Enterprise Risk Management and Mergers and Acquisitions: Evidence from the Insurance Industry

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Abstract

This paper conducts the first exploratory analysis of the impact of ERM on merger outcomes. Merger is an ideal setting to analyze the channel through which ERM impacts firm value because it combines the risk portfolios of two firms, is one of the most important strategic actions that a firm can take, and has a high failure rate. Consistent with the risk-awareness hypothesis, we find that the quality of a firm's ERM program is negatively associated with the likelihood and frequency of its M&A activities. Further, this negative relation is driven by firms that have consistently demonstrated excellence in ERM programs. Given that a merger is completed, we find that firms with higher quality ERM programs have higher buy-and-hold stock returns, which is consistent with the technology-superiority hypothesis that firms with high quality ERM programs select better merger targets and are more capable of effectively executing the combination of potentially very different businesses. We also find that the stock market reacts more favorably to merger announcements by bidders with high quality ERM programs if the merger is complex.

JEL classification: G32; G34; G38; G22
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1. Introduction

This paper studies the impact of enterprise risk management (ERM) on corporate propensity to pursue mergers and acquisitions (M&As) and post-merger performance. ERM is a holistic approach to risk management as opposed to the traditional, "siloed" approach to risk analysis (Miller, 2015). It has emerged as the state-of-the-art risk management technology in recent years, especially after the 2008 Global Finance Crisis. Risk management experts have argued that "the financial crisis resulted from a system-wide failure to embrace appropriate enterprise risk management behaviors."[1] In recent years a growing number of nonfinancial firms have also started to adopt ERM as ERM technology has seasoned and its value impact has become better understood.

The formalized discipline of ERM has only been in existence since the early 2000s (Farrell and Gallagher, 2015). Reflecting the newness of the ERM practices, the ERM literature is still in its infancy, with the bulk of the work focusing on whether ERM enhances firm value and firm performance. The consensus appears to be that ERM adds value. In contrast to the ample work on the efficacy of ERM, the channels through which ERM creates value have received limited attention. This paper aims to contribute to this strand of the ERM literature by probing the impact of ERM on merger outcomes. To the best of our knowledge, this question is yet to be addressed. This gap in the literature is surprising given that M&As is one of the most important strategic decision that a firm makes, has a high failure rate, and can destroy substantial value.[2]

Importantly, M&As is also an ideal setting to analyze the channels through which ERM impacts firm performance. Specifically, M&As frequently represents transformational strategic

[1] "The 2008 Financial Crisis: A Wake-Up Call for Enterprise Risk Management," by the Risk and Insurance Management Society (RIMS), page 4.
[2] It is widely acknowledged that two of every three M&As fail to create the anticipated value (Economist, 1999; Bowe, 2011).

transactions that involve a significant amount of operational, financial, and long-term risks. A merger combines two businesses that potentially have different lines of businesses, operate in different geographical regions, and practice different organizational processes and cultures. A merger can also increase a firm's financial risk if leverage is used to finance the transaction. A merger, especially a large acquisition, entails a long packback period and is therefore subject to more future unpredictable risks.

We choose the U.S. insurance industry to study our research question because it is the only industry for which we can obtain reliable data on the quality of ERM programs over a long time series. Following the literature (see, e.g., Baxter, Bedard, Hoitash, and Yezegel, 2013; Ai, Bajtelsmit, and Wang, 2016), we use Standard & Poor's (S&P) ERM ratings to measure the quality of a firm's ERM program. For our main regression analyses, we have 94 unique insurance firms or 684 firm-year observations from 2007-2016.

We propose two competing hypotheses to analyze the effect of ERM quality on merger likelihood and frequency. The technology-superiority hypothesis posits that a firm with superior abilities in holistically identifying and managing risks should have a comparative advantage in identifying synergies in a merger, managing risks associated with combining two firms, and maximizing synergy gains post-merger. Therefore, firms with high quality ERM programs should be more inclined to pursue M&As and use mergers to more rapidly achieve operational efficiency or adapt to technology shocks than firms with weak ERM programs. On the other hand, the risk-awareness hypothesis predicts a negative relation between ERM quality and merger likelihood and frequency. The risk-awareness hypothesis suggests that firms with high quality ERM programs can more accurately identify and assess risks. Further, one critical component of ERM is installing a risk-management culture of accountability and effective governance controls including an

optimal compensation structure. Consequently, firms with high quality ERM programs should be more capable of monitoring managerial risk-taking behaviors and recognizing value-destroying mergers, leading those firms to pursue fewer mergers than firms with weak ERM programs.

Implementation of ERM requires significant resource commitment and a deep understanding of risk management tools in a holistic manner at the C-suite level. A complete integration of ERM practices into a firm's strategic decision-making also entails a multiyear process of learning, experimenting, assessing, and optimization. Therefore, it is reasonable to argue that ERM maturity (i.e., consistent demonstration of excellence in ERM) may be more informative than a one-year snapshot of ERM performance. Consistent with this idea, Eckles et al. (2014) find that the benefits of ERM adoption grow stronger over time. Farrell and Gallagher (2015) also find that it is those firms that have mature ERM programs command higher firm valuation. Therefore, we also investigate the relation between the maturity of a firm's ERM program and its propensity to pursue M&As.

We find evidence in support of the risk-awareness hypothesis. Specifically, the quality of a firm's ERM program is negatively associated with the likelihood and frequency of its M&A activities. Further, this negative relation is driven by firms that have consistently demonstrated excellence in ERM programs.

Given that a merger is completed, the technology-superiority hypothesis predicts that firms with high quality ERM programs should have better post-merger performance because their superior ERM technology enables them to identify and prioritize mergers that yield higher risk-adjusted returns in the first place, and once a merger is consummated, they are more expert at managing the risks of, and efficiently executing, the combination of potentially very different

businesses. Consistent with the technology-superiority hypothesis, we find that firms with higher quality ERM programs have higher buy-and-hold stock returns.

Lastly, we examine market reactions to merger announcements as a function of ERM program quality. This inquiry is of interest because it is theoretically unclear how investors will assess the impact of ERM on merger outcomes. ERM adoption requires continuous and considerable investment of corporate resources over time. It is also a complex technology that requires a time-consuming learning process not only for the management but also for investors. Consistent with this notion, Eastman and Xu (2015) find that market reactions to ERM adoption is negative prior to 2005 but turned positive after 2005. Although our sample period starts in 2007, it is unclear whether investors will be able to fully understand the impact of ERM on post-merger performance, especially considering that some merger transactions can be quite complex. We find that the stock market reacts more favorably to merger announcements by firms with high quality ERM programs if the merger is a complex transaction.

This paper makes two main contributions. First, it is the first to study the impact of ERM on merger outcome. Therefore, it adds to the limited knowledge regarding the channels through which ERM adds value. Second, the paper relates to the voluminous literature on M&As. It is common knowledge that mergers are high risk corporate events especially for large acquisition deals. Yet, our knowledge about the source of merger risks and how they can be mitigated is still limited. By probing whether and how ERM informs risk-return tradeoff decisions for acquirers, our results bring new insights to this line of literature.

2. Related literature and hypothesis development

2.1. Firm characteristics, ERM adoption, and the quality of ERM program

Liebenberg and Hoyt (2003) compare firm characteristics between ERM adopters and their control firms. They fail to find much difference except that the former are more levered. Pagach and Warr (2011) find that ERM-adopting firms are larger, more volatile, and have greater institutional ownership. In addition, when the CEO has an incentive to take risk, the firm is more likely to hire a Chief Risk Officer (CRO). Eastman and Xu (2015) find that the stock market reacted negatively to ERM adoption prior to 2005, but positively after 2005. They interpret the results as ERM is a complex technology that takes time for firms to learn and deploy and takes time for the market to understand and evaluate its impact on firm value. Liebenberg and Hoyt (2003), Pagach and Warr (2011), and Eastman and Xu (2015) all use the CRO appointments to proxy for firms' decision to adopt ERM.

Baxter et al. (2013) study the determinants of high-quality ERM programs, as measured by S&P's ERM ratings, and find that larger and more diversified firms have higher ERM ratings, while higher risk companies have lower ratings. In addition, higher quality ERM programs are associated with better corporate governance (i.e., audit committees charged with direct oversight of risk), less audit-related risk (i.e., stable auditor relationships and effective internal controls), presence of risk officers/committees, and boards with longer tenure).

To summarize, the prevailing evidence in the literature suggests that firms adopt ERM for efficiency benefits and the availability of corporate resources is a primary driver behind whether a firm adopts ERM. There is anecdotal evidence that firms can spend up to 7 percent of their operational costs on their ERM programs on an ongoing basis (Farrell and Gallagher, 2014).

2.2. The impact of ERM programs on firm performance and valuation

A number of studies analyze the impact of ERM on firm value and firm performance. The overall weight of the evidence, especially from more recent studies, is consistent with the proposition that ERM increases value. Using a sample of publicly traded insurance companies from 1998 to 2005, Hoyt and Liebenberg (2011) find that ERM adoption is associated with higher firm value, indicated by a Tobin's *Q* premium of roughly 20%. Eckles, Hoyt, and Miller (2014) hypothesize that ERM adoption lowers the marginal cost of reducing firm risk. Consistent with their hypothesis, they find that, after implementing ERM, firms experience profit-maximizing incentives to "produce" more risk reduction—realizing a reduction in stock return volatility and a rise in operating profits per unit of risk (ROA/return volatility). Baxter et al. (2013) and Ai et al. (2016) find that ERM quality, as measured by S&P ERM ratings, is positively related to operating performance (ROA) and Tobin's *Q*. Baxter et al. (2013) also test whether firms with high-quality ERM programs experienced better market return surrounding the 2008 Global Financial Crisis. They find insignificant relation prior to and during the crisis, but a significantly positive association between ERM quality and market performance post the crisis. They interpret the positive association as evidence that following the flight from financial services firms during the crisis period, information contained in ERM ratings was used by investors to identify companies that were more likely to rebound.

In contrast the above studies, Beasley, Pagach and Warr (2008) study the market reactions when firms announce the appointment of a CRO, which they use to proxy for ERM adoption. They find insignificant market reaction. Additionally, for non-financial firms, announcement returns are positively associated with firm size and earnings volatility and negatively associated with leverage and cash balance, while for financial firms, announcement returns are negatively associated with

leverage and cash balance. The evidence in Beasley et al. (2008), coupled with the evidence from above-mentioned evidence on the determinants of ERM adoption suggests that given the complex nature of ERM programs, the costs and benefits of ERM implementation and operation vary by firm characteristics and the benefits of ERM are likely to grow over time as firms overcome the learning curve. Pagach and Warr (2010) study the impact of ERM adoption on firm long-term performance. Using a wide range of firm characteristics, they fail to find support for the proposition that ERM increases value. They call for further study in the area, particularly on how ERM's success can be measured.

As ERM is a complex risk management system, there are varying degrees of ERM implementation and consequently ERM quality. A number of studies have linked the degree of ERM maturity and quality to the extent of ERM effect on firm value. Specifically, McShane, Nair, and Rustambekov (2011) find that insurance firms show a positive relation between Tobin's *Q* and S&P's ERM ratings only as the rating increases over the first three levels. Farrell and Gallagher (2014) study the impact of ERM maturity, as measured by the Risk and Insurance Management Society Risk Maturity Model, on firm value. They find that firms with mature ERM programs have a Tobin's *Q* premium of 25%.

Certain ERM characteristics have also been linked to ERM success. Grace, Leverty, Phillips, and Shimpi (2015) study which aspects of ERM add value, as measured by cost efficiency and revenue efficiency. They find that the use of economic capital models and dedicated risk managers improve operating performance. Requiring the dedicated risk manager report to the board of directors or to the chief executive officer (CEO) also increases value. However, Aebi, Sabato, and Schmid (2012) find that banks, in which the CRO directly reports to the board of

directors and not to the CEO (or other corporate entities), exhibit significantly higher (i.e., less negative) stock returns and ROE during the 2008 Global Financial Crisis.

To summarize, the literature has generally established that ERM adds value. However, because ERM is complex, is still a relevantly new risk management technology, and is constantly evolving, the evidence on which characteristics of ERM add value is limited and mixed.

2.3. Specific channels via which ERM creates value

Compared to the rich evidence on the value implication of ERM programs, only a limited number of studies have focused on how ERM impacts value. Specifically, Berry-Stölzle and Xu (2016) find that for a sample of publicly traded insurance companies, ERM adoption significantly reduces firm's cost of equity capital. They follow Hoyt and Liebenberg (2011) in identifying ERM adoption through key-word searches of newswires, other news media, and corporate financial reports filed with the U.S. Securities and Exchange Commission. Lundqvist and Vilhelmsson (2016) study the relation between default risk and the degree of ERM implementation. They search banks' annual reports for 83 dimensions of ERM implementation to construct a proxy for the degree of ERM implementation that ranges in values from 0 to 83. They find a significantly negative relationship between the degree of ERM implementation and a bank's credit default swap (CDS) spreads. Xu and Xie (2018) study the impact of ERM on corporate innovation. They follow the literature (see, e.g., Hoyt and Liebenberg, 2011) in identifying firms that have adopted ERM. They find that ERM-adoption firms make greater R&D investments and generate greater innovation output.

In theory, larger and more complex firms should benefit more from a holistic approach toward risk identification and management because of their comparative advantage in economies

of scale, resources, and risk management sophistication. This proposition is well corroborated by empirical evidence (see, e.g., Farrell and Gallagher, 2014). Motivated by this stylized fact, Ai et al. (2016) hypothesize that one channel for high-quality ERM programs to add value to large and complex organizations is through superior risk governance during corporate diversification processes. While prior literature has found negative value effects for product line and geographic diversifications, they find a combined positive effect of ERM programs and product line diversification on ROA and insignificant combined effect for geographic diversification. It is worth noting that the interaction between high ERM quality and product line diversification is significantly and negatively related to ROA and Tobin's *Q*, while ERM quality and product line diversification are both individually positively and significantly related to ROA and both insignificantly related to Tobin's *Q*.

The limited evidence on how ERM impacts value, coupled with the incomplete knowledge of which characteristics of ERM add value, highlights the gap in the literature that more research is needed to better understand the specific mechanisms through which ERM creates value. It is this line of literature to which this paper aims to contribute.

2.4. Hypothesis development

The existing literature shows that the key feature of ERM is the holistic approach to identifying and managing risks, affording firms with high quality ERM programs the competitive edge to outperform their peers (Hoyt and Liebenberg, 2011; Eckles et al., 2014). We argue that this holistic risk approach is of particular importance to a firm's long-term success in a M&A setting because a merger frequently represents a transformational strategic transaction that involves a significant amount of operational, financial, and long-term risks. Specifically, a merger

event combines two businesses that potentially have different lines of businesses, operate in different geographical regions, and practice different organizational processes and cultures. A merger can also increase a firm's financial risk if leverage is used to finance the transaction. A merger, especially a large acquisition, entails a long packback period. As optimism is exacerbated in investments with a long-term horizon, compared to other business transactions, mergers are more likely to entail downside surprises as opposed to upside potential (Wilson, 2015).

We argue that a firm with a high-quality ERM program should have a comparative advantage in identifying, evaluating, and managing the varied and numerous risks associated with a merger transaction. Further, such a comparative advantage should manifest itself in a systematic way in terms of merger likelihood and frequency and post-merger performance. With regards to merger likelihood and frequency, one the one hand, firms with high quality ERM programs (hereafter superior ERM firms for brevity) should have a comparative advantage in identifying synergies in a merger, managing risks associated with combining two firms, and maximizing synergy gains post-merger. This line of reasoning suggests that superior ERM firms should be more inclined to pursue M&As and use mergers to more rapidly achieve operational efficiency or adapt to technology shocks than firms with poor-quality ERM programs (hereafter weak ERM firms for brevity). We refer to this argument as "technology-superiority hypothesis." On the other hand, superior ERM firms can more accurately identify risks, especially emerging risks (defined as "future unpredictable or unexpected events" by S&P Global Ratings (2016, page 2)). In addition, one critical component of ERM is corporate governance including compensation structure and a risk management culture of accountability. This line of reasoning suggests that superior ERM firms should be more capable of recognizing value-destroying mergers and averting merger pitfalls

such as over-valued equity and hubris. We refer to this argument as "risk-awareness hypothesis." Therefore, we propose the following hypotheses:

H1.a (Technology-Superiority Hypothesis): ERM quality is positively related to merger likelihood.
H1.b (Risk-Awareness Hypothesis): ERM quality is negatively related to merger likelihood.
H1.c (Technology-Superiority Hypothesis): ERM quality is positively related to merger frequency.
H1.d (Risk-Awareness Hypothesis): ERM quality is negatively related to merger frequency.

ERM adoption represents a radical paradigm shift from the traditional method of evaluating risks individually to managing risks holistically at the enterprise level. Implementation of ERM requires significant resource commitment and a deep understanding of risk management tools at the C-suite level. A complete integration of ERM practices into a firm's strategic decision making also entails a multiyear process of learning, experimenting, assessing, and optimization. Consistent with this notion, Eckles et al. (2014) find that the benefits of ERM adoption grow stronger over time. Therefore, it is reasonable to argue that ERM maturity, namely consistent demonstration of excellence in ERM, may be more informative than a one-year snapshot of ERM performance. In line with this idea, Farrell and Gallagher (2015) use the RIMS ERM Maturity Model to assess a firm's ERM maturity on a five-point scale and find that firms scoring three and better have higher Tobin's *Q*. Additionally, McShane, Nair, and Rustambekov (2011) find that insurance firms show a positive relationship between S&P ERM ratings only as the rating increases above the first three levels. Therefore, we propose the following hypotheses. For brevity, we refer to firms that have consistently demonstrated excellence in ERM as ERM-mature firms and firms that have persistently poor ERM performance as ERM-underdeveloped firms.

H2.a (Technology-Superiority Hypothesis): ERM-mature firms are *more* likely to undertake merger transactions than ERM-underdeveloped firms.
H2.b (Risk-Awareness Hypothesis): ERM-mature firms are *less* likely to undertake merger transactions than ERM-underdeveloped firms.
H2.c (Technology-Superiority Hypothesis): ERM-mature firms complete *more* merger deals than ERM-underdeveloped firms.
H2.d (Risk-Awareness Hypothesis): ERM-mature firms complete *less* merger deals than ERM-underdeveloped firms.

Once a superior ERM firm completes a merger, we expect the firm to have better post-merger performance because its superior ERM technology should enable the firm to identify and prioritize mergers that yield greater risk-adjusted returns in the first place and once the merger is consummated, more effectively execute the combination of the two businesses. Therefore, we have the following hypotheses.

H3.a (Technology-Superiority Hypothesis): ERM quality is positively related to post-merger performance.
H3.b (Technology-Superiority Hypothesis): ERM-mature firms experience better post-merger performance than ERM-underdeveloped firms.

ERM adoption imposes a large demand for frequently scarce corporate resources. It is also a complex technology that requires a time-consuming learning process not only for the management but also for investors to fully understand its impact on firm value. Consistent with this notion, Eastman and Xu (2015) find that market reactions to ERM adoption is negative prior to 2005 but turned positive after 2005. Although our sample period starts in 2007, it is unclear whether investors will be able to fully understand the impact of ERM on post-merger performance given the complexity of merger transactions. Therefore, we propose the following hypotheses:

H4.a (Knowledged Investors Hypothesis): Market reacts more favorably to merger announcements made by superior ERM firms than weak ERM firms.
H4.b (Learning Investors Hypothesis): There is no difference in market reactions to merger announcements between superior ERM firms and weak ERM firms.
H4.c (Knowledged Investors Hypothesis): Market reacts more favorably to merger announcements made by ERM-mature firms than ERM-underdeveloped firms.
H4.d (Learning Investors Hypothesis): There is no difference in market reactions to merger announcements between ERM-mature firms and ERM-underdeveloped firms.

3. Proxies for ERM quality and sample construction

3.1. Standard & Poor's ERM Ratings

To investigate our research question, we use S&P ERM ratings to build our proxies for the quality of a firm's ERM program because S&P is a leading ratings agency in assessing various performance of a firm including risk management, corporate governance, credit risk, social

performance, etc. We focus on the insurance industry because S&P provides ERM assessment for all of its rated U.S. insurance companies for a relatively long time series. More importantly, S&P places more of a focus on ERM for insurers than for corporates or other financial institutions. Specifically, for insurance firms, S&P provides separate ERM ratings and credit ratings. For corporates, ERM assessment is simply an extension of the management assessments and is not separately evaluated. For banks, ERM ratings have not been updated since 2007 (Lundqvist and Vilhelmsson, 2016).

S&P began evaluating an insurer's ability to aggregate risks for analysis as a critical factor in assessing the credit rating of the insurer in 2005 and published the first ERM ratings for almost all of its rated insurance companies in 2006.[3] S&P has revised its rating criteria throughout the years. From 2007 to 2009, S&P ERM evaluation system provides five categories of composite ERM scores: "Excellent," "Strong," "Adequate with positive trend," "Adequate," and "Weak." In 2010, S&P ERM evaluations resulted in four categories of composite ERM scores: "Excellent," "Strong," "Adequate," and "Weak." From 2010 to 2012, S&P ERM evaluations expanded to six categories of composite ERM scores: "Excellent," "Strong," "Adequate with strong risk control trend," "Adequate with positive trend," "Adequate," and "Weak." From 2013 and 2016, S&P reverts back to a five-category ERM-score system, replacing "Excellent" with "Very strong" and eliminating "Adequate with positive trend." The five ERM categories from 2013 to 2016 are "Very strong," "Strong," "Adequate with strong risk control," "Adequate," and "Weak." Appendix I provides more detailed descriptions for the ERM scores.

For consistent analysis throughout the sample period, we use five ERM scores: 1) "Very strong;" 2) "Strong;" 3) "Adequate Plus;" 4) "Adequate;" and 5) "Weak," which correspond to the

[3] We are in the process to obtain the 2006 S&P ERM ratings data.

S&P ERM scores over the years—1) "Very strong" or "Excellent;" 2) "Strong;" 3) "Adequate with strong risk control" or "Adequate with positive trend;" 4) "Adequate;" and 5) "Weak."

3.2. Empirical proxies for the quality of an insurance company's ERM program

We use two proxies to measure the quality of an insurance company's ERM program. The first is *ERM score*, which is a numeric variable on a scale of one to five ranging from one being "Weak" to five being "Very strong." As discussed in Section 3.1, the five ERM scores are: 5 = "Very strong" or "Excellent," 4 = "Strong," 3 = "Adequate with strong risk control" or "Adequate with positive trend," 2 = "Adequate," and 1 = "Weak." *ERM score* provides a snapshot of a firm's ERM performance in a given year.

To assess the maturity of a firm's ERM program, we construct two indicator variables: *ERM mature* and *ERM underdeveloped. ERM mature* equals one if the firm has at least three years of S&P ERM ratings data and its ERM program is always rated "Very strong" or "Strong" throughout the sample period. *ERM underdeveloped* takes the value of one if the firm has at least three years of S&P ERM ratings data and its ERM is always rated "Weak" or "Adequate" throughout the sample period.[4]

3.3. Sample

To maximize the amount of information used in our analyses, we employ three samples: **The Initial Sample** for providing an overview of S&P ERM ratings and merger activities in the insurance industry from 2007 to 2016, **the Main Sample** for estimating the impact of ERM on merger likelihood, merger frequency, and post-merger performance, and **the Event Study Sample**

[4] Of the 94 firms in the Main Sample, 11 firms are classified as *ERM mature* and 55 as *ERM underdeveloped*.

for relating ERM to market reactions to merger announcements. Table 1 describes the sample construction process for each sample.

We manually collected CRSP/Compustat identifiers for each insurance company with S&P ERM ratings. The Initial Sample consists of 105 unique insurance companies or 759 firm-year observations. Figure 1 shows the distribution of S&P ERM ratings for the Initial Sample from 2007 to 2016. As Figure 1 shows, a smaller fraction of the sample firms are rated "Weak" toward the end of the sample period, consistent with the notion that firms gain proficiency in ERM technology over time.

To identify merger activities for the Initial Sample, we searched Thomson Reuters' Securities Data Company's (SDC) International Mergers and Acquisitions Database for deals that were announced and completed between 2007 and 2016 and acquirors were US insurance companies (Standard Industrial Classification System (SIC) codes between 6311 and 6399). Following the literature (see, e.g., Karolyi and Taboada, 2015), we exclude privatizations, leveraged buyouts, spin-offs, recapitalizations, exchange offers, repurchases, and self-tender offers. This selection criterion result in 284 merger deals. Table 1 reports the frequency distributions of firm-year observations, merger activities, target nations, and merger activities by different types of insurance companies for the Initial Sample during our sample period. As Panels A and B of Table 1 shows, from 2007-2016, our sample firms completed a total of 284 merger deals, of which 56 are cross-border deals spreading across 25 countries outside the United States. As Panel C of Table 1 shows, health insurers tend to pursue more M&As (88%), while life insurers tend to pursue more cross-border M&A (27%). For perspective, Boubakri, Dionne, and Triki (2008) study 177 transactions completed by U.S. property-liability (P&L) insurance firms from 1995 to 2000. They find that 17% of the deals are cross-border.

We obtain financial statement data from Compustat and stock return data from CRSP. After meeting the requisite data requirements, the Main Sample consists of 94 unique firms or 684 firm-year observations. As the prior literature find that CEO characteristics impact merger likelihood and performance, we also collect CEO characteristics data including age, tenure, ownership, and pay from EXECUCOMP. However, since the EXECUCOMP data are available for mainly firms in S&P1500 index, we do not use EXECUCOMP data availability to screen firms. Table 3 reports the summary statistics for the Main Sample.

4. Results

4.1. The impact of ERM on merger likelihood and frequency

To test H1.a, H1.b, H2.a, and H2.b, we estimate the following logistic model:

$$Pr(\text{Merger}_{it}=1) = \beta_0 + \beta_1 ERM_{it-1} + \gamma CONTROLS_{it-1} + d_k + d_t + \varepsilon_{it} \quad \ldots(1)$$

ERM denotes the two proxies used to measure the quality of an insurance company's ERM program: 1) *ERM score*, which is a numeric variable on a scale of one to five with one being "Weak" and five being "Very strong;" and 2) the two indicator variables of *ERM mature* and *ERM underdeveloped*, which gauge whether an insurance firm has consistently demonstrated excellence in ERM program. *CONTROLS* denotes the vector of control variables. d_k denotes four dummy variables for insurer types: $d_{k=1}$ if Life Insurance (SIC=6311), $d_{k=2}$ if Accident and Health Insurance (SIC=6321) or Hospital and Medical Service Plans (SIC=6324), and $d_{k=3}$ if P&C Insurance (SIC=6331). The base insurer type is Surety (SIC=6351) and Title Insurance (SIC=6361). Our sample does not have any insurance carriers (SIC=6399). d_t denotes year fixed effects. ε_{it} is the error term. To more accurately assess the research question of the impact of ERM program quality

on merger likelihood, we use predetermined ERM ratings. As a result, the number of observations decreases from 684 to 607.

We estimate two model specifications for the two ERM proxies—one only controlling for firm characteristics and the other also controlling for CEO characteristics. We lose more than 20% observations when using the second specification. Table 4 reports the results. As Columns (1) and (2) show, firms with higher ERM ratings are less likely to complete a merger. Columns (3) and (4) further indicate that this negative relation is primarily driven by firms that have consistently demonstrated excellence in ERM. The result is consistent with the notion that firms with high quality ERM programs tend to be large firms and large firms have poorer merger performance. Specifically, Moeller et al. (2004) find that large acquirers have lower announcement returns surrounding the merger announcements. (Similar to this study, Moeller et al. only consider completed mergers.) The result is also consistent with Farrell and Gallagher (2015), who find that internationally diversified firms have lower ERM maturity scores. Consistent with the literature (see, e.g., Maksimovic, Phillips, and Yang, 2013), we find that firm size is significantly and positively related to merger probability. None of the proxies for CEO characteristics enters the regressions with any statistical significance. Additionally, their inclusion does not impact the estimation of our main variable of interest—ERM ratings.

To test H1.c, H1.d, H2.c, and H2.d, we relate ERM ratings to the number of completed mergers in a given year using ordered logistic model. Table 5 reports similar results as Table 4. Namely, consistent with the risk-awareness hypothesis, firms with higher ERM ratings complete fewer deals in a given year and this negative relation is driven by firms that have consistently demonstrated excellence in ERM.

We also re-run Tables 4 and 5 regressions relating ERM ratings to the likelihood and frequency of cross-border M&A deals. None of our ERM proxies is significant in columns (1) and (3) regressions. However, As Appendix III shows, after incorporating the effects of CEO characteristics, we find some evidence that firms with higher ERM ratings are also less likely to pursue a cross-border merger deal and that firms with persistently weak ERM programs appear to be more prone to pursue cross-border mergers. In addition, the likelihood and frequency of cross-border M&A deals are positively related to CEO tenure with marginal significance and are significantly and positively related to CEO pay. Although CEO ownership is negatively associated with the likelihood of cross-border M&A deals with ten-percent significance, it is not significantly linked to the frequency of cross-border M&A deals. Since cross-border M&As are risker than domestic M&As, the evidence from the CEO characteristics is consistent with the notion that more experienced CEO (as proxied by CEO tenure), higher ability CEO (as proxied by CEO pay), and more diversified CEO (i.e., we interpret low CEO ownership as less personal wealth tied with firm performance) are more likely to seek risker business transactions.

4.2. ERM and post-merger firm performance

To test H3.a and H3.b., we estimate the following panel model to investigate the relation between ERM ratings and buy-and-hold stock returns post-merger:

$$BHR = \beta_0 + \beta_1 ERM\_score_{it} * Merger_{it} + \beta_2 ERM\_score_{it} + \beta_3 Merger_{it} + \gamma CONTROLS_{it} + d_i + d_t + \varepsilon_{it} \quad \ldots(2.1)$$

$$BHR = \beta_0 + \beta_1 ERM\_mature_{it} * Merger_{it} + \beta_2 ERM\_underdeveloped_{it} * Merger_{it} + \beta_3 Merger_{it} + \gamma CONTROLS_{it} + d_i + d_t + \varepsilon_{it} \quad \ldots(2.2)$$

BHR denotes the buy-and-hold stock returns one year (***BHR1YR***) and two years (***BHR2YR***) after the merger. ***ERM_score*** measures a firm's ERM performance in a given year. ***ERM_mature*** and ***ERM underdeveloped*** measure a firm's long-term ERM performance. Since ***ERM mature*** and ***ERM***

underdeveloped are indicator variables, they are absorbed by firm fixed effects. *Merger* denotes either the indicator variable that equals one if a firm completes a merger or a cross-border merger in a given year ($Merger_{1/0}$, $CB_{1/0}$) or the number of mergers (*Merger_N*) or cross-border mergers (*CB_N*) that a firm completes in a given year. *CONTROLS* denotes the vector of control variables. d_i and d_t denote firm and year fixed effects, respectively. ε_{it} is the error term.

Panel A of Table 6 reports the results when we use the proxy of *ERM score*. The negative coefficient of $Merger_{1/0}$ and the significantly negative coefficient of *Merger_N* are consistent with the consensus that mergers are risky transactions. *ERM score * Merger* $_{1/0}$ is positively related to *BHR1YR* and significantly and positively related to *BHR2YR* suggesting that although mergers are risky transactions, firms with higher ERM scores appear to have better post-merger stock performance. Panel B of Table 6 provides corroborating evidence when we use the alternative proxies of ERM quality—*ERM mature* and *ERM underdeveloped*. Specifically, firms that have consistently demonstrated excellence in ERM perform better post-merger than firms that consistently implemented poor quality ERM programs.

We prefer market-based firm performance to accounting measures because merger synergies arising from initiatives such as combining back offices and distribution channels can take years to bear fruit. However, to provide additional evidence, we use an alternative measure of firm performance—Tobin's *Q*—as defined in Hoyt and Liebenberg (2011) given that Tobin's *Q* is a popular measure of firm value or performance in the ERM literature. As Table 7 shows, we find qualitatively similar results.

To summarize, the results are consistent with the technology-superiority hypothesis. Although firms with high ERM ratings are less likely to engage in a merger deal, when they do, they exhibit better post-merger performance.

4.3. ERM and merger announcement returns

To test H4 hypotheses, we estimate the following ordinary least squares (OLS) model to investigate the relation between S&P ERM ratings and the market reaction to merger announcements of the acquirers.

$$CAR = \beta_0 + \beta_1 ERM_{it} * Complex\ deals_{it} + \beta_2 ERM_{it} + \beta_3 Complex\ deals_{it} + \gamma FCONTROLS_{it-1} + \lambda DCONTROLS_{it} + d_i + d_t + \varepsilon_{it} \quad \ldots(3)$$

CAR denotes the cumulative abnormal return (CAR) over the five-day event window (-2, +2).[5] We use the standard event study method (Brown and Warner, 1985) to compute CAR. Abnormal returns over the event window are computed using the market model with the CRSP value-weighted index returns as the market index. The parameters for the market model are estimated over the (-205, -6) interval. ERM denotes either ***ERM score*** or the two proxies for ERM maturity—***ERM mature*** and ***ERM underdeveloped***. $Complex\ deal$ is an indicator variable that equals one if the deal is a cross-border transaction or if the deal is a domestic deal, the relative deal size exceeds the 75th percentile of all domestic deals in our sample. *FCONTROLS* and *DCONTROLS* denote firm and deal characteristics, respectively, that prior work finds to impact CAR. d_i and d_t denote firm and year fixed effects, respectively. ε_{it} is the error term.

As illustrated in Table 1, the Event-Study Sample consists of 42 firms or 130 merger announcements with the requisite data for the CAR regression analyses. Panels A and B of Table 8 reports summary statistics and correlation matrix for the Event-Study Sample, respectively. Panel B shows that firms with higher quality ERM programs tend to complete more cross-border M&A deals but smaller deals as proxied by relative deal size. As Panel C shows, the stock market reacts more favorably to merger announcements by bidders with consistently high-quality ERM programs if the merger is a complex transaction.

[5] Our results remain qualitatively similar if we use CAR [-1, +1].

5. Conclusion

Enterprise risk management (ERM) is a relatively new risk management technology that has attracted heightened attention since the 2008 Global Financial Crisis because risk management experts argue that the crisis resulted from a system-wide failure to embrace ERM. In recent years a growing number of nonfinancial firms have also started to adopt ERM as the ERM technology has seasoned and its value impact has become better understood. In this paper, we conduct the first exploratory study of the impact of ERM on merger outcomes. Merger is an ideal setting to investigate the channels through which ERM impacts firm value because a merger combines the risk portfolios of two firms, has a high failure rate, and can destroy substantial firm value.

Consistent with the risk-awareness hypothesis, we find that the quality of a firm's ERM program is negatively associated with the likelihood and frequency of its M&A activities. Further, this negative relation is driven by firms that have consistently demonstrated excellence in ERM programs. Given that a merger is completed, we find that firms with higher quality ERM programs have higher buy-and-hold stock returns, which is consistent with the technology-superiority hypothesis that firms with high quality ERM programs are more capable of managing risks of, and more effectively executing, the combination of potentially very different businesses. We also find that the stock market reacts more favorably to merger announcements by bidders with high quality ERM programs if the merger is a large or a cross-border deal.

Appendix I: Definitions of ERM ratings

The definitions come from "North American And Bermudan Insurers Continue To Step Up Their Enterprise Risk Management Efforts" (S&P RatingsDirect, May 3, 2011) and "Focus On ORSA Leaves ERM Scores For North American And Bermudian Insurers Virtually Unchanged" (S&P Ratings Services, May 19, 2014).

Standardized ERM scores used in this study	**ERM scores used by S&P from 2007 to 2013**	**ERM score definition per S&P**
Very strong	"Excellent" prior to 2013 and was replaced by "Very strong" starting 2013	Positive score for all subfactors and economic capital model is assessed either good or superior under S&P criteria.
Strong	Strong	The risk-management culture, risk controls, and strategic risk management subfactors are scored positive, one or both of the other two subfactors is scored neutral, and no subfactor is scored negative.
Adequate Plus	Adequate with positive trend for the period of 2007-2008	A company with an ERM score of "Adequate with positive trend" has all of the characteristics of a company with an "Adequate with strong risk controls score," plus a strong or better score for risk management culture, the near-term potential for a strong or better score for strategic risk management, and the possibility of attaining an overall ERM assessment of "Strong" within 24 months.
	Adequate with strong risk controls for the period of 2010-2016	A company with an ERM score of "Adequate with strong risk controls" has all of the characteristics of a company with an "Adequate" ERM score plus strong controls over all of its material risks.
Adequate	Adequate	A company with an ERM score of "Adequate" has complete and reliable control processes in place for its major risks. This company typically won't experience outsized losses in an economy that is benign.
Weak	Weak	One or both of the risk controls and risk-management culture subfactors are scored negative

Appendix II: Variable definitions and data sources

This table provides definition for all variables used in this analysis in alphabetical order.

Variables	Definitions	Data Source
All-cash deal	An indicator variable that equals one if the merger is paid 100% in cash and zero otherwise	SDC
BHR1YR	One-year buy-and-hold stock returns post the merger	CSRP
BHR2YR	Two-year buy-and-hold stock returns post the merger	CSRP
CAR(-2,+2)	Acquirer's five-day cumulative abnormal return (CAR) calculated using the market model. The parameters for the market model are estimated over the (-205, -6) interval with the CRSP value-weighted return as the market index.	
$CB_{1/0}$	An indicator variable that takes the value of one if a firm completed a cross-border merger in a given year and zero otherwise	SDC
CB_N	Number of cross-border merger deals that an insurance company completed in a given year	SDC
CEO age	Number of years since the Chief Executive Officer (CEO) was born	Execucomp
CEO_OwnPct	Percent of equityholdings of the CEO	Execucomp
CEO tenure	Number of years that a CEO has been in office	Execucomp
CEO total pay	Sum of salary, bonus, other annual pay, restricted stock grants, long-term-incentive-plan (LTIP) payouts, all other payouts, and the value of option grants (Execucomp variable TDC1)	Execucomp
Complex deal	An indicator variable that equals one if the deal is a cross-border transaction or if the deal is a domestic deal, the relative deal size exceeds the 75th percentile of all domestic deals in our sample	SDC
ERM mature$_{1/0}$	An indicator variable that equals one if a firm has at least three years of data and its ERM is always rated "Very strong" or "Strong" during the entire sample period of 2007-2016	S&P RatingsDirect
ERM score	A discrete variable on a scale of one to five based on S&P's ERM Ratings: 5 = "Very strong" or "Excellent," 4 = "Strong," 3 = "Adequate with strong risk control" or "Adequate with positive trend," 2 = "Adequate," and 1 = "Weak."	S&P RatingsDirect
ERM underdeveloped	An indicator variable that equals one if a firm has at least three years of data and its ERM is always rated "Weak" or "Adequate" during the entire sample period of 2007-2016	S&P RatingsDirect
Firm size	Natural logarithm of market value of common equity	Compustat
Large deal	An indicator variable that equals one if the deal is a domestic deal and the relative deal size exceeds the 75th percentile of all domestic deals in our sample, and zero otherwise	SDC
Leverage	Long-term debt over total book assets	Compustat
Merger$_{1/0}$	An indicator variable that takes the value of one if a firm completed a merger in a given year and zero otherwise	SDC
Merger_N	Number of mergers that an insurance company completed in a given year	SDC
Number of bidders	Number of bidders in a given deal	SDC
Minority stake acquisition	An indicator variable that equals one if the acquirer seeks to acquire less than 50% of the target and zero otherwise	SDC
Private target	An indicator variable that equals one if the target is a private company and zero otherwise	SDC
Relative deal size	Deal value over acquirer's market value of common equity	SDC
ROA	Earnings before interests and taxes (EBIT) over total assets	Compustat
Sales growth	Sales this year over sales last year minus one	Compustat
Sigma	Annualized standard deviation of daily stock returns, assuming 254 business days per year (Yermack 1995)	CSRP
Subsidiary target	An indicator variable that equals one if the target is a subsidiary and zero otherwise	SDC
Tobin's Q	(Book value of total assets + the market value of common equity - book value of common equity) / book value of total assets	Compustat

Appendix III: Impact of ERM scores and maturity on merger likelihood and frequency

Columns (1) and (2) report the results from estimating logistic model relating the likelihood of an insurance company completing a cross-border merger transaction in a given year ($CB_{1/0,t}$) to its ERM quality at the beginning of the year. Columns (3) and (4) report the results from estimating ordered logistic model relating the number of cross-border merger transactions (CB_N_t) that an insurance company completed in a given year to its ERM quality at the beginning of the year. Estimates for constant in Columns (1) and (2) and constant cuts1-3 in Columns (3) and (4) are not reported to conserve space. *p-values* are reported in parentheses below the coefficient estimates and are computed using robust standard errors with firm-level clustering. ***, ** and * denote significance less than 1%, 5%, and 10% levels, respectively. See Appendix II for variable definitions.

Dependent variable =	$CB_{1/0,t}$		CB_N_t	
	(1) LOGIT	(2) LOGIT	(3) OLOGIT	(4) OLOGIT
ERM score $_{t-1}$	-0.576*		-0.628**	
	(0.056)		(0.022)	
(A) ERM mature $_{1/0, t-1}$		-0.123		-0.626
		(0.793)		(0.188)
(B) ERM underdeveloped $_{1/0, t-1}$		1.346*		0.759
		(0.076)		(0.241)
Firm size $_{t-1}$	0.736*	0.662*	1.196***	1.174***
	(0.067)	(0.056)	(0.000)	(0.000)
ROA $_{t-1}$	-6.154	-6.725	-1.149	-0.890
	(0.479)	(0.418)	(0.907)	(0.927)
Sales growth $_{t-1}$	0.701	0.724	1.500**	1.490**
	(0.177)	(0.191)	(0.047)	(0.040)
Leverage $_{t-1}$	-3.021	-2.356	-4.956	-4.016
	(0.683)	(0.740)	(0.516)	(0.609)
Sigma $_{t-1}$	-2.567	-1.661	-2.757	-2.017
	(0.134)	(0.352)	(0.280)	(0.426)
Log (CEO age $_{t-1}$)	-2.349	-2.518	0.261	0.161
	(0.498)	(0.408)	(0.916)	(0.948)
Log (CEO tenure $_{t-1}$)	0.823*	0.773*	0.916*	0.860
	(0.077)	(0.090)	(0.096)	(0.115)
Log (CEO ownership $_{t-1}$)	-1.328*	-1.183*	-1.012	-0.874
	(0.060)	(0.099)	(0.108)	(0.169)
Log (CEO total pay $_{t-1}$)	1.804***	1.891***	1.681***	1.568**
	(0.006)	(0.008)	(0.007)	(0.013)
Life Insurance	-0.573	-0.153	-0.932	-0.564
	(0.584)	(0.875)	(0.362)	(0.616)
Health Insurance	-2.034	-2.007	-1.650	-1.449
	(0.107)	(0.108)	(0.179)	(0.271)
Property and Casualty Insurance	-1.286	-1.000	-1.695	-1.361
	(0.264)	(0.358)	(0.131)	(0.266)
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	475	475	475	475
Number of firms	64	64	64	64
Pseudo R2	0.305	0.308	0.311	0.306
Coeff. equality test of (A) =(B): Prob. > F		(0.136)		(0.149)

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Figure 1: Standard & Poor's (S&P) ERM Ratings Distribution
This figure depicts the distribution of S&P ERM ratings of 105 unique insurance companies or 759 firm-year observations from 2007 to 2016. See Appendix I for more detail about ERM ratings.

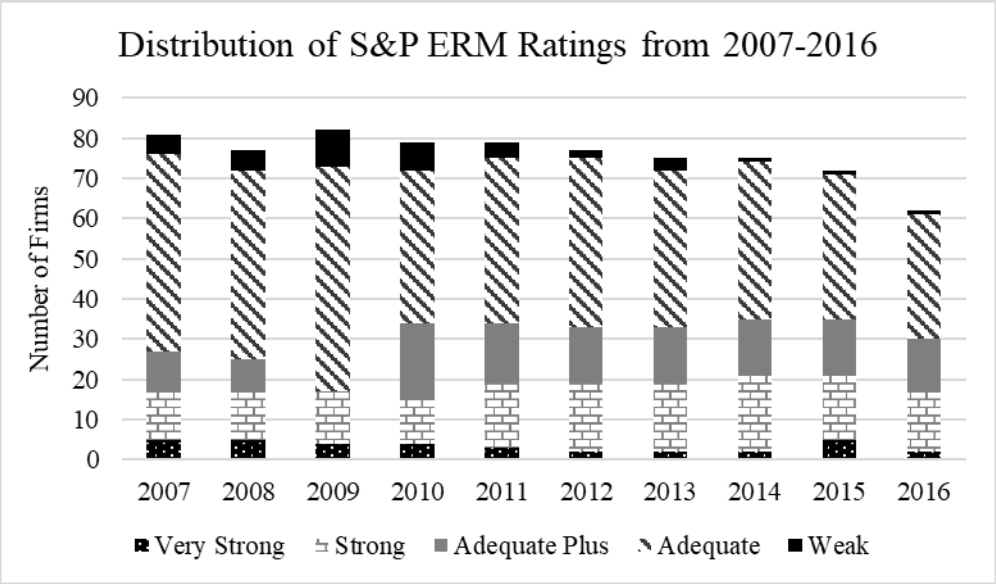

Table 1: Sample construction process

To maximize information used for analysis, this study uses three samples: **The Initial Sample** for producing Table 1, **the Main Sample** for estimating the impact of ERM on merger likelihood, merger frequency, and post-merger performance (Tables 2-7 and Appendix III), and **the Event Study Sample** for relating ERM to market reactions to merger announcements. This table describes the sample construction process for each sample.

Sample selection criteria	**Sample description**
Firms have S&P ERM ratings and can be matched to CRSP and Compustat	**Initial Sample:** 105 insurance companies, 759 firm-year observations, or 284 mergers
To identify merger activities for the **Initial Sample**, we searched Thomson Reuters' Securities Data Company's (SDC) International Mergers and Acquisitions Database using the following filters 1) Date announced: January 1, 2007 to December 31, 2016 2) Acquiror nation: US	109,772 mergers
3) Acquiror industry sector: Insurance	3,312 mergers
4) Deal status: Completed deals	2,882 mergers
5) Deal type: Exclude privatizations, leveraged buyouts, spin-offs, recapitalizations, exchange offers, repurchases, and self-tender offers	2,825 mergers
6) Have S&P ERM ratings and can be matched to CRSP and Compustat	284 mergers
Firm have requisite financial and stock price data: Total assets, EBIT, $Sales_t$, $Sales_{t-1}$, long-term debt, daily stock returns, and market and book value of common equity	**Main Sample:** 94 insurance companies or 684 firm-year observations
Firm have requisite information for deal characteristics: Transaction value, percent sought, method of payment, target identity, form of transaction, and number of bidders	132 mergers or 42 insurance companies
Exclude duplicate records with the same announcement date by the same bidder	**Event-Study Sample:** 130 mergers or 42 insurance companies

Table 2: Frequency distribution of M&A activities

This table reports frequency distribution of M&A transactions completed by 105 unique insurance companies that have S&P ERM ratings from 2007 to 2016. S&P ERM ratings data come from S&P Global Ratings. Merger transactions come from Thomson Reuters SDC International Mergers and Acquisitions Database.

Panel A: Frequency distribution of M&A activities by year

	N (#firm-year)	Num. of M&A	Num. of M&A over N	Num. of Cross-Border M&A	Num. of Cross-Border M&A over Num. of M&A
2007	81	36	44%	7	19%
2008	77	36	47%	1	3%
2009	82	13	16%	3	23%
2010	79	27	34%	7	26%
2011	79	34	43%	6	18%
2012	77	36	47%	8	22%
2013	75	34	45%	8	24%
2014	75	25	33%	8	32%
2015	72	18	25%	4	22%
2016	62	25	40%	4	16%
Total	**759**	**284**	**37%**	**56**	**20%**

Panel B: Frequency distribution of M&A activities by target nations

	Target Nation	Count	Percent
1	Belgium	2	0.70%
2	Bermuda	2	0.70%
3	Brazil	8	2.82%
4	Canada	3	1.06%
5	Czech Republic	2	0.70%
6	Czechia	1	0.35%
7	Ecuador	1	0.35%
8	Germany	1	0.35%
9	Hungary	1	0.35%
10	India	3	1.06%
11	Israel	1	0.35%
12	Italy	1	0.35%
13	Japan	2	0.70%
14	Malaysia	4	1.41%
15	Mexico	2	0.70%
16	Netherlands	1	0.35%
17	Paraguay	1	0.35%
18	Peru	2	0.70%
19	Philippines	1	0.35%
20	Romania	1	0.35%
21	Slovakia	1	0.35%
22	Spain	1	0.35%
23	Thailand	2	0.70%
24	United Kingdom	12	4.23%
25	United States	228	80.28%
	Total	**284**	**100%**

Panel C: Frequency distribution of M&A activities by different types of insurance companies

	N	Num. of M&A	Num. of M&A over N	Num. of Cross-Border M&A	Num. of Cross-Border M&A over Num. of M&A
Life Insurance (SIC=6311)	201	60	30%	16	27%
Health Insurance (SIC=6321, 6324)	113	99	88%	14	14%
Property and Casualty Insurance (SIC=6331)	393	102	26%	23	23%
Other Insurance (SIC=6351, 6361)	52	23	44%	3	13%
Total	**759**	**284**	**37%**	**56**	**20%**

Table 3: Summary statistics

This table reports summary statistics for 94 unique insurance companies (or 684 firm-year observations) that have ERM ratings from 2007 to 2016. All continuous variables except for *Firm size*, *ERM score*, and CEO characteristic variables are winsorized at 1% level on both tails. To address the concern of positive outliers, we normalize *Firm size* and CEO characteristic variables by taking logarithm. CEO characteristic variables are reported in raw numbers for better intuition. See Appendix II for variable definitions.

	N	Mean	Median	Std. Dev.	Min	Max
ERM score	684	2.626	2.000	0.999	1.000	5.000
ERM mature $_{1/0}$	684	0.132	0.000	0.338	0.000	1.000
ERM underdeveloped $_{1/0}$	684	0.491	0.000	0.500	0.000	1.000
Merger $_{1/0}$	684	0.249	0.000	0.432	0.000	1.000
Merger_N	684	0.415	0.000	0.910	0.000	6.000
CB $_{1/0}$	684	0.044	0.000	0.205	0.000	1.000
CB_N	684	0.082	0.000	0.345	0.000	3.000
Firm size	684	8.282	8.191	1.318	3.107	11.934
ROA	684	0.033	0.029	0.042	-0.175	0.142
Sales growth	684	0.051	0.033	0.229	-0.512	1.366
Leverage	684	0.064	0.053	0.047	0.000	0.235
Sigma	684	0.360	0.272	0.268	0.127	1.654
Tobin's *Q*	684	0.040	0.007	0.130	-0.333	0.657
BHR1YR	684	0.147	0.138	0.346	-0.800	1.619
BHR2YR	659	0.326	0.295	0.479	-0.736	2.097
CEO age	535	57.422	58.000	6.663	39.000	88.000
CEO tenure	534	7.416	6.000	7.426	0.000	48.000
CEO_OwnPct (%)	535	1.308	0.250	4.246	0.000	43.576
CEO total pay (in thousands $)	535	7882.012	6229.001	5977.144	204.058	45549.490

Table 4: Impact of ERM scores and maturity on merger likelihood

This table reports the results from estimating the logistic model that relates the likelihood of an insurance company completing a merger transaction in a given year (*Merger* $_{1/0, t}$) to its ERM quality at the beginning of the year (*ERM score* $_{t-1}$). We use two proxies to measure the quality of an insurance company's ERM program: 1) a five-scale S&P ERM score (*ERM score*) with five being the highest quality and 2) two indicator variables that gauge ERM maturity—*ERM mature* and *ERM underdeveloped*. The base group for *ERM mature* and *ERM underdeveloped* consists of firms whose ERM programs are rated as Adequate or firms whose ERM programs have inconsistent ratings (e.g., moving from a rating of Strong in one year to a rating of Adequate the next year). *p-values* are reported in parentheses below the coefficient estimates and are computed using robust standard errors with firm-level clustering. ***, ** and * denote significance less than 1%, 5%, and 10% levels, respectively. See Appendix II for variable definitions.

	Dependent variable = Merger $_{1/0, t}$			
	(1)	(2)	(3)	(4)
ERM score $_{t-1}$	-0.436***	-0.378**		
	(0.005)	(0.022)		
(A) ERM mature $_{1/0, t-1}$			-1.353***	-0.988**
			(0.005)	(0.028)
(B) ERM underdeveloped $_{1/0, t-1}$			-0.132	0.128
			(0.720)	(0.758)
Firm size $_{t-1}$	0.940***	0.843***	0.909***	0.855***
	(0.000)	(0.000)	(0.000)	(0.000)
ROA $_{t-1}$	7.207	6.488	7.635	6.874
	(0.192)	(0.238)	(0.180)	(0.233)
Sales growth $_{t-1}$	0.397	0.730*	0.383	0.733*
	(0.209)	(0.094)	(0.239)	(0.090)
Leverage $_{t-1}$	-1.018	-1.853	0.060	-1.342
	(0.840)	(0.705)	(0.991)	(0.787)
Sigma $_{t-1}$	-0.407	-0.667	-0.044	-0.393
	(0.682)	(0.480)	(0.961)	(0.660)
Log (CEO age $_{t-1}$)		-0.680		-0.549
		(0.646)		(0.711)
Log (CEO tenure $_{t-1}$)		-0.079		-0.061
		(0.710)		(0.778)
Log (CEO ownership $_{t-1}$)		0.345		0.292
		(0.358)		(0.459)
Log (CEO total pay $_{t-1}$)		0.084		0.043
		(0.726)		(0.869)
Life Insurance	-1.185**	-0.917	-1.129*	-0.848
	(0.026)	(0.104)	(0.099)	(0.211)
Health Insurance	-0.929	-0.874	-0.890	-0.858
	(0.104)	(0.148)	(0.179)	(0.188)
Property and Casualty Insurance	-1.337***	-1.510***	-1.348**	-1.422**
	(0.004)	(0.003)	(0.034)	(0.025)
Constant	-7.035***	-4.106	-7.855***	-5.478
	(0.000)	(0.494)	(0.000)	(0.369)
Year FE	YES	YES	YES	YES
Observations	607	475	607	475
Number of firms	89	64	89	64
Pseudo R2	0.191	0.176	0.199	0.178
Coeff. equality test of (A) =(B): Prob. > F			(0.019**)	(0.062*)

Table 5: Impact of ERM scores and maturity on merger frequency

This table reports the results from estimating the ordered logistic model that relates the number of merger transactions (*Merger_N* $_t$) that an insurance company completed in a given year to its ERM quality at the beginning of the year (*ERM score* $_{t-1}$). We use two proxies to measure the quality of an insurance company's ERM program: 1) a five-scale S&P ERM score (*ERM score*) with five being the highest quality and 2) two indicator variables that gauge ERM maturity—*ERM mature* and *ERM underdeveloped*. The base group for *ERM mature* and *ERM underdeveloped* consists of firms whose ERM programs are rated as Adequate or firms whose ERM programs have inconsistent ratings (e.g., moving from a rating of Strong in one year to a rating of Adequate the next year). Estimates for constant cuts1-6 are not reported to conserve space. *p-values* are reported in parentheses below the coefficient estimates and are computed using robust standard errors with firm-level clustering. ***, ** and * denote significance less than 1%, 5%, and 10% levels, respectively. See Appendix II for variable definitions.

	Dependent variable = Merger_N $_t$			
	(1)	(2)	(3)	(4)
ERM score $_{t-1}$	-0.384**	-0.276*		
	(0.014)	(0.084)		
(A) ERM mature $_{1/0, t-1}$			-1.372***	-0.902**
			(0.003)	(0.037)
(B) ERM underdeveloped $_{1/0, t-1}$			-0.107	-0.032
			(0.646)	(0.902)
CB $_{1/0, t}$	2.225***	2.407***	2.398***	2.530***
	(0.000)	(0.000)	(0.000)	(0.000)
Firm size $_{t-1}$	0.782***	0.773***	0.743***	0.765***
	(0.000)	(0.000)	(0.000)	(0.000)
ROA $_{t-1}$	10.013	9.649	10.487	10.111
	(0.105)	(0.145)	(0.107)	(0.142)
Sales growth $_{t-1}$	0.366	0.695	0.298	0.678
	(0.319)	(0.194)	(0.440)	(0.206)
Leverage $_{t-1}$	-2.170	-2.462	-1.368	-2.095
	(0.647)	(0.610)	(0.774)	(0.667)
Sigma $_{t-1}$	0.099	-0.183	0.416	0.015
	(0.913)	(0.847)	(0.618)	(0.986)
Log (CEO age $_{t-1}$)		0.016		0.098
		(0.989)		(0.931)
Log (CEO tenure $_{t-1}$)		-0.150		-0.144
		(0.485)		(0.516)
Log (CEO ownership $_{t-1}$)		0.436		0.381
		(0.276)		(0.344)
Log (CEO total pay $_{t-1}$)		-0.172		-0.245
		(0.450)		(0.315)
Life Insurance	-1.017**	-0.935**	-0.971*	-0.919
	(0.021)	(0.049)	(0.086)	(0.113)
Health Insurance	-0.730	-0.659	-0.686	-0.602
	(0.140)	(0.214)	(0.232)	(0.289)
Property and Casualty Insurance	-1.293***	-1.594***	-1.305**	-1.567***
	(0.002)	(0.000)	(0.014)	(0.004)
Year FE	YES	YES	YES	YES
Observations	607	475	607	475
Number of firms	89	64	89	64
Pseudo R2	0.167	0.166	0.175	0.170
Coeff. equality test of (A) = (B): Prob. > F			(0.011***)	(0.113)

Table 6: ERM and post-merger buy-and-hold returns

This table reports panel estimation results from regressing post-merger buy-and-hold returns on the quality of ERM programs in the merger year. We use two proxies to measure the quality of an insurance company's ERM program: 1) a five-scale S&P ERM score (*ERM score*) with five being the highest quality and 2) two indicator variables that gauge ERM maturity—*ERM mature* and *ERM underdeveloped*. The base group for *ERM mature* and *ERM underdeveloped* consists of firms whose ERM programs are rated as Adequate or firms whose ERM programs have inconsistent ratings (e.g., moving from a rating of Strong in one year to a rating of Adequate the next year). *p-values* are reported in parentheses below the coefficient estimates and are computed using robust standard errors with firm-level clustering. ***, ** and * denote significance less than 1%, 5%, and 10% levels, respectively. See Appendix II for variable definitions.

Panel A: ERM score

	BHR1YR $_{t0, t+1}$				BHR2YR $_{t0, t+2}$			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ERM score $_t$ * Merger $_{1/0, t}$	0.043	0.041			0.085**	0.072*		
	(0.125)	(0.146)			(0.037)	(0.062)		
Merger $_{1/0, t}$	-0.101	-0.071			-0.296***	-0.232**		
	(0.181)	(0.357)			(0.005)	(0.018)		
CB $_{1/0, t}$	0.062	0.048			0.071*	0.053		
	(0.125)	(0.228)			(0.072)	(0.174)		
ERM score $_t$ * Merger_N $_t$			0.039**	0.045***			0.042*	0.050**
			(0.022)	(0.009)			(0.097)	(0.031)
Merger_N $_t$			-0.110***	-0.110***			-0.142**	-0.140***
			(0.007)	(0.008)			(0.010)	(0.006)
CB_N $_t$			0.014	-0.008			0.024	-0.011
			(0.677)	(0.817)			(0.600)	(0.784)
ERM score $_t$	0.050*	0.059	0.046	0.051	0.057	0.085	0.061	0.080
	(0.100)	(0.181)	(0.121)	(0.222)	(0.251)	(0.217)	(0.210)	(0.221)
Firm size $_t$	-0.468***	-0.478***	-0.467***	-0.477***	-0.630***	-0.708***	-0.629***	-0.708***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROA $_t$	1.610**	1.255**	1.646**	1.289**	1.209**	0.588	1.224**	0.586
	(0.013)	(0.031)	(0.013)	(0.032)	(0.028)	(0.281)	(0.026)	(0.286)
Sales growth $_t$	0.062	0.148*	0.067	0.153**	0.034	0.067	0.025	0.061
	(0.384)	(0.051)	(0.348)	(0.048)	(0.682)	(0.445)	(0.764)	(0.477)
Leverage $_t$	1.451***	1.686***	1.438***	1.666***	2.488***	3.022***	2.493***	3.041***
	(0.006)	(0.007)	(0.007)	(0.008)	(0.002)	(0.000)	(0.002)	(0.000)
Sigma $_t$	0.326**	0.391**	0.323**	0.384**	0.020	0.141	0.016	0.132
	(0.021)	(0.020)	(0.020)	(0.018)	(0.919)	(0.553)	(0.933)	(0.568)
Log (CEO age $_t$)		-0.086		-0.088		0.032		0.036
		(0.756)		(0.752)		(0.924)		(0.914)
Log (CEO tenure $_t$)		-0.018		-0.014		-0.022		-0.019
		(0.486)		(0.595)		(0.525)		(0.598)
Log (CEO ownership $_t$)		-0.015		-0.024		-0.100		-0.099
		(0.775)		(0.662)		(0.243)		(0.244)
Log (CEO total pay $_t$)		0.044		0.042		0.148**		0.148**
		(0.265)		(0.286)		(0.022)		(0.023)
Constant	4.742***	4.010***	4.721***	4.005***	4.742***	4.010***	4.721***	4.005***
	(0.000)	(0.007)	(0.000)	(0.009)	(0.000)	(0.007)	(0.000)	(0.009)
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	684	534	684	534	659	518	659	518
Number of firms	94	68	94	68	92	66	92	66
Overall R2	0.101	0.137	0.100	0.135	0.0949	0.141	0.0954	0.142

Panel B: ERM maturity

	BHR1YR $_{t+1}$				BHR2YR $_{t+1, t+2}$			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(A) ERM mature $_{1/0, t}$* Merger $_{1/0, t}$	-0.036	-0.073			0.019	-0.021		
	(0.467)	(0.146)			(0.772)	(0.772)		
(B) ERM underdeveloped $_{1/0, t}$* Merger $_{1/0, t}$	-0.081	-0.110*			-0.150	-0.172*		
	(0.171)	(0.065)			(0.114)	(0.087)		
Merger $_{1/0, t}$	0.054	0.102**			-0.006	0.048		
	(0.235)	(0.026)			(0.937)	(0.543)		
CB $_{1/0, t}$	0.078**	0.061			0.086**	0.059		
	(0.038)	(0.111)			(0.013)	(0.103)		
(A) ERM mature $_{t}$ * Merger_N $_{t}$			0.021	0.008			0.033*	0.016
			(0.308)	(0.740)			(0.073)	(0.442)
(B) ERM underdeveloped $_{t}$ * Merger_N $_{t}$			-0.036	-0.050*			-0.033	-0.055
			(0.144)	(0.073)			(0.325)	(0.129)
Merger_N $_{t}$			0.003	0.025			-0.024	0.009
			(0.873)	(0.301)			(0.424)	(0.776)
CB_N $_{t}$			0.030	0.014			0.039	0.011
			(0.340)	(0.680)			(0.230)	(0.747)
Firm size $_{t}$	-0.457***	-0.476***	-0.460***	-0.482***	-0.616***	-0.703***	-0.621***	-0.712***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROA $_{t}$	1.623**	1.289**	1.643**	1.295**	1.212**	0.630	1.221**	0.600
	(0.012)	(0.028)	(0.012)	(0.029)	(0.028)	(0.254)	(0.025)	(0.275)
Sales growth $_{t}$	0.049	0.134*	0.052	0.141*	0.020	0.049	0.009	0.045
	(0.487)	(0.082)	(0.461)	(0.070)	(0.815)	(0.581)	(0.916)	(0.598)
Leverage $_{t}$	1.334***	1.549***	1.322***	1.520***	2.297***	2.790***	2.339***	2.812***
	(0.007)	(0.007)	(0.008)	(0.009)	(0.003)	(0.000)	(0.003)	(0.000)
Sigma $_{t}$	0.318**	0.374**	0.317**	0.367**	0.010	0.114	0.004	0.102
	(0.023)	(0.022)	(0.023)	(0.024)	(0.961)	(0.624)	(0.983)	(0.656)
Log (CEO age $_{t}$)		-0.088		-0.074		0.043		0.066
		(0.752)		(0.797)		(0.902)		(0.847)
Log (CEO tenure $_{t}$)		-0.017		-0.012		-0.020		-0.015
		(0.544)		(0.676)		(0.597)		(0.683)
Log (CEO ownership $_{t}$)		-0.016		-0.028		-0.102		-0.106
		(0.756)		(0.590)		(0.220)		(0.195)
Log (CEO total pay $_{t}$)		0.047		0.048		0.151**		0.153**
		(0.222)		(0.226)		(0.022)		(0.022)
Constant	3.293***	3.442***	3.325***	3.443***	4.790***	4.141***	4.826***	4.100***
	(0.000)	(0.002)	(0.000)	(0.002)	(0.000)	(0.005)	(0.000)	(0.007)
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	684	534	684	534	659	518	659	518
Number of firms	94	68	94	68	92	66	92	66
Overall R2	0.0973	0.131	0.0949	0.126	0.0924	0.137	0.0913	0.134
Coeff. equality test of (A) = (B): Prob. > F	(0.345)	(0.181)	(0.051*)	(0.055*)	(0.027**)	(0.048**)	(0.013**)	(0.024**)

Table 7: ERM and post-merger Tobin's *Q*

This table reports panel estimation results from regressing post-merger Tobin's *Q* on the quality of ERM programs in the merger year. We use two proxies to measure the quality of an insurance company's ERM program: 1) a five-scale S&P ERM score (*ERM score*) with five being the highest quality and 2) two indicator variables that gauge ERM maturity—*ERM mature* and *ERM underdeveloped*. The base group for *ERM mature* and *ERM underdeveloped* consists of firms whose ERM programs are rated as Adequate or firms whose ERM programs have inconsistent ratings (e.g., moving from a rating of Strong in one year to a rating of Adequate the next year). *p-values* are reported in parentheses below the coefficient estimates and are computed using robust standard errors with firm-level clustering. ***, ** and * denote significance less than 1%, 5%, and 10% levels, respectively. See Appendix II for variable definitions.

	Dependent variable = Log(Tobin's Q_{t+1})							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ERM score $_t$ * Merger $_{1/0,\,t}$	0.007	0.011						
	(0.276)	(0.102)						
ERM score $_t$ * Merger_N $_t$			0.006	0.008*				
			(0.150)	(0.082)				
(A) ERM mature $_{1/0,\,t}$					-0.002	-0.006		
* Merger $_{1/0,\,t}$					(0.905)	(0.660)		
(B) ERM underdeveloped $_{1/0,\,t}$					-0.022*	-0.026*		
* Merger $_{1/0,\,t}$					(0.081)	(0.062)		
(A) ERM mature $_{1/0,\,t}$							-0.008	-0.012
* Merger_N $_t$							(0.227)	(0.104)
(B) ERM underdeveloped $_{1/0,\,t}$							-0.020**	-0.023**
* Merger_N $_t$							(0.026)	(0.013)
ERM score $_t$	-0.006	-0.012	-0.007	-0.013				
	(0.375)	(0.226)	(0.317)	(0.191)				
Merger $_{1/0,\,t}$	-0.020	-0.030			0.007	0.011		
	(0.231)	(0.105)			(0.389)	(0.254)		
CB $_{1/0,\,t}$	0.010	0.010			0.011	0.011		
	(0.376)	(0.435)			(0.387)	(0.367)		
Merger_N $_t$			-0.024*	-0.029*			0.002	0.005
			(0.086)	(0.053)			(0.651)	(0.334)
CB_N $_t$			0.011	0.010			0.011	0.011
			(0.201)	(0.280)			(0.177)	(0.164)
Firm size $_t$	0.046***	0.045**	0.046***	0.046**	0.046***	0.046**	0.046***	0.045**
	(0.004)	(0.016)	(0.004)	(0.016)	(0.005)	(0.014)	(0.004)	(0.013)
ROA $_t$	0.404***	0.396**	0.423***	0.417**	0.406***	0.396**	0.421***	0.414**
	(0.007)	(0.022)	(0.004)	(0.014)	(0.007)	(0.023)	(0.005)	(0.016)
Sales growth $_t$	-0.024**	-0.019	-0.024**	-0.021	-0.023**	-0.019	-0.024**	-0.020
	(0.037)	(0.238)	(0.036)	(0.206)	(0.038)	(0.239)	(0.035)	(0.217)
Leverage $_t$	0.866***	0.852***	0.861***	0.844***	0.863***	0.859***	0.855***	0.850***
	(0.000)	(0.002)	(0.000)	(0.001)	(0.000)	(0.002)	(0.000)	(0.001)
Sigma $_t$	0.155***	0.166***	0.154***	0.165***	0.157***	0.173***	0.156***	0.172***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Log (CEO age $_t$)		0.018		0.016		0.017		0.020
		(0.800)		(0.820)		(0.812)		(0.772)
Log (CEO tenure $_t$)		-0.003		-0.001		-0.003		-0.002
		(0.647)		(0.812)		(0.621)		(0.786)
Log (CEO ownership $_t$)		-0.023		-0.025		-0.021		-0.023
		(0.336)		(0.281)		(0.383)		(0.329)
Log (CEO total pay $_t$)		-0.003		-0.003		-0.003		-0.003
		(0.761)		(0.657)		(0.769)		(0.740)
Constant	-0.460***	-0.471	-0.458***	-0.454	-0.478***	-0.502*	-0.475***	-0.510*
	(0.002)	(0.113)	(0.002)	(0.125)	(0.001)	(0.097)	(0.001)	(0.088)
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	672	524	672	524	672	524	672	524
Number of firms	92	66	92	66	92	66	92	66
Overall R2	0.279	0.231	0.276	0.227	0.269	0.223	0.266	0.221
Coeff. equality test of (A) = (B): Prob. > F					(0.207)	(0.170)	(0.064*)	(0.030**)

Table 8: ERM and CAR

Panels A and B report summary statistics and correlation matrix, respectively, for 42 insurance companies that have the requisite data for the regression analyses of cumulative abnormal return (CAR) from 2007 to 2016. All continuous variables except for *Firm size*, *ERM score*, and *Number of bidders* are winsorized at 1% level on both tails. Panel C reports regression results from estimating the ordinary least squares (OLS) model that relates ERM ratings to market reactions to merger announcements by the acquirers (*CAR*). *p-values* are reported in parentheses below the coefficient estimates and are computed using robust standard errors with firm-level clustering. ***, ** and * denote significance less than 1%, 5%, and 10% levels, respectively. See Appendix II for variable definitions.

Panel A: Summary statistics

	N	Mean	Median	Std. Dev.	MIN	MAX
ERM score	130	2.662	2.000	0.953	1.000	5.000
ERM mature	130	0.123	0.000	0.330	0.000	1.000
ERM underdeveloped	130	0.469	0.000	0.501	0.000	1.000
CAR [-2, +2]	130	0.003	0.005	0.043	-0.152	0.119
CB dummy	130	0.208	0.000	0.407	0.000	1.000
Firm size	130	9.089	9.035	1.147	6.882	11.627
ROA	130	0.045	0.037	0.038	-0.024	0.185
Sales growth	130	0.131	0.045	0.521	-0.512	3.254
Leverage	130	0.074	0.054	0.054	0.002	0.229
Sigma	130	0.332	0.277	0.225	0.120	1.541
Relative deal size	130	0.088	0.025	0.186	0.000	1.000
All-cash deal	130	0.462	0.000	0.500	0.000	1.000
Private target	130	0.354	0.000	0.480	0.000	1.000
Subsidiary target	130	0.446	0.000	0.499	0.000	1.000
Minority stake acquisition	130	0.131	0.000	0.338	0.000	1.000
Number of bidders	130	1.023	1.000	0.196	1.000	3.000

Panel B: Correlation matrix (significance less than 5% is in bold)

		1	2	3	4	5	6	7	8	9	10	11
1	ERM score	1										
2	ERM mature	**0.6023**	1									
3	ERM underdeveloped	**-0.7203**	-0.3522	1								
4	CAR [-2, +2]	-0.1280	-0.0411	0.1393	1							
5	$CB_{1/0}$	**0.2825**	**0.4431**	**-0.2534**	-0.087	1						
6	Relative deal size	**-0.2084**	-0.0698	**0.1983**	-0.0614	-0.0773	1					
7	All-cash deal	0.0863	0.0759	0.1189	0.0959	-0.0176	-0.1156	1				
8	Private target	-0.0920	-0.1303	0.0779	0.0229	-0.0220	-0.1343	-0.0720	1			
9	Subsidiary target	0.0918	0.0877	-0.0377	0.0506	-0.0399	-0.0910	0.0072	-0.6642	1		
10	Minority stake acquisition	-0.0059	-0.0064	-0.0447	0.0085	0.1389	-0.0485	-0.1303	-0.0484	-0.1186	1	
11	Number of bidders	-0.0410	-0.0444	0.0469	**-0.1611**	0.0367	0.4202	-0.1097	-0.0877	-0.1064	-0.0460	1

Panel C: ERM ratings and CAR

	Dependent variable = CAR (-2, +2) $_t$			
	(1)	(2)	(3)	(4)
ERM score $_t$ * Complex deal $_{1/0, t}$	0.028*			
	(0.080)			
(A) ERM mature $_{1/0, t}$ * Complex deal $_{1/0, t}$		0.063**		
		(0.019)		
(B) ERM underdeveloped $_{1/0, t}$ * Complex deal $_{1/0, t}$		0.007		
		(0.814)		
ERM score $_t$ * Large deal $_{1/0, t}$			0.031	
			(0.284)	
ERM score $_t$ * CB $_{1/0, t}$			0.019	
			(0.239)	
(C) ERM mature $_{1/0, t}$ * Large deal $_{1/0, t}$				0.147***
				(0.000)
(D) ERM mature $_{1/0, t}$ * CB $_{1/0, t}$				0.031
				(0.322)
(E) ERM underdeveloped $_{1/0, t}$ * Large deal $_{1/0, t}$				0.056*
				(0.067)
(F) ERM underdeveloped $_{1/0, t}$ * CB $_{1/0, t}$				0.000
				(0.988)
ERM score $_t$	-0.027		-0.025	
	(0.135)		(0.171)	
ERM mature $_{1/0, t-1}$		-0.095		-0.104
		(0.188)		(0.148)
ERM underdeveloped $_{1/0, t-1}$		0.031		0.033
		(0.693)		(0.671)
Complex deal $_{1/0, t}$	-0.060	-0.006		
	(0.171)	(0.817)		
Large deal $_{1/0, t}$			-0.069	-0.024
			(0.348)	(0.399)
CB $_{1/0, t}$			-0.061	-0.014
			(0.200)	(0.620)
Firm size $_{t-1}$	0.005	0.009	0.008	0.014
	(0.894)	(0.789)	(0.841)	(0.679)
ROA $_{t-1}$	-0.670	-0.629	-0.663	-0.632
	(0.287)	(0.360)	(0.274)	(0.365)
Sales growth $_{t-1}$	0.003	-0.004	0.001	-0.006
	(0.823)	(0.710)	(0.921)	(0.565)
Leverage $_{t-1}$	-0.005	0.140	0.001	0.200
	(0.987)	(0.607)	(0.998)	(0.388)
Sigma $_{t-1}$	0.010	0.001	0.009	0.002
	(0.353)	(0.942)	(0.450)	(0.895)
All-cash deal $_t$	0.008	0.002	0.008	0.001
	(0.637)	(0.928)	(0.669)	(0.962)
Private target $_t$	0.017	0.013	0.013	0.013
	(0.316)	(0.395)	(0.471)	(0.379)
Subsidiary target $_t$	0.023	0.024	0.025	0.028
	(0.234)	(0.233)	(0.221)	(0.153)
Minority stake acquisition $_t$	-0.003	-0.016	-0.006	-0.013
	(0.925)	(0.648)	(0.874)	(0.657)
Number of bidders $_t$	0.005	0.009	0.008	0.014
	(0.894)	(0.789)	(0.841)	(0.679)
Constant	0.111	-0.010	0.079	-0.065
	(0.741)	(0.974)	(0.827)	(0.837)

Firm FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	130	130	130	130
R-squared	0.604	0.580	0.607	0.614
Coeff. equality test of (A) = (B): Prob. > F		(0.0155)**		
Coeff. equality test of (C) = (E): Prob. > F				(0.0017)***
Coeff. equality test of (D) = (F): Prob. > F				(0.0038)***