	Median	p75	max
MA score	20,242	.009	.137	-.271	-.075	-.018	.055	.652
Integration concern	20,242	.675	.666	0	0	1	1	4
Related	20,229	1.894	.682	0	2	2	2	3
Cross-national	18,357	.593	2.038	.082	.082	.082	.082	14.487
EWI	7,669	.856	2.365	-6	0	0	2	16
Staff productivity	20,230	1.613	1.929	.202	.744	1.093	1.714	34.545
CSR score	7,508	.039	.575	-1.867	-.333	0	.208	2.657
CEO power index	8,905	1.128	.459	0	1	1	1	2

Control variables	N	Mean	Std. Dev.	min	p25	Median	p75	max
Size	19,736	6.188	1.9	1.353	4.828	6.138	7.445	11.752
Leverage	20,180	1.264	2.796	-32.282	.362	.82	1.578	37.887
ROA	20,230	-.012	.202	-2.442	-.021	.037	.077	.344
Market-to-book	19,724	1.011	.204	.287	1	1	1	4.615
Sales Growth	20,043	.285	.751	-.655	.013	.126	.316	12.113
Cash flow	19,737	.061	.132	-.854	.026	.079	.13	.449
Stock volatility	20,242	.017	.023	0	0	0	.032	.171
Tangible	20,151	.445	.366	.01	.168	.337	.635	2.582
Deal size	20,242	485.484	1503.711	1.09	18.9	70	280	23553.475

Panel B: A comparison of descriptive statistics before and after the merger

	Pre-merger	**Post-merger**		
	(1)	(2)	(3)	(4)
Dependant variable	Mean	Mean	Difference	T-value
MA score	0.019	0.001	0.018***	(9.195)
Independent variables				
Integration concern	0.673	0.676	-0.003	(-0.354)
Relatedness	1.885	1.902	-0.016	(-1.709)
Cross-national distance	0.603	0.584	0.019	(0.620)
EWI	0.897	0.825	0.073	(1.320)
Staff productivity	1.576	1.645	-0.069*	(-2.544)
CSR score	0.036	0.040	-0.004	(-0.277)
CEO Power index	1.134	1.124	0.009	(0.962)
Control variables				
Size	6.162	6.210	-0.048	(-1.774)
Leverage	1.145	1.370	-0.225***	(-5.721)
ROA	0.005	-0.027	0.032***	(11.323)
Market-to-book	1.008	1.013	-0.005	(-1.767)
Sales Growth	0.335	0.240	0.095***	(8.747)
Cash flow	0.065	0.057	0.009***	(4.556)
Stock volatility	0.015	0.019	-0.004***	(-12.001)
Tangible	0.450	0.441	0.010	(1.876)
Deal value	520.311	454.653	65.659***	(3.079)
Observations	9,505	10,737		

Table 3. Acquirers' managerial efficiency following M&A

This table presents the coefficients of model (1), which examines the relationship between acquirers' managerial efficiency and post-merger status (H1). In model (1), the acquirer's managerial efficiency, as measured by the MA score, is the dependent variable. The post-merger status variable Post is an independent variable. Column (1) presents the results of model (1), while columns (2)– (5) show the results of model (1) with an alternative measurement of managerial efficiency. Model (1) controls for firm-level characteristics, including firm size, leverage, return on assets, market-to-book ratio, sales growth, operating cash flows, stock volatility, tangible assets, and M&A deal size. Firm, year and industry effects are also controlled. The full variable definitions are available in the Appendix. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. T-values are shown in parentheses.

Table 24. Acquirers' managerial efficiency following M&A

	(1) MA score	(2) Industry MA rank	(3) Firm efficiency	(4) Industry-adjusted ROA	(5) Historical Return
Post	-0.01***	-0.035***	-0.005***	-0.017***	-0.416***
	(-5.519)	(-10.141)	(-2.868)	(-6.236)	(-21.852)
Size	0.012***	0.014***	0.041***	0.007***	0
	(18.721)	(12.957)	(78.701)	(8.464)	(-0.038)
Leverage	-0.001***	0	0	0	0
	(-3.583)	(0.054)	(0.87)	(-0.67)	(-0.63)
ROA	0.023***	0.04***	-0.006	--	0.055
	(3.526)	(4.747)	(-1.544)	--	(1.233)
Market-to-book	-0.003	0	-0.009***	0.008*	-0.041
	(-0.771)	(-0.091)	(-3.333)	(1.806)	(-1.412)
Sales Growth	0.009***	0.001***	0.001***	0	0
	(6.506)	(3.006)	(4.574)	(0.27)	(-0.22)
Cash flow	0.158***	0.256***	0.164***	1.104***	0.046
	(15.546)	(16.219)	(22.179)	(112.084)	(0.526)
Stock volatility	0.403***	0.686***	0.338***	-0.648***	1.242*
	(4.816)	(5.232)	(5.48)	(-6.397)	(1.702)
Tangible	-0.063***	-0.013***	-0.046***	-0.081***	0.054*
	(-18.651)	(-23.071)	(-17.364)	(-18.898)	(1.715)
Deal size	0***	0***	0***	0***	0
	(10.306)	(6.919)	(18.142)	(-2.882)	(0.478)
Constant	-0.116***	0.482***	0.036*	-0.036	3.898***
	(-5.812)	(10.676)	(1.686)	(-1.041)	(15.882)
Observations	19077	19077	19077	19077	19077
Number of firms	3389	3389	3389	3389	
R-squared	0.2	0.085	0.375	0.372	0.309
Industry FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES

Table 4. PMI challenge and acquirers' post-merger managerial efficiency

This table depicts the results of model (2), which examines the impact of post-merger integration challenge on US-listed acquirers' managerial efficiency following M&A. Here, the MA score as the proxy for managerial efficiency is the dependent variable, while Post, Integration concern, Cross-national distance, Relatedness, and the interaction between Post and all three integration proxies are the independent variables. Columns (1) to (3) present the results of the relationships between acquirers' post-merger managerial efficiency and three post-merger integration concern proxies. Model (2) controls for firm-level characteristics, including firm size, leverage, return on assets, market-to-book ratio, sales growth, operating cash flows, stock volatility, tangible assets, and M&A deal size. Firm, year and industry effects are also controlled. The full variable definitions are available in the Appendix. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. T-values are shown in parentheses.

Table 25. PMI challenge and acquirers' post-merger managerial efficiency

	(1) MA score	(2) MA score	(3) MA score
Post	-0.005** (-2.022)	-0.007*** (-3.781)	-0.025*** (-4.87)
Integration Concern	0.011*** (5.679)		
Cross-national distance		0.001 (1.509)	
Relatedness			-0.01*** (-4.922)
Post× Integration concern	-0.007*** (-2.669)		
Post × Cross-national distance		-0.001* (-1.835)	
Post× Relatedness			0.008*** (3.18)
Size	0.013*** (26.71)	0.012*** (23.269)	0.013*** (26.246)
Leverage	0 (0.028)	0 (0.062)	0 (0.051)
ROA	0.004 (0.95)	0.003 (0.735)	0.004 (1.002)
Market-to-book	-0.002 (-0.951)	-0.002 (-0.794)	-0.002 (-0.904)
Sales Growth	0.001*** (5.29)	0.001*** (7.957)	0.001*** (5.333)
Cash flow	0.119*** (17.154)	0.12*** (16.793)	0.12*** (17.214)
Stock volatility	0.3***	0.28***	0.304***

	(5.185)	(4.688)	(5.259)
Tangible	-0.048***	-0.049***	-0.048***
	(-19.475)	(-19.125)	(-19.271)
Deal size	0***	0***	0***
	(10.81)	(10.747)	(10.461)
Constant	-0.121***	-0.101***	-0.101***
	(-6.077)	(-4.925)	(-4.973)
Observations	19077	17278	19064
R-squared	0.207	0.203	0.207
Industry FE	YES	YES	YES
Year FE	YES	YES	YES
Firm FE	YES	YES	YES

Table 5. CSR practices and acquirers' post-merger managerial efficiency

This table shows the coefficients of model (3), which investigates the moderating effect of acquirers' CSR practices on their decline in managerial efficiency following M&A. The MA score (which serves as a proxy for managerial efficiency is the dependent variable, while Post, CSR score, EWI, Staff productivity, and the interaction between Post and these three variables are independent variables. Columns (1) to (3) present the results of the relationships between acquirers' post-merger managerial efficiency and overall CSR performance, employee welfare, and staff productivity. Model (3) controls for firm-level characteristics, including firm size, leverage, return on assets, market-to-book ratio, sales growth, operating cash flows, stock volatility, tangible assets, and M&A deal size. Firm, year and industry effects are also controlled. The full variable definitions are available in the Appendix. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. T-values are shown in parentheses.

Table 26. CSR practices and acquirers' post-merger managerial efficiency

	(1) MA score	(2) MA score	(3) MA score
Post	-0.017*** (-5.373)	-0.017*** (-5.241)	-0.017*** (-7.323)
CSR	0.012*** (2.771)		
EWI		0.006*** (5.658)	
Staff productivity			-0.014*** (-16.898)
Post × CSR score	0.011** (2.529)		
Post× EWI		0.002** (2.063)	
Post × Staff productivity			0.005*** (3.901)
Size	0.024*** (21.815)	0.022*** (20.009)	0.014*** (29.201)
Leverage	0 (1.094)	0 (1.056)	0 (-0.043)
ROA	0.015 (1.455)	0.016 (1.538)	0.002 (0.57)
Market-to-book	-0.007 (-0.87)	-0.009 (-1.108)	-0.002 (-0.788)
Sales Growth	0 (0.272)	0 (0.277)	0.001*** (6.516)
Cash flow	0.217*** (13.067)	0.22*** (13.413)	0.089*** (12.725)
Stock volatility	0.324***	0.326***	0.323***

	(3)	(3.046)	(5.65)
Tangible	-0.04***	-0.041***	-0.053***
	(-8.816)	(-9.333)	(-21.445)
Deal size	0**	0**	0***
	(2.432)	(2.377)	(9.562)
Constant	-0.239***	-0.185***	-0.095***
	(-8.534)	(-5.97)	(-4.823)
Observations	7440	7595	19077
R-squared	0.277	0.282	0.217
Industry FE	YES	YES	YES
Year FE	YES	YES	YES
Firm FE	YES	YES	YES

Table 6. CEO power and acquirers' post-merger managerial efficiency

This table displays the coefficients of model (4), which examines the moderating effect of acquirers' CEO power on their decrease in managerial efficiency following M&A. The MA score (used as an indicator of managerial efficiency) is the dependent variable, while Post, the CEO power index, CEO pay, and the interaction between Post and these two CEO power proxies are the independent variables. Columns (1) and (2) present the results of the relationships between acquirers' post-merger managerial efficiency and the main CEO power proxy, the CEO power index, and the alternative CEO power measurement CEO pay, respectively. Model (3) controls for firm-level characteristics, including firm size, leverage, return on assets, market-to-book ratio, sales growth, operating cash flows, stock volatility, tangible assets, and M&A deal size. Firm, year and industry effects are also controlled. The full variable definitions are available in the Appendix. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. T-values are shown in parentheses.

Table 27. CEO power and acquirers' post-merger managerial efficiency

	(1) MA score	(2) MA score
Post	-0.034***	-0.014*
	(-4.664)	(-1.732)
CEO power index	-0.007	
	(-1.551)	
CEO pay		0.005**
		(2.426)
Post × CEO power index	0.019**	
	(3.249)	
Post × CEO pay (Alternative proxy)		0.015*** (3.5)
Size	0.013***	0.028***
	(15.426)	(10.199)
Leverage	0	0
	(0.503)	(0.547)
ROA	0.005	0.009
	(0.581)	(0.52)
Market-to-book	-0.01	-0.041**
	(-1.409)	(-2.088)
Sales Growth	0.002***	0
	(4.032)	(-0.001)
Cash flow	0.159***	0.222***
	(12.231)	(5.642)
Stock volatility	0.372***	0.515**
	(4.372)	(2.349)
Tangible	-0.033***	-0.11***
	(-8.082)	(-8.342)
Deal size	0***	0
	(4.002)	(-0.765)
Constant	-0.103**	-0.253***
	(-2.363)	(-3.445)

Observations	12,335	2,366
R-squared	0.201	0.307
Industry FE	YES	YES
Year FE	YES	YES
Firm FE	YES	YES

Table 7. Robustness check of PMI challenge and acquirers' post-merger managerial efficiency

This table shows the coefficients of model (2) using alternative managerial efficiency measurements. The industry rank of the MA score and firm efficiency (used as indicators of managerial efficiency) are the dependent variables. The variables Post, Integration concern, Relatedness, cross-national distance, and the interaction between Post and these three integration proxies are independent variables. Columns (1) to (3) in Panel A present the results of the relationships between integration concern, cross-national distance, relatedness, and acquirers' post-merger managerial efficiency proxied by industry MA rank. In Panel B, Columns (1) – (3) present the results of the relationships between integration concern, cross-national distance, relatedness, and acquirers' post-merger managerial efficiency proxied by firm efficiency. Model (2) controls for firm-level characteristics, including firm size, leverage, return on assets, market-to-book ratio, sales growth, operating cash flows, stock volatility, tangible assets, and M&A deal size. Firm, year and industry effects are also controlled. The full variable definitions are available in the Appendix. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. T-values are shown in parentheses.

Table 28. PMI challenge and acquirers' post-merger managerial efficiency (alternative measurement)

Panel A: Integration concern and acquirers' post-merger MA score industry rank

	(1) Industry MA rank	(2) Industry MA rank	(3) Industry MA rank
Post	-0.02*** (-3.468)	-0.024*** (-5.484)	-0.06*** (-5.149)
Integration concern	0.026*** (5.755)		
Cross-national distance		0.003* (1.899)	
Relatedness			-0.018*** (-4.172)
Post × Integration concern	-0.012*** (-2.942)		
Post × Cross-national distance		-0.003* (-1.695)	
Post × Relatedness			0.015*** (3.129)
Size	0.015*** (13.172)	0.013*** (11.086)	0.014*** (12.804)
Leverage	0 (0.043)	0 (0.098)	0 (0.068)
ROA	0.04*** (4.735)	0.037*** (4.297)	0.04*** (4.799)
Market-to-book	-0.001 (-0.103)	0 (0.028)	0 (-0.06)
Sales Growth	0.001*** (3.013)	0.001*** (4.062)	0.001*** (3.055)

Cash flow	0.255***	0.256***	0.256***
	(16.219)	(15.724)	(16.229)
Stock volatility	0.676***	0.655***	0.684***
	(5.161)	(4.802)	(5.216)
Tangible	-0.129***	-0.129***	-0.128***
	(-22.936)	(-22.056)	(-22.74)
Deal size	0***	0***	0***
	(7.406)	(7.209)	(7.03)
Constant	0.471***	0.515***	0.51***
	(10.428)	(11.014)	(11.13)
Observations	26,618	24,092	26,599
R-squared	0.087	0.085	0.086
Industry FE	YES	YES	YES
Year FE	YES	YES	YES
Firm FE	YES	YES	YES

Panel B: Integration concern and acquirers' post-merger firm efficiency

	(1) Firm efficiency	(2) Firm efficiency	(3) Firm efficiency
Post	0.003	0	-0.019***
	(0.973)	(0.053)	(-3.353
Integration concern	0.01***		
	(4.901)		
Cross-national			
Relatedness		0.009***	
		(3.149)	
Post × Integration concern	-0.006***		
	(-3.041)		
Post × Cross-national		-0.001	
		(-1.524)	
Post × Relatedness			0.008***
			(3.354)
Size	0.041***	0.039***	0.041***
	(78.736)	(72.669)	(78.255)
Leverage	0	0	0
	(0.858)	(0.862)	(0.872)
ROA	-0.006	-0.007*	-0.006
	(-1.552)	(-1.679)	(-1.497)
Market-to-book	-0.009***	-0.008***	-0.009***
	(-3.338)	(-3.114)	(-3.294)
Sales Growth	0.001***	0.001***	0.001***
	(4.585)	(7.405)	(4.629)
Cash flow	0.164***	0.164***	0.165***
	(22.184)	(21.601)	(22.26)
Stock volatility	0.334***	0.322***	0.338***
	(5.421)	(5.06)	(5.487)
Tangible	-0.046***	-0.047***	-0.045***
	(-17.258)	(-17.122)	(-16.969)
Deal size	0***	0***	0***
	(18.46)	(18.683)	(18.35)
Constant	0.032	0.05**	0.055**
	(1.481)	(2.276)	(2.569)
Observations	19077	19064	17278
R-squared	0.376	0.376	0.369
Industry FE	YES	YES	YES
Year FE	YES	YES	YES
Firm FE	YES	YES	YES

Table 8. Robustness check of CSR practices and acquirers' post-merger managerial efficiency

This table displays the coefficients of model (3) when using alternative managerial efficiency metrics. The industry rank of the MA score and firm efficiency (used as measures of managerial effectiveness) are the dependent variables. The variables Post, CSR performance, employee welfare index, staff productivity, and the interaction between Post and these three variables are the independent variables. In Panel A, columns (1) to (3) present the results of the relationships between the acquirers' overall CSR performance, employee welfare index, staff productivity, and their post-merger managerial efficiency proxied by the industry MA rank respectively. In Panel B, Columns (1) – (3) present the results of the relationships between acquirers' CSR performance, employee welfare index, staff productivity, and acquirers' post-merger managerial efficiency proxied by firm efficiency. Model (3) controls for firm-level characteristics, including firm size, leverage, return on assets, market-to-book ratio, sales growth, operating cash flows, stock volatility, tangible assets, and M&A deal size. Firm, year and industry effects are also controlled. The full variable definitions are available in the Appendix. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. T-values are shown in parentheses.

Table 29. CSR practices and acquirers' post-merger managerial efficiency (alternative measurement)

Panel A: CSR performance, employee welfare and acquirers' post-merger MA score industry rank

	(1) Industry MA rank	(2) Industry MA rank	(3) Industry MA rank
Post	-0.041*** (-6.222)	-0.043*** (-6.177)	-0.05*** (-9.456)
CSR	0.035*** (3.706)		
EWI		0.009*** (4.36)	
Staff productivity			-0.034*** (-18.53)
Post × CSR score	0.022** (2.378)		
Post × EWI		0.007*** (3.118)	
Post × Staff productivity			0.011*** (5.692)
Size	0.035*** (14.975)	0.033*** (14.193)	0.017*** (15.731)

Leverage	0	0	0
	(1.409)	(1.406)	(-0.04)
ROA	0.077***	0.075***	0.036***
	(3.57)	(3.5)	(4.366)
Market-to-book	-0.005	-0.009	0
	(-0.27)	(-0.568)	(0.07)
Sales Growth	0	0	0.001***
	(0.946)	(0.929)	(4.306)
Cash flow	0.506***	0.511***	0.183***
	(14.533)	(14.8)	(11.538)
Stock volatility	0.721***	0.73***	0.729***
	(3.176)	(3.239)	(5.627)
Tangible	-0.088***	-0.092***	-0.139***
	(-9.386)	(-9.903)	(-25.091)
Deal size	0	0	0***
	(1.237)	(1.039)	(6.092)
Constant	0.227***	0.283***	0.535***
	(3.863)	(4.34)	(11.959)
Observations	7440	7595	19077
R-squared	0.164	0.166	0.386
Industry FE	YES	YES	YES
Year FE	YES	YES	YES
Firm FE	YES	YES	YES

Panel B: CSR performance, employee welfare and acquirers' post-merger firm efficiency

	(1)	(2)	(3)
	Firm efficiency	Firm efficiency	Firm efficiency
Post	-0.011***	-0.01***	-0.01***
	(-3.275)	(-2.966)	(-4.076)
EWI		0.007***	
		(6.874)	
Staff productivity			-0.014***
			(-15.848)
CSR	0.015***		
	(3.082)		
Post × CSR score	0.013***		
	(2.629)		
Post × EWI		0.001	
		(1.205)	
Post × Staff productivity			0.004***
			(4.134)
Size	0.054***	0.053***	0.042***
	(45.938)	(44.722)	(81.534)
Leverage	0	0	0
	(1.138)	(1.104)	(0.795)
ROA	0.012	0.011	-0.008*
	(1.133)	(1.031)	(-1.96)
Market-to-book	-0.015*	-0.016*	-0.008***
	(-1.71)	(-1.949)	(-3.21)
Sales Growth	0	0	0.001***
	(-0.358)	(-0.363)	(5.785)
Cash flow	0.215***	0.218***	0.133***
	(12.178)	(12.475)	(17.784)
Stock volatility	0.454***	0.453***	0.358***
	(3.946)	(3.97)	(5.86)
Tangible	-0.04***	-0.041***	-0.05***
	(-8.422)	(-8.801)	(-19.146)
Deal size	0***	0***	0***
	(7.837)	(7.607)	(17.483)
Constant	0.009	-0.012	0.058***
	(0.311)	(-0.357)	(2.738)
Observations	7440	7595	19077
R-squared	0.432	0.437	0.386
Industry FE	YES	YES	YES
Year FE	YES	YES	YES
Firm FE	YES	YES	YES

Table 9. Robustness check of CEO power and acquirers' post-merger managerial efficiency

This table shows the coefficients of model (4) when alternative managerial efficiency metrics are used. The industry rank of the MA score and firm efficiency (used as measures of managerial effectiveness) are the dependent variables. The independent variables are Post, CEO power index, CEO pay, and the interaction between Post and these two CEO power proxies. Columns (1) and (2) present the coefficients of the relationships between the acquirers' main CEO power proxy – CEO power index–and their post-merger managerial efficiency proxied by two alternative managerial efficiency measures. Columns (3) – (4) present the results of the relationships between the alternative CEO power proxy, CEO pay, and acquirers' post-merger managerial efficiency proxied by firm efficiency and industry MA rank, respectively. Model (4) controls for firm-level characteristics, including firm size, leverage, return on assets, market-to-book ratio, sales growth, operating cash flows, stock volatility, tangible assets, and M&A deal size. Firm, year and industry effects are also controlled. The full variable definitions are available in the Appendix. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. T-values are shown in parentheses.

Table 30. CEO power and acquirers' post-merger managerial efficiency (alternative measurement)

	(1) Firm efficiency	(2) Industry MA rank	(3) Firm efficiency	(4) Industry MA rank
Post	-0.031***	-.066***	-0.009	-0.029*
	(-4.013)	(-4.211)	(-0.994)	(-1.811)
CEO index	-0.007	-0.008		
	(-1.504)	(-0.767)		
CEO pay			0.005**	0.013***
			(2.373)	(3.259)
Post × CEO power index	0.012**	0.016*		
	(2.3)	(1.479)		
Post × CEO pay			0.013***	0.037***
			(2.922)	(4.541)
Size	0.041***	0.012***	0.059***	0.053***
	(47.025)	(6.453)	(20.116)	(9.851)
Leverage	0	0	0*	0
	(0.822)	(0.586)	(1.774)	(0.649)
ROA	0.003	0.06***	0.01	0.046
	(0.37)	(3.296)	(0.57)	(1.4)
Market-to-book	-0.02***	-0.006	-0.055***	-0.053
	(-2.842)	(-0.4)	(-2.608)	(-1.394)
Sales Growth	0.001***	0.002**	-0.001	-0.003
	(3.3)	(1.994)	(-0.551)	(-0.94)
Cash flow	0.183***	0.365***	0.184***	0.491***
	(13.298)	(12.786)	(4.396)	(6.475)
Stock volatility	0.428***	0.759***	0.616***	0.993**
	(4.761)	(4.07)	(2.637)	(2.352)
Tangible	-0.032***	-0.078***	-0.106***	-0.192***
	(-7.483)	(-8.665)	(-7.493)	(-7.535)

Deal size	0***	0***	0***	0
	(10.96)	(4.252)	(3.042)	(-0.244)
Constant	0.121***	0.575***	0.023	0.151
	(2.63)	(6.006)	(0.289)	(1.069)
Observations	8802	8802	1655	1655
R-squared	0.378	0.081	0.46	0.201
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES

Table 10. Robustness check of baseline regressions controlling for additional board characteristics

This table presents the results of models (1)– (4) with additional board characteristic controls, including board size proxied by the number of directors, board gender ratio (the percentage of male directors on the board), director experience (directors' average time on the board), and directors' education level measured by the number of qualifications. Column (1) of Panel A shows the results of model (1) with additional board controls, while columns (2) to (4) present the results of model (2), controlling for board characteristics. In Panel B, columns (1) to (3) show the outcomes of model (3) controlling for board characteristics. In Panel C, columns (1)–(3) display the results of model (4), with controlled board characteristics. Model (1) – (4) controls for firm-level characteristics, including firm size, leverage, return on assets, market-to-book ratio, sales growth, operating cash flows, stock volatility, tangible assets, and M&A deal size. Firm, year and industry effects are also controlled. The full variable definitions are available in the Appendix. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. T-values are shown in parentheses.

Table 31. Baseline regression with additional board controls

Panel A: Results of models (1) and (2) with additional board controls

	(1) MA score	(2) MA score	(3) MA score	(4) MA score
Post	-0.009*** (-3.807)	-0.006 (-1.597)	-.008** (-2.475)	-0.025*** (-4.87)
Integration concern		0.012*** (3.845)		
Cross-national distance			0.002* (1.819)	
Relatedness				-0.007** (-2.503)
Post × Integration concern		-0.005** (-2.083)		
Post × Cross-national distance			-0.002* (-1.844)	
Post × Relatedness				0.005* (1.659)
Size	0.013*** (13.369)	0.013*** (13.399)	0.013*** (12.114)	0.013*** (13.32)
Leverage	0 (-1.213)	0 (-1.144)	0 (-0.909)	0 (-1.216)
ROA	0.018* (1.741)	0.017* (1.72)	0.013 (1.198)	0.018* (1.749)
Market-to-book	-0.012 (-1.459)	-0.012 (-1.483)	-0.01 (-1.122)	-0.012 (-1.445)

Sales Growth	0.022***	0.022***	0.023***	0.022***
	(8.174)	(8.153)	(8.279)	(8.203)
Cash flow	0.192***	0.192***	0.201***	0.192***
	(12.85)	(12.86)	(12.773)	(12.821)
Stock volatility	0.428***	0.412***	0.399***	0.427***
	(4.324)	(4.164)	(3.821)	(4.306)
Tangible	-0.035***	-0.035***	-0.04***	-0.035***
	(-7.946)	(-7.837)	(-8.481)	(-7.864)
Deal size	0***	0***	0***	0***
	(3.489)	(4.209)	(3.596)	(3.572)
Board size	-0.003***	-0.003***	-0.003***	-0.003***
	(-4.668)	(-4.574)	(-4.694)	(-4.68)
Board gender ratio	-0.039***	-0.035***	-0.032**	-0.038***
	(-3.023)	(-2.751)	(-2.332)	(-2.968)
Director experience	0	0	0	0
	(-0.776)	(-0.754)	(-0.412)	(-0.786)
Director education	0.005***	0.004***	0.004***	0.004***
	(3.928)	(3.812)	(3.291)	(3.892)
Constant	-0.052	-0.064	-0.033	-0.044
	(-1.13)	(-1.395)	(-0.674)	(-0.961)
Observations	8802	8802	7781	8796
R-squared	0.209	0.211	0.206	0.209
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES

Panel B: Results of model (3) with additional board controls

	(1) MA score	(2) MA score	(3) MA score
Post	-0.02***	-0.016***	-0.016***
	(-5.168)	(-4.447)	(-4.84)
Staff productivity	-0.01***		
	(-7.191)		
EWI		0.003**	
		(2.557)	
CSR			0.007
			(1.416)
Post × staff productivity	0.005***		
	(3.186)		
Post × EWI			
		0.0002	
		(0.166)	
Post × CSR score			0.012**
			(2.32)
Size	0.014***	0.022***	0.023***
	(14.271)	(15.249)	(15.797)
Leverage	-0.001***	0	0
	(-3.329)	(0.295)	(0.222)
ROA	-0.035***	0.015	0.013
	(-3.318)	(1.055)	(0.901)
Market-to-book	-0.013	-0.016	-0.015
	(-1.555)	(-1.355)	(-1.286)
Sales Growth	0.032***	0.042***	0.042***
	(11.472)	(9.698)	(9.565)
Cash flow	0.187***	0.249***	0.249***
	(12.019)	(12.23)	(12.162)
Stock volatility	0.038	0.336**	0.314**
	(0.645)	(2.453)	(2.286)
Tangible	-0.064***	-0.048***	-0.047***
	(-17.545)	(-8.49)	(-8.388)
Deal size	0***	0	0
	(4.397)	(0.901)	(0.846)
Board size	-0.006***	-0.004***	-0.004***
	(-8.047)	(-4.765)	(-4.782)
Board gender ratio	-0.013	-0.045***	-0.042**
	(-1.03)	(-2.822)	(-2.517)
Director experience	0	0	0
	(-0.398)	(-0.462)	(-0.243)
Director education	0.005***	0.008***	0.008***
	(4.591)	(5.635)	(5.63)
Constant	-0.012	-0.166***	-0.163***

	(-0.671)	(-3.041)	(-2.988)
Observations	8802	6261	6201
R-squared	0.092	0.267	0.265
Industry FE	YES	YES	YES
Year FE	YES	YES	YES
Firm FE	YES	YES	YES

Panel C: Results of model (4) with additional board controls

	(1) MA score	(2) MA score
Post	-0.033***	-0.012
	(-4.581)	(-1.478)
CEO power index	-0.007	
	(-1.43)	
CEO pay		0.005***
		(2.602)
Post × CEO power index	0.01*	
	(1.945)	
Post × CEO pay		0.015***
		(3.605)
Size	0.013***	0.033***
	(13.223)	(10.418)
Leverage	0	-0.001
	(-1.186)	(-0.616)
ROA	0.018*	0.006
	(1.753)	(0.249)
Market-to-book	-0.012	-0.053**
	(-1.467)	(-2.376)
Sales Growth	0.021***	0.014**
	(8.073)	(2.2)
Cash flow	0.192***	0.242***
	(12.864)	(5.513)
Stock volatility	0.432***	1.324***
	(4.361)	(3.772)
Tangible	-0.035***	-0.112***
	(-7.931)	(-7.803)
Deal size	0***	0**
	(3.462)	(-2.116)
Board size	-0.003***	-0.005***
	(-4.671)	(-2.803)
Board gender ratio	-0.038***	-0.065*
	(-2.925)	(-1.65)
Director experience	0	-0.001
	(-1.122)	(-1.178)
Director education	0.005***	0.015***
	(3.959)	(4.359)
Constant	-0.053	-0.22**
	(-1.145)	(-2.568)
Observations	8802	1655
R-squared	0.21	0.32
Industry FE	YES	YES
Year FE	YES	YES
Firm FE	YES	YES

Table 11. Robustness check of baseline regressions controlling for CEO replacement

The following table illustrates the findings of model 1, which includes controls for CEO replacement. CEO replacement is measured by a forced CEO turnover dummy variable, which takes a value of 1 if there is a forced CEO turnover and 0 otherwise. The results of model (1), which includes controls for firm-level characteristics such as firm size, leverage, return on assets, market-to-book ratio, sales growth, operating cash flows, stock volatility, tangible assets, and M&A deal size. The year, industry effects are also presented in column (1). The full variable definitions can be found in the Appendix. Statistical significance is indicated at the 1%, 5%, and 10% levels by ***, **, and *, respectively, with corresponding t-values shown in parentheses.

Table 32. Baseline regression controlling for CEO replacement.

	(1) MA score
Post	-0.01***
	(-5.506)
Size	0.012***
	(18.73)
Leverage	-0.001***
	(-3.574)
ROA	0.023***
	(3.507)
Market-to-book	-0.003
	(-0.774)
Sales Growth	0.009***
	(6.492)
Cash flow	0.158***
	(15.551)
Stock volatility	0.403***
	(4.817)
Tangible	-0.063***
	(-18.636)
Deal size	0***
	(8.01)
Force CEO turnover	-0.005
	(-0.571)
Constant	-0.087***
	(-3.687)
Observations	19077
R-squared	0.206
Industry FE	YES
Year FE	YES
Firm FE	YES

Table 12. The placebo test of acquirers' post-M&A managerial efficiency

This table illustrates the placebo test results of model (1), which examines the correlation between acquirers' managerial efficiency and their post-merger status. In model (1), the acquirer's managerial efficiency, as measured by the MA score, is the dependent variable. The post-merger status variable Post is an independent variable. Column (1) displays the outcome of the placebo test of the acquirers' post-event managerial efficiency change with a randomly selected firm year Model (1) controls for firm-level characteristics, including firm size, leverage, return on assets, market-to-book ratio, sales growth, operating cash flows, stock volatility, tangible assets and deal size. Firm, year and industry effects are also controlled. The full variable definitions are available in the Appendix. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. T-values are shown in parentheses.

Table 33. The placebo test of acquirers' post-merger managerial efficiency

	(1) Placebo with a random year MA score
Post	0.002
	(0.999)
Size	0.014***
	(24.099)
Leverage	0
	(-0.126)
ROA	0.003
	(0.714)
Market-to-book	0
	(-0.06)
Sales Growth	0**
	(2.571)
Cash flow	0.106***
	(13.362)
Stock volatility	0.387***
	(4.802)
Tangible	-0.031***
	(-12.976)
Deal size	0***
	(6.903)
Constant	-0.136***
	(-6.137)
Observations	10563
R-squared	0.203
Industry FE	YES
Year FE	YES
Firm FE	YES

Table 13. Heckman Two-Stage Correction Analysis for Acquirers' Post-M&A Managerial Efficiency: Addressing Self-Selection Bias

This table exhibits the results from applying the Heckman two-stage correction procedure to address the self-selection bias inherent in the study of acquirers' managerial efficiency following M&A. In the first stage, a probit model estimates the likelihood of a firm engaging in an M&A, using instrumental variables that influence the selection process but are uncorrelated with the error term of the managerial efficiency equation. The second stage employs the inverse Mills ratio derived from the first stage as an additional regressor in the baseline model, effectively correcting for potential self-selection bias. Key variables include the level managerial efficiency, proxied by MA score, and control variables firm size, leverage, return on assets, market-to-book ratio, sales growth, operating cash flows, stock volatility, tangible assets and deal size. Firm, year and industry effects are also controlled. The table is organized to present coefficients, standard errors, and significance levels for each variable across both stages of the model, providing the impact of M&A on acquirers' managerial efficiency while mitigating the effects of self-selection.

Table 34. Heckman Two-Stage Correction Analysis for Acquirers' Post-M&A Managerial Efficiency: Addressing Self-Selection Bias

Description	**First stage Selection Model Probit**	**Second stage MA score Model (1)**
Selection Equation		
Size	0.053***	
	(0.003)	
Sales Growth	0.176***	
	(0.007)	
Cash flow	0.403***	
	(0.037)	
Year Dummies	YES	
Outcome Equations		
Post		-0.010***
		(0.002)
Size		0.159***
		(0.010)
Leverage		-0.001***
		(0.000)
ROA		0.024***
		(0.006)
Market-to-book		-0.005
		(0.005)
Sales Growth		0.057***
		(0.004)
Tangible		-0.065***
		(0.003)
Stock volatility		0.164*

	(0.084)
Deal size	0***
	(0.000)
Heckman_lambda	3.997***
	(0.269)
Constant	-6.576***
	(0.438)
Year FE	YES
Firm FE	YES
Observations	19,077
Number of firms	3,689
R-squared	0.213

Conclusion

1 Summary of the findings

The purpose of this thesis is to investigate the impact of M&A on the strategic actions of acquiring firms regarding earnings management, financial report readability, and managerial efficiency. Specifically, I aim to identify the causes of such behaviour and the factors that influence these practices.

Chapter 1 investigates the acquirers' earnings management behaviour following M&A. I obtain financial data and M&A information for 3,728 US public acquirers from 1985 to 2018, totalling 17,223 firm observations within the [-3, +3] 7-year M&A event window. Based on my empirical findings, acquirers tend to engage in earnings management following a merger and /or acquisition, and they prefer real earnings management (REM) to accrual-based earnings management (AEM). After the merger, the increased business complexity and visibility of the acquiring firm stimulate their REM. Additionally, the stock payment method for M&A deals motivates acquirers' post-merger REM, while better M&A performance moderates such REM.

I argue that M&A-induced business complexity leads to a higher level of information asymmetry, which creates a favourable environment for opportunistic EM behaviour. However, increased visibility after a merger also results in higher levels of regulation. Specifically, the increase in sales, the number of analysts following and institutional holdings, along with the resulting regulatory enforcement, limit the ability of the acquirers to engage in post-merger AEM. As a result, REM is preferred by acquirers after a merger to meet post-merger objectives such as minimizing the negative price impact of pre-merger AEM and upholding acquirers' firm and managerial interests linked to the M&A success. The findings support my argument in several ways. They show a positive link between acquirers' REM and post-merger status. The M&A-induced complexity, firm visibility, and stock payment method are positively associated with acquirers' post-merger REM levels, whereas strong M&A performance lowers these REM levels.

My findings are in line with Zhang (2017), who also finds that the REM of the acquirer is more pronounced than their AEM after the M&A. Those who have already adopted AEM are more likely to switch to REM than to continue using AEM. Furthermore, my results concur with prior research positing that a firm's REM level is raised by firm diversification, acting as an indicator of increased business complexity (Jiraporn et al., 2008; Khanchel El Mehdi and Seboui, 2011; Farooqi et al., 2014). Finally, my findings agree with those of He and Yang (2014)

and Zang (2012) who have demonstrated that transparency constraints firms' AEM and enhances firms' REM due to the elevated cost of employing AEM.

Chapter 2 furthers Chapter 1 and explores acquirers' financial readability in the post-merger context. Analysing 3,440 US-listed bidders from 1985-2018 and using the Bog Index by Bonsall et al. (2017) to measure firm readability, I find that acquirers' financial readability generally decreases after M&A. Following a merger, the business complexity of acquirers increases, which can lead to a decrease in a firm's readability, as suggested by Bloomfield (2008), Rutherford (2016) and Guay et al. (2016). This is particularly true in cross-border M&A, where differences in institutional environments can result in additional costs that impede the post-integration process. To enhance communication with individual investors and minimize the adverse effects of institutional distance, acquirers may strive to improve their readability since poor readability impedes trading activities (Miller, 2010; Rennekamp, 2012; Lawrence, 2013; Chen et al., 2021). When both the acquirer and the target speak English as their native language, M&A costs are lower due to the simplicity resulting from language convergence. Without a strong motivation to improve readability for mitigating M&A costs, these acquirers' post-merger readability declines with M&A-induced complexity.

My finding that acquirers enhance their readability following cross-border M&A supports this argument. More specifically, I find the greater the cross-national distance between merging firms, the more readable the acquirers will be after the merger. These results support previous research suggesting that complex information can lead to lower readability, and firms are motivated to improve their financial readability to attract individual investors (e.g., Bloomfield, 2008; Miller, 2010; Lawrence, 2013; Lundholm et al., 2014; Guay et al., 2016; Rutherford, 2016).

Finally, Chapter 3 examines acquirers' managerial efficiency after mergers and the determinants shaping acquirers' post-merger managerial efficiency. Using a sample of 20,242 firm-year observations representing 3,392 US public acquirers from 1985-2018 and the MA score as the measure of managerial efficiency, I find that acquirers' managerial efficiency declines following an M&A. This is consistent with prior studies that have observed underperformance following mergers, yet this study provides a managerial perspective on the reasons for such underperformance (e.g., Agrawal et al., 1992; Agrawal and Jaffe, 2003; Knapp et al., 2005; Malikov et al., 2021).

After M&A, the post-merger integration (PMI) process can be complicated by differences between merging firms, hindering the acquirers' management from carrying out their duties efficiently. Accordingly, strong ties between the two organizations, resulting from strategic, organizational, and cultural compatibility, are likely to enhance the PMI process and facilitate higher management efficiency for acquirers (Cartwright and Schoenberg, 2006; Homburg and Bucerius, 2006; Li et al., 2016; Wang and Larimo, 2020). Although PMI issues may hamper an acquirer's post-merger managerial efficiency, certain corporate governance practices, such as CSR programs and a strong CEO, can mitigate this impact by moderating internal tensions during the integration process. Specifically, acquirers' CSR practices can boost post-merger managerial efficiency by motivating employee input, strengthening stakeholder relationships, and developing investor trust (Ertugrul, 2013; Javed et al., 2014; Symitsi et al., 2018). During the PMI, influential CEOs can expedite decision-making and implementation with their authority and social capital, improving post-merger efficiency (Haspeslagh and Jemison, 1991; Klein et al., 2004; Larcker et al., 2010).

My evidence confirms this argument and demonstrates acquirers' post-merger managerial efficiency is negatively impacted by post-merger concerns, which are proxied by differences between the target and the acquirer. Furthermore, robust employee-friendly CSR programs and powerful CEOs positively moderate post-merger managerial efficiency as expected. The findings corroborate previous claims that CSR practices enhance firms' ability to extract greater value from acquisitions and improve both firm performance and post-acquisition integration (Ertugrul, 2013; Javed et al., 2014; Guo et al., 2016; Symitsi et al., 2018). Unlike previous studies, my findings demonstrate a direct positive effect of CSR programs on the managerial efficiency of acquirers, rather than improving the overall firm performance. Furthermore, the findings support previous studies that demonstrate the ability of powerful CEOs to foster cohesion and create value within organizations undergoing M&A changes (Rhodewalt and Davison Jr., 1986; Adams et al., 2005; Li et al., 2019).

2 Policy implications

Both researchers and industry professionals can draw valuable insights from this thesis. The consequences of acquiring firms' decisions and actions following mergers and acquisitions have a significant impact on whether these deals lead to value creation or destruction. However, there is a limited understanding of how acquirers strategically react to post-merger challenges and modify their behaviours in existing literature. Lacking a sufficient understanding of

acquirers' post-merger behaviour, efforts to prevent acquiring firms from engaging in misconduct following a merger will remain inadequate.

Chapter 1 and Chapter 2 exhibit evidence of acquiring firms' manipulation of their reported earnings and report readability. Existing regulations may restrict the use of accrual-based earnings management, but Chapter 1 suggests that acquirers often engage in real activities manipulation to manage earnings after mergers. To address this loophole, policymakers could implement disclosure requirements and increase auditor diligence surrounding significant operational changes made by acquirers that can influence their earnings following the merger. Penalizing acquirers for misleading post-merger real earnings management and withholding tied executive compensation could further discourage the practice. Policymakers must target acquirers' post-merger real activities manipulation to fully safeguard investors and maintain market integrity.

Chapter 2 indicates that acquirers' readability tends to reduce following the merger. Post-merger acquirers are only motivated to improve their readability when the costs of poor readability are high. Regulators should collaborate with shareholders and industry groups to create voluntary readability guidelines for post-merger financial reports, with the aim of improving readability. To incentivize compliance with these guidelines, rewards and recognition should be given to those who adhere to them closely.

Chapter 3 highlights the direct influence of integration issues on the post-merger managerial efficiency of acquiring firms, as well as the positive moderating effect of CSR and strong CEOs on this efficiency. While CSR initiatives can enhance firm value, policymakers have not sufficiently addressed incentives or requirements that could be used to encourage CSR adoption among acquirers during post-merger integration. Based on my findings in Chapter 3, policymakers could consider implementing incentives that encourage acquirers to exhibit strong CSR and appoint apt leadership, which can enhance post-merger managerial efficiency and speed up the integration process.

3 Limitations of the studies

This thesis faces some limitations stemming primarily from data availability and scope. First, the lack of data on private bidders and targets presents a major obstacle to fully extending the analysis and obtaining a comprehensive view of post-merger behaviour. However, focusing on public acquirers still provides valuable insights, as they represent a major segment of M&A activity. Furthermore, the results may partially generalize to private firms or at least provide a

meaningful comparison point. Second, the sample being limited to U.S. public acquirers means the empirical findings may not directly apply to other geographies. Nonetheless, examining one major economy in depth allows developing an impactful conceptual framework that can inform future multi-country research. Finally, missing data on some board characteristics, CSR, and employee welfare required using proxy metrics, which are imperfect substitutes. However, the proxies were carefully selected and validated to still capture the core concepts. Their use highlights avenues for improved data collection. Overall, while the limitations preclude definitive conclusions, this research still significantly advances the understanding of post-merger behaviour and lays the groundwork for expanded analysis as more data becomes available.

4 Suggestions for future research

This thesis provides important insights regarding acquirers' behaviour following M&A. There are, however, several promising avenues for further investigation. One such avenue is to examine the post-merger behaviour of serial acquirers, as Chapter 1 does not cover serial M&A deals. Doing so would allow for a more comprehensive understanding of how different types of M&A affect acquirers' behaviour. As an expansion of Chapter 2, future studies may delve into the implications of varying levels of acquirers' post-merger readability. This can further Chapter 2 by evaluating the outcome of the acquirer's voluntary efforts to improve their financial readability. Finally, Chapter 3 does not consider certain controls that are difficult to measure like changes in management style after an acquisition. In the future, researchers could incorporate new metrics that quantify such controls while exploring other determinants of acquiring firms’ post-merger managerial efficiency.

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