CENTER FOR TAX AND ACCOUNTING RESEARCH

Center for Risk Management

TAXATION, ACCOUNTING, AND FINANCE

TAF WORKING PAPER

No. 71 / June 2022

CDS investors' risk perceptions of M&A announcements

Hippert, Benjamin / Uhde, André

PADERBORN UNIVERSITY

www.taf-wps.cetar.org.

CDS investors' risk perceptions of M&A announcements

Benjamin Hippert* & André Uhde‡

Abstract: Merging a sample of 492 merger and acquisition (M&A) announcements from 284 acquiring firms across Europe and North America with data from 5-year single-name credit default swaps (CDSs) written on stock-listed acquiring firms between 2005 and 2018, the paper at hand empirically analyzes the CDS investors' risk perceptions of M&A announcements using event study methodologies. As a baseline result, we provide evidence for significantly positive cumulative average abnormal CDS spread changes for both, European and North American acquirers suggesting that CDS investors perceive an increase in the acquiring firms' credit risk exposures due to M&A announcements. Our baseline finding holds under several robustness checks, especially when controlling for the robustness of the empirical design. Moreover, results from a large variety of sensitivity analyses reveal a number of deal and firm characteristics that may explain why CDS investors from our sample expect an increase in the acquirers' credit risk exposures due to forthcoming M&A transactions.

Keywords: mergers and acquisitions; credit default swaps; risk perception; event study

JEL Classification: G14; G34

* Dr. Benjamin Hippert, Chair of Banking & Finance, Paderborn University, Warburger Strasse 100, 33098 Paderborn, Germany, benjamin.hippert@gmx.net

‡ Prof. Dr. André Uhde (corresponding author), Chair of Banking & Finance, Paderborn University, Warburger Strasse 100, 33098 Paderborn, Germany, andre.uhde@upb.de

1. Introduction

Academic research has identified three well-accepted incentives for firms to engage in mergers & acquisitions (M&As), i.e. (i) realizing efficiency gains from increased economies of scale and scope, (ii) gaining from cash flow diversification, which improves solvency in times of volatile markets, and (iii) having strategic advantages from an improved competitive position (e.g., Ismailescu and Col, 2022).

However, M&A transactions are not riskless. In particular, the level of riskiness depends on different deal as well as acquiring and target firm characteristics, which may explain why theoretical predictions and empirical evidence are still mixed. Hence, it is initially argued the acquiring firm's credit risk exposure may be reduced if the aforementioned gains from an M&A transaction are realized and if earnings streams of the merging firms are less than perfectly correlated, which is known as the coinsurance effect (Levy and Sarnat, 1970; Lewellen, 1971; Higgins and Schall, 1975; Kim and McConnell, 1977). However, as empirically shown, whether an acquirer benefits from gains and the coinsurance effect, may depend on characteristics of the M&A transaction, like the type and complexity of the transaction as well as the degree of risk-transfer from the target to the acquirer. In addition, it may also depend on individual fundamental characteristics of the merging firms, such as the firms' size, leverage ratios, market values and ratings (Shastri, 1990; Leland, 2007; Furfine and Rosen, 2011; da Silva et al., 2015).

Against this background, the study at hand initially analyzes, if investors in credit default swaps (CDSs), that are written on acquiring firms, perceive a change in the acquirer's credit risk exposure due to the announcement of an M&A transaction. Subsequently, individual M&A deal as well as firm characteristics are identified that may help explaining a change in the CDS investors' risk assessments. Taking the mixed theoretical predictions and evidence on the riskiness of M&A transactions into account, we expect both, positive abnormal CDS spread changes, if CDS investors perceive that the acquirer's credit risk exposure may rise as a results from an M&A transaction, and negative (or zero) spreads if the investors expect that the acquiring firm may benefit from the

coinsurance effect.

For the analysis at hand, we merge data on 5-year single-name CDSs written on stock-listed acquiring firms and a sample of 492 announcements of complete M&A transactions received from 284 acquirers across Europe and North America between 2005 and 2018. Employing event study methodologies, our analysis initially reveals that both, European and North American acquiring firms exhibit positive abnormal CDS spread changes of about 310 bps during a five-day event window due to the announcement of a complete M&A transaction. This finding suggests that investors in CDSs from our sample expect an increase in the acquirer's credit risk exposure immediately after the M&A announcement has made. In contrast, we do not find that CDS investors may anticipate the M&A announcement. Rather, we observe the highest positive abnormal CDS spread at the announcement day itself, and a fading of this effect during the next two trading days indicating semi-strong efficient European and North American CDS markets. This baseline finding holds under several robustness checks, especially when controlling for the robustness of individual parameters from the empirical design. Moreover, results from a large variety of sensitivity analyses, reveal a number of deal and firm characteristics that may explain why CDS investors expect an increase in the acquirers' credit risk exposures due to forthcoming M&A transactions.

Our contribution to the existing literature is twofold. *First*, the study at hand provides an alternative approach by investigating changes in CDS spreads instead of changes in bond returns (e.g., Billett et al., 2004; Bessembinder et al., 2008) to measure market participants' perceptions of the riskiness of M&A transactions. As compared to bonds, analyzing CDS spread changes is interesting in itself and has several advantages (e.g., Oehmke and Zawadowski, 2016). Given that the CDS market may be an alternative trading venue for debtholders, CDS spreads may be a more appropriate measure of an investor's perception of a firm's credit and default risk. This is primarily due to the fact that CDSs are more liquid than bonds and therefore, changes in CDS spreads may faster and more accurately reflect an investor's risk perception than bond spreads. In addition, as CDS contract maturities are standardized, changes in CDS spreads can more easily be compared across firms.

Similarly, instead of aggregating returns across several bonds with potentially different liquidity and trading intensities, only one CDS contract per firm is needed to analyze risk perceptions. And finally, in contrast to theoretically-derived default risk measures in the sense of Merton (1974), the CDS spread is a market-based measure of default risk, which can directly be observed and which, as it is traded by investors to hedge their debt or equity position, reflects a change in the investors' risk perceptions immediately (Greatrex, 2009; Longstaff et al., 2011).

Second, the analysis at hand extends the existing, but sparse, related literature on CDS investors' risk perceptions of M&A transactions. To the best of our knowledge, only two related studies exist. Hüttermann and Lleshaj (2020) investigate debtholder wealth effects through CDS spreads by employing a worldwide sample of 3,255 M&A transactions over the period from 2004 to 2010. Analyzing debtholders, who also act as CDS investors, the study reveals a negative impact of M&A announcements on the acquiring firms' debtholder wealth, which is measured by abnormal CDS spread changes. Ismailescu and Col (2022) focus on the risk perception of CDS investors during cross-border acquisition announcements from U.S. firms by analyzing abnormal CDS spread changes. Investigating 889 cross-border acquisitions over the period from 2001 to 2011, they find that CDS investors perceive an increase in the acquirers' risk exposures if target firms operate in an emerging market, whereas they observe a decrease if the target firm is located in a developed country.

We complement and extend these previous studies since our analysis is the first, that employs a comprehensive sample of M&A transactions from Europe (next to North America). Furthermore, the empirical analysis at hand is based a longer and more recent observation period and includes both, cross-border and domestic takeovers. Moreover, we control for the validity of our key findings in several indispensable checks of the empirical design. And finally, we extensively elaborate on a large variety of deal, acquirer and target firm characteristics that may explain the change of a CDS investor's risk perception due to M&A announcements.

The remainder of the paper is organized as follows. Section 2 presents the data and Section 3 introduces the empirical methodology. While Section 4.1 discusses empirical results from our

baseline analysis, results from robustness checks and sensitivity analyses are discussed in Sections 4.2 and 4.3, respectively. Finally, Section 5 summarizes and provides implications.

2. Data

Daily single name *CDS spread data* is retrieved from IHS Markit, the leading vendor of credit pricing data. We only consider CDS spreads with a five-year maturity since these are the most liquid contracts in the CDS market. Additionally, we focus on CDS written on senior unsecured debt to avoid any bias due to differences in seniority. CDS on North American entities follow the documentation clause modified restructuring (MR) and are denominated in USD, while the CDS on European entities follow the modified restructuring clause (MM) with a denomination in EUR (Andres et al., 2016; Augustin et al., 2016; Jansen and Fabozzi, 2017).

Data on M&A transactions is retrieved from Thomson Reuters' Security Data Corporation database (SDC). This database includes information about the acquiring and target firms as well as several deal characteristics. We initially collect data on all takeovers in Europe and North America between May 2005 and October 2018. Following Masulis et al. (2007) and Harford et al. (2012), we employ data on complete M&A transactions, i.e. the bidder owns less than 50% of the target before the acquisition and 100% after the deal (full transfer of control rights).[1] In addition, the transaction value must exceed $1 million, or 1% of the bidder's net assets, 11 days prior to the announcement date. Furthermore, to avoid a bias from confounding events, we consider only the first M&A announcement when we observe more than one announcement by the same acquirer within three months. Finally, if an event is announced on a weekend or holiday, we define the next Monday or the day after the holiday as the announcement day.

[1] Exceptionally employing complete M&A transactions, we are able to analyze cross-border and domestic takeovers simultaneously. This is due to the fact, that (as compared to a partial M&A) the target firm does not remain an entity under the jurisdiction of its head office's country and the acquirer is not additionally exposed to a country specific risk factor (Bris and Cabolis, 2008; Ismailescu and Col, 2022).

M&A transaction and CDS spread data are merged by retaining acquirers that exhibit CDS data at least 6 months prior and 1 month after the announcement date.[2] We exclude acquiring firms with missing CDS spreads or without trading activities on more than five consecutive trading days during the estimation window. In addition, acquirers with missing CDS spreads on the event day are excluded as well. This yields to a final sample of 492 M&A transactions from 284 different acquiring firms across Europe and North America between 2005 and 2018. Respective balance sheet and market data for the acquiring firms is retrieved from Thomson Reuters Datastream and EIKON.

As shown by Table 1 in the Empirical Appendix, the total number of M&A announcements in our sample peaks in 2006 and 2007, remains stable from 2008 to 2014 and decreases since 2015. Table 1 further reveals that nearly 65 percent of the acquirers in our sample are headquartered in North America. Likewise, Table 2 indicates that the majority of the acquirers operate in the United States, while France and the United Kingdom follow at a huge distance.

The distribution of the M&A announcements over 10 sectors, as defined by Markit, are mapped in Table 3 (by sectors and regions) and in Table 4 (by sectors and years). As shown, the industrials sector comprises the highest number of transaction announcements in both Europe and North America, whereas the energy sector (telecommunications services sector) exhibits the lowest number of announcements in Europe (North America).

Table 5 additionally reports the number of M&A announcements by target firms' home countries and acquiring firms' regions. As illustrated, 50 percent of all European M&A transactions are performed outside of Europe, whereas only about 20 percent of the targets of North American M&As are operating outside North America. This underrepresentation of US firms in cross-border M&As is well-established in the literature (e.g., Erel et al., 2012).

Furthermore, M&A announcements by the targets' sectors and the acquirers' regions are shown in Table 6, whereas Table 7 reports M&A deals by the targets' sectors and years. As shown, in

[2] As to be discussed in Section 3 (empirical methodology), we need 5 months of CDS data to build the estimation window, and 1 month of CDS data to implement the gap between the estimation and event window.

total, most M&A announcements are observed for target firms operating in the technology sector and healthcare sector, whereas the fewest announcements are observed for targets from the utility sector. This result is mainly driven by the North American market, which exhibits the highest number of M&A announcements in the technology sector and the fewest in the utility sector. In this context, the European market draws a different picture since most M&A announcements are observed in the industrial sector and the fewest are performed in the energy sector.

Table 9 presents deal, acquiring firm and target firm characteristics for the 492 M&A announcements from our sample, while the respective variables are described in Table 8. Referring to the deal characteristics, it is initially shown, that sectoral *diversification* through M&A transactions plays a minor role for acquirers in our sample. In contrast, nearly 75 percent of the deals describe horizontal M&A transactions. As regards the *type of transaction*, it is shown that about 84 percent of the entire number of M&A deals are *mergers* while *cross-border* M&A deals make nearly 44 percent of all transactions. Furthermore, the average *transaction volume* paid by an acquirer is at $4.4 billion while the ratio of the transaction volume to an acquirer's book value of total assets (*transaction volume ratio*) amounts to almost one fifth on average. Finally, the ratio of the book values of a target's total assets to the book value of an acquirer's total assets (*size ratio*) is balanced at about 50 percent.

Introducing key characteristics of the acquiring firms, Table 9 initially shows that about 65 percent of the acquirers from our sample are headquartered in the *North America*. Furthermore, the average acquirer exhibits $63.6 billion in *total assets* and an average *leverage ratio* of nearly 136 percent. In about 40 percent of all deals the acquirer exhibits a *lower leverage ratio than the target firm* while the leverage ratio of the acquiring firm increases by approximately 40 percent due to the M&A transaction (*leverage ratio change*). In addition, exhibiting a *market-to-book ratio* greater than one, acquiring firms in our sample are overvalued on average. Furthermore, the average *rating* of an acquirer exhibits a value of 7.4 which translates into a rating grade between A3/A- and Baa1/BBB+. Finally, the average pre-announcement *mean CDS spread* is at about 103 basis points.

Referring to the target firms' characteristics, Table 9 initially displays that the average target firm exhibits about $5.7 billion in *total assets* and thus, is considerably smaller than the average acquirer. However, the target firms' *leverage ratio* and the *market-to-book ratio* are, on average, similar to those of the acquirers. Furthermore, the average *rating* of a target firm exhibits the value of 10.65 which corresponds to a rating grade between Baa3/BBB- and Ba1/BB+. In this context, only one quarter of all target firms in our sample exhibit a rating provided by the three major rating agencies (*rated*).

Finally, Table 10 reports deal, acquirer and target characteristics for European and North American M&A announcements separately. As initially shown, nearly one third of the European acquiring firms take over target firms from another sector (*diversification*), and about 83 percent of all deals are *cross-border mergers*. In contrast, diversification through M&A and cross-border transactions are less prominent for the North American sample. Furthermore, although the absolute *transaction volume* is larger in Europe, the *transaction volume ratio* and the *size ratio* indicate that both, the ratio of the transaction's volume and the ratio of the target firm's size to the acquirer's total assets are larger in North America, respectively. Accordingly, acquiring firms in Europe are, on average, larger in *size* and buy smaller target firms as compared to the North American acquirers. As regards the *leverage ratio*, it Table 10 further reveals that the North American acquirers are stronger levered and more often take over less-levered target firms (*lower leverage ratio than target*) on average, although the leverage ratios of the target firms do not remarkably differ. In addition, the *leverage ratio change* due to an M&A announcement is positive for both, North American and European acquirers, but larger for North American acquiring firms. The *market-to-book ratios (MBRs)* are higher than the value of 1 indicating overvalued acquirers in both regions on average, while the MBR is almost two times higher for North American acquirers. Finally, it is reported that European acquiring firms take over better rated firms and exhibit a better *rating* by approximately one notch as compared to North American acquirers. A better rating of European acquirers is also reflected in the *mean CDS spread* indicating that CDS protection sellers demand a smaller premium

for European acquiring firms.

3. Empirical methodology

Following Brown and Warner (1985), we employ a standard event study methodology in order to analyze abnormal CDS spread changes due to M&A announcements from North American and European acquiring firms between May 2005 and October 2018.[3] According to the efficient market hypothesis proposed by Fama (1970), CDS spreads should reflect all publicly available information in the market and hence, should adjust when new public information is provided suggesting that at least a semi-strong efficiency is assumed.

CDS spread changes due to M&A announcements from acquiring firms are calculated as follows. Let t_0 be the date of the event and let the event window start at t_{-1} and end at t_1. Since the event window is set such that $[t_{-1} \leq t_0 \leq t_1]$ holds, $[t_{-1}, t_1]$ represents a symmetrical event window around the event date t_0. The CDS spread changes ($\Delta CDS_{i,t}$) for each firm i and time t are then calculated as

$$\Delta CDS_{i,t} = \ln\left(\frac{CDS_{i,t}}{CDS_{i,t-1}}\right). \tag{1}$$

As cross-sectoral correlation, event-induced volatility and serial correlation may bias the results, which is especially observed in times of high market volatility during financial crises (Cathcart et al., 2013), we fit the $\Delta CDS_{i,t}$ time series with a GARCH(1,1) model to account for volatility clustering and autoregressive conditional heteroskedasticity (e.g., Farruggio et al., 2013).

Following MacKinlay (1997), the abnormal CDS spread change ($ACSC_{i,t}$) is calculated as the difference between the realized CDS spread change ($\Delta CDS_{i,t}$) and the expected CDS spread change

[3] The sample period starts in May 2005 since trading data on CDS spreads from Markit are not available before December 2004.

($E[\Delta CDS_{i,t}]$) in absence of the event at time t_0:

$$ACSC_{i,t} = \Delta CDS_{i,t} - E[\Delta CDS_{i,t}]. \quad (2)$$

In line with Andres et al. (2016), expected CDS spread changes are calculated by employing a four-factor market model approach since this model proxies the CDS investor's risk perception of the acquirer's credit risk more adequately than a standard market model.[4] The four factors utilized are (i) the CDS market index, (ii) the level of the risk-free yield curve, (iii) the slope of the risk-free yield curve and (iv) the equity-implied volatility.[5] Accordingly, the expected CDS spread is calculated as

$$E[\Delta CDS_{i,t}] = \alpha_i + \beta_i \Delta Index_{m,r,t} + \gamma_i \Delta YC_{m,t} + \delta_i \Delta SlopeYC_{m,t} + \varepsilon_i \Delta Vola_{m,t}\,, \quad (3)$$

where the coefficients $\alpha_i, \beta_i, \gamma_i, \delta_i$ and ε_i are estimated for each firm by the ordinary least squares (OLS) method. The estimation window starts at $[t_{-3}]$ and ends at $[t_{-2}]$, where $[t_{-3} < t_{-2} < t_{-1}]$ holds, so that the estimation window is represented by $[t_{-3}, t_{-2}]$. $\Delta Index_{m,r,t}$ is the CDS spread change of the CDS market index in rating category r, $\Delta YC_{m,t}$ is the change of the yield curve with a maturity

[4] Note that we additionally control for the robustness of our results by reiterating the analysis with a standard market model and a constant mean model. Respective results are discussed in Section 4.2.

[5] As regards the market index, we use the CDX North American Investment Grade Index for North American investment grade entities and the CDX North American High Yield Index for entities that exhibit non-investment grade ratings. We employ the iTraxx Europe for firms with investment grade ratings and the iTraxx Europe High Volatility for non-investment grade rated firms as corresponding indices for Europe. If an entity does not exhibit any rating, the CDS implied rating is used as a proxy (Jansen and Fabozzi, 2017). The level of the risk-free yield curve is proxied by the interest rate with a 5-year maturity and is retrieved from the European Central Bank for Europe and from the US Department of the Treasury for North America. The slope of the yield curve is calculated as the difference of the 10-year and 1-year yields. Finally, the equity-implied volatility is measured by the VIX and VSTOXX for Europe and North America, respectively. The volatility indices are retrieved from Thomson Reuters Datastream.

of 5 years, $\Delta SlopeYC_{m,t}$ is the change of the slope of the yield curve and $\Delta Vola_{m,t}$ is the change of the equity-implied volatility of market m at time t respectively. The cumulative abnormal CDS spread changes for a single event are then calculated as

$$CACSC_{i,[t_{-1},t_1]} = \sum_{t=t_{-1}}^{t_1} ACSC_{i,t}\,, \tag{4}$$

where $CACSC_{i,[t_{-1},t_1]}$ is the cumulative abnormal CDS spread change of the acquiring firm i during the event window $[t_{-1}, t_1]$.

When considering multiple events, the (cumulative) average abnormal CDS spread changes are calculated as

$$AACSC_t = \frac{1}{N}\sum_{i=1}^{N} ACSC_{i,t}\,, \tag{5}$$

and

$$CAACSC_{[t_{-1},t_1]} = \sum_{t=t_{-1}}^{t_1} AACSC_t\,, \tag{6}$$

where $AACSC_t$ is the average abnormal CDS spread change of all firms N at time t and $CAACSC_{[t_{-1},t_1]}$ is the cumulative average abnormal CDS spread change during the event window $[t_{-1}, t_1]$. We use an estimation window of 100 days for our baseline analysis, set the estimation window to $[-120, -21]$ and the main event window to $[-2,2]$.[6]

[6] We additionally employ variations of the event window length in our baseline analysis as presented and discussed in Section 4.1. Furthermore, we control for the robustness of our baseline results by changing the estimation window to 60 and 200 days and by implementing the model without a gap between the estimation and event window. Results from these modifications are discussed in Section 4.2.

The impact of M&A announcements on the acquiring firms' (cumulative) average abnormal CDS spread changes ((C)AACSCs) is tested by means of two different non-parametric tests. We employ non-parametric tests since they are more effective in small sample sizes and when assuming a non-normal distribution of CDS spread changes. Moreover, non-parametric tests tend to dominate parametric tests and therefore, should be preferred in event studies of abnormal security price performance (Kolari and Pynnonen, 2011). We initially implement the Wilcoxon signed-rank test (henceforth Wilcoxon test) since this test accounts for both, the importance of the sign and the magnitude of the changes in (cumulative) average abnormal CDS spreads. In addition, this test is more adequate than t-tests in case of fat-tailed distributions (Wilcoxon, 1945; Corrado, 1989).

As a second test, we employ the generalized rank test (henceforth GRANK test) as proposed by Kolari and Pynnonen (2011). Following Campbell et al. (1997) the GRANK statistic is based on the standardized (cumulative) abnormal CDS spread changes which are defined as

$$SACSC_{i,t} = \frac{ACSC_{i,t}}{S_{ACSC_{i,t}}} \tag{7}$$

and

$$SCACSC_{i,[t_{-1},t_1]} = \frac{CACSC_{i,[t_{-1},t_1]}}{S_{CACSC_{i,[t_{-1},t_1]}}}, \tag{8}$$

where $S_{ACSC_{i,t}}$ and $S_{CACSC_{i,[t_{-1},t_1]}}$ are the standard deviations of the regression prediction errors in the (cumulative) abnormal CDS spread changes. The GRANK test extends the single day non-parametric test of Corrado and Zivney (1992) to an efficient testing of cumulative abnormal changes. In addition, the GRANK test is robust to serial correlation in CDS spread changes, event-induced volatility and cross-sectoral correlation of CDS spread changes due to event day clustering. Finally, Kolari and Pynnonen (2011) show that the GRANK test exhibits superior empirical power as compared to popular parametric tests (e.g., Patell, 1976 or Boehmer et al., 1991) for all event

window lengths.

4. Empirical results

We provide the results from our baseline analysis in Table 11 and Figure 1. While results from robustness checks are presented in Tables 12a – 12c, results from further sensitivity analyses including deal, acquiring firm and target firm characteristics are shown in Tables 13a – 13c.

4.1. Baseline analysis

Referring to our main event window period length of four days ([–2,2]) symmetrically set around the announcement day t_0, the upper half of Table 11 reports a significantly positive average abnormal spread change (AACSC) of around 165 bps at the announcement day as well as significantly positive spreads of about 95 bps and 29 bps the two following trading days, respectively. Moreover, it is shown that AACSCs exhibit the highest proportion of positive values (about 58 percent) at the announcement day suggesting that our baseline finding is not biased by outliers.

Introducing the cumulative average abnormal CDS spread changes (CAACSCs), the lower half of Table 11 additionally reports a significantly positive CAACSC of about 310 bps due to M&A announcements with regard to the main event window ([–2,2]). As further shown, our finding of increasing spreads is reiterated for each variation of the event window while the proportion of positive CAACSCs is significantly higher than 50 percent in each case. Moreover, it is revealed that CAACSCs rise with an increasing event window length while, however, the Wilcoxon and GRANK test point to a decreasing significance of CAACSCs for larger event windows.

Figure 1 more precisely illustrates the development of the CAACSC with regard to the main event window. As shown, CAACSCs weakly and insignificantly grow during the two trading days before the announcement day and then, significantly rise by about 289 bps at the event day and during the following two trading days. Hence, although the CDS market is frequently used by insiders

(Acharya and Johnson, 2007; Hraschek et al., 2016), we do not find that CDS investors from our sample anticipate M&A announcements from acquiring firms. Rather, we observe delayed CDS market reactions for two more trading days after the event date indicating semi-strong efficient European and North American CDS markets.

Against this background, results from the analysis at hand do not support theoretical predictions suggesting that CDS investors may perceive M&A transactions as low-risk (or riskless) transactions due to probable coinsurance and diversification effects (Levy and Sarnat, 1970; Lewellen, 1971; Higgins and Schall, 1975). Rather and in contrast, as we provide evidence of a positive (cumulative) average abnormal change of CDS spreads, our analysis reveals that CDS investors expect an increase in European and North American acquiring firms' credit risk exposure, which is line with previous studies provided by Ismailescu and Col (2022) as well as Hüttermann and Lleshaj (2020). At this point, the negative perceptions of CDS investors may be explained by the general fact that investors expect a transfer of risk from the target firm to the acquirer (Dennis and McConnell, 1986; Shastri, 1990; Billett et al., 2004; Bessembinder et al., 2008; Furfine and Rosen, 2011; da Silva et al., 2015). However, the large variety of sensitivity analyses in our study (Section 4.3.) sheds a brighter light on the risk-channels and thus, reveals several further determinants that may explain the negative perceptions of CDS investors from our sample.

4.2. Robustness checks

In the following, we control for the robustness of our key findings by modifying individual parameters of the empirical design as described in detail in Section 3. To be upfront with it and as shown by Tables 12a – 12c, CAACSCs from the different robustness checks do not remarkably differ in quantities, and remain signs and significances as compared to the CAACSC from the baseline analysis.

4.2.1. Parameter-modifications

In a first robustness check, we investigate if our regression results react sensitively to the specification of the market model. Accordingly, we substitute the four-factor model from our baseline methodology by (i) a standard market model with the CDS market index as the only factor and (ii) a constant mean model. As shown by Table 12a, the baseline finding of a significantly positive CAACSC is qualitatively reiterated even when employing the market model (311.9540) and the constant mean model (295.7186). In addition, employing a difference in means t-test indicates that both difference-values (–2.0272 and 14.2082) are not significant. Thus, we rule out, that our baseline result is biased by the model selection.

Furthermore, our choice of the estimation window length of 100 days is, to some extent, arbitrary and may influence the results. Hence, longer estimation windows may smooth the prediction of the CDS spread changes, whereas shorter windows may not predict the CDS change adequately since they are more prone to outliers. Taking this into account, we choose two different settings (200 days and 60 days) to estimate abnormal CDS spread changes. As illustrated in Table 12a, the baseline CAACSC is qualitatively reiterated for both, the longer and shorter estimation window. In addition, respective difference-values are not significant suggesting that our baseline result remains robust under shorter and longer estimation window lengths.

We proceed and argue that modelling a gap between the estimation window and the event window could distort the regression results. Although implementing the gap is a commonly accepted estimation strategy, it does not process changes in CDS spreads during the gap and especially, shortly before the event window starts. To address this issue, we modify our estimation strategy and let the event window follow the estimation window immediately. However, as reported by Table 12a, estimating without a gap does not provoke remarkably different CAACSC. Moreover, as the difference-value is not significant, we rule out that the gap between the estimation and event window may influence our baseline results.

In a final robustness check, we do not longer distinguish between investment grade and non-

investment entities (acquiring firms) when determining the adequate market index to calculate expected CDS spreads. The reason is, that employing high-yield CDS market indices for non-investment grade entities could bias our results if especially high-yield indices exhibit a lower market liquidity than the most-liquid investment grade CDS indices. Accordingly, we exceptionally include main investment grade CDS indices, namely the CDX North American Investment Grade Index for all North American acquiring firms, and the iTraxx Europe for all European acquirers, regardless of the acquirers' de facto ratings. A shown by Table 12a, the baseline CAACSC is quantitatively and qualitatively reiterated while the difference-value is not significant. Accordingly, we suggest that selecting CDS market indices according to the acquiring firms' rating grades does not bias our baseline results.

4.2.2. Regional and sectoral analysis

As reported by Table 1, our entire sample of 492 M&A announcements from Europe and North America is dominated by announcements from North American acquirers (approx. 65 percent). In addition, and as discussed in Section 2 and reported by Table 10, we observe several differences in M&A characteristics between Europe and North America. Against this background, we split the entire sample into subsamples of European and North American M&A announcements and subsequently repeat our baseline regression with each subsample.

As displayed by Table 12b, both, the European and the North American subsample exhibit a significantly positive CAACSC from CDSs written on local acquiring firms. In addition, respective differences in CAACSCs from both subsamples and the baseline analysis are not significant indicating that our baseline findings are not triggered by the larger number of North American M&A announcements.

We proceed and investigate if M&A announcements are perceived differently by CDS investors when considering the industrial sectors in which acquiring firms and target firms operate. We admit that results from this analysis must be taken with caution since the number of observations for each

sector is small.

Referring to the acquiring firms' sectors, Table 12c reports the highest CAACSCs for the sectors of consumer goods (781 bps) and basic materials (563 bps), while the lowest spread change is found for the technology sector (191 bps). Turning to the target firms' sectors, we again observe the highest CAACSCs in the sectors of consumer goods (737 bps) and basic materials (868 bps) while the lowest spread change is found for the sector of telecommunication services (152 bps). Accordingly, the analysis suggests that CDS investors perceive M&A announcements as most risky if transactions will be performed in the sectors of consumer goods and basic materials. This finding holds irrespective of whether acquiring firms or target firms are active in these sectors.

4.3. Sensitivity analyses

In the following section, we present and discuss results from a large variety of sensitivity analyses. The aim is to identify if and how different deal, acquiring firm and target firm characteristics may influence the CDS investors' perceptions of M&A announcements. The individual characteristics are intensively discussed in Section 2 and reported by Tables 8 – 10. Results from the sensitivity analyses are shown in Tables 13a – 13c.

4.3.1. Deal characteristics

Diversification

To begin with, a CDS investor's risk perception may depend on the diversification potential from a cross-sectoral M&A transaction. *On the one hand*, it is suggested that the announcement of cross-sectoral M&A deals may reduce CDS spreads if CDS investors expect diversification effects, an increase in operating efficiency and debt capacity as well as a reduced tax burden at the acquiring firms (Lewellen, 1971; Hann et al., 2013; Kuppuswamy and Villalonga, 2015; Ismailescu and Col, 2016).

On the other hand, cross-sectoral takeovers may also have negative effects on the acquiring firm's

performance and risk exposure. Hence, it is argued that combined entities from cross-sectoral M&As may be faced with increasing costs from more severe information asymmetries between the central management and divisional managers (Myerson, 1982; Harris et al., 1982; Laeven and Levine, 2007). In this context, previous research has also shown that conglomerates have problems in designing efficient managerial incentive contracts and in aligning interests of outsiders and insiders (Aron, 1988; Stulz, 1990; Rotemberg and Saloner, 1994). Additionally, it is proposed that cross-sectoral diversified firms may take more investment projects with a negative net present value since poor business segments in diversified firms have access to free cash flows, which would not be the case if they were operated independently (Jensen, 1986; Stulz, 1990). Similarly, it is argued that cross-subsidizing poor business segments in a diversified conglomerate may increase the conglomerate's risk exposure (Meyer et al., 1992).

As reported by Panel A in Table 13a, we provide evidence of significantly positive CAACSCs for both, announcements of cross-border M&As deals and transactions performed within the same industrial sectors. Accordingly, and since the analysis does not reveal a statistically significant difference in CAACSCs between both subsamples, we suggest that likely diversification, efficiency and risk-reducing effects from announced cross-sectional M&A transactions may not determine the risk perception of European and North American CDS investors from our sample.

Type of transaction

The analysis at hand employs both types of an M&A transaction, i.e. mergers as well as acquisitions of assets in tender offers. During both transaction types, the bidding firm offers to buy the target firm's stocks at a price exceeding the target's market value. However, mergers are negotiated directly between the managers of both firms and are approved by the target's board of directors before the vote of the target's shareholders. In contrast, during an acquisition of assets in tender offers, the bidding firm buys shares directly from the target's shareholders who decide individually decide to sell their shares or not (e.g., Jensen and Ruback, 1983).

Previous studies have examined whether different transaction types increase or decrease the shareholder value of a bidding firm. Overall, these studies provide empirical evidence that acquiring firms may earn significantly negative abnormal stock returns from mergers but smaller or even no negative abnormal stock returns at all from an acquisition of assets through tender offers (Dodd and Ruback, 1977; Dodd, 1980; Langetieg et al., 1980; Asquith, 1983; Jensen and Ruback, 1983; Malatesta, 1983; Bradley et al., 1988; Franks and Harris, 1989; Agrawal et al., 1992; Rau and Vermaelen, 1998; Goergen and Renneboog, 2004).

As reported by Panel B in Table 13a, our analysis reveals significantly positive CAACSC for merger announcements, whereas we do not find a significant abnormal spread change from an acquisition of assets in tender offers. In addition, as the difference between CAACSCs is statistically significant, we provide evidence that CDS investors perceive merger-announcements as riskier. Taking this into account, the results at hand support previous findings from stock market returns.

Cross-border M&As

We proceed and differentiate between announcements of cross-border and domestic M&A transactions. In particular, it is not clear ex ante, how CDS investors may assess the risk from cross-border deals. *On the one hand*, cross-border M&As may provoke additional risks as compared to domestic transactions since acquiring firms may have to overcome geographical distances and cultural differences, which will increase takeover costs (Rose et al., 2000). In particular, geographical distances and cultural differences may complicate the integration process of the foreign target firm, which will trigger additional costs and operational inefficiency due to higher coordination needs, a stronger monitoring and controlling of the target and conflicts between fragmented interests of specialized business units (Shrivastava, 1986).[7]

[7] Note that, the acquiring firms in our sample are not exposed to target country-specific risk factors since we exceptionally include complete M&A announcements in our sample. Thus, in contrast to a partial M&A, the target firm does not remain an entity under the jurisdiction of its head office's country (Bris and Cabolis, 2008; Ismailescu

On the other hand, acquiring firms may benefit from entering a foreign market if market shares are increased, new business opportunities are created and business models are stronger diversified (Francis et al., 2008; Erel et al., 2012). In this context, it is found that the positive effects of cross-border M&As may even be stronger when acquirers from developed countries take over targets from emerging markets, and when institutional and corporate governance practices of a higher quality are transferred to the target firm (Ismailescu and Col, 2022).

As pointed out by Panel C in Table 13a, we observe significantly positive CAACSC for both, the announcement of cross-border transactions and domestic deals. Thus, and as the difference between both CAACSCs is not significant, we find that CDS investors from our sample expect an increase in the acquiring firms' credit risk exposure irrespective of whether a cross-border or domestic M&A transaction will be performed.

Complexity of the transaction

A CDS investor's risk perception may also depend on the complexity of an M&A transaction. In this context, it is shown that the complexity of a transaction increases with the deal size, which is due to a more complex integration process of large targets and a higher uncertainty concerning the realization of synergy effects (Alexandridis et al., 2013). In addition, it is suggested that acquirers may realize larger losses when taking over large targets (when performing more complex M&A transactions) since they are more likely to pay an excess premium due to manager overconfidence or higher private benefits of CEOs (Loderer and Martin, 1990; Hayward and Hambrick, 1997; Grinstein and Hribar, 2004; Harford and Li, 2007; Malmendier and Tate, 2008). In contrast however, it is also found that acquiring firms may have a lower overpayment potential during large and complex transactions since there are less competitors in large deals who could mitigate the "winners curse" (Gorton et al., 2009; Alexandridis et al., 2013). In addition, it is argued that acquirers expecting a

and Col, 2022).

higher complexity of a transaction hesitate to offer a high takeover-premium (Amihud and Lev, 1981; Demsetz and Lehn, 1985; Bauguess et al., 2009; Alexandridis et al., 2013).

We employ three proxies to measure the degree of the complexity of announced M&A transactions in our sample, i.e. (i) the absolute amount paid by the acquirer (transaction volume), (ii) the transaction volume divided by the acquirer's book value of total assets in the year before an M&A is announced (transaction volume ratio) and (iii) the ratio of a target firm's book value of total assets to an acquiring firm's book value of total assets in the year before an M&A transaction is announced (size ratio). Subsequently we build respective subsamples with proxy-values above and below the entire sample's median value.

As reported by Panel D in Table 13a, our analysis reveals a significantly positive CAACSC for transaction volumes and transaction volume ratios above the entire sample's median volume and ratio, respectively. In contrast, we do not observe significant abnormal CDS spread changes for the subsample of transaction volumes and transaction volume ratios below the entire sample's median volume and ratio. As regards the size ratio, Table 13a reports significantly positive CAACSCs for both, the above- and below-median subsample while the CAACSC from the above-median subsample is significantly larger in value. Overall, as differences in CAACSCs are significant throughout all proxies (i) – (iii), our results suggest that CDS investors perceive announcements of more complex M&A transactions as riskier supporting previous findings from studies beyond CDS markets.

4.3.2. Acquiring firm and target firm characteristics

Next to deal characteristics, we additionally investigate if and to what extent individual firm characteristics may determine a CDS investor's risk assessment. As we investigate announcements of M&A transactions (rather than yet carried out M&As deals), we are able to differentiate between characteristics of both, the acquiring and target firms. Results from the sensitivity analyses are reported by Table 13b for acquiring firms and Table 13c for target firms, respectively,

Size

To begin with, we analyze if the CDS investors' risk perceptions depend on the acquiring or target firm's size, which is measured by a firm's book value of total assets. As already discussed when analyzing the effects of the complexity level of an M&A transaction (Section 4.3.1.), the impact of the target firm's size on the riskiness of an M&A transaction is not clear (e.g., Alexandridis et al., 2013). As regards the acquiring firm's size, it is suggested that larger acquirers may realize stronger coinsurance and diversification effects (Lewellen, 1971; Billett et al., 2004).

As shown by Panel A in Table 13b, we find a significantly lower positive CAACSC for M&A transactions performed by larger acquirers (with a value of total assets above the entire sample's median value) indicating that CDS investors expect gains from the coinsurance and diversification effect. As regards the target firms' size, Panel A in Table 13c reveals a significantly higher abnormal positive CDS spread change if larger target firms are involved in M&A transactions. This result corresponds to our findings from Section 4.3.1. suggesting that CDS investors perceive announcements of more complex M&A transactions, including larger targets, as riskier.

Leverage ratio

The riskiness of an M&A deal may also depend on the level of the target and acquiring firm's leverage ratio ex ante (Shastri, 1990; da Silva et al., 2015). Hence, it is found that M&A transactions between firms with different leverage ratios may decrease the leverage ratio (and credit risk exposure) of the high-levered firm and increase the leverage ratio (and credit risk exposure) of the low-levered firm (Billett et al., 2004). Furthermore, it is shown that an acquirer's leverage ratio may rise shortly before an M&A is performed (due to debt-financing the deal), but that the acquiring firm's credit risk may decrease if the positive effects of a higher leverage (increased tax shield) as well as likely gains from the M&A transaction (economies of scale and scope, diversification effects, competitive advantages) outweigh the risk from an increased financial leverage (Leland,

2007).

We employ three different measures to investigate if and how the acquiring and target firm's level of the leverage ratio determine the CDS investors' risk perceptions. *First*, we employ leverage ratios from acquiring firms (Table 13b, Panel B (i)) and target firms (Table 13c, Panel B) separately. We use ratios from the year before an M&A transaction is announced and build subsamples with firms exhibiting a leverage ratio above and below the entire sample's median leverage ratio, respectively. *Second*, we split the sample into two subsamples of acquiring firms exhibiting a lower and a higher leverage ratio than the target firm (Table 13b, Panel B (ii)). And *third*, we employ the change of an acquiring firm's leverage ratio. The change is measured for the period from one year before an M&A transaction is announced until the year of the announcement (Table 13b, Panel B (iii)). Again, we build subsamples with firms exhibiting a change in their ratios above and below the entire sample's median change ratio, respectively.

As shown by Table 13b (Panel B (i)) and Table 13c (Panel B), we find a significantly positive CAACSCs for the acquiring and target firms' above- and below-median leverage ratios, respectively. However, the analysis also reveals that the difference in CAACSCs for high-levered and low-levered acquirers and targets is not significant. Furthermore, in line with predictions provided by Billett et al. (2004), we observe that the CAACSC is significantly higher for acquiring firms taking over higher-levered target firms (Table 13b, Panel B (ii)). Finally, Panel B (iii) from Table 13b reports that acquiring firms with a leverage ratio-change above the entire sample's median change exhibit a significantly positive higher CAACSC than acquirers with a leverage ratio-change below the entire sample's median change. Hence, our results indicate that CDS investors may expect an increase in the acquirer's credit risk if the acquirer raises the leverage ratios due to a (stronger) debt-financing of the forthcoming M&A transaction (Leland, 2007).

Valuation

Referring to the valuation of the firms involved in an M&S transaction, previous empirical

studies demonstrate that high-valued (overvalued) acquiring firms tend to perform poorly after M&A deals (Dong et al., 2006; Song, 2007). This might be explained by the fact that an overvaluation of the acquirer increases managerial discretion, which may provoke bad acquisition decisions and, as a last consequence, a decrease in shareholder and debtholder value (Jensen, 2005; Moeller et al., 2005; Akbulut, 2013; Ismailescu and Col, 2022). As regards target firms, it is suggested that an overvaluation of the target firm may incentivize bidders to overpay during an M&A transaction (Alexandridis et al., 2013).

In order to empirically identify if and to what extent firm valuation may determine a CDS investor's risk assessment, we employ the market-to-book ratio (MBR) as a market-based valuation measure and classify acquirers and targets into subsamples with MBRs above and below the entire sample's median MBR, respectively.

As shown by Panels C in Tables 13b and 13c, we observe significantly positive CAACSCs throughout all subsamples. However, as we do not find a significant difference in CAACSCs for above-median and below-median valued acquirers, results from our analysis does not confirm predictions that CDS investors may expect a poor performance of overvalued acquiring firms after M&A transactions. Rather, as we find a significantly higher positive CAACSC for target firms exhibiting MBRs above the entire sample's median MBR, this result points out that CDS investors may perceive takeovers of overvalued target firms as riskier since they may expect managers from acquiring firms to overpay the deal if the target is highly valued.

Rating

Finally, theoretical models suggest that the asset risk-level of a high-risk (low-risk) firm should decrease (increase), whereas its asset value should increase (decrease), if acquiring and target firms exhibit differences in their asset-risk levels, or have imperfectly correlated and unlevered asset returns during an M&A transaction (Shastri, 1990; Billett et al., 2004). Taking this into account, we analyze if and to what extent the acquiring and target firms' asset risk-levels may affect the CDS investors'

credit risk perceptions.

We initially split the entire sample into subsamples of investment grade-rated and speculative grade-rated acquiring and target firms.[8] In addition, considering that protection sellers in the CDS market request a higher premium for a default insurance, we employ the average spread of a CDS written on an acquirer within the [–120, –21] window before the M&A announcement is announced. Subsequently, we divide the acquiring firms into subsamples with firms exhibiting a CDS spread above and below the entire sample's median CDS spread, respectively. Finally, we additionally control if CAACSCs are different when a target firm is rated by at least one of the three biggest rating agencies (Moody's, Standard and Poor's or Fitch).

As reported by Panel D (i) in Table 13b, we find a significantly positive CAACSC for acquiring firms exhibiting an investment grade-rating, whereas we do not observe a significantly abnormal spread change for acquirers with a speculative grade-rating. In addition, as the difference between the CAACSCs is not significant, it is indicated that the CDS investors' risk perceptions are not affected by the fact if the acquiring firm is rated or not. Turning to the target firms, Panel D (i) in Table 13c points to significantly positive CAACSCs for the subsample of target firms exhibiting a speculative grade-rating and an investment grade-rating, respectively. Furthermore, as we find a significantly higher CAACSC for speculative grade-rated target firms, the analysis reveals that CDS investors may perceive a takeover of worse rated target firms as riskier.

Introducing average CDS spreads, Panel D (ii) in Table 13b shows a significantly higher positive CAACSC for acquiring firms with lower CDS spreads before the announcement day. Given that acquiring firms exhibiting a lower pre-announcement CDS spread may, ceteris paribus, exhibit a smaller credit risk exposure, we suggest that CDS investors expect a stronger increase in the credit risk exposure due to an M&A deal, which is in line with predictions provided by Shastri (1990) and

[8] We are aware of the fact that whether an acquirer has taken over a target firm with a lower or higher rating than its own would be a better proxy. However, since most acquirers in our sample exhibit a higher rating than the targets (Table 9), the number of observations is insufficient to build respective subsamples.

Billett et al. (2004).

Finally, Panel D (ii) in Table 13c reports significantly positive CAACSCs for rated and unrated target firms, while the CAACSC is significantly higher in the case of rated target firms. Taking this into account, the results at hand initially suggest that CDS investors expect an increase in the acquiring firms' credit risk if M&A transactions include unrated target firms. However, and more interestingly, CDS investors seem to expect an even stronger rise in the acquirers' credit risk exposures if target firms are rated. This finding may be explained by the fact that the transaction volume of M&As including rated target firms is more than 3.3 times higher as compared to transactions including unrated target firms in our sample. In addition, rated target firms in our sample exhibit a 1.8 times higher leverage ratio.

5. Summary and implications

Combining a sample of 492 merger and acquisition (M&A) announcements from 284 acquiring firms across Europe and North America and data from 5-year single-name credit default swaps (CDSs) written on stock-listed acquiring firms between 2005 and 2018, the paper at hand analyzes, if investors in CDSs perceive a change in the acquirer's credit risk exposure due to the announcement of a complete M&A transaction. In addition, several deal and firm characteristics are identified that may help explaining the change in a CDS investor's risk perceptions.

The analysis initially reveals that both, European and North American acquiring firms exhibit positive abnormal CDS spread changes of about 310 bps during a five-day event window due to the announcement of a complete M&A transaction. This finding suggests that CDS investors from our sample perceive an increase in the acquirer's credit risk exposure immediately after the M&A announcement has made. In contrast, we do not find that CDS investors may anticipate the M&A announcement. Rather, we observe the highest positive abnormal CDS spread at the announcement day itself, and a fading of this effect during the next two trading days indicating semi-strong efficient European and North American CDS markets.

Our baseline finding holds under several robustness checks, especially when controlling for the robustness of individual parameters of the empirical design. Moreover, results from a large variety of sensitivity analyses reveal a number of deal and firm characteristics that may explain the change in CDS investors' risk perceptions. Hence, we find that CDS investors perceive an M&A deal as riskier if the transaction is performed as a merger and when it is more complex. In addition, we observe higher positive abnormal spread changes for those CDS, that are written on larger acquirers exhibiting lower pre-announcement CDS spreads and higher pre-announcement leverage ratios as compared to their targets. Finally, our analysis points to significantly positive CAACSCs if acquirers take over larger, worse rated and overvalued target firms.

The study at hand provides important implications. *First*, from an academic point of view, it extends previous related studies employing bonds (rather than CDSs) to empirically identify market participants' perceptions of the riskiness of M&A transactions. *Second*, from a regulator's perspective, our analysis sheds a brighter light on the CDS market, which is still very opaque. Thus, the study at hand may promote transparency by investigating a large variety of M&A characteristics that may have determine a CDS investor's risk assessment. *Third*, the study at hand has also implications for practitioners. Accordingly, results from the analysis suggest that European and North American CDS investors may strongly weigh detrimental effects of an M&A transaction, such as value destruction and a possible transfer of additional risk from the target to the acquirer. In contrast, benefits from an M&A deal, like stronger diversification opportunities and efficiency gains, are less appraised. Taking this into account, managers from acquiring firms should be aware of the fact that (institutional) CDS investors (e.g., banks, insurance companies or funds) may negatively value the risk of an M&A transaction, which in turn will increase CDS spreads and will provoke higher future funding costs for the combined entity.

References

Acharya, V. V. and Johnson, T. C. (2007). Insider trading in credit derivatives.*Journal of Financial Economics*, 84(1):110–141.

Agrawal, A., Jaffe, J. F., and Mandelker, G. N. (1992). The post-merger performance of acquiring firms: A re-examination of an anomaly. *The Journal of Finance*, 47(4):1605–1621.

Akbulut, M. E. (2013). Do overvaluation-driven stock acquisitions really benefit acquirer shareholders? *Journal of Financial and Quantitative Analysis*, 48(4):1025–1055.

Alexandridis, G., Fuller, K. P., Terhaar, L., and Travlos, N. G. (2013). Deal size, acquisition premia and shareholder gains. *Journal of Corporate Finance*, 20:1–13.

Amihud, Y. and Lev, B. (1981). Risk reduction as a managerial motive for conglomerate mergers. *The Bell Journal of Economics*, 12(2):605–617.

Andres, C., Betzer, A., and Doumet, M. (2016). Measuring abnormal credit default swap spreads. *Available at SSRN 2194320*.

Aron, D. J. (1988). Ability, moral hazard, firm size, and diversification. *The Rand Journal of Economics*, 19(1):72–87.

Asquith, P. (1983). Merger bids, uncertainty, and stockholder returns. *Journal of Financial Economics*, 11(1-4):51–83.

Augustin, P., Subrahmanyam, M. G., Tang, D. Y., and Wang, S. Q. (2016). Credit default swaps: Past, present, and future. *Annual Review of Financial Economics*, 8:175–196.

Bauguess, S. W., Moeller, S. B., Schlingemann, F. P., and Zutter, C. J. (2009). Ownership structure and target returns. *Journal of Corporate Finance*, 15(1):48–65.

Bessembinder, H., Kahle, K. M., Maxwell, W. F., and Xu, D. (2008). Measuring abnormal bond performance. *The Review of Financial Studies*, 22(10):4219–4258.

Billett, M. T., King, T.-H. D., and Mauer, D. C. (2004). Bondholder wealth effects in mergers and acquisitions: New evidence from the 1980s and 1990s. *The Journal of Finance*, 59(1):107–135.

Boehmer, E., Masumeci, J., and Poulsen, A. B. (1991). Event-study methodology under conditions of event-induced variance. *Journal of Financial Economics*, 30(2):253–272.

Bradley, M., Desai, A., and Kim, E. H. (1988). Synergistic gains from corporate acquisitions and their division between the stockholders of target and acquiring firms. *Journal of Financial Economics*, 21(1):3–40.

Bris, A. and Cabolis, C. (2008). The value of investor protection: Firm evidence from cross-border mergers. *The Review of Financial Studies*, 21(2):605–648.

Brown, S. J. and Warner, J. B. (1985). Using daily stock returns: The case of event studies. *Journal of Financial Economics*, 14(1):3–31.

Campbell, J. Y., Lo, A. W.-C., and MacKinlay, A. C. (1997). *The Econometrics of Financial Markets*. Princeton University Press, Princeton, NJ.

Cathcart, L., El-Jahel, L., and Evans, L. (2013). The correlation structure of the CDS market: An empirical investigation. *The Journal of Fixed Income*, 22(4):53–74.

Corrado, C. J. (1989). A nonparametric test for abnormal security-price performance in event studies. *Journal of Financial Economics*, 23(2):385 – 395.

Corrado, C. J. and Zivney, T. L. (1992). The specification and power of the sign test in event study hypothesis tests using daily stock returns. *Journal of Financial and Quantitative Analysis*, 27(3):465–478.

da Silva, P. P., Vieira, I., and Vieira, C. (2015). M&A operations: Further evidence of informed trading in the CDS market. *Journal of Multinational Financial Management*, 32-33:116–130.

Demsetz, H. and Lehn, K. (1985). The structure of corporate ownership: Causes and consequences. *Journal of Political Economy*, 93(6):1155–1177.

Dennis, D. K. and McConnell, J. J. (1986). Corporate mergers and security returns. *Journal of Financial Economics*, 16(2):143–187.

Dodd, P. (1980). Merger proposals, management discretion and stockholder wealth. *Journal of Financial Economics*, 8(2):105–137.

Dodd, P. and Ruback, R. (1977). Tender offers and stockholder returns: An empirical analysis. *Journal of Financial Economics*, 5(3):351–373.

Dong, M., Hirshleifer, D., Richardson, S., and Teoh, S. H. (2006). Does investor misvaluation drive the takeover market? *The Journal of Finance*, 61(2):725–762.

Erel, I., Liao, R. C., and Weisbach, M. S. (2012). Determinants of cross-border mergers and acquisitions. *The Journal of Finance*, 67(3):1045–1082.

Fama, E. F. (1970). Efficient capital markets: A review of theory and empirical work. *The Journal of Finance*, 25(2):383–417.

Farruggio, C., Michalak, T. C., and Uhde, A. (2013). The light and dark side of tarp. *Journal of Banking & Finance*, 37(7):2586–2604.

Francis, B. B., Hasan, I., and Sun, X. (2008). Financial market integration and the value of global diversification: Evidence for us acquirers in cross-border mergers and acquisitions. *Journal of Banking & Finance*, 32(8):1522–1540.

Franks, J. R. and Harris, R. S. (1989). Shareholder wealth effects of corporate takeovers: The UK experience 1955–1985. *Journal of Financial Economics*, 23(2):225–249.

Furfine, C. H. and Rosen, R. J. (2011). Mergers increase default risk. *Journal of Corporate Finance*, 17(4):832–849.

Goergen, M. and Renneboog, L. (2004). Shareholder wealth effects of European domestic and cross-border takeover bids. *European Financial Management*, 10(1):9–45.

Gorton, G., Kahl, M., and Rosen, R. J. (2009). Eat or be eaten: A theory of mergers and firm size. *The Journal of Finance*, 64(3):1291–1344.

Greatrex, C. A. (2009). Credit default swap market determinants. *The Journal of Fixed Income*, 18(3):18.

Grinstein, Y. and Hribar, P. (2004). CEO compensation and incentives: Evidence from M&A bonuses. *Journal of Financial Economics*, 73(1):119–143.

Hann, R. N., Ogneva, M., and Ozbas, O. (2013). Corporate diversification and the cost of capital. *The Journal of Finance*, 68(5):1961–1999.

Harford, J., Humphery-Jenner, M., and Powell, R. (2012). The sources of value destruction in acquisitions by entrenched managers. *Journal of Financial Economics*, 106(2):247– 261.

Harford, J. and Li, K. (2007). Decoupling CEO wealth and firm performance: The case of acquiring CEOs. *The Journal of Finance*, 62(2):917–949.

Harris, M., Kriebel, C. H., and Raviv, A. (1982). Asymmetric information, incentives and intrafirm resource allocation. *Management Science*, 28(6):604–620.

Hayward, M. L. A. and Hambrick, D. C. (1997). Explaining the premiums paid for large acquisitions: Evidence of CEO hubris. *Administrative science quarterly*, pages 103–127.

Higgins, R. C. and Schall, L. D. (1975). Corporate bankruptcy and conglomerate merger. *The Journal of Finance*, 30(1):93–113.

Hraschek, M., Mietzner, M., and Tyrell, M. (2016). A note on credit derivatives and M&A transactions: Announcement and anticipation effects. *Corporate Ownership & Control*, 13(2):272–279.

Hüttermann, K. and Lleshaj, D. (2020). Debtholder wealth effects in mergers and acquisitions: Evidence from the CDS market. *Working Paper*.

Ismailescu, I. and Col, B. (2022). Cross-border M&As and credit risk: Evidence from the CDS market. *Journal of Empirical Finance*, 66:51-73.

Jansen, J. and Fabozzi, F. J. (2017). CDS implied credit ratings. *The Journal of Fixed Income*, 26(4):25–52.

Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. *The American Economic Review*, 76(2):323–329.

Jensen, M. C. (2005). Agency costs of overvalued equity. *Financial Management*, 34(1):5– 19.

Jensen, M. C. and Ruback, R. S. (1983). The market for corporate control: The scientific evidence. *Journal of Financial Economics*, 11(1-4):5–50.

Jorion, P., Liu, Z., and Shi, C. (2005). Informational effects of regulation FD: Evidence from rating agencies. *Journal of Financial Economics*, 76(2):309–330.

Kim, E. H. and McConnell, J. J. (1977). Corporate mergers and the co-insurance of corporate debt. *The Journal of Finance*, 32(2):349–365.

Kolari, J. W. and Pynnonen, S. (2011). Nonparametric rank tests for event studies. *Journal of Empirical Finance*, 18(5):953–971.

Kuppuswamy, V. and Villalonga, B. (2015). Does diversification create value in the presence of external financing constraints? Evidence from the 2007–2009 financial crisis. *Management Science*, 62(4):905–923.

Laeven, L. and Levine, R. (2007). Is there a diversification discount in financial conglomerates? *Journal of Financial Economics*, 85(2):331–367.

Langetieg, T. C., Haugen, R. A. and Wichern, D. W. (1980). Merger and stockholder risk. *The Journal of Financial and Quantitative Analysis*, 15(3):689-717.

Leland, H. E. (2007). Financial synergies and the optimal scope of the firm: Implications for mergers, spinoffs, and structured finance. *The Journal of Finance*, 62(2):765–807.

Levy, H. and Sarnat, M. (1970). Diversification, portfolio analysis and the uneasy case for conglomerate mergers. *The Journal of Finance*, 25(4):795–802.

Lewellen, W. G. (1971). A pure financial rationale for the conglomerate merger. *The Journal of Finance*, 26(2):521–537.

Loderer, C. and Martin, K. (1990). Corporate acquisitions by listed firms: The experience of a comprehensive sample. *Financial management*, pages 17–33.

Longstaff, F. A., Pan, J., Pedersen, L. H., and Singleton, K. J. (2011). How sovereign is sovereign credit risk? *American EconomicJournal: Macroeconomics*, 3(2):75–103.

MacKinlay, A. C. (1997). Event studies in economics and finance. *Journal of Economic Literature*, 35(1):13–39.

Malatesta, P. H. (1983). The wealth effect of merger activity and the objective functions of merging firms. *Journal of Financial Economics*, 11(1-4):155–181.

Malmendier, U. and Tate, G. (2008). Who makes acquisitions? CEO overconfidence and the market's reaction. *Journal of Financial Economics*, 89(1):20–43.

Masulis, R. W., Wang, C., and Xie, F. (2007). Corporate governance and acquirer returns. *The Journal of Finance*, 62(4):1851–1889.

Merton, R. C. (1974). On the pricing of corporate debt: the risk structure of interest rates. *The Journal of Finance*, 29(2):449–470.

Meyer, M., Milgrom, P., and Roberts, J. (1992). Organizational prospects, influence costs, and ownership changes. *Journal of Economics & Management Strategy*, 1(1):9–35.

Moeller, S. B., Schlingemann, F. P., and Stulz, R. M. (2005). Wealth destruction on a massive scale? A study of acquiring-firm returns in the recent merger wave. *The Journal of Finance*, 60(2):757–782.

Myerson, R. B. (1982). Optimal coordination mechanisms in generalized principal–agent problems. *Journal of Mathematical Economics*, 10(1):67–81.

Oehmke, M. and Zawadowski, A. (2016). The anatomy of the CDS market. *The Review of Financial Studies*, 30(1):80–119.

Patell, J. M. (1976). Corporate forecasts of earnings per share and stock price behavior: Empirical test. *Journal of Accounting Research*, 14(2):246–276.

Rau, P. R. and Vermaelen, T. (1998). Glamour, value and the post-acquisition performance of acquiring firms. *Journal of Financial Economics*, 49(2):223–253.

Rose, A. K., Lockwood, B., and Quah, D. (2000). One money, one market: Estimating the effect of common currencies on trade. *Economic Policy*, 15(30):7–45.

Rotemberg, J. J. and Saloner, G. (1994). Benefits of narrow business strategies. *The American Economic Review*, 84(5):1330–1349.

Shastri, K. (1990). The differential effects of mergers on corporate security values. *Research in Finance*, 8:179–201.

Shrivastava, P. (1986). Postmerger integration. *Journal of Business Strategy*, 7(1):65–76. Song, W. (2007). Does overvaluation lead to bad mergers? In *AFA 2007 Chicago Meetings Paper*.

Stulz, R. M. (1990). Managerial discretion and optimal financing policies. *Journal of Financial Economics*, 2(1):3–27.

Vallascas, F. and Hagendorff, J. (2011). The impact of european bank mergers on bidder default risk. *Journal of Banking & Finance*, 35(4):902–915.

Wilcoxon, F. (1945). Individual comparisons by ranking methods. *Biometrics Bulletin*, 1(6):80–83.

Empirical Appendix

Table 1. Number of M&A announcements by year and acquiring firms' region

Year	Europe	North America	Total
2005	17	18	35
2006	28	27	55
2007	21	32	53
2008	11	14	25
2009	6	25	31
2010	10	29	39
2011	11	28	39
2012	13	26	39
2013	10	17	27
2014	11	23	34
2015	13	32	45
2016	15	23	38
2017	5	15	20
2018	2	10	12
Total	**173**	**319**	**492**

Table 2. Number of M&A announcements by acquiring firms' countries

Country	No. of M&As
Belgium	2
Canada	1
Denmark	1
Finland	8
France	30
Germany	22
Iceland	1
Italy	9
Luxembourg	1
Netherlands	17
Norway	5
Poland	1
Puerto Rico	1
Spain	13
Sweden	21
Switzerland	12
United Kingdom	30
United States	317
Total	**492**

Table 3. Number of M&A announcements by acquiring firms' sector classifications and regions

Sector	Europe	North America	Total
Basic Materials	15	25	40
Consumer Goods	24	33	57
Consumer Services	20	34	54
Energy	6	32	38
Financials	23	27	50
Healthcare	14	45	59
Industrials	34	51	85
Technology	14	49	63
Telecommunications Services	14	11	25
Utilities	9	12	21
Total	**173**	**319**	**492**

Table 4. Number of M&A announcements by acquiring firms' sector classifications and year

Sector	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
Basic Materials	1	5	6	2	0	3	6	5	1	3	5	3	0	0	40
Consumer Goods	3	4	5	2	6	5	2	4	0	4	7	6	6	3	57
Consumer Services	1	4	6	3	1	3	7	2	7	5	8	3	2	2	54
Energy	2	3	2	0	4	5	3	3	2	1	4	3	4	2	38
Financials	5	12	6	2	3	0	5	5	1	6	2	0	2	1	50
Healthcare	4	4	5	6	3	7	2	9	2	6	4	5	1	1	59
Industrials	6	7	7	4	3	9	10	8	9	3	6	9	1	3	85
Technology	7	9	11	4	7	4	1	3	1	2	7	5	2	0	63
Telecommunications Services	6	2	3	1	4	0	2	0	1	2	0	2	2	0	25
Utilities	0	5	2	1	0	3	1	0	3	2	2	2	0	0	21
Total	35	55	53	25	31	39	39	39	27	34	45	38	20	12	492

Table 5. Number of M&A announcements by target firms' domestic countries and acquiring firms' regions

Target country	Europe	North America	Total
Australia	3	6	9
Belgium	3	2	5
Bermuda	1	2	3
Brazil	2	2	4
Canada	8	13	21
China	3	1	4
Denmark	7	3	10
Egypt	1	0	1
Finland	1	0	1
France	11	2	13
Germany	7	5	12
Guernsey	1	0	1
Ireland	0	3	3
Isle of Man	0	1	1
Israel	0	2	2
Italy	6	4	10
Luxembourg	0	1	1
Netherlands	5	1	6
Norway	7	1	8
Poland	1	0	1
Puerto Rico	0	1	1
Singapore	1	1	2
South Africa	1	0	1
Spain	11	3	14
Sweden	5	3	8
United Kingdom	26	17	43
United States	62	245	307
Total	173	319	492

Table 6. Number of M&A announcements by target firms' sector classifications and acquiring firms' regions

Sector	Europe	North America	Total
Basic Materials	14	25	39
Consumer Goods	16	40	56
Consumer Services	21	26	47
Energy	6	36	42
Financials	26	22	48
Healthcare	16	54	70
Industrials	30	33	63
Technology	20	59	79
Telecommunications Services	14	15	29
Utilities	10	9	19
Total	173	319	492

Table 7. Number of M&A by target firms' sector classifications and year

Sector	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
Basic Materials	0	5	6	2	0	3	6	1	1	4	6	5	0	0	39
Consumer Goods	5	2	4	3	6	4	3	5	3	2	8	6	2	3	56
Consumer Services	1	1	3	1	3	3	6	5	6	4	5	4	3	2	47
Energy	4	4	3	0	3	5	3	3	2	2	4	3	4	2	42
Financials	6	12	6	3	2	0	2	4	1	6	3	0	2	1	48
Healthcare	4	7	6	6	2	7	4	13	2	6	4	6	2	1	70
Industrials	3	8	8	3	2	7	8	4	4	2	3	6	3	2	63
Technology	6	9	12	5	8	7	4	4	2	6	8	5	2	1	79
Telecommunications Services	6	3	4	1	4	0	2	0	2	2	1	2	2	0	29
Utilities	0	4	1	1	1	3	1	0	4	0	3	1	0	0	19
Total	35	55	53	25	31	39	39	39	27	34	45	38	20	12	492

Table 8. Notes on variables and data sources

Variable	Description	Source
Deal characteristics		
Diversification	Dummy variable that takes on the value of 1 if the industrial sector of a target firm differs from the acquiring firm's sector, and 0 otherwise.	Markit, own calc.
Type of transaction	Dummy variable that takes on the value of 1 if the transaction type is a merger, and 0 otherwise.	Thomson Reuter's SDC Platinum
Cross-border M&A	Dummy variable that takes on the value of 1 if the transaction is performed cross-border, and 0 otherwise.	
Transaction volume	US dollar amount (in millions) of an M&A transaction paid by an acquiring firm.	
Transaction volume ratio	Ratio of the transaction volume to an acquiring firm's book value of total assets in the year before an M&A transaction is announced.	Thomson Reuter's SDC Platinum and Worldscope, own calc.
Size ratio	Ratio of a target firm's book value of total assets to an acquiring firm's book value of total assets in the year before an M&A transaction is announced.	Thomson Reuter's Worldscope, own calc.

continued on next page

Table 8. Notes on variables and data sources (continued)

Variable	Description	Source
Acquiring and target firm characteristics		
North America	Dummy variable that takes on the value of 1 if an acquiring firm operates in the North American region, and 0 if the acquirer is located in Europe.	Thomson Reuter's SDC Platinum
Size	An acquiring and target firm's book value of total assets in millions of US dollars in the year before an M&A transaction is announced.	Thomson Reuter's Worldscope
Leverage ratio	An acquiring and target firm's debt-to-equity ratio in the year before an M&A transaction is announced.	
Lower leverage ratio than target	Dummy variable that takes on the value of 1 if an acquiring firm has a lower leverage ratio than the target firm in the year before an M&A transaction is announced, and 0 otherwise.	Thomson Reuter's Worldscope, own calc.
Leverage ratio change	Change of an acquiring firm's leverage ratio. The change is measured for the period from the year before an M&A transaction is announced until the year of the announcement.	
Valuation	Market-to-book ratio (MBR). An acquiring and target firm's ratio of the stock price per share to the book value per share in the year before an M&A transaction is announced.	Thomson Reuter's Worldscope
Rating	Average acquiring and target firm's issuer rating provided by Moody's, Standard and Poors and Fitch. The value of 1 represents the best rating, whereas the value of 23 denotes the worst rating. Ratings are translated into values following the method provided by Jorion et al., 2005.	Thomson Reuter's EIKON
Mean CDS spread	Mean CDS spread of an acquiring firm during the [-120,-21] window before the announcement day in basis points.	Markit, own calc.
Rated	Variable that that takes on the value of 1 if a target firm has received a rating from Moody's, Standard and Poor's or Fitch, and 0 otherwise.	Thomson Reuter's EIKON

Table 9. Summary statistics of the entire sample of M&A announcements

	Mean	SD	Min.	Max.	N
Deal characteristics					
Diversification	0.2480	0.4323	0.0000	1.0000	492
Type of transaction (merger)	0.8394	0.3675	0.0000	1.0000	492
Cross-border M&A	0.4431	0.4973	0.0000	1.0000	492
Transaction volume ($m)	4,440.8227	9,470.9234	2.5000	101,475.7900	492
Transaction volume ratio (%)	19.2973	33.8663	0.0055	231.0269	443
Size ratio (%)	50.3159	275.7725	0.0061	4,243.6740	290
Acquiring firm characteristics					
North America	0.6484	0.4780	0.0000	1.0000	492
Size (total assets in $m)	63,595.2230	170,064.1155	957.3970	2,172,924.0000	443
Leverage ratio (%)	135.5824	380.1629	1.6400	5001.9500	432
Lower leverage ratio than target	0.4083	0.4926	0.0000	1.0000	240
Leverage ratio change (%)	29.3614	110.5616	–96.6947	1,183.6045	416
Valuation (MBR) (%)	4.6634	23.2262	0.4400	494.7700	474
Rating	7.4309	2.8423	1.0000	18.0000	492
Mean CDS spread (bps)	103.1256	158.6574	4.7150	2,106.2096	492
Target firm characteristics					
Size (total assets in $m)	5,717.5334	18,662.2264	12.4180	272,109.0000	326
Leverage ratio (%)	134.4338	316.8574	0.0100	3,665.0500	265
Valuation (MBR) (%)	3.9272	8.1003	0.2700	95.3300	328
Rating	10.6500	2.9324	4.0000	17.0000	120
Rated	0.2439	0.4299	0.0000	1.0000	492

This table displays the summary statistics of the entire sample of 492 M&A announcements from stock-listed acquiring firms from North America and Europe between May 2005 and October 2018.

Table 10. Summary statistics of North American and European M&A announcements

	Europe					North America				
	Mean	**SD**	**Min.**	**Max.**	**N**	**Mean**	**SD**	**Min.**	**Max.**	**N**
Deal characteristics										
Diversification	0.3295	0.4714	0.0000	1.0000	173	0.2038	0.4034	0.0000	1.0000	319
Type of transaction (merger)	0.8324	0.3746	0.0000	1.0000	173	0.8433	0.3641	0.0000	1.0000	319
Cross-border M&A	0.8266	0.3797	0.0000	1.0000	173	0.2351	0.4247	0.0000	1.0000	319
Transaction volume ($m)	5,384.2637	12,800.6143	3.7120	10,1475.7900	173	3,929.1760	7,008.8067	2.5000	62,141.0560	319
Transaction volume ratio (%)	14.5245	31.0520	0.0055	201.7823	152	21.7903	35.0405	0.0150	231.0269	291
Size ratio (%)	20.4111	63.3807	0.0195	511.3888	102	66.5409	338.5417	0.0061	4,243.6740	188
Acquiring firm characteristics										
Size (total assets in $m)	85,156.6506	206,932.3533	1,568.4000	2,172,924.0000	152	52,332.8965	146,333.2494	957.3970	1,913,902.0000	291
Leverage ratio (%)	103.1754	160.6333	1.6400	1046.2800	151	152.9968	455.8176	2.1500	5001.9500	281
Lower leverage ratio than target	0.2800	0.4520	0.0000	1.0000	75	0.4667	0.5004	0.0000	1.0000	165
Leverage ratio change (%)	24.1629	112.6767	–63.9628	1,183.6045	138	31.8803	109.4173	–96.6947	1,124.1860	279
Valuation (MBR) (%)	2.7754	2.1095	0.4400	14.8600	168	5.6999	28.8291	0.4500	494.7700	306
Rating	6.6994	2.2025	1.0000	13.0000	173	7.8276	3.0661	1.0000	18.0000	319
Mean CDS spread (bps)	73.9014	84.1396	4.7150	648.4683	173	118.9744	185.2586	7.7094	2,106.2096	319
Target firm characteristics										
Size (total assets in $m)	4,534.5413	12,810.7052	12.4180	127,254.0000	118	6,388.6539	21,279.1882	12.5370	272,109.0000	208
Leverage ratio (%)	134.5410	329.6411	0.0200	2,216.0300	84	134.3840	311.6816	0.0100	3,665.0500	181
Valuation (MBR) (%)	3.0960	3.6168	0.2700	31.6200	102	4.3024	9.4357	0.5900	95.3300	226
Rating	9.6129	2.8830	5.0000	16.0000	31	11.0112	2.8782	4.0000	17.0000	89
Rated	0.1792	0.3846	0.0000	1.0000	173	0.2790	0.4492	0.0000	1.0000	319

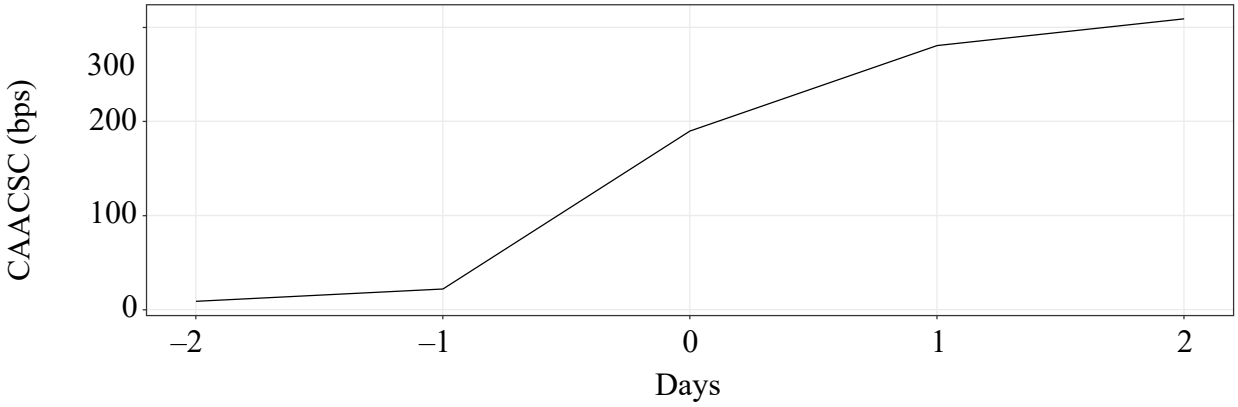
This table shows the summary statistics for European (173) and North American (319) M&A announcements from stock-listed acquiring firms between May 2005 and October 2018.

Table 11. Baseline analysis: (C)AACSCs due to M&A announcements

Days	(C)AACSC (bps)	Wilcoxon	GRANK	% > 0	N
–2	7.4437	0.2713	1.1602	51.0163	492
–1	13.2771	0.7220	1.2129	49.5935	492
0	165.1602	5.2137***	2.2618**	58.1301***	492
1	94.5582	3.1206***	1.7705*	55.2846**	492
2	29.4877	2.2604**	1.7021*	53.2520	492
[–2,2]	309.9268	5.9471***	4.1933***	58.3333***	492
[–2,1]	280.4392	5.7833***	4.4270***	58.5366***	492
[–2,0]	185.8810	4.6087***	4.1949***	56.3008***	492
[–1,2]	302.4831	6.4476***	4.7968***	60.3659***	492
[0,2]	289.2061	6.2492***	5.1105***	59.7561***	492
[–1,1]	272.9954	6.2685***	5.0003***	61.3821***	492
[–1,0]	178.4372	5.2093***	4.7984***	58.9431***	492
[0,1]	259.7184	6.1462***	5.2279***	60.7724***	492
[–5,5]	364.8776	5.1754***	2.4374**	58.3333***	492
[–10,10]	377.9458	3.9900***	1.7106*	55.8943**	492

The upper half of this table reports average abnormal spread changes (*AACSCs*) from CDSs written on stock-listed acquiring firms for the main event window period of four days ([–2,2]) symmetrically set around the M&A announcement day t_0. The lower half of the table displays cumulative abnormal spread changes (*CAACSCs*) from CDSs written on stock-listed acquiring firms across different event window lengths. Both, *AACSCs* and *CAACSCs* are denoted in basis points. *Wilcoxon* indicates the test statistics of the Wilcoxon signed-rank test and *GRANK* reports the statistics of the generalized rank test as described in Section 2. *% > 0* is the percentage of positive *(C)AACSCs* for a given day or event window. Significances are tested with *Pearson's chi-squared test* of equal proportions. The number of observations is denoted by *N*. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

Figure 1. Baseline analysis: Development of CAACSCs during the main event window



This figure refers to Table 11 and illustrates the development of the cumulative average abnormal CDS spread changes (*CAACSCs*) during the main event window period of four days ([–2,2]) symmetrically set around the M&A announcement day t_0. *CAACSCs* are denoted in basis points.

Table 12a. Robustness checks: Parameter-modifications

	$CAACSC_{[-2,2]}$ (bps)	Difference (bps)	% > 0	N
Baseline analysis	309.9268***	–	58.3333***	492
Market model	311.9540***	–2.0272	59.3496***	492
Constant mean model	295.7186***	14.2082	58.9431***	492
60 days estimation window	310.0649***	–0.1381	58.7398***	492
200 days estimation window	322.3100***	–12.3832	60.1790***	447
Without gap	307.4706***	2.4562	58.9431***	492
Without rating adjustment	308.2417***	1.6851	57.9268***	492

This table shows cumulative average abnormal spread changes (*CAACSCs*) from CDSs written on stock-listed acquiring firms with regard to modifications of several parameters used for the baseline empirical design and described in Section 3. *CAACSCs* are denoted in basis points and measured during the main event window period of four days ([–2,2]) symmetrically set around the M&A announcement day t_0. *Baseline analysis* repeats the results from our baseline analysis as reported in Table 11 (Section 4.1). *Market model* substitutes the four factor model from our main analysis by a one factor model whereas *constant mean model* replaces the four factor model by a constant mean model. *60 days estimation window* and *200 days estimation window* vary the length of the estimation window to 60 and 200 days, respectively. *Without gap* does not allow for a gap between the estimation and event window. *Without rating adjustment* exceptionally employs the investment grade index to predict the returns from the four factor model. The significance of each *CAACSC* is tested with the *GRANK test*. *Difference (bps)* indicates the differences between the *CAACSC* from the baseline analysis and *CAACSCs* from respective robustness checks. The difference between the *CAACSCs* is tested with the *difference in means t-test*. This test is implemented with the assumption of unequal variances when a test of equal variances is rejected at the 5% level, and with the assumption of equal variances otherwise. *% > 0* is the percentage of positive *CAACSCs* from the main event window ([–2,2]). The significance is tested with *Pearson's chi-squared test* of equal proportions. The number of observations is denoted by *N*. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

Table 12b. Robustness checks: Regional analysis

	$CAACSC_{[-2,\,2]}$ (bps)	**Difference (bps)**	**% > 0**	**N**
Baseline analysis	309.9268***	–	58.3333***	492
Europe	296.4429***	13.4839	55.4913	173
North America	317.2394***	–7.3126	59.8746***	319

This table shows cumulative average abnormal spread changes (*CAACSCs*) from CDSs, separately for European and North American stock-listed acquiring firms. *CAACSCs* are denoted in basis points and measured for the main event window period of four days ([–2,2]) symmetrically set around the M&A announcement day t_0. *Baseline analysis* repeats the results from our baseline analysis as reported in Table 11 (Section 4.1). *Europe* and *North America* reports *CAACSCs* for stock-listed acquiring firms from Europe and North America, respectively. The significance of each *CAACSC* is tested with the *GRANK test*. *Difference (bps)* indicates the differences between the *CAACSC* from the baseline analysis and *CAACSCs* from respective regional analyses. The difference between the *CAACSCs* is tested with the *difference in means t-test*. This test is implemented with the assumption of unequal variances when a test of equal variances is rejected at the 5% level, and with the assumption of equal variances otherwise. *% > 0* is the percentage of positive *CAACSC* from the main event window ([–2,2]). The significance is tested with *Pearson's chi-squared test* of equal proportions. The number of observations is denoted by *N*. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

Table 12c. Robustness checks: Sectoral analysis

	Acquirer firms			Target firms		
	$CAACSC_{[-2,2]}$ (bps)	**% > 0**	**N**	**$CAACSC_{[-2,2]}$ (bps)**	**% > 0**	**N**
Basic Materials	562.6179***	65.0000*	40	868.0481***	69.2308**	39
Consumer Goods	781.3939***	64.9123**	57	737.1223***	64.2857**	56
Consumer Services	–52.6414	48.1481	54	27.6773	51.0638	47
Energy	234.5598	60.5263	38	177.5752	54.7619	42
Financials	241.1147*	60.0000	50	183.4476	54.1667	48
Healthcare	347.2396***	59.3220	59	221.5283**	52.8571	70
Industrials	249.1793**	54.1176	85	409.2263***	65.0794**	63
Technology	191.1151**	58.7302	63	49.8628	54.4304	79
Telecommunication Services	310.4738**	68.0000	25	151.9998*	62.069	29
Utilities	278.2856	47.6190	21	534.2849*	63.1579	19

This table shows cumulative average abnormal spread changes (*CAACSCs*) from CDSs across different industrial sectors of the acquiring and target firms. *CAACSCs* are denoted in basis points and measured for the main event window period of four days ([–2,2]) symmetrically set around the M&A announcement day t_0. The significances of the *CAACSCs* are tested with the *GRANK test*. The difference between the *CAACSCs* is tested with the *difference in means t-test*. This test is implemented with the assumption of unequal variances when a test of equal variances is rejected at the 5% level, and with the assumption of equal variances otherwise. *% > 0* is the percentage of positive *CAACSCs* from the main event window ([–2,2]). The significance is tested with *Pearson's chi-squared* test of equal proportions. The number of observations is denoted by *N*. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

Table 13a. Sensitivity analyses: Deal characteristics

	$CAACSC_{[-2,\,2]}$ (bps)	% > 0	N
Panel A: Diversification			
Grouped by whether the sector classification is the same fir the acquiring and target firm			
No Diversification	310.6576***	60.2703***	370
Diversification	307.7107**	52.459	122
Difference	2.9469		
Panel B: Type of transaction			
Grouped by whether the deal type is a merger			
Merger	347.4215***	60.2906***	413
Acquisition of assets	113.9104	48.1013	79
Difference	233.5111**		
Panel C: Cross-border M&A			
Grouped by whether the target firm is operating in a different country			
Cross-border	296.8758***	60.5839***	274
Domestic	326.3304***	55.5046	218
Difference	–29.4546		
Panel D: Complexity of the transaction			
(i) Grouped by the transaction volume			
Above median	598.5933***	68.2927***	246
Below median	21.2604	48.374	246
Difference	577.3329***		
(ii) Grouped by the transaction volume ratio			
Above median	579.5838***	68.018***	222
Below median	37.6387	47.5113	221
Difference	541.9451***		
(iii) Grouped by the size ratio			
Above median	421.896**	60.6897**	145
Below median	213.0145**	54.4828	145
Difference	208.8815*		

This table shows cumulative average abnormal spread changes (*CAACSCs*) from CDSs written on stock-listed acquiring firms across different deal characteristics. The description of the deal characteristics is provided by Table 9. *CAACSCs* are denoted in basis points and measured for the main event window period of four days ([–2,2]) symmetrically set around the M&A announcement day t_0. The significances of the *CAACSCs* are tested with the *GRANK test*. The differences between *CAACSCs* are tested with the *difference in means t-test*. This test is implemented with the assumption of unequal variances when a test of equal variances is rejected at the 5% level, and with the assumption of equal variances otherwise. *% > 0* is the percentage of positive *CAACSCs* from the main event window ([–2,2]). Significance is tested with *Pearson's chi-squared test* of equal proportions. The number ofobservations is denoted by *N*. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

Table 13b. Sensitivity analyses: Acquiring firm characteristics

	$CAACSC_{[-2,2]}$ (bps)	% > 0	N
Panel A: Size			
Grouped by total assets			
Above median	191.297***	53.1532	222
Below median	427.6824***	62.4434***	221
Difference	–236.3854**		
Panel B: Leverage ratio			
(i) Grouped by the leverage ratio			
Above median	345.584***	60.6481***	216
Below median	292.5921***	56.4815*	216
Difference	52.9919		
(ii) Grouped by whether the acquirer's leverage ratio is lower than the target's leverage ratio			
Lower acquirer leverage	746.0231***	69.3878***	98
Higher acquirer leverage	198.3355***	59.8592**	142
Difference	547.6876***		
(iii) Grouped by the leverage ratio change			
Above median	437.4482***	60.5769***	208
Below median	220.2224***	55.7692	208
Difference	217.2258*		
Panel C: Valuation			
Grouped by the market-to-book ratio			
Above median	317.9047***	60.7595***	237
Below median	318.8936***	56.962**	237
Difference	–0.9889		
Panel D: Rating			
(i) Grouped by rating categories			
Investment grade	314.0083***	58.8101***	437
Speculative grade	277.4977	54.5455	55
Difference	36.5106		
(ii) Grouped by the average CDS spread			
Above median	218.945***	55.6911*	246
Below median	400.9087***	60.9756***	246
Difference	–181.9637*		

This table shows cumulative average abnormal spread changes (*CAACSCs*) from CDSs written on stock-listed acquiring firms across different acquiring firm characteristics. The description of the acquiring firm characteristics is provided by Table 9. *CAACSCs* are denoted in basis points and measured for the main event window period of four days ([–2,2]) symmetrically set around the M&A announcement day t_0. The significances of the *CAACSCs* are tested with the *GRANK test*. The differences between *CAACSCs* are tested with the *difference in means t-test*. This test is implemented with the assumption of unequal variances when a test of equal variances is rejected at the 5% level, and with the assumption of equal variances otherwise. *% > 0* is the percentage of positive *CAACSCs* from the main event window ([–2,2]). Significance is tested with *Pearson's chi-squared test* of equal proportions. The number ofobservations is denoted by *N*. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

Table 13c. Sensitivity analyses: Target firm characteristics

	$CAACSC_{[-2,2]}$ (bps)	% > 0	N
Panel A: Size			
Grouped by total assets			
Above median	399.4556***	61.3497***	163
Below median	258.652***	55.2147	163
Difference	140.8036*		
Panel B: Leverage ratio			
Grouped by the leverage ratio			
Above median	542.1753***	65.4135***	133
Below median	301.473***	62.1212***	132
Difference	240.7023		
Panel C: Valuation			
Grouped by the market-to-book ratio			
Above median	512.0164***	64.6341***	164
Below median	133.4471**	56.0976	164
Difference	378.5693***		
Panel D: Rating			
(i) Grouped by rating categories			
Investment grade	571.9959***	65.0794**	63
Speculative grade	803.5999***	73.6842***	57
Difference	–231.604*		
(ii) Grouped by whether the target is rated			
Rated	682.0078***	69.1667***	120
Not rated	189.9007***	54.8387*	372
Difference	492.1071***		

This table shows cumulative average abnormal spread changes (*CAACSCs*) from CDSs written on stock-listed acquiring firms across different target firm characteristics. The description of the target firm characteristics is provided by Table 9. *CAACSCs* are denoted in basis points and measured for the main event window period of four days ([–2,2]) symmetrically set around the M&A announcement day t_0. The significances of the *CAACSCs* are tested with the *GRANK test*. The differences between *CAACSCs* are tested with the *difference in means t-test*. This test is implemented with the assumption of unequal variances when a test of equal variances is rejected at the 5% level, and with the assumption of equal variances otherwise. *% > 0* is the percentage of positive *CAACSCs* from the main event window ([–2,2]). Significance is tested with *Pearson's chi-squared test* of equal proportions. The number ofobservations is denoted by *N*. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$