Mitigating Acquisition Risk: The Critical Role of Indemnification during Merger Contracting

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Disen Huang Albrecht
Rutgers, The State University of New Jersey

Audra L. Boone
Texas Christian University and ECGI

Patrick Hopkins
Texas Christian University

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Failing to adequately uncover, assess, and manage uncertainties and risks in M&As can lead to large financial losses for acquirers. Two key avenues to mitigate acquisition risk are (i) due diligence, processes that identify potential risks prior to consummating the deal, and (ii) indemnification, contractual clauses that allow acquirers to recuperate some of their losses from key risks after consummating the deal. Using an extensive database of merger contracts, we show that mergers with higher information asymmetry between the acquirer and target are more likely to utilize indemnification. We also provide evidence consistent with a substitution effect of due diligence effort with indemnification. Specifically, on average, acquirers have shorter post-contract periods when they obtain indemnification. Moreover, we find segments absorbing indemnified targets are significantly more likely to experience future goodwill impairments, consistent with a substitution effect and the notion that lower due diligence is detrimental to appropriately valuing targets. As such, our findings provide new evidence of how this understudied contracting feature plays a role in deal valuation and wealth gains.

Keywords: Mergers and Acquisitions, Indemnification, Due Diligence, Representations and Warranties

JEL Classifications:

Disen Huang Albrecht
Assistant Professor
Rutgers, The State University of New Jersey
100 Rockafeller Road Office 4131
Piscataway, NJ 08854, USA
e-mail: disen.huang@rutgers.edu

Audra L. Boone
C.R. Williams Professorship in Financial Services
Texas Christian University
Neeley 3101A 2900 Lubbock
Fort Worth, Texas 76109, USA
e-mail: audra.boone@tcu.edu

Patrick Hopkins*
Assistant Professor
Texas Christian University
5009 Chisholm View Dr.
Fort Worth, TX, 76123 , USA
e-mail: p.l.hopkins@tcu.edu

*Corresponding Author

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Disen Huang Albrecht[1] Audra Boone*[2] Patrick Hopkins*[3]

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Abstract

Failing to adequately uncover, assess, and manage uncertainties and risks in M&As can lead to large financial losses for acquirers. Two key avenues to mitigate acquisition risk are (i) due diligence, processes that identify potential risks prior to consummating the deal, and (ii) indemnification, contractual clauses that allow acquirers to recuperate some of their losses from key risks after consummating the deal. Using an extensive database of merger contracts, we show that mergers with higher information asymmetry between the acquirer and target are more likely to utilize indemnification. We also provide evidence consistent with a substitution effect of due diligence effort with indemnification. Specifically, on average, acquirers have shorter post-contract periods when they obtain indemnification. Moreover, we find segments absorbing indemnified targets are significantly more likely to experience future goodwill impairments, consistent with a substitution effect and the notion that lower due diligence is detrimental to appropriately valuing targets. As such, our findings provide new evidence of how this understudied contracting feature plays a role in deal valuation and wealth gains.

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[1] Department of Accounting and Information Systems, Rutgers Business School, Rutgers University; [2]Department of Finance, Neeley School of Business, Texas Christian University; [3]Department of Accounting, Neeley School of Business, Texas Christian University
* Co-corresponding authors.

1. Introduction

Mergers and acquisitions (M&As) often entail significant investments for acquirers, but research has indicated that many deals fail to generate the expected returns (Malmendier, Moretti, and Peters, 2018; Renneboog and Vansteenkiste, 2019). Lajoux and Elson (2000) suggest that robust due diligence, which attempts to ensure that purchasing the target will "pose no unnecessary risks to the acquirer's shareholders," can help mitigate the acquirer's potential future financial losses. They note, however, that due diligence is a time- and resource-consuming process, and therefore, "an acquirer cannot, and should not be expected to, discover every possible risk." This limitation creates a potential disparity in each party's valuation of the deal and, in turn, can reduce their willingness to enter into a transaction.

To address the residual risk remaining after due diligence, the target and acquirer can include indemnification agreements, which compensate acquirers for future losses that are due to misrepresentations, e.g., target liabilities not identified during due diligence (Howson, 2017). Indemnification clauses enable the acquirer to recuperate some portion of the lost value if ex-post conditions are less favorable than expected. For example, in *Master Lock Co. v. Hawn* (2007), an indemnification agreement allowed the acquirer to pursue reimbursement for environmental cleanup expenses from the target. Moreover, indemnification agreements can benefit targets by facilitating quicker deal completion, which can help mitigate ex-post renegotiation due to interim changes in target value (Bhagwat et al., 2016).

Despite the potential importance of indemnification in enhancing contracting efficiencies, there is sparse empirical evidence on its antecedents, effectiveness, and interplay with due diligence. Our study aims to fill this gap by examining the use and circumstances associated with indemnification in facilitating M&A transactions. Thus, we heed the call by Welch, Pavićević, Keil

and Laamanen (2019) to better understand the pre-deal phase of M&As.

The recent fiasco of J.P. Morgan Chase's (Chase) acquisition of fintech startup Frank illustrates the importance of uncovering material risks in M&As. Frank catered to a demographic traditionally not seeking financial services—high school and college students—by helping them with financial aid applications. Shortly after finalizing the deal, Chase alleged that Frank's founder, Charlie Javice, created fictitious user records that increased reported user numbers by more than tenfold, leading the US Securities and Exchange Commission (SEC) to charge Javice with fraud ("SEC v. Charlie Javice," 2023, pp. 13-15). Chase maintains that Javice refused to directly disclose their user list to them on the grounds of confidentiality, though a third party performed due diligence on the customer list ("SEC v. Charlie Javice," 2023). Subsequently, Chase's M&A process has attracted criticism and an audit from the Office of the Comptroller of the Currency (DeFrancesco, 2023; Franklin, 2023).

To investigate merger indemnification clauses, we utilize a new dataset containing close to eight thousand definitive M&A agreements published by Adelson, Jennejohn, Nyarko and Talley (2024).[1] To our knowledge, this is the largest database of machine-readable M&A contracts available to researchers, which enables new M&A research. We focus on merger contracts because only these agreements have meaningful variation in indemnification provisions (Hopkins, 2024).[2] Our final sample contains 1,740 merger contracts, with 1,177 of those involving public targets and the remaining 563 involving private targets. In a manual review of the 504 indemnification agreements in our sample, we observe that 99.4% of indemnifications include items covering the

[1] Available at https://github.com/padelson/dma_corpus.

[2] Hopkins (2024) finds that indemnification is present in approximately 50% of merger and 90% of non-merger contracts. Non-merger contracts in the Adelson et al. (2024) database include transaction types such as asset purchases, share purchases, plans of reorganization, and others. However, as most of these contracts contain indemnification clauses, they do not provide meaningful variation for statistical analyses.

target's representations, warranties, covenants, and agreements. Representations and warranties refer to the target's disclosures, while covenants and agreements refer to actions that the target promises to perform.[3] Other common separately identified and indemnified matters include taxes (49.2%), appraisal rights for dissenting shareholders (42.5%), and unexpected closing costs (33.7%). Note that specific indemnification topics are not necessarily separate and distinct from representations and warranties. They often overlap as the representations and warranties contain disclosures regarding specific indemnified matters. Details and examples are provided in Appendix C.

We begin our study by analyzing firm and deal characteristics associated with obtaining indemnification. Compared to contracts without indemnification clauses, we find that indemnified contracts tend to exhibit higher pre-merger information asymmetry between acquirer and target, proxied by the length of the contract's representations and warranties (R&Ws) section.[4] We also document that indemnification is more likely to be present when there is higher uncertainty regarding deal valuation, proxied by the presence of contingent consideration such as earnouts. Lastly, we provide evidence that acquirers are less likely to obtain indemnification in deals involving public targets or more external legal and financial advisors.

After documenting characteristics associated with obtaining indemnification, we focus on its interplay with due diligence. A major purpose of due diligence is to uncover misrepresentations. However, recent analytical work suggests that in equilibrium, acquirers often engage in more than the socially optimal amount of due diligence (Daley, Geelen, and Green, 2024). The implication is that acquirers should strive for neither too little nor too much due diligence. As such, we posit that

[3] In legal terms, a "warranty is…a 'guarantee' by the seller that a certain state of affairs exists. Like representations, warranties are statements of fact which the seller confirms to be true" (Howson, 2017).
[4] Using our public-target subsample, we validate that R&Ws length is associated with established measures of information asymmetry, such as low analyst following and accounting restatements.

because indemnification offers some protection from misrepresentations, the demand for due diligence lowers in the presence of indemnification. Similar to prior studies, we proxy for due diligence effort with time during the negotiation phase and time between signing the merger agreement and deal completion.[5] We find that indemnification provisions are associated with longer pre-contract periods, consistent with increased contract negotiation and practitioners identifying areas that need indemnification (Howson, 2017). Further, indemnification is correlated with shorter post-contract periods, suggesting that indemnities, once decided, may substitute for further due diligence.

Less due diligence can result in faster deals, but faster deals do not necessarily equate to efficient or effective due diligence. As such, substituting due diligence for indemnification could increase the odds of misvaluing deals, leading to overpayment. Because acquirers aspire to close *good* deals quickly, we examine whether indemnified deals are more likely to experience goodwill impairments in subsequent periods. To explore this conjecture, we hand-collect disclosures from acquirers' financial statements regarding subsequent goodwill impairments. Controlling for due diligence periods and other important factors, we find evidence that indemnified deals are significantly more likely to result in future impairments. Note that these impairments often do not trigger indemnification compensation because they fall outside the claim expiration period or the scope of covered issues. Thus, our evidence suggests that indemnification does not fully protect acquirers from these realized losses.

While practitioner guides outline anecdotal logic on approaching indemnities in M&A deals, large-sample empirical practices might not reflect such arguments. To illustrate, Even-Tov, Ryans and Solomon (2022) find a disconnect between ex-ante purchase decisions and premiums

[5] Practitioner guides on M&A suggest that time spent reflects scope and effort because legal and financial practitioners track time meticulously for billing purposes (Howson, 2017).

related to third-party indemnities and ex-post realized losses. They show that private equity sellers are *more* likely to purchase such indemnities at higher premiums yet *less* likely to make claims on the policies. The risk of acquiring the target is only one of many factors affecting the demand for indemnification, though little is known about other factors. We fill this gap in the literature by documenting additional deal and firm characteristics associated with obtaining indemnification.

Additionally, we contribute to the literature on M&A contract design. Prior work explores the economic impact of provisions for material changes or adverse events (Denis and Macias, 2013). Prior work also explores the risk-mitigation role of stock consideration (Houston and Ryngaert, 1997; Huang, Officer, and Powell, 2016) and contingent consideration (Reuer, Shenkar, and Ragozzino, 2003; Chatterjee and Yan, 2008), particularly earnouts (Ragozzino and Reuer, 2009; Barbopoulos and Sudarsanam, 2012; Dahlen, 2024). While prior research documents that some contractual features facilitate deals (e.g., collars on stock consideration (Officer, 2005), lock-out options (Burch, 2001), and termination fee provisions (Bates and Lemmon, 2003), others contend certain ones can be value-destroying (e.g., merger bonuses to target CEOs (Fich, Rice, and Tran, 2016)). Considering the high stakes of such large investments, all these contracting features are important. In the spirit of this literature stream, we expand our understanding of the usage and impact of indemnities, one of the most frequently observed risk-allocation features in M&A contracts (Coates, 2012).

Lastly, our study contributes to understanding M&A contracting speed and efficiency. Prior literature documents that when targets exhibit better financial accounting quality, it mitigates the risks to the acquirer and increases the likelihood of deal completion (Marquardt and Zur, 2015). Conversely, poor accounting quality reduces the likelihood of deal completion (Skaife and Wangerin, 2013) or of the target receiving an acquisition offer in the first place (Amel-Zadeh and

Zhang, 2015). Marquardt and Zur (2015) also document that higher accounting quality is associated with faster contracting speed. Our evidence suggests that indemnification lowers the acquirer's risk perception and increases overall contracting speed. However, the answer to whether the perception of risk mitigation is justified—whether indemnification increases M&A efficiency—is surprisingly in doubt. These results hold implications for rethinking routine M&A practices and contract provisions. Our findings indicate that the efficacy of long-standing industry practices cannot be taken for granted but needs rigorous testing, frequent reflection, and continued innovation.

2. Literature Review and Hypotheses Development

Under U.S. law, M&A deals operate under the legal doctrine of "caveat emptor" or buyer beware, meaning that the onus is on the acquirer to ascertain the condition of the target company (Howson, 2017).[6] For this reason, acquirers perform due diligence on the target to reduce information asymmetry and the possibility of overpayment.

Targets have legitimate reasons to maintain information asymmetry, e.g., to protect their proprietary information. Consider L'Oreal's terminated bid for Olaplex in 2015. During the preliminary discussions, Olaplex shared its trade secrets and product formulas with L'Oreal. However, L'Oreal decided not to acquire Olaplex but to develop similar products in-house. Subsequently, Olaplex sued L'Oreal and alleged that the cosmetics conglomerate stole and used their trade secrets to create competing products. Following these allegations, district courts ruled in favor of Olaplex (although recently, appellate courts reversed aspects of those rulings).[7] The Olaplex case highlights why sellers need to guard against revealing too much information during

[6] In contrast, under European law, M&A sellers also have a duty of good faith to the acquirer, i.e., a responsibility to disclose information relevant to the target company's valuation (Howson, 2017, p.10).
[7] See *Olaplex, Inc. v. L'Oréal U.S., Inc.*, No. 2020-1382 (Fed. Cir. May. 6, 2021).

the negotiation phase. In contrast, Chase's botched acquisition of Frank highlights why acquirers should guard against learning too little.

Despite the potential risks associated with disclosing certain types of information, targets "voluntarily" provide disclosures known as representations and warranties to facilitate deals. R&Ws are considered statements of fact that acquirers rely on for valuation purposes. R&Ws offer some contractual protection in that acquirers can sue targets over their (lack of) truthfulness. However, the court process is long and costly, and funds might not be available for recovery. Instead, acquirers can seek indemnification from the target, which often requires the target to set aside funds ahead of time to compensate the acquirer if losses occur. These funds are held for a specified amount of time, usually ranging from one to three years. Additionally, acquirers can take targets to court to enforce indemnification agreements.

R&Ws and indemnification both create contractual liabilities for targets, but how they relate to each other is unclear ex-ante. On the one hand, a greater number of R&Ws could increase the need for indemnification clauses because they represent substantive factors where the acquirer has less information than the target. On the other hand, a greater number of R&Ws could decrease the need for indemnification clauses because supporting documentation accompanying R&Ws could alleviate information asymmetry. Due to conflicting possibilities, we state our first hypothesis in null form:

H1: All else equal, the probability of indemnification provisions is not associated with the length of Representations and Warranties.

In addition to the contractual protection provided by R&Ws and indemnities, acquirers can reduce acquisition risk through due diligence. Due diligence entails verifying the target's assets and liabilities, identifying contingent liabilities, and several other aspects. The goal of this process

is to ensure "that [the acquirer's] purchase would pose no unnecessary risks to the acquirer's shareholders" (Lajoux and Elson, 2000, p. 5). Furthermore, this review process offers assurance regarding the target's key financial, legal, commercial, operational, technological, managerial, tax-related, property-related, and anti-trust issues (Howson, 2017). Though due diligence and indemnification reduce the potential of future financial losses, practitioner guides emphasize that these contract aspects are separate, complementary tools and not meant as substitutes for each other (Howson, 2017).

Due diligence occurs both throughout the private negotiation phase and after signing the merger contract. While due diligence prior to signing the contract focuses on obtaining private information from the target, post-contract due diligence involves verifying information and updating assets and liabilities to the most recent fair values (Wangerin, 2019). Practitioner guides instruct that due diligence should highlight areas of uncertainty against which the seller can request protection, e.g., in the form of additional contract provisions (Howson, 2017). We expect most indemnification negotiations to occur before contract finalization as post-contract renegotiations would be costly (Bhagwat, Dam, and Harford, 2016). Because indemnification clauses are complex and require negotiations, we predict a positive association between indemnification provisions and pre-contract periods.

In contrast, we expect a negative association between indemnification provisions and the post-contract due diligence period. Acquirers often intentionally shorten post-contract periods, e.g., by setting earlier expirations for tender offers, to lower the risk of renegotiation or termination (Bhagwat et al., 2016). The risk of these costly events occurring increases with the length of the period between the M&A agreement announcement and the closing date (Bhagwat et al., 2016). In a more general sense, analytical models show that overinvesting in due diligence effort reduces

welfare (Daley et al., 2024). Thus, acquirers should strive for an optimal level of post-contract due diligence, not a maximum level.

In our setting, acquirers could perceive less need for verification and updating if future uncertainties have been addressed through indemnification. As such, acquirers could reduce due diligence in indemnified areas to facilitate quicker closings, particularly when there is greater time pressure (Wangerin, 2019). In other words, even though indemnification should not replace due diligence in theory, we might observe some substitution between the two in practice in the post-contract period. In line with our reasoning, we state our second hypothesis in the alternative form:

H2: All else equal, indemnification provisions are 1) positively associated with the length of the pre-contract period but 2) negatively associated with the length of the post-contract period.

Lastly, we investigate whether indemnified M&As are more likely to experience future impairments. Wangerin (2019) documents that goodwill impairments are more likely when post-contract due diligence periods are shorter than expected (though indemnification as a factor leading to shorter due diligence is unexplored). We posit that if indemnification provisions substitute for some due diligence and shorten due diligence periods, then on the margin, indemnified deals may be more likely than non-indemnified deals to be impaired later. We state our final hypothesis in the alternative form:

H3: All else equal, indemnified mergers are more likely to suffer future goodwill impairments.

3. Sample and Methodology

Regulation S-K requires that public corporations file all material contracts with the SEC, which are then publicly available on EDGAR. However, extensive effort is required to extract M&A contracts and match them with financial details. Adelson et al. (2024) combine machine learning and human validation to merge EDGAR filings with FactSet announcements. They

construct a database of M&A agreements signed between 2000 and 2020, relating to deals that 1) are $100M or higher in transaction value and 2) involve at least one public company. We download all 7,931 contracts from their data repository.

Because Hopkins (2024) finds that only merger contracts have meaningful variation regarding indemnification, we identify merger contracts within this database. Specifically, we use Python to scan the contracts' titles for the terms "Merger Agreement" or "Plan of Merger." If a merger-related term is present, we classify the contract as a merger contract of interest to this study.[8] Otherwise, we exclude the contracts from our analysis. We identify 4,125 merger contracts to keep in the sample.

To obtain deal characteristics, we merge the above contracts with completed mergers in the SDC Platinum Database beginning in 2009. We require deals to be effective by the end of 2019 to enable us to examine wealth effects five years ahead, ending in 2024. The merged sample contains 2,094 observations across this period. Then, we eliminate 96 deals with acquirers that operate in the banking, insurance, or real estate investment trust (REIT) industries, as these industries are subject to different regulations. We also drop deals with acquirers formed as special purpose acquisition companies (SPACs), as their motivations for entering into M&A deals differ from acquirers with existing operations. To ensure data validity, we drop 82 observations with negative due diligence periods. Finally, we drop 176 observations lacking data to compute regression controls. Table 1 summarizes the sample selection procedures.

With this sample, we classify deals as indemnified or non-indemnified via a Python script to identify non-survival and indemnification clauses in our contract sample by flagging common

[8] Besides scanning titles for merger contract terms, we also used terms to identify non-merger contracts. See Appendix B for a listing of all terms used.

phrases used in these clauses.[9] For example, indemnification clauses commonly use phrases such as "INDEMNIFICATION CLAIMS", "INDEMNIFICATION ESCROW", and "LIMITATIONS ON INDEMNIFICATIONS".[10] Because Hopkins (2024) finds that non-survival and indemnification clauses are not present simultaneously, we manually review and classify contracts in which both non-survival and indemnification clauses are flagged or neither type of clause is flagged. Using the results of this process, we code the variable *INDEMN* as one when indemnification is present and zero otherwise. Our full sample consists of 398 indemnified deals and 1,342 non-indemnified deals.

4. Empirical Results

In this section, we test our hypotheses. We present univariate evidence in Section 4.1 and multivariate evidence in Section 4.2. Due to our small sample size, we utilize our entire sample in main analyses to perform logit and ordinary least squares (OLS) regressions that compare indemnified deals to non-indemnified ones. In Section 4.3, as a robustness test, we use propensity score matching on the determinants of indemnification to identify a matched control sample of non-indemnified deals.

4.1 Univariate Results

Table 2, Panel A presents descriptive statistics for the variables used in our main analyses for the entire sample. Panel B presents descriptive statistics for the indemnified group and non-indemnified group separately. Tests of mean differences reveal that all group mean differences are significant at the 0.01 level, so we omit the presentation of statistical significance for brevity. These

[9] Non-survival clauses state that R&Ws will not survive an M&A closing; as such, the acquirer has no contractual protection from the seller for misrepresentations.

[10] It is important to note that the term "INDEMNIFICATION" cannot be used solely to identify these contracting features because contracts commonly include clauses for indemnifying directors and officers, which is not the same as indemnifying R&Ws. See Appendix B for a listing of all phrases used in these searches.

differences highlight the importance of accounting for these factors in pooled analyses. Panel C presents descriptive statistics for a subsample of private-target deals.

Panel A reveals that 22.9 percent of deals in our sample have indemnification clauses, approximately half the indemnification rate reported by Hopkins (2024) for merger contracts. This lower occurrence of indemnification is due to two sample selection factors. First, Adelson et al. (2024) only include deals with over $100 million in value. Hopkins (2024) includes deals under $100 million in value and reports that lower-value deals have higher indemnification rates (91.12 percent). Second, two-thirds of our sample consists of public targets. Hopkins (2024) reports that public-target deals have low indemnification rates (1.14 percent). Consequently, excluding lower-value deals and including public-target deals significantly lowers our full sample indemnification rate. In contrast, in Panel C, the indemnification rate for the subsample of private-target deals is 68.7 percent.

RW_LENGTH is the natural log of one plus the length of the R&Ws section. To obtain the length of the R&Ws section, we use Python to extract this section from the contract and count the number of words contained within the section. We note in Panel B that the average length of the R&Ws section is significantly longer in indemnified deals (10,646 words) than in non-indemnified deals (10,167 words). Furthermore, we note that the ratio of stock consideration to total deal value (*%_STOCK*) is significantly lower in indemnified deals than in non-indemnified deals (0.214 vs. 0.412). In other words, risk-sharing through shared ownership lowers significantly when deals provide indemnification.[11] This finding is consistent with the notion that acquirers may view indemnification as a tool to reduce acquisition risk and may use it to substitute for other methods of risk reduction (i.e., stock for stock consideration and due diligence).

[11] In univariate tests, we find that this ratio is significantly lower for indemnified deals using our subsample of private-target deals (0.208 versus 0.353, p-value < 0.01).

We calculate *DD_PRE* and *DD_POST* as the logged number of days from the nondisclosure agreement date to the announcement date and the announcement date to the effective date, respectively. We also present the unlogged values in Table 2 for ease of interpretation. We note that our sample has periods of due diligence comparable to that of Wangerin (2019). Specifically, Wangerin reports pre-contract due diligence of approximately 143 days and post-contract due diligence of approximately 115 days on average. In Table 2, Panel A, we report means of 139 and 117 days of pre- and post-contract due diligence, respectively. We note interesting trends in due diligence when we split our sample into indemnified and non-indemnified contracts in Panels B and C, respectfully. Specifically, we note that in indemnified deals, each quartile of post-contract due diligence length is shorter than each quartile of pre-contract due diligence length. Deals without indemnification exhibit the opposite comparison; that is, post-contract due diligence length is longer than pre-contract due diligence length. These observations are preliminary but consistent with H2. To alleviate the concern that this comparison is driven by the large portion of non-indemnified public-target deals in our sample, we further compare the means of pre- and post-contract due diligence length in private-target deals. We find that indemnified deals have longer pre-contract due diligence than non-indemnified deals (190 days versus 152 days, p-value < 0.05) and shorter post-contract due diligence (57 days versus 121 days, p-value < 0.01), again consistent with H2.

Lastly, we note from Table 2, Panel B, that the mean value of *IMPAIR*, an indicator variable equal to one if the merger's reporting unit or segment experiences a goodwill impairment within five years of the effective date and zero otherwise, is nearly twice as high in indemnified deals than in non-indemnified deals (0.216 vs. 0.109, p-value < 0.01). This initial statistic suggests that

indemnified deals are more likely to experience goodwill impairment, consistent with H3.[12]

Table 3 presents pairwise correlations. The pre-contract due diligence period (*DD_PRE*) positively correlates with *INDEMN* and *RW_LENGTH* (p-values < 0.01). These positive relations that indemnification and R&Ws length have with time are consistent with these aspects requiring extensive negotiations (Lajoux and Elson, 2000). In addition, the positive correlation between *DD_PRE* and *RW_LENGTH* could reflect the underlying information asymmetry between the target and acquirer, which gives rise to both factors. In contrast, we document that the post-contract due diligence period (*DD_POST*) negatively correlates with *INDEMN* (p-values < 0.01), which supports H2, suggesting that acquirers might substitute due diligence, another method of risk reduction, with indemnification.

The negative correlation between *DD_POST* and *RW_LENGTH* (p-value < 0.01) is surprising because longer R&Ws likely require more evaluation time. However, because *INDEMN* positively correlates with *RW_LENGTH* but negatively correlates with *DD_POST*, it is difficult to predict and interpret the univariate relationship between *RW_LENGTH* and *DD_POST*. Given the many differences between indemnified and non-indemnified contracts, the univariate results above should be considered only descriptive. We rely on multivariate regressions to draw inferences in Section 4.2.

4.2 Multivariate Results

4.2.1 Determinants of Indemnification

We begin by exploring factors associated with the propensity to include indemnification within a merger contract. One possibility is that items related to the extent of due diligence could

[12] Using our subsample of private-target deals, we continue to find univariate support for H3 that future goodwill impairment is significantly higher for indemnified deals (0.221 versus 0.118, p-value < 0.01).

also relate to the presence of indemnification, as both aim to reduce risks and losses from information asymmetry. To test Hypothesis 1, we add *RW_LENGTH* to similar deal characteristics that Wangerin (2019) uses to model due diligence:

$$Prob(INDEMN) = f(RW\_LENGTH, \text{other deal characteristics}) + \text{industry and year fixed effects} \quad (1)$$

As H1 suggests that indemnification may or may not be associated with the length of the R&Ws section, we refrain from suggesting an expectation on *RW_LENGTH*.

We control for other deal characteristics, including relative size, contingent consideration, stock consideration, whether the acquirer and target operate in the same industry, the number of external advisors to the acquirer, whether the target is publicly listed, and whether the target operates in a high-tech industry. We elaborate on their definitions and relevance below.[13] First, *REL_SIZE* is the ratio of the deal's rank value to the acquirer's market value 60 days before the deal announcement. As the target's value increases relative to the acquirer, the acquirer could anticipate a greater need to protect its investment. However, as the relative target grows, it also has more bargaining power to refuse to indemnify. Thus, we do not predict which factor prevails.

We also control for the extent to which other contract features protect the acquirer. *CONTINGENT* is an indicator variable equal to one if the contract provides contingent consideration (e.g., earnouts and contingent value rights) and zero otherwise. *%_STOCK* is the ratio of stock consideration to the rank value of the deal. Both contingent and stock consideration allow acquirers to share valuation risks with sellers. For example, Hansen (1987) theorizes that stock consideration can mitigate the "lemons problem" by allowing sellers to benefit from synergistic acquisitions while sharing losses from disruptive acquisitions. These contract terms

[13] Because we include private targets in our study, we cannot implement several controls commonly used in studies that only examine public target deals, such as the target's price movements and historical financial statements.

may act as complements or substitutes for indemnification clauses.

Next, we control for similarities between the acquirer and the target, which could reduce information asymmetry and lessen the need for indemnification. *SAME_IND* is an indicator variable equal to one when the target operates in the same industry as the acquirer. We define industry according to Refinitiv, the current owner of SDC Platinum. Refinitiv combines SIC Codes, NAICS Codes, and overall company business descriptions to create these classifications (Refinitiv, 2024). The mid-level classifications number over 85, making the Refinitiv system a more granular classification than the Fama-French 12 or 48 industry classifications. Like Hopkins (2024), we argue that when acquirers are familiar with an industry, they should be more confident in valuations and less likely to require indemnification, resulting in a negative association between *SAME_IND* and *INDEMN*.[14]

Wangerin (2019) documents mixed results on whether the acquirer's external advisors influence the deal's M&A process (specifically, average advisory fees are positively associated with due diligence length, but top legal advisor status is negatively associated with due diligence length). In our setting, advisors could share knowledge on the best contracting practices. Therefore, involving external advisors, especially legal advisors, could increase the likelihood of indemnification provisions in M&A contracts. It is also possible, however, that external advisors enhance the quality and efficiency of due diligence, which reduces the need for indemnification.[15] We refrain from providing expectations for coefficients on *LEGAL_ADV* and *FIN_ADV* (legal and financial advisors, respectively).

[14] Another possible similarity is whether the target and acquirer are headquartered in the same country. This variable potentially has low statistical power because our sample only contains 33 cross-country deals. In untabulated tests, we add an indicator variable to control for cross-country deals. We find the cross-country variable to be statistically insignificant. More importantly, inferences remain unchanged regarding our variables of interest.

[15] Note that we cannot observe the number of the acquirer's *internal* advisors and their interactions with external advisors or the name and affiliation of every external advisor.

Furthermore, we control for two target characteristics that affect information risk, *HIGH_TECH* and *PUBLIC_T*. *HIGH_TECH* is an indicator variable equal to one if SDC Platinum reports that the target operates in the technology industry and zero otherwise. Firms focusing on technology derive most of their value from intangible assets, which are difficult to value using accounting methods (Canibano, Garcia-Ayuso, and Sanchez, 2000). Such assets could exacerbate the information asymmetry problem, increasing the need for indemnification. In contrast, public targets regularly file audited financial reports with regulators and experience monitoring from information intermediaries like financial analysts, reducing information asymmetry. Additionally, Hopkins (2024) suggests that indemnification is harder to obtain from public entities due to large numbers of shareholders not wanting to be responsible for the target post-sale. Therefore, we expect *HIGH_TECH* (*PUBLIC_T*) to have a positive (negative) association with *INDEMN*.

Appendix A contains a full list of variable definitions. We cluster standard errors by acquirer and include Fama-French 12 industry and year fixed effects to control for other industry-invariant and time-invariant characteristics.[16]

Table 4 presents the results of estimating logit regressions based on Model (1). In Column 1, we fit the model on all sample deals to maximize the generalizability of results. In Column 2, we refit the model on a sample of private target deals (*PUBLIC_T*=0) to ensure that public target deals are not driving our inferences.[17] In both columns, we find evidence of a positive relation

[16] Year fixed effects may subsume market conditions, e.g., market uncertainty, which dampens M&A activity (Bhagwat et al., 2016; Betton, El Meslmani, and Switzer, 2022). Though acquirers cannot demand protection from market volatility, they could be more sensitive to information risk exposure and more likely to request indemnification when market uncertainty is higher. We run an alternate specification using explicit controls for market uncertainty, VIX and VVIX in the 60 days before the announcement date. We find that market uncertainty does not hold explanatory power for indemnification and have therefore chosen to use year fixed effects instead of these variables in Model (1).

[17] The area under the receiver operating characteristics (AUROC) curve is 0.970 and 0.846 when using the full sample and the private-target subsample, respectively, which is much higher than a random chance model (AUROC value of 0.500). These values reflect the high explanatory power of our determinants model regarding indemnification

between *RW_LENGTH* and *INDEMN* (p-value < 0.05 for all targets and p-value < 0.01 for private targets).[18] As such, we observe that more R&Ws indicate higher, not lower, information asymmetry between buyers and sellers. Thus, we reject the null hypothesis in H1. We conclude that acquirers are more likely to require indemnification when R&Ws are more extensive, especially in deals with private targets. Going forward, we refer to and interpret coefficients on *RW_LENGTH* as a proxy for information risk.

Turning to other protective contract features, the coefficients on *CONTINGENT* are significantly positive (p-values < 0.01), while the coefficients on *%_STOCK* are significantly negative (p-value < 0.05 for all targets and p-value < 0.01 for private targets). Acquirers are more likely to require indemnification when sellers share future valuation and cash flow risk via contingent consideration but are less likely to use indemnification to accompany stock consideration. Despite contingent and stock consideration having similar contract mechanisms, they exhibit opposite relations to indemnification. A potential reason is that contingent consideration, even in the case of clawbacks, is limited to the amount specified, while stock consideration induces the seller to share to the full extent of future value losses. Due to this difference, buyers could use indemnification as a complementary tool to cover potential losses that contingent consideration does not cover.

The coefficients on *LEGAL_ADV* and *FIN_ADV* are both negative and significant, indicating that, on average, external advisors of the acquirer reduce the need for indemnification. For private targets, adding one legal or financial advisor is associated with 52.57% or 71.55% lower odds of indemnification, respectively. Lastly, consistent with the descriptive statistics, a

provisions. The drop in AUROC from the full sample to the private-target subsample is due to public-target status being a strong predictor of indemnification.

[18] In additional analyses, we use our subsample of public targets to document that longer R&Ws sections have positive correlations with common measures of higher information asymmetry (see Section 4.5).

target's public status strongly predicts indemnification's presence when we include it, *PUBLIC_T*, in Column 1; the coefficient is negative and significant (p-value < 0.01). Ceteris paribus, private targets have 99.62% higher odds of providing indemnification than public targets.

We do not observe significant relationships between indemnification and relative size, industry similarity, or tech industry targets. Overall, the amount of information disclosed in representations and warranties, the payment structure, the involvement of external advisors, and the public status of targets strongly correlate with using indemnification in merger contracts.

4.2.2 Relation Between Indemnification and Length of Contract Periods

Next, we explore whether indemnification is associated with due diligence effort, proxied by the length of pre and post-contract periods (Marquardt and Zur, 2015; Howson, 2017; Wangerin, 2019). Following Wangerin (2019), we model due diligence effort as a function of information risk, deal characteristics, target characteristics, and deal advisors, which we include as control variables in the following model:

Due Diligence Effort = *f*(indemnification, information risk, other deal characteristics) + Industry, Year Fixed Effects (2)

Due Diligence Effort is the natural log of the contract period length measured in days. In the spirit of Marquardt and Zur (2015) and Wangerin (2019), we separate due diligence efforts into the pre-contract period (*DD_PRE*) and the post-contract period (*DD_POST*). Namely, *DD_PRE* is the log of one plus the number of days between the nondisclosure agreement date (often considered the start of the due diligence cycle in academic research) and the announcement date of the merger.[19] During this period, acquirers and targets negotiate contract details and begin discovery.

[19] Though the announcement date normally coincides with the official M&A contract date, we note four observations with announcement dates before the nondisclosure agreement date. For these four observations, we use the final contract date.

DD_POST is the log of one plus the number of days between the announcement date and the effective date of the merger. During this period, acquirers continue discovery and test representations provided by targets to ensure proper valuations.

We expect the associations between indemnification provisions and the length of time to vary across the two stages. Specifically, we expect *INDEMN* to have a positive association with *DD_PRE* but a negative association with *DD_POST*. Indemnification is negotiated during the private negotiation phase prior to signing the contract, perhaps increasing the time spent during this period. After signing, we might observe a substitution effect between indemnification and post-contract due diligence, accelerating the post-contract period. To control for mechanical relationships between the two periods, i.e., pre-contact due diligence reduces the need for post-contract due diligence, we add *DD_PRE* as an explanatory variable of *DD_POST*. We expect a negative association between *DD_PRE* and *DD_POST*.

Also, our expectations for how several explanatory variables relate to different contract stages vary. For example, some contract terms involving extensive negotiations in the pre-contract period are not further negotiated or need little verification during the post-contract signing period, such as the inclusion of contingent consideration. Thus, we expect *CONTINGENT* to have a positive association with *DD_PRE*. However, because its fulfillment depends on future realizations beyond deal completion, low assurance is necessary regarding these terms in the post-contract due diligence period. Hence, it should not lengthen the post-contract period.

We expect the target's public or private status to impact due diligence periods. As previously noted, public targets have more transparent information practices and environments, allowing quicker discovery in pre-contract periods. However, public targets tend to be larger and more complex than private targets. Verifying the private representations of public targets could

involve extensive effort in post-contract periods. Moreover, acquisitions of large public targets are more likely to invite regulatory oversight, such as antitrust scrutiny. In line with this reasoning, we expect *PUBLIC_T* to be negatively associated with *DD_PRE* and positively associated with *DD_POST*. As the variables that explain the need for due diligence and indemnification largely overlap, we expect most remaining explanatory variables to have similar associations with due diligence as they do with indemnification.

4.2.3 Pre-contract Due Diligence

Table 5 Panel A provides the results from the OLS estimation of Model (2) with pre-contract period length, *DD_PRE*, as the dependent variable. As in Table 4, we estimate Column 1 on the overall sample and Column 2 on the private-target subsample. In both columns, we find positive coefficients on *INDEMN* (p-value < 0.05 for all targets and p-value < 0.10 for private targets). This finding suggests that indemnification is associated with longer pre-contract periods and supports H2. For all contracts, indemnification is associated with 1.186 additional days of pre-contract period length. For private targets, it is associated with 1.217 additional days.

We also find positive coefficients on *RW_LENGTH* (p-value < 0.01), indicating that longer R&Ws contribute to longer pre-contract due diligence length. Furthermore, pre-contract due diligence length is significantly associated with contingent consideration (positive coefficient, p-value < 0.01 for all targets and p-value < 0.05 for private targets), though not with stock consideration. We also document a negative coefficient on *PUBLIC_T* in Column 1, consistent with publicly available, audited financials facilitating pre-contract due diligence. The coefficient on *LEGAL_ADV* is negative in Column 1, indicating that deals with more external legal advisors experience shorter pre-contract period length periods. This result appears to be driven by public-target deals, as they are not statistically significant for private-target deals in Column 2.

4.2.4 Post-Contract Due Diligence

Table 5 Panel B provides the results from the OLS estimation of Model (2) with post-contract period length, *DD_POST*, as the dependent variable. We find significantly negative coefficients on *INDEMN* (p-value < 0.01 for all targets and p-value < 0.10 for private targets), suggesting that indemnification, once obtained, may be used as a substitute for post-contract due diligence. The acquirer may proceed with less due diligence for two reasons. First, the acquirer feels protected from adverse events and thus dedicates less time to due diligence. Second, the acquirer believes adverse events will be less likely since the seller shares misrepresentation risk, again dedicating less time to due diligence. We cannot distinguish empirically between these two possibilities. In either case, we observe that indemnification is associated with 1.426 fewer days of post-contract due diligence in general and 1.204 fewer days specifically for private targets.

We do not find a significant relationship between *RW_LENGTH* and post-contract due diligence length. Consistent with Wangerin (2019), we observe a significantly positive coefficient on *REL_SIZE* (p-value < 0.01 for all targets and p-value < 0.05 for private targets), indicating that larger targets require more due diligence than smaller targets. Stock consideration is significantly associated with post-contract due diligence (positive coefficients, p-values < 0.01), while contingent consideration is not incrementally significant here. We find significantly positive relations between post-contract period length and external advisors, both legal and financial (p-values < 0.01), which are consistent with Wangerin's (2019) finding on average advisor involvement. The positive coefficient (p-values < 0.05) on *PUBLIC_T* is consistent with post-contract periods taking longer when acquiring public targets.

To summarize, we find evidence that indemnification is positively associated with pre-contract period length and negatively associated with post-contract period length. These findings

support H2. Most importantly, the evidence is consistent with a possible substitution between obtaining indemnification and expending effort on due diligence.

4.2.5 Relationship of Indemnification to Future Goodwill Impairments

Lastly, we test whether indemnified deals are more likely to experience goodwill impairment in the target's reporting unit or segment within five years. Our model is as follows:

Prob(IMPAIR) = *f*(indemnification, information risk, due diligence effort, other deal characteristics) + Industry, Year Fixed Effects (3)

Given Wangerin's (2019) finding that lower-than-expected due diligence is associated with future goodwill impairments, we control for pre- and post-contract due diligence length.[20] In accordance with H3, we expect *INDEMN* to have a positive association with *IMPAIR*.

Table 6 provides the results from estimating logit regressions using Model (3).[21] The coefficient on *INDEMN* is significantly positive in both specifications (p-value < 0.01 for all targets and p-value < 0.05 for private targets). The odds of indemnified deals incurring goodwill impairments within five years are, on average, over double those of non-indemnified deals in our full sample and closer to triple in our private-target subsample. The only control variable with significant explanatory power is *REL_SIZE* (p-values < 0.05), indicating that targets larger in size relative to their acquirers are associated with a higher likelihood of future impairment. Risk-sharing contract features, external advisors, and high-tech or private targets are not significantly related to goodwill impairment. Based on these results, we conclude that indemnified deals are more likely to be impaired than non-indemnified deals, supporting H3.

[20] A substantial concern in including both indemnification and due diligence in the multivariate analysis is possible multicollinearity, given that we document the explanatory power of indemnification for due diligence. In untabulated tests, we omit the two due diligence variables, *DD_PRE* and *DD_POST*, and the results remain similar.

[21] The AUROC curve is 0.737 and 0.729 using our full and private target subsample, respectively, suggesting high explanatory power.

4.3 Self Selection Concerns

Even though our previous specifications control for the determinants of indemnification, self-selection is a key concern with any M&A study on contract features. It is possible that systematic differences behind the contract decision, instead of the contract feature itself, drive the economic outcomes. Ideally, we would identify an instrument that explains indemnification but does not explain due diligence. However, the determinants of due diligence and indemnification largely overlap, so an instrument is implausible.

As a compromise, we implement entropy balancing and propensity score matching in two robustness tests. First, we entropy balance the first two covariate moments between indemnified and non-indemnified deals. An examination of assigned entropy weights reveals that some observations receive extreme weights to achieve convergence (i.e., weights up to 21.109).[22] Hainmueller (2012) warns that extreme weights can be a limitation of entropy balancing and suggests implementing iterative weight trimming in these cases. In line with this suggestion, we implement an iterative entropy balancing procedure that determines initial weights, winsorizes extreme weights at the 1st and 99th percentiles, then repeats the entropy balancing procedure considering the prior iteration weights until it finds convergence using weights less than five, a common cutoff for other weighting procedures. Table 7, Panel A shows the first three moments before and after the iterative weighting procedure. Table 7, Panel B shows the results of using these entropy-balanced samples to repeat the OLS estimations of Model (2) in Columns 1-2 and logit estimation of Model (3) in Column 3. We find support for indemnification being positively related

[22] Hainmueller (2012) does not provide guidance on identifying extreme weights. As such, we use a common statistical method for identifying extreme values, the interquartile range method, which suggests extreme values begin at 3.983. The interquartile range method creates an extreme value threshold based on the 75th percentile plus 3 times the distance between the 25th and 75th percentiles.

to pre-contract period length (p-value < 0.01), negatively related to post-contract period length (p-value < 0.10, one-tailed test), and positively related to future goodwill impairment (p-value < 0.10).

Second, we use propensity score matching to identify non-indemnified deals similar to indemnified ones with similar characteristics. Specifically, we use radius matching, considered to be one of the least biased propensity score matching methods (Huber, Lechner, and Wunsch, 2013). This process entails matching control observations to treatment observations within a selected propensity score radius called the caliper.

We match on the determinants of indemnification from Model (1). We set the caliper to 0.02, or 0.02 times the standard deviation, to take a conservative approach. Ultimately, the caliper determines treatment-control observations admissible to the sample, and control observations are matched with replacement. Within these parameters, we match 221 indemnified deals as a treatment group to 190 non-indemnified deals as a control group. After matching, only *PUBLIC_T* and the numbers of external advisors are still significantly different at the 0.01 level, which is unsurprising given the high proportion of public targets in the control group. If we relax the caliper to 0.05 or 0.10, we end up with 612 or 811 sample observations, respectively. However, this increase in caliper would increase the number of variables significantly different at the 0.01 level to 4 or 5 variables, respectively. Inferences remain qualitatively similar with these different caliper settings (untabulated).

We report the re-estimated results using the propensity score matched sample in Table 7, Panel C. In the matched sample, we continue to find that indemnification is positively related to pre-contract period length (p-value < 0.05, Column 1), negatively related to post-contract period length (p-value < 0.05, Column 2), and positively related to future goodwill impairment (p-value < 0.01, Column 3). Though coefficients are slightly weaker in significance, inferences remain

similar to those in the unmatched sample. In summary, our main findings are robust to entropy balancing and propensity score matching, alleviating concerns that other systematic differences between indemnified and non-indemnified deals drive these results.

4.4 Additional Analysis on Merger Backgrounds

We conduct additional analysis on private-target deals where the acquirer supplies a merger background section. Again, we focus on private-target deals because they have more variation in indemnification. We manually identify whether the target or the acquirer initiated the merger negotiations and whether the target considered multiple bidders. Because both these factors influence the bargaining power between the target and acquirer (Boone and Mulherin, 2007; Chira and Volkov, 2017), we posit they could influence the inclusion of indemnification clauses.

We begin by manually searching acquirers' EDGAR filings (e.g., Forms S-4 and S-4/A, Form DEFM14A, Form DEFM14C) in the year leading up to the deal for disclosures on merger backgrounds. This search yields 62 deals with merger backgrounds. We read the sequence of events to determine whether the target initiated the merger (*TARGET_INIT* =1) and whether the target signed multiple confidentiality agreements, indicating that multiple bidders were involved (*MULTI_BIDDER* =1).

In Table 8, Panel A, we observe that most acquirer-initiated mergers only have a single bidder (32 out of 34), while most target-initiated mergers have multiple bidders (21 out of 28). We expect targets in negotiations with multiple bidders to have more bargaining power due to having more options, thus being less willing to provide indemnification. Consistent with this conjecture, none of the target-initiated deals with multiple bidders have indemnification clauses in this subsample.

We repeat the main analyses on this sample of 62 deals, omitting fixed effects due to the

reduced sample size. Our logit regressions also require removing contingent consideration and multiple bidders from Models (1) and (4), respectively, to avoid perfect prediction. In Table 8, Panel B, we continue to find that indemnification is negatively associated with post-contract period length and positively associated with future goodwill impairments. Though we do not find significant coefficients on target initiation or multiple bidders, we cannot rule out that lack of statistical power confounds these results.

4.5 Additional Analysis regarding Information Asymmetry Proxies

In this section, we validate our interpretation that longer R&Ws capture higher information risk by examining its association with commonly used measures of information asymmetry from studies on public target mergers, e.g., low analyst following (Chemmanur, Paeglis, and Simonyanc, 2009) and low accounting quality (Marquardt and Zur, 2015). To utilize these commonly used measures in earlier tests, we would need to exclude a large portion of our sample because these measures are not readably available for privately held targets. As a compromise, we use R&Ws length, a text-based measure available for all deals in our sample.

As with any proxy, concerns exist regarding whether the measure captures the construct of interest. To ease these concerns, we explore whether *RW_LENGTH* correlates with accepted measures of information credibility or transparency around the contracting period for the public-target subsample. Specifically, we use whether the target issues an accounting restatement (*RESTATE*=1) or receives an SEC comment letter (*SEC*=1) during the contracting period, whether the target used a Big 4 auditor (*BIG4*=1) in the period prior to the contracting period, the target's firm-level and industry-level financial statement quality prior to the contracting period (*Firm_AQ*

and *Industry_AQ*, respectively) per McNichols and Stubben (2015), and analyst following (*ANALYSTS*) prior to the contracting period.

In Table 9, Panel A, we document that *RW_LENGTH* is significantly positively correlated with restatements, negatively correlated with all three measures of financial statement quality (*BIG4*, *Firm_AQ*, and *Industry_AQ*), and negatively correlated with analyst following; all consistent with longer R&Ws sections capturing higher information asymmetry. In Table 9, Panel B, we regress *RW_LENGTH* on the above proxies while controlling for the relative size of the target as well as industry and year fixed effects. We find a negative association between relative target size and *RW_LENGTH*, suggesting that larger targets with bargaining power commit to fewer R&Ws. Restatements and low analyst following hold significant explanatory power for *RW_LENGTH* in multivariate regressions. Some of these proxies likely subsume the explanatory power of others when placed together. Overall, the evidence is consistent with R&Ws length proxying for information asymmetry.

A conceptual limitation of these proxies for information credibility and asymmetry is that they do not consider targets' private disclosures and acquirers' due diligence. Strictly speaking, they capture information asymmetry between firms and outsiders. *RW_LENGTH* is specific to the target-acquirer relationship, though we must extrapolate their usefulness from public to private-target deals. We invite future research to establish mechanisms and theoretical foundations for this new proxy for information risk. We acknowledge that we trade off different advantages and limitations when we choose among these measures.

4.6 Additional Robustness Checks

We include industry fixed effects to reduce the possibility of endogeneity in the form of omitted variable bias from unmodeled time-invariant industry characteristics. However, a recent

methodological study warns researchers of various shortcomings with fixed effects (Breuer and deHaan, 2024). As such, we omit industry fixed effects and repeat our main analysis. In untabulated results, inferences remain unchanged with the exclusion of industry fixed effects and, in most cases, become more significant, consistent with fixed effects subsuming meaningful variation.

In our main analyses, we winsorize all continuous variables at their respective distributions' 1 and 99 percentiles to reduce the influence of outliers. However, research indicates that results may be sensitive to outlier treatment methods (Leone, Minutti-Meza, and Wasley, 2019; Hopkins, Lusch, and Nelson, 2024). Accordingly, we reset our sample without winsorization and repeat our analyses using Cook's Distance to identify outliers.[23] This method significantly lowers our sample sizes for each test. Specifically, sample sizes reduce to 200, 1636, 1643, and 375 for regressions on Models (1) - (3), respectively. After these reductions, in untabulated analyses, we find continued support for all our hypotheses. Additionally, following Leone et al. (2019), we replace the OLS regressions in Model (2) with robust regressions using an MM-estimator with an efficiency of 70%. This method does not apply to the logit regressions in Models (1) and (3). We downweight 80 and 107 identified outliers in our tests for Model (2) and continue to find support for H2.

In summary, the results are robust to entropy balancing, propensity-score-matching, various samples, alternative regression estimation methods, and various outlier treatment methods.

5. Conclusion

Merger contracts contain features that help protect acquirers against potential losses. We explore indemnification clauses, an often-featured but understudied risk management mechanism.

[23] To facilitate Cook's Distance with our logit regressions, we identify outliers using Cook's Distance with OLS and then rerun the logit regressions, omitting outliers from the first stage. Outliers have distances greater than 4 divided by the number of observations for the associated regression.

Specifically, we analyze the circumstances in which deals contain indemnification clauses and how these are associated with contract period length and subsequent wealth effects.

We find that indemnification is associated with the extensiveness of the target's representations and warranties. We further show that R&Ws reflect information risk in public targets and extrapolate this relationship to private targets. We show that indemnification is associated with longer pre-contract and shorter post-contract due diligence periods. We caveat that without internal documents, we cannot separate time allocated to negotiation and due diligence within these periods. However, consistent with the reduced verification conjecture, we find that indemnified deals are more likely to exhibit negative wealth effects in the associated reporting unit, i.e., goodwill impairments.

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Appendix A. Variable definitions

Variable	Definition
Dependent Variables	
INDEMN	Indicator variable equal to one if the merger contract provides indemnification for representations and warranties, and zero otherwise.
DD_PRE	The log of the number of days between the nondisclosure agreement and announcement dates (DATEANN) of the merger plus one.
DD_POST	The log of the number of days between the announcement and effective dates (DATEANN and DATEEFF, respectively) of the merger plus one.
IMPAIR	Indicator variable equal to one if acquirer impairs the goodwill of target's reporting segment within five years of acquisition per Audit Analytics, and zero otherwise.
Deal Characteristics	
RW_LENGTH	The log of the number of words in the representations and warranties section of the contract plus one.
REL_SIZE	Rank value of the merger per SDC (RANKVAL), scaled by the market value of the acquirer four weeks prior to the announcement date (AMV).
CONTINGENT	Indicator variable equal to one if the merger consideration includes a contingent component per SDC (CONSID), and zero otherwise.
%_STOCK	Percent of stock consideration to all consideration per SDC (PCT_STK).
SAME_IND	Indicator variable equal to one if target is in same mid industry per SDC as acquirer (TTF_MID_DESC), and zero otherwise.
LEGAL_ADV	The log of the number of external legal advisors (ALEGCOUNT + TLEGCOUNT) involved in the merger per SDC plus one.
FIN_ADV	The log of the number of external financial advisors (ADVCOUNT) involved in the merger per SDC plus one.
MULTI_BIDDER	Indicator variable equal to one if the merger background suggests that multiple potential bidders signed confidentiality agreements, and zero otherwise.
TARGET_INIT	Indicator variable equal to one if the merger background suggests that the target initiated the M&A proceedings, and zero otherwise.

Target Characteristics	
PUBLIC_T	Indicator variable equal to one if target is in traded on public exchange per SDC (TPUBLIC), and zero otherwise.
HIGH_TECH	Indicator variable equal to one if target is in technology industry per SDC (TTF_MACRO_DESC), and zero otherwise.
Information Asymmetry Proxies for Public Targets	
ANALYSTS	The number of analyst recommendations regarding target in month prior to signing confidentiality agreement per IBES.
BIG4	Indicator variable equal to one if the target used a big 4 auditor in year prior to signing confidentiality agreement, and zero otherwise.
FIRM_AQ	Target's accounting quality at the firm level in year prior to confidentiality agreement, following McNichols and Stubben (2015).
INDUSTRY_AQ	Target's accounting quality at the industry level in year prior to confidentiality agreement, following McNichols and Stubben (2015).
RESTATE	Indicator variable equal to one if target issues a restatement after acquirer signs confidentiality agreement, and zero otherwise.
SEC	Indicator variable equal to one if the SEC issues a comment letter to target after acquirer signs confidentiality agreement, and zero otherwise.

Appendix B. Details of Classification Method

In order to accommodate efficient and replicable classifications, we used Python to scan contract titles for various terms and phrases to classify contracts as i) merger agreements, ii) non-merger agreements, and iii) unclassified. All unclassified contracts were manually reviewed and classified. This procedure yields 4,125 merger contracts. We then matched these contracts to SDC platinum, resulting in 2,193 matches. Terms used for the various classifications include:

Merger-	"PLAN OF MERGER"
	"MERGER AGREEMENT"
Non-Merger-	"ASSET PURCHASE"
	"ASSET SALE"
	"STOCK PURCHASE"
	"SHARE PURCHASE"
	"SHARE SALE"
	"STOCK SALE"
	"UNIT PURCHASE"
	"MEMBERSHIP INTEREST PURCHASE"
	"INTEREST PURCHASE"
	"TRANSACTION AGREEMENT"
	"ACQUISITION AGREEMENT"
	"PURCHASE AND SALE"
	"SALE AND PURCHASE"
	"COMBINATION AGREEMENT"
	"ARRANGEMENT AGREEMENT"
	"SECURITIES PURCHASE"
	"PLAN OF REORGANIZATION"
	"RECEIVABLES PURCHASE AGREEMENT"
	"LOAN PURCHASE AGREEMENT"
	"CONTRIBUTION AGREEMENT"
	"EMPLOYMENT AGREEMENT"
	"AFFILIATION AGREEMENT"
	"SUPPORT AGREEMENT"

Furthermore, we used Python to scan the matched contracts for phrases commonly used in indemnification and non-survival clauses to classify contracts as either having an indemnification or a non-survival clause. When a contract was found to have both or neither, the contract was manually reviewed for proper classification. This procedure yielded 511 contracts with indemnification. Terms used in this procedure include:

Non-Survival- "NON-SURVIVAL"
"NONSURVIVAL"
"NO SURVIVAL"
"SHALL NOT SURVIVE THE CLOSING"
"SHALL NOT SURVIVE BEYOND THE EFFECTIVE"
"SHALL NOT SURVIVE THE CONSUMMATION"
"SHALL SURVIVE UNTIL (BUT NOT BEYOND) THE EFFECTIVE"
"SHALL TERMINATE AT THE EFFECTIVE"
"NONE OF THE REPRESENTATIONS AND WARRANTIES CONTAINED IN THIS AGREEMENT"
"SHALL NOT SURVIVE THE MERGER EFFECTIVE"
"SHALL NOT SURVIVE THE EFFECTIVE"

Indemnification- "INDEMNIFICATION OF BUYER"
"LIMITATIONS ON INDEMNIFICATION"
"INDEMNIFICATION CLAIM PROCEDURE"
"INDEMNIFICATION CLAIMS"
"INDEMNITY ESCROW ACCOUNT"
"INDEMNIFCATION ESCROW ACCOUNT"
"LIMITATION ON INDEMNITY"
"TAX TREATMENT OF INDEMNITY PAYMENTS"
"LIMITATION ON CLAIMS"

It is important to note that the word "INDEMNIFICATION" cannot be used to identify indemnification clauses. This issue arises from contracts commonly including discussions for the indemnification of directors and officers, which differs from clauses for the indemnification of representations and warranties.

We then manually reviewed all contracts identified as indemnified by textual analysis to record their content (more on this in Appendix C). During this process, we manually identified 7 misclassifications. After reclassifying, our initial merger contract sample consists of 504 contracts with indemnification and 1,689 contracts without indemnification.

Appendix C. Indemnification Clause Contents and Examples

We manually review the indemnification sections of all 504 contracts to record indemnified matters. We observe that the most common indemnified matters for the buyer's benefit are the target's representations, warranties, covenants, and agreements (covenants and agreements refer to actions that the target will perform under the merger contract); specifically, 99.4% of indemnified contracts provide this protection. Other common indemnified matters include taxes (49.2%), appraisal rights for dissenting shareholders (42.5%), unexpected closing costs (33.7%), preclosing liabilities not considered in the calculation of merger payments (32.7%), employee issues such as severance (15.7%), specific litigation (8.7%), and environmental issues (2.8%).

Moreover, we observe that merger contracts exhibit meaningful variation in indemnified matters. Indemnification sections are not boilerplate but often highlight specific concerns that acquirers have involving targets.

We provide two examples of indemnification language from sample contracts below:

EXHIBIT 1.

Agreement and Plan of Merger between Imperva Inc., Pahlmeyer Acquisition Sub Inc., and Prevoty Inc. (Dated July 25, 2018)

8.2 Indemnification.

(a) Subject to the limitations set forth in this Article VIII, from and after the Closing, each Indemnifying Holder shall severally but not jointly indemnify and hold harmless Acquirer, Merger Sub and the Company and their respective officers, directors, agents and employees and each Person, if any, who controls or may control Acquirer within the meaning of the Securities Act (each, an "*Indemnified Person*") from and against, and shall compensate and reimburse each Indemnified Person for, any and all losses, Liabilities, damages (including consequential (to the extent such consequential damages could be reasonably foreseeable), special (to the extent such special damages could be reasonably foreseeable), punitive (subject to Section 8.3(j)), exemplary (subject to Section 8.3(j)), and incidental damages, penalties, fines, costs and expenses), and the amounts of and/or paid or payable in respect of, any and all Liabilities and claims (including interest, penalties, Taxes, fees, costs and expenses, including the fees, costs and expenses paid in connection with the investigation, defense, enforcement and/or settlement of any of the foregoing and the reasonable fees, costs and expenses of counsel, accountants, experts and other professionals), directly or indirectly, whether or not due to a Third-Party Claim (collectively, "*Indemnifiable Damages*"), arising out of, resulting from or in connection with:

(i) any failure of any representation or warranty made by the Company herein or in the Company Disclosure Letter (including any exhibit to or schedule of the Company Disclosure Letter) to be true and correct (A) as of the Agreement Date (except in the case of representations and warranties that by their terms speak only as of a specified date or dates, which representations and warranties shall be true and correct as of such date or dates) or (B) as of the Closing Date as though such representation or warranty were made as of the Closing Date (except in the case of representations

and warranties that by their terms speak only as of a specific date or dates, which representations and warranties shall be true and correct as of such date or dates);

(ii) any failure of any certification, representation or warranty made by the Company in any certificate (other than the Spreadsheet and the Company Closing Financial Certificate) delivered to Acquirer pursuant to this Agreement to be true and correct as of the date such certificate is delivered to Acquirer;

(iii) any breach of, or default in connection with, any of the covenants, agreements or obligations made by the Company herein or in any other agreements contemplated by the Transaction Documents or the Merger;

(iv) any inaccuracies in the Spreadsheet or the Company Closing Financial Certificate to the extent not taken into account in the calculation of Company Net Working Capital or Merger Consideration;

(v) any claim or Legal Proceeding initiated by any Person (A) arising out of or relating to the allocation or distribution of the Merger Consideration among the Company Securityholders (including whether or not such allocation or distribution is consistent with the Certificate of Incorporation) or any failure of the Spreadsheet or the Company Closing Financial Certificate or the information contained therein to be true and correct (to the extent not taken into account in the calculation of Company Net Working Capital or Merger Consideration), (B) arising out of or relating to the Company Options (including any Taxes related thereto, including any Taxes arising under or pursuant to Section 4999 of the Code), the Company Option Plan, any agreement between a Company Optionholder and the Company relating to any Company Option or (C) arising out of or relating to the allocation of any of the Indemnity Escrow Fund or the Expense Fund in respect of any of the foregoing;

(vi) the exercise of appraisal rights or dissenters' rights with respect to the Merger by any holder of Dissenting Shares, to the extent that any such Liability, in the aggregate, exceeds the value of the amount that otherwise would have been payable by Acquirer pursuant to Section 1.3(a)(i) or Section 1.3(a)(ii) upon the exchange of such Dissenting Shares, including, for the avoidance of doubt, any fees, costs and expenses incurred by Acquirer or any of its Representatives or Affiliates relating to or in connection with the investigation, defense and/or settlement thereof;

(vii) any claims by (A) any then-current or former holder or alleged then-current or former holder of any Equity Interests of the Company (including any predecessors), arising out of, resulting from or in connection with (I) the Transactions or this Agreement, including the allocation of the Merger Consideration or any portion thereof, or (II) such Person's status or alleged status as a holder of Equity Interests of the Company (including any predecessors thereof) at any time at or prior to the Closing, whether for breach of fiduciary duty or otherwise, (B) any Person to the effect that such Person is entitled to any Equity Interest of Acquirer or the Company or any payment in connection with the Transactions other than as specifically set forth on the Spreadsheet or (C) any Person with respect to any Company Option Plan or any other plan, policy or Contract providing for compensation to any Person in the form of Equity Interests;

(viii) any matter set forth in Schedule 2.6 of the Company Disclosure Letter or that is or would be an exception to the representations and warranties made in Section 2.6 (Litigation) as of the Agreement Date or the Closing;

(ix) the Repricing;

(x) regardless of any matter set forth on the Company Disclosure Letter, any Pre-Closing Taxes to the extent not taken into account in calculating the Company Net Working Capital;

(xi) the reasonable attorneys' fees and other fees, costs and expenses of the investigation, evaluation and defense of any claim or Legal Proceeding asserted by any Person that, if meritorious, would constitute or give rise to an inaccuracy in or breach of any representation or warranty made by the Company in this Agreement, the Company Disclosure Letter or any certificate delivered by the Company or its officers in connection with the Closing;

(xii) (i) the Settlement Agreement, (ii) any failure to comply with the provisions of the Settlement Agreement, (iii) any matter arising out of or related to the same or similar circumstances and/or events described in the pleadings and other materials submitted in the lawsuit captioned Hullinger, et al. v. Anand, et. Al. in the United States District Court for the Central District of California, Case No. 15-CV-07185 SJO (FFM) or the Settlement Agreement, (iv) any claim against the Company by the Specified Persons, (v) any Taxes imposed upon or payable by the Company with respect to the Settlement Agreement, (vi) any Defendant Indemnity Payments, (vii) any Settlement Agreement Payments, and (viii) any claim that the Company is a successor in interest to Agora Systems, LLC;

(xiii) any failure to properly classify any employee of the Company as exempt or non-exempt or any individual as a consultant or independent contractor;

(xiv) any unpaid Transaction Expenses or Company Debt as of the Closing to the extent not taken into account in the calculation of Company Net Working Capital or Merger Consideration;

(xv) regardless of the disclosure of any matter set forth in the Company Disclosure Letter, any Liability arising out of any claims: (A) brought against the current or former directors or officers of the Company that exceed the proceeds received by the Surviving Corporation with respect to such Liability under the D&O Tail or (B) brought by any current or former director or officer of the Company or any Company Securityholder or any Affiliate of such Company Securityholder, in each case, pursuant to the Certificate of Incorporation or Bylaws, any organizational documents of any predecessor of the Company, any indemnification agreement between such Company Securityholder and the Company, or any director's and officer's insurance policy or other fiduciary insurance policy maintained by the Company or the Surviving Corporation for the benefit of such Person for (I) indemnification of any kind, (II) receipt of insurance benefits or (III) reimbursement or advancement of expenses or other amounts (including rights of contribution), relief or remedy, in each case, arising out of any claim or Legal Proceeding brought against such current or former director or officer in his or her capacity as a director or officer of the Company (or any predecessors) or, in the case of a Company Securityholder, against such Company Securityholder

or any Affiliate of such Company Securityholder in its, his or her capacity as an Affiliate or designating or appointing Person of such current or former director or officer;

(xvi) any breach by any Company Securityholder of, or any failure by any Company Securityholder to perform or comply with, any representation, warranty, covenant or agreement contained in a Stockholder Agreement, Option Consent or other Transaction Document;

(xvii) any failure to obtain the Required Consents (including the consent of the Applicable Counterparty) or take the Required Actions and any Indemnifiable Damages arising therefrom, and any Indemnifiable Damages that result as a consequence of actions of a third party resulting from such failure;

(xviii) the grant of the 5.18 RSUs;

(xix) any fraud, intentional misrepresentation or intentional or willful misconduct by or on behalf of the Company or such Indemnifying Holder.

EXHIBIT 2.

Agreement and Plan of Merger between Darden Restaurants Inc., Continental Merger Sub Inc., and Cheddar's Restaurant Holding Corp. (Dated March 27, 2017)

5.2. Indemnification by the Equityholders. Subject to Sections 5.1 and 5.5, each of the Equityholders severally, but not jointly, shall indemnify and hold Purchaser, the Company, the Surviving Corporation and their respective directors, officers, employees, Affiliates, stockholders, members, partners, agents, attorneys, representatives, successors and assigns (collectively, "Purchaser Indemnified Parties") harmless from and against, and to pay to the applicable Purchaser Indemnified Parties, the amount of any and all losses, liabilities, obligations, deficiencies, judgments, damages, interest, fines, assessments, costs and expenses (including reasonable costs of investigation and defense and reasonable attorneys' fees) (individually, a "Loss" and, collectively, "Losses") incurred by such Purchaser Indemnified Party arising out of or resulting from:

(a) the failure of any of the representations or warranties made by the Company (i) in this Agreement to be true and correct in all respects as of the date hereof or on the Closing Date or (ii) in the certificates delivered pursuant to Sections 1.13(a)(i) and (iv) to be true and correct in all respects as of the Closing Date (in each case, disregarding any qualifications as to Material Adverse Effect, materiality or phrases of like import contained in such representations and warranties);

(b) the breach of any covenant or other agreement on the part of the Company under this Agreement;

(c) any Company Transaction Expenses not paid prior to or at the Closing or pursuant to Section 1.12;

(d) any Indebtedness of the Company existing prior to the Closing and not paid prior to or at the Closing or pursuant to Section 1.12; or

(e) any failure by the Company to obtain the consent or approval of any Person that is a party to a Contract and whose consent or approval is required as set forth on Schedule 2.3(b) prior to the Closing (including, for the avoidance of doubt, any Losses that constitute consent fees or similar payments made after the Closing to obtain any such consents or approvals).

TABLE 1

Sample Selection

	Observations
All merger and acquisition contracts from the Adelson et al. (2024) database	7,931
Less: Contract titles relate to asset acquisitions, joint ventures, or equity purchases instead of mergers, identified by Python	(3,806)
Not matching to SDC platinum	(1,932)
Effective after 12/31/2019	(99)
Banking and insurance, REIT and SPAC acquirers	(96)
Negative due diligence phases	(82)
Missing regression variables	(176)
Full merger contract sample	1,740

TABLE 2

Descriptive Statistics

This table presents descriptive statistics for our sample. Panel A presents statistics for the entire sample, while Panels B and C show descriptives for important subsamples.

Panel A. Descriptive Statistics for All Deals

Variable	N	Mean	Std. Dev.	Q1	Median	Q3
Dependent Variables						
INDEMN	1,740	0.229	0.420	0.000	0.000	0.000
DD_PRE	1,740	4.483	0.982	3.922	4.522	5.075
Unlogged *DD_PRE*	1,740	139.000	156.000	49.500	91.000	159.000
DD_POST	1,740	4.475	0.882	3.951	4.590	5.063
Unlogged *DD_POST*	1,740	117.300	86.740	51.000	97.500	157.000
IMPAIR	1,348	0.339	0.133	0.339	0.000	0.000
Deal Characteristics						
RW_LENGTH	1,740	9.238	0.280	9.065	9.257	9.415
REL_SIZE	1,740	0.448	0.610	0.083	0.226	0.583
CONTINGENT	1,740	0.053	0.224	0.000	0.000	0.000
%_STOCK	1,740	0.367	0.408	0.000	0.176	0.776
SAME_IND	1,740	0.432	0.495	0.000	0.000	1.000
LEGAL_ADV	1,740	1.454	0.470	1.099	1.386	1.792
FIN_ADV	1,740	1.15	0.373	1.099	1.099	1.386
Target Characteristics						
PUBLIC_T	1,740	0.676	0.468	0.000	1.000	1.000
HIGH_TECH	1,740	0.258	0.438	0.000	0.000	1.000

TABLE 2 Continued
Descriptive Statistics

We present descriptive statistics separately for indemnified contracts and non-indemnified contracts in Panel B. Tests of group means indicate all variables are significantly different at the 0.01 level. We omit presentation of group differences within the table for brevity.

Panel B. Descriptive Statistics for Indemnified and Non-Indemnified Deals						
Variable	N	Mean	Std. Dev.	Q1	Median	Q3
***INDEMN* = 1**						
DD_PRE	398	4.879	0.889	4.407	4.902	5.371
Unlogged *DD_PRE*	398	188.600	180.400	81.000	133.500	214.000
DD_POST	398	3.668	1.029	3.367	3.749	4.190
Unlogged *DD_POST*	398	58.750	62.800	28.000	41.500	65.000
IMPAIR	296	0.216	0.412	0.000	0.000	0.000
RW_LENGTH	398	9.277	0.313	9.055	9.282	9.497
REL_SIZE	398	0.348	0.557	0.077	0.166	0.380
CONTINGENT	398	0.168	0.375	0.000	0.000	0.000
%_STOCK	398	0.214	0.333	0.000	0.000	0.363
SAME_IND	398	0.543	0.499	0.000	1.000	1.000
LEGAL_ADV	398	1.115	0.426	1.099	1.099	1.386
FIN_ADV	398	0.896	0.461	0.693	1.099	1.099
PUBLIC_T	398	0.028	0.164	0.000	0.000	0.000
HIGH_TECH	398	0.364	0.482	0.000	0.000	1.000
***INDEMN* = 0**						
DD_PRE	1,342	4.365	0.978	3.784	4.394	4.913
Unlogged *DD_PRE*	1,342	124.300	144.800	43.000	80.000	135.000
DD_POST	1,342	4.714	0.667	4.317	4.754	5.147
Unlogged *DD_POST*	1,342	134.600	85.270	74.000	115.000	171.000
IMPAIR	1,052	0.109	0.312	0.000	0.000	0.000
RW_LENGTH	1,342	9.226	0.269	9.068	9.247	9.403
REL_SIZE	1,342	0.478	0.622	0.088	0.252	0.632
CONTINGENT	1,342	0.019	0.135	0.000	0.000	0.000
%_STOCK	1,342	0.412	0.417	0.000	0.337	0.882
SAME_IND	1,342	0.399	0.490	0.000	0.000	1.000
LEGAL_ADV	1,342	1.554	0.434	1.386	1.609	1.792
FIN_ADV	1,342	1.226	0.305	1.099	1.099	1.386
PUBLIC_T	1,342	0.869	0.338	1.000	1.000	1.000
HIGH_TECH	1,342	0.227	0.419	0.000	0.000	0.000

TABLE 2 Continued
Descriptive Statistics

We present descriptive statistics separately for deals with private targets in Panel C.

Panel C. Descriptive Statistics for Private-Target Deals						
Variable	N	Mean	Std. Dev.	Q1	Median	Q3
***PUBLIC_T*=0**						
INDEMN	563	0.687	0.464	0.000	1.000	1.000
DD_PRE	563	4.797	0.916	4.331	4.836	5.298
DD_POST	563	3.885	1.087	3.434	3.871	4.585
IMPAIR	434	0.187	0.390	0.000	0.000	0.000
RW_LENGTH	563	9.252	0.299	9.051	9.262	9.450
REL_SIZE	563	0.404	0.599	0.093	0.192	0.453
CONTINGENT	563	0.133	0.340	0.000	0.000	0.000
%_STOCK	563	0.253	0.354	0.000	0.000	0.477
SAME_IND	563	0.513	0.500	0.000	1.000	1.000
LEGAL_ADV	563	1.190	0.458	1.099	1.099	1.386
FIN_ADV	563	0.982	0.459	0.693	1.099	1.386
HIGH_TECH	563	0.321	0.467	0.000	0.000	1.000

TABLE 3
Correlations

This table presents Pearson (bottom) and Spearman (top) pairwise correlations for all variables. Statistical significance at the 0.01 level is indicated by bold formatting.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) *INDEMN*		**0.084**	**-0.097**	**0.259**	**-0.490**	**0.305**	**-0.209**	**0.106**	**0.138**	**-0.747**	**-0.387**	**-0.318**	**0.130**
(2) *RW_LENGTH*	**0.077**		**-0.222**	**0.131**	**-0.149**	**0.110**	**-0.104**	0.018	**0.275**	-0.009	**-0.077**	**-0.134**	-0.009
(3) *REL_SIZE*	**-0.090**	**-0.156**		-0.055	**0.356**	-0.044	**0.400**	**-0.136**	**-0.211**	0.040	**0.288**	**0.401**	**0.127**
(4) *DD_PRE*	**0.219**	**0.152**	-0.021		**-0.173**	**0.173**	**-0.085**	0.041	0.060	**-0.247**	**-0.174**	**-0.156**	0.019
(5) *DD_POST*	**-0.498**	**-0.144**	**0.251**	**-0.157**		**-0.212**	**0.501**	**-0.223**	**-0.271**	**0.432**	**0.332**	**0.346**	-0.051
(6) *CONTINGENT*	**0.281**	**0.097**	-0.023	**0.145**	**-0.198**		**-0.078**	0.011	0.024	**-0.258**	**-0.115**	**-0.129**	0.018
(7) *%_STOCK*	**-0.204**	**-0.137**	**0.207**	**-0.140**	**0.396**	**-0.108**		**-0.215**	**-0.211**	**0.163**	0.067	**0.179**	0.007
(8) *SAME_IND*	**0.122**	0.038	**-0.100**	0.058	**-0.203**	0.027	**-0.179**		**0.195**	**-0.098**	-0.008	-0.049	-0.014
(9) *HIGH_TECH*	**0.132**	**0.252**	**-0.166**	0.031	**-0.249**	0.013	**-0.126**	**0.199**		**-0.093**	-0.043	**-0.201**	-0.036
(10) *PUBLIC_T*	**-0.755**	-0.035	0.050	**-0.221**	**0.463**	**-0.248**	**0.192**	**-0.114**	**-0.100**		**0.390**	**0.259**	**-0.109**
(11) *LEGAL_ADV*	**-0.393**	-0.010	**0.229**	**-0.144**	**0.374**	**-0.095**	**0.071**	-0.039	-0.053	**0.389**		**0.531**	0.047
(12) *FIN_ADV*	**-0.371**	**-0.119**	**0.273**	**-0.125**	**0.398**	**-0.126**	**0.151**	-0.076	**-0.188**	**0.312**	**0.533**		0.019
(13) *IMPAIR*	**0.130**	0.003	**0.081**	0.010	-0.067	0.018	-0.017	-0.014	-0.036	**-0.109**	0.037	0.018	

TABLE 4

Determinants of Indemnification Logit Model

This table presents logit estimation results of Model (1): *Prob(INDEMN) = f*(information risk, deal characteristics, target characteristics) + constant + Industry, Year Fixed Effects. *INDEMN* is an indicator variable equal to one if the merger contract provides indemnification for representations and warranties, and zero otherwise. *RW_LENGTH* is the natural log of the number of words in the representations and warranties section of the contract plus one. Please refer to Appendix A for a full list of variable definitions. Industry fixed effects are based on Refinitiv's proprietary mid-level industry classifications. Robust standard errors, clustered by acquirer, are in parentheses. Statistical significance at the 0.01, 0.05, and 0.10 levels are denoted by ***, **, and *, respectively.

	(1) $INDEMN_t$	(2) $INDEMN_t$
	Public and Private Targets	*Private Targets*
RW_LENGTH	0.850**	1.103***
	(2.194)	(2.875)
REL_SIZE	-0.193	-0.226
	(-1.041)	(-1.235)
CONTINGENT	1.295***	1.349***
	(3.125)	(2.866)
%_STOCK	-0.810**	-1.037***
	(-2.222)	(-2.836)
SAME_IND	0.041	0.053
	(0.182)	(0.211)
LEGAL_ADV	-0.890***	-0.746**
	(-2.906)	(-2.269)
FIN_ADV	-1.178***	-1.257***
	(-3.937)	(-3.887)
HIGH_TECH	0.294	0.009
	(0.550)	(0.017)
PUBLIC_T	-5.563***	
	(-14.607)	
Observations	1,740	563
Pseudo R2	0.669	0.291

TABLE 5

Due Diligence Length OLS Model

This table presents OLS estimation results of Model (2): *Due Diligence Length = f*(indemnification, information risk, deal characteristics, deal advisors, target characteristics) + constant + Industry, Year Fixed Effects. Panel A focuses on the pre-contract due diligence length, *DD_PRE*, which is the log of one plus the number of days between the nondisclosure agreement date and the announcement date of the merger. Panel B focuses on the post-contract due diligence length, *DD_POST*, which is the log of one plus the number of days between the merger's announcement date and effective date.

INDEMN is an indicator variable equal to one if the merger contract provides indemnification for representations and warranties, and zero otherwise. Industry fixed effects are based on Refinitiv's proprietary mid-level industry classifications. Robust standard errors, clustered by acquirer, are in parentheses. Statistical significance at the 0.01, 0.05, and 0.10 levels are denoted by ***, **, and *, respectively.

Panel A. Pre-Contract Due Diligence

	(1)	(2)
	DD_PRE	*DD_PRE*
	Public and Private Targets	*Private Targets*
INDEMN	0.171**	0.196*
	(2.027)	(1.955)
RW_LENGTH	0.397***	0.428***
	(4.120)	(2.752)
REL_SIZE	0.051	0.034
	(1.216)	(0.553)
CONTINGENT	0.317***	0.274**
	(3.073)	(2.515)
%_STOCK	-0.070	-0.087
	(-1.009)	(-0.639)
SAME_IND	0.023	0.039
	(0.472)	(0.461)
LEGAL_ADV	-0.233***	-0.116
	(-3.446)	(-1.036)
FIN_ADV	-0.015	0.033
	(-0.199)	(0.318)
HIGH_TECH	-0.012	-0.049
	(-0.103)	(-0.250)
PUBLIC_T	-0.190**	
	(-2.496)	
Observations	1,740	563
Adjusted R2	0.095	0.050

Panel B. Post-Contract Due Diligence		
	(1)	(2)
	DD_POST	*DD_POST*
	Public and Private Targets	*Private Targets*
INDEMN	-0.355***	-0.186*
	(-4.701)	(-1.905)
RW_LENGTH	-0.069	0.019
	(-0.946)	(0.113)
DD_PRE	0.011	-0.037
	(0.701)	(-0.891)
REL_SIZE	0.140***	0.204**
	(3.922)	(2.143)
CONTINGENT	-0.124	-0.153
	(-1.281)	(-1.264)
%_STOCK	0.400***	0.601***
	(9.126)	(4.523)
SAME_IND	-0.102***	-0.109
	(-2.913)	(-1.242)
LEGAL_ADV	0.296***	0.456***
	(5.782)	(4.057)
FIN_ADV	0.226***	0.331***
	(3.277)	(2.868)
HIGH_TECH	-0.100	-0.211
	(-1.157)	(-0.702)
PUBLIC_T	0.286***	
	(4.743)	
Observations	1,740	563
Adjusted R2	0.465	0.337

TABLE 6

Future Goodwill Impairments Logit Model

This table presents results from logit estimation of Model (3): *Prob(IMPAIR) = f(INDEMN*, information risk, deal characteristics, deal advisors, target characteristics) + constant + Industry, Year Fixed Effects. *IMPAIR* is an indicator variable equal to one if the merger's reporting unit or segment experiences a goodwill impairment within five years of the effective date and zero otherwise. *INDEMN* is an indicator variable equal to one if the merger contract provides indemnification for representations and warranties and zero otherwise. Industry fixed effects are based on Refinitiv's proprietary mid-level industry classifications. Robust standard errors, clustered by acquirer, are in parentheses. Statistical significance at the 0.01, 0.05, and 0.10 levels are denoted by ***, **, and *, respectively.

	(1)	(2)
	IMPAIR	*IMPAIR*
	Public and Private Targets	*Private Targets*
INDEMN	0.933***	1.031**
	(3.010)	(2.455)
RW_LENGTH	0.260	0.041
	(0.743)	(0.078)
DD_PRE	-0.067	-0.028
	(-0.690)	(-0.176)
DD_POST	-0.111	-0.132
	(-0.812)	(-0.872)
REL_SIZE	0.256**	0.429**
	(2.089)	(2.061)
CONTINGENT	-0.215	-0.237
	(-0.520)	(-0.514)
%_STOCK	0.359	0.716
	(1.354)	(1.378)
SAME_IND	-0.161	-0.141
	(-0.844)	(-0.492)
LEGAL_ADV	0.375	-0.228
	(1.452)	(-0.606)
FIN_ADV	0.230	0.390
	(0.854)	(1.078)
HIGH_TECH	-0.365	0.188
	(-0.784)	(0.231)
PUBLIC_T	-0.127	
	(-0.466)	
Observations	1,329	427
Pseudo R2	0.111	0.116

TABLE 7
Additional Analysis Addressing Self-Selection Concerns

This table presents re-estimation of Models (2) and (3) using an entropy balance sample (Panels A and B) and a propensity score matched sample of indemnified and non-indemnified contracts (Panel C). We entropy balance on the first two moment. To propensity match, we match on the determinates of indemnification from Model (1), using radius matching with a caliper of 0.01, or 0.01 times the standard deviation. The resulting sample consists of 140 indemnified and 153 non-indemnified contracts. Industry fixed effects are based on Refinitiv's proprietary mid-level industry classifications. Robust standard errors, clustered by acquirer, are in parentheses. Statistical significance at the 0.01, 0.05, and 0.10 levels are denoted by ***, **, and *, respectively.

Panel A: First three moments before and after weighting

All Targets		Before Weighting			After Weighting		
Variable	N	Mean	Variance	Skewness	Mean	Variance	Skewness
Control Group							
RW_LENGTH	1,342	9.226	0.072	-0.412	9.276	0.098	-0.862
REL_SIZE	1,342	0.478	0.387	2.774	0.348	0.310	3.924
CONTINGENT	1,342	0.019	0.018	7.120	0.168	0.140	1.772
%_STOCK	1,342	0.412	0.174	0.307	0.214	0.111	1.368
SAME_IND	1,342	0.399	0.240	0.414	0.543	0.248	-0.171
LEGAL_ADV	1,342	1.554	0.189	-0.443	1.115	0.181	-0.407
FIN_ADV	1,342	1.226	0.093	0.087	0.896	0.213	-0.526
HIGH_TECH	1,342	0.227	0.175	1.307	0.364	0.232	0.564
PUBLIC_T	1,342	0.869	0.114	-2.185	0.028	0.027	5.755
Treatment Group							
RW_LENGTH	398	9.277	0.098	-0.224	9.277	0.098	-0.224
REL_SIZE	398	0.348	0.310	3.890	0.348	0.310	3.890
CONTINGENT	398	0.168	0.140	1.773	0.168	0.140	1.773
%_STOCK	398	0.214	0.111	1.394	0.214	0.111	1.394
SAME_IND	398	0.543	0.249	-0.172	0.543	0.249	-0.172
LEGAL_ADV	398	1.115	0.181	-0.738	1.115	0.181	-0.738
FIN_ADV	398	0.897	0.213	-0.674	0.897	0.213	-0.674
HIGH_TECH	398	0.364	0.232	0.564	0.364	0.232	0.564
PUBLIC_T	398	0.028	0.027	5.763	0.028	0.027	5.763

Panel B: Entropy Balanced Regressions

	(1)	(2)	(3)
VARIABLES	*DD_PRE*	*DD_POST*	*IMPAIR*
INDEMN	0.296***	-0.168	0.769*
	(3.332)	(-1.321)	(1.897)
Observations	1,740	1,740	1,329
R2/Pseudo R2	0.110	0.251	0.042
Year and Industry FE	Yes	Yes	Yes

Panel C: Propensity Score Matched Sample

	(1)	(2)	(3)
VARIABLES	*DD_PRE*	*DD_POST*	*IMPAIR*
INDEMN	0.222**	-0.189**	1.408***
	(2.204)	(-1.989)	(2.643)
Observations	411	411	227
Adjusted/Pseudo R2	0.014	0.342	0.180
Year and Industry FE	Yes	Yes	Yes

TABLE 8

Additional Analysis on Characteristics of Merger Backgrounds

We manually collect additional information on merger backgrounds from filings to register M&A activity (Forms S-4 and S-4/A), proxy statements prepared for shareholder votes on M&A activity (Form DEFM14A), and information statements related to M&A activity (Form DEFM14C). We present evidence related to the 62 contracts with merger backgrounds in this table.

Panel A presents univariate testing on whether target-initiated contracts are more likely to have multiple bidders. Panel B presents results from stepwise regressions on indemnification likelihood, due diligence period length, and impairment likelihood, with the addition of two variables: whether the target and acquirer signed multiple confidentiality agreements (*MULTI_BIDDER* =1) and whether the merger was initiated by the target (*TARGET_INIT* =1). Robust standard errors, clustered by acquirer, are in parentheses. Statistical significance at the 0.01, 0.05, and 0.10 levels are denoted by ***, **, and *, respectively.

Panel A. Two-by-Two Analysis of Merger Background Characteristics

	Numbers of Bidders						
	Single		Multiple				
	N	Mean	N	Mean		Difference	T-stat
Acquirer Initiation	32	0.500	2	0.500		0.000	0.000
Target Initiation	7	0.571	21	0.000		0.571***	5.099
Difference		-0.071		0.500***			
T-Stat		0.334		4.379			

Panel B. Multivariate Analyses

	(1)	(2)	(3)	(4)
	INDEMN	*DD_PRE*	*DD_POST*	*IMPAIR*
INDEMN		0.152	-0.295*	2.594**
		(0.474)	(-1.959)	(2.290)
RW_LENGTH	1.286	0.509	0.080	2.506
	(0.855)	(1.311)	(0.207)	(0.654)
REL_SIZE	-0.669	0.082	-0.211	1.153
	(-1.100)	(0.394)	(-0.906)	(1.133)
CONTINGENT		0.070	0.171	0.642
		(0.096)	(0.333)	(0.333)
%_STOCK	-1.167	-0.491	0.315	10.917*
	(-0.876)	(-0.913)	(1.108)	(1.769)
SAME_IND	0.975	-0.192	-0.046	-4.776*
	(1.060)	(-0.569)	(-0.308)	(-1.931)
LEGAL_ADV	-0.116	0.010	0.257	10.304*
	(-0.096)	(0.039)	(1.208)	(1.950)
FIN_ADV	0.183	-0.050	0.593	-9.764*
	(0.132)	(-0.118)	(1.190)	(-1.837)
HIGH_TECH	0.889	0.406	-0.386*	-0.496
	(1.033)	(1.158)	(-1.689)	(-0.310)
TARGET_INIT	-1.190	-0.005	-0.176	4.366
	(-0.936)	(-0.015)	(-0.858)	(1.275)
MULTI_BIDDER	-2.009	0.279	0.050	
	(-1.241)	(0.775)	(0.181)	
Observations	60	62	62	29
Adjusted/Pseudo R2	0.291	-0.032	0.192	0.461

TABLE 9

Additional Analysis on Information Asymmetry Proxies

This table presents our analyses of our measure of information asymmetry with traditional measure of information asymmetry using our sample of public targets. *RW_LENGTH* is the log of the number of words in the representations and warranties section of the contract plus one. Panel A presents univariate testing on whether *RW_LENGTH* correlates with other information asymmetry proxies. Panel B presents multivariate results of regressing *RW_LENGTH* on relative target size, traditional proxies of information asymmetry, industry and year fixed effects and a constant. Industry fixed effects are based on Refinitiv's proprietary mid-level industry classifications. Robust standard errors, clustered by acquirer, are in parentheses. Statistical significance at the 0.01, 0.05, and 0.10 levels are denoted by ***, **, and *, respectively.

Panel A. Correlations between traditional information asymmetry proxies

	RESTATE	*SEC*	*BIG4*	*ANALYSTS*	*FIRM_AQ*	*INDUSTRY_AQ*
N	1,142	1,142	1,122	981	709	1,122
RW_LENGTH	0.061**	0.032	-0.071***	-0.059*	-0.129***	-0.113***

Panel B. Multivariate Analysis

	(1)	(2)	(3)
	RW_LENGTH	*RW_LENGTH*	*RW_LENGTH*
REL_SIZE	-0.029*	-0.028**	-0.030**
	(-1.929)	(-2.072)	(-1.995)
RESTATE	0.065**	0.015	0.065**
	(2.509)	(0.598)	(2.503)
SEC	-0.013	-0.016	-0.013
	(-0.626)	(-0.938)	(-0.626)
BIG4	-0.021	-0.024	-0.020
	(-0.799)	(-1.177)	(-0.768)
ANALYSTS	-0.003*	-0.002*	-0.003*
	(-1.857)	(-1.778)	(-1.843)
FIRM_AQ	-0.001		-0.004
	(-0.108)		(-0.302)
INDUSTRY_AQ		0.000	0.001
		(0.318)	(0.615)
Observations	636	975	636
Adjusted R2	0.282	0.265	0.282

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