Credit Derivatives and Firm Investment

George Batta and Fan Yu[1]

Current Version: December 6, 2017

[1]Batta and Yu are from Claremont McKenna College (gbatta@cmc.edu and fyu@cmc.edu). We are grateful to the audience at the CMC brownbag seminar and the SAIF Workshop on Credit Default Swaps, and especially Zhiguo He, Dragon Tang, Tak-Yuen Wong, and Jin Yu for helpful comments. We also thank the Markit Group for supplying the CDS data used in this research.

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Abstract

We examine the effect of credit default swap (CDS) trading on firm investment, finding evidence of a post-CDS introduction drop in debt issuance and M&A activities, which remains robust to propensity score matching and instrumenting CDS introduction using lenders' FX hedging activities. Further analysis reveals a CDS introduction-year increase in debt financing and investment, and suggests that the ex ante commitment benefit of CDS in reducing strategic default, the ex post increase in bankruptcy risk and debt overhang, and the credit supply expansion by banks using CDS to reduce regulatory capital requirements all play a role in explaining these results.

1 Introduction

The objective of this paper is to present an empirical analysis of the effect of CDS trading on firm investment. The last two decades have witnessed the explosive growth of the CDS market, which spurred the development of a large literature devoted to the study of this novel financial instrument.[1] While the early literature treats CDS as a redundant security better known for providing more timely default risk information (Longstaff, Mithal, and Neis, 2005; Blanco, Brennan, and Marsh, 2005; Acharya and Johnson, 2007), recent studies focus on the corporate finance implications of CDS, such as how it affects the cost of debt (Ashcraft and Santos, 2009), bank loan covenants (Shan, Tang, and Winton, 2015), the likelihood of bankruptcy (Subrahmanyam, Tang, and Wang, 2014), and cash holdings (Subrahmanyam, Tang, and Wang, 2016). Yet, there is a lack of empirical work addressing the effect of CDS trading on corporate investment, a subject of arguably greater importance and wider interest.

There are many reasons why the presence of CDS trading can affect firms' financing and investment. Saretto and Tookes (2013) argue that lenders can use single-name CDS to reduce regulatory capital requirements, thus enabling them to lend more. While they focus on the empirical finding of greater leverage ratios for firms with CDS trading, a natural consequence of an expanded credit supply is that firms can pursue a wider range of investment opportunities. Bolton and Oehmke (2011) point out that lenders can use credit insurance to strengthen their bargaining power in debt renegotiations. They demonstrate that this behavior can deter strategic default and increase debt capacity and investment (ex ante commitment benefit of CDS), even though it also leads to a greater likelihood of bankruptcy and failed debt renegotiation (the ex post empty creditor cost of CDS).[2] Danis and Gamba

[1] For a comprehensive review of CDS-related literature, see Augustin, Subrahmanyam, Tang, and Wang (2014).

[2] Both the greater bankruptcy risk and the lower participate rate of bondholders in distressed exchanges post-CDS introduction have been documented by Subrahmanyam, Tang, and Wang (2014) and Danis (2015), respectively. There is also some indirect evidence of the ex ante commitment benefit of CDS. For example, Kim (2015) finds a greater reduction of corporate bond yield spreads after CDS introduction for firms more prone to strategic default.

(2015) extend Bolton and Oehmke's two-period model to a dynamic setting while adding optimal debt/equity choice. Using simulation-based methods, they confirm that under most scenarios, the availability of CDS leads to an increase in investment and firm value.

In light of these theoretical and empirical studies, the positive impact of CDS trading on firm investment may seem like a foregone conclusion. However, Wong and Yu (2017) note that Danis and Gamba assume one-period debt in their dynamic model, and that the financing and investment decisions are made simultaneously each period with no existing debt. Instead, they use a Leland-style continuous-time model in which the perpetual debt is determined at time zero and the firm makes ongoing investment decisions. Similar to Bolton and Oehmke (2011) and Danis and Gamba (2015), this model predicts an initial expansion of debt capacity in the presence of CDS trading. At the same time, however, the increased default risk that results from debtholders' use of credit insurance exacerbates the debt overhang problem and reduces subsequent investment by the firm.

To provide empirical insights, we examine a broad range of investment variables using differences-in-differences estimations, exploiting a large number of CDS introductions between 2001 and 2013. We find that asset growth declines by 2.1 percentage points following CDS introduction, with most of the decline attributed to a sharp drop in the component of net investment related to mergers and acquisitions (as measured by cash paid for acquisitions, the change in goodwill, merger likelihood, merger count, and the dollar value of mergers). We also find that net debt issuance falls following CDS introduction. Furthermore, these results are robust to propensity score matching and instrumenting for CDS introduction. They suggest that debt overhang, which is intimately connected to the empty creditor problem, has a major influence on firm investment in the post-CDS period.

It is perhaps not surprising that the M&A component of firm investment features prominently in a study of the real effects of CDS trading. M&A deals typically require a large number of lenders, especially if they involve the issuance of corporate bonds. They are also frequently motivated by an expectation of large synergy, which implies a significant differ-

ence between the continuation value and liquidation value of the acquired assets. These characteristics are associated with lenders' propensity to over-insure according to Bolton and Oehmke.[3] The large CDS positions held by the lenders make them extra tough in debt renegotiations, and increase the firm's bankruptcy risk and the severity of debt overhang.

We conduct additional tests to shed light on the mechanisms behind the CDS effects on firm investment. First, we examine the debt financing and investment variables separately for the partial year of CDS introduction and the post-introduction years. We find some evidence of M&A activities and changes in debt increasing during the CDS introduction year relative to the pre-introduction baseline. However, debt issuance and M&A activities are lower during the post-introduction years, and remain so even after controlling for lagged M&A. These results are consistent with the temporal pattern described in Wong and Yu (2017) of how firm investment responds to CDS trading.

That both M&A and net debt issuance decline after the CDS introduction year suggests that these are perhaps related to each other. Therefore, we examine debt issuance and the change in leverage around mergers. As expected, both debt issuance and the change in leverage are positive during the merger years, consistent with a debt capacity expansion around mergers (Ghosh and Jain, 2000). However, these merger-related debt increases are significantly smaller after the commencement of CDS trading. Meanwhile, these variables do not behave differently with or without CDS during the non-merger years. Again, these results seem consistent with the debt overhang problem created by CDS trading during the CDS introduction year preventing firms from using new debt to finance additional acquisitions in the subsequent years.

Other tests we perform are designed to distinguish the credit supply expansion hypothesis of Saretto and Tookes (2013) from the empty creditor hypothesis of Bolton and Oehmke (2011). Specifically, we follow Saretto and Tookes in using state-level debt defaults to measure portfolio shocks to lenders within the state in which the sample firm is headquartered.

[3] See Corollary 4 and Section 4 of Bolton and Oehmke (2011).

Presumably, the role of CDS in expanding firms' access to credit is likely more important after these adverse shocks have impacted the local lenders. We also follow Bolton and Oehmke's prediction that lenders tend to over-insure (hence exacerbate the empty creditor and debt overhang problems) when there is ample renegotiation surplus in the event of a liquidity default. We use the the wedge between the market value and replacement value of assets, measured by Tobin's Q at the industry level, as a proxy for this renegotiation surplus. We find empirical evidence from net debt issuance consistent with both of these mechanisms—net debt issuance is larger post-CDS among firms headquartered in states with higher debt defaults, and lower post-CDS among firms with a higher median industry Q.

Lastly, how do we reconcile Saretto and Tookes (2013)' finding of higher firm leverage with our finding of lower net debt issuance in the presence of CDS trading? First, although they focus exclusively on S&P 500 firms, while we examine a much broader set of companies, we are able to replicate their finding of higher leverage after CDS initiation in our sample. Nevertheless, our findings of declining net debt issuance, asset growth, and M&A activities can be mechanically consistent with an increasing leverage if the CDS-induced cumulative effect on the denominator of leverage (assets) is larger in magnitude than the effect on the numerator (debt). Second, Saretto and Tookes (2013, Table 6) present evidence of the change in debt being higher for CDS firms relative to matched firms during the year of CDS introduction. Interestingly, they also examine the change in debt over a two-year period beginning with the CDS introduction year. In the latter case, their differences-in-differences estimate is still positive but smaller compared to the estimate using only the CDS introduction year. Therefore, their results are actually consistent with ours—relative to non-CDS firms, the annual change in debt for CDS firms is larger only during the CDS introduction year but lower during the post-introduction years.

There is a limited amount of empirical work analyzing the effect of CDS trading on firm investment. Colonnello, Efing, and Zucchi (2016) show that firm investment, as measured by the ratio of capital expenditures to PPE, declines post-CDS for firms with strong

shareholders. While this finding is similar to ours, they motivate it using a model without limited commitment and strategic default, and are therefore exclusively focused on the empty creditor cost of CDS in increasing bankruptcy risk and reducing firm value. Guest, Karampatsas, Petmezas, and Travlos (2016) find that CDS firms are more likely to engage in acquisitions. However, their results are based on the cross-sectional indicator of a CDS firm rather than the time-varying indicator of whether a firm has active CDS trading. We find through replication that their conclusion is reversed when using the CDS trading indicator and controlling for time-invariant heterogeneities at the firm level. Bartram, Conrad, Lee, and Subrahmanyam (2017) focus on how cross-country differences in the legal environment impact the investment and financing effects of CDS introduction. Their estimation uses only the CDS introduction year as treatment, and uncovers evidence of higher leverage and capital expenditure. The main difference of our paper from these studies is that we begin from a richer set of theoretical models. This allows us to design empirical tests that attempt to flush out the full implications of these models, e.g., for different types of investment as well as the timing of investment in relation to CDS introduction.

The rest of our paper is organized as follows. Section 2 motivates our empirical tests by reviewing the literature pertaining to the effect of CDS trading on firm investment and financing. Section 3 outlines the construction of the dataset and summarizes the variables used in the analysis as well as the empirical methodologies. Section 4 presents the empirical findings. Section 5 concludes.

2 Literature Review

According to the extant literature, there are several ways in which the existence of a CDS market can affect debt market outcomes, which can include price-related terms such as the yield spread and bond liquidity, as well as non-price terms such as the amount of debt issued, debt maturity, and debt covenants. In this paper, we focus on the impact of CDS trading on a firm's debt capacity. Lemmon and Roberts (2010) find a nearly one-for-one decline

in net investment with the decline in net debt issuance given an exogenous contraction of credit supply, and that there is little substitution into alternative sources of capital such as internal reserves, trade credit, and equity.[4] Therefore, to the extent that we can adequately control for factors that explain CDS introduction, the truly exogenous part of CDS trading initiation should have similar effects on debt issuance and investment.

Saretto and Tookes (2013) start with a discussion of the role of capital supply frictions in firms' capital structure and investment decisions. The main reason why CDS trading can increase the supply of debt capital for borrowers, according to their discussion, is that purchasing CDS can mitigate portfolio risk and provide regulatory capital relief for lenders. For example, the risk-weight for BBB-rated corporate bonds is 100 percent according to the standardized approach of Basel II (BCBS, 2001), while hedging with CDS sold by AA-rated counterparties will bring the risk-weight down to only 20 percent. This can dramatically boost lenders' profitability even after factoring in the CDS premiums that they have to pay.[5]

Bolton and Oehmke (2011) recognize that lenders, by purchasing credit insurance through the CDS market, acquire an "outside option" that turns them into "empty creditors," who can act tough in debt renegotiation. While this would inefficiently increase the likelihood of renegotiation failure, thus leading to greater bankruptcy risk, it can also serve as a commitment device that reduces borrowers' propensity to default strategically in order to negotiate down their payments. Overall, Bolton and Oehmke show that the presence of CDS can reduce the incidence of strategic default and increase the set of projects that can receive debt financing. Hence, their model predicts debt capacity expansion and increased investment after CDS introduction. Danis and Gamba (2015) subsequently extend Bolton and Oehmke's two-period model to a multi-period setting with repeated investment and financing decisions involving one-period debt. By simulating the steady state of a large number of firms with different characteristics, they confirm Bolton and Oehmke's result of higher debt financing

[4] They exploit the collapse of Drexel Burnham Lambert Inc. in 1989 and its effect on the below-investment-grade credit supply as a natural experiment.

[5] Consistent with this argument, Shan, Tang, and Yan (2015) find that banks' total assets increase, but their risk-weighted assets shrink, after they start using CDS.

and investment in the presence of CDS trading.

Because of the assumption of short-term debt, there is no debt overhang in either of these models. However, this is not the case when firms use long-term debt. Specifically, Wong and Yu (2017) consider the effect of CDS trading on firm investment and financing using a continuous-time model in the spirit of Leland (1994). In this model, the firm issues perpetual debt at time zero and makes continuous investment decisions. As in the two aforementioned models with short-term debt, the ex ante commitment benefit of CDS reduces strategic default and increases debt capacity at time zero. The main difference here is that the greater bankruptcy risk attributed to the empty creditors also worsens debt overhang, thereby restricting subsequent investment.

In light of these predictions, we will conduct differences-in-differences estimations of firms' debt issuance and investment, exploiting the staggered introduction of single-name CDS trading during our sample period. Furthermore, we can examine the behavior of debt issuance and investment during the year of CDS introduction versus all subsequent years, as a way to disentangle the initial debt capacity expansion from the subsequent reduction in investment vis-à-vis the debt overhang problem.[6]

To see whether the credit supply expansion mechanism described by Saretto and Tookes (2013) plays a role in the determination of firm financing and investment, we adopt one of the empirical tests in their paper, which exploits a local bias in the preference of both borrowers and lenders (Bharath, Dahiya, Saunders, and Srinivasan, 2007; Massa, Yasuda, and Zhang, 2013). Specifically, an increase in defaults among firms headquartered in the same state as the sample firm can be considered as a negative portfolio shock to all local lenders that will reduce their willingness to lend.[7] Under such a scenario, the availability of CDS for hedging

[6] Because firms can retire old debt and issue new debt after CDS introduction, we could be estimating the *average* effect of the ex ante commitment benefit and the ex post debt overhang cost of CDS over multiple rounds of debt refinancing. Since our sample period covers only 2001-13 and the post-CDS period for the typical CDS firm is relatively short, this may be a less important concern. To confront this issue more fully would seem to require an extension of the Wong and Yu (2017) model to finite maturity debt with refinancing.

[7] Following Saretto and Tookes (2013), we only consider the increase in defaults outside the sample firm's industry. This prevents the measure from being directly linked to the credit risk (hence the debt capacity)

and regulatory capital relief will be particularly appreciated by the local lenders. Therefore, we would predict a greater reliance on debt financing after CDS introduction for firms whose local lenders have suffered negative portfolio shocks.

For the empty creditor mechanism, Bolton and Oehmke (2011, Corollary 4) describe a tendency by lenders to over-insure using CDS in order to capture more of the renegotiation surplus in the "high state," at the cost of pushing the firm into inefficient liquidation in the "low state." The propensity to over-insure depends positively on the ratio of the cash flows in the high and low states, which we can loosely interpret as the continuation and liquidation values of the firm's assets, and proxy using the firm's industry median Q ratio.[8] As shown respectively in Bolton and Oehmke (2011) and Wong and Yu (2017), this over-insurance has the dual consequence of a larger debt capacity expansion at time zero as well as a lower level of subsequent investment. This suggests a refinement of the DID test by interacting the CDS treatment dummy with the industry median Q of the sample firm.

Bolton and Oehmke (2011, Section 4) further show that having multiple creditors can exacerbate the over-insurance problem, because each creditor wants to strengthen its own bargaining position relative to other creditors as well as the firm, and now the cost of failed debt renegotiation is shared among an even larger group of claimholders. We note that mergers and acquisitions, as a category of firm investment, usually involve debt financing with multiple creditors, especially when corporate bonds are issued. Moreover, the acquired asset typically has higher expected value as part of the combined entity than its liquidation value on a standalone basis. Both of these features are associated with over-insurance by lenders in the Bolton and Oehmke model. This suggests that we ought to pay greater attention to M&A activities when examining the effect of CDS trading on firm investment.

of the sample firm.

[8] Using the industry median allows this measure to be insensitive to the Q ratio of the sample firm, which can be negatively correlated with its likelihood of liquidity default. Presumably, a lower likelihood of liquidity default will diminish the empty creditor effect on firms' capital structure and investment decisions.

3 Data and Methodology

3.1 Data

Since we analyze the effect of CDS trading on firms' financing and investment decisions, our sample is based on the standard non-financial Compustat/CRSP universe supplemented with CDS introduction dates obtained from Markit Group's CDS database. Specifically, we obtain daily composite CDS premiums on five-year contracts written on senior unsecured obligations of North American reference entities. The first date on which we have a five-year CDS premium observation for a given firm is defined as the date of CDS introduction for that firm.[9] If CDS trading had already begun on January 2 or January 3, 2001, then the CDS introduction date is treated as an unobserved earlier date, and such a firm would be excluded from our sample. This process results in 554 firms that had their CDS initiation during the sample period between January 2001 and December 2013. In addition to these CDS firms, our sample also includes 5,186 non-CDS firms that never experienced CDS trading during the sample period.[10]

[Insert Table 1 here]

Table 1 contains the definitions of all variables used in our analysis. Among the main variables of interest, CDSActive is a dummy variable equal to one if a firm has active CDS trading by year t, and zero otherwise.[11] We measure firms' financing decisions using net debt issuance and the change in debt—while net debt issuance reflects debt issued for cash, the change in debt also captures debt assumed in an acquisition. We measure firms' investment decisions using net investment. Following Lemmon and Roberts (2010), we divide net investment into three categories: net capital expenditure, cash paid for acquisitions, and other

[9] We base this characterization on five-year CDS premium observations because five-year contracts are typically the most liquid CDS maturity.

[10] Batta, Qiu, and Yu (2016) use a similar sample construction procedure, resulting in 739 CDS firms and 6,115 non-CDS firms. They have a shorter sample period (January 2001 to September 2010), but include financial firms and require I/B/E/S coverage due to their focus on price discovery in the CDS market and its effect on analyst forecasts.

[11] What this means is that if CDS trading began in June 2004, then our CDSActive variable would be equal to one starting from the year of 2005. In later analysis, we will also examine the partial year of CDS introduction (2004 in this example) separately from the post-introduction years.

investment. Since investment generally results in asset growth, we also examine the change in total assets.

An important category of net investment that we will be focusing on is mergers and acquisitions. To more broadly measure M&A activities, we include the change in goodwill[12] and a merger dummy equal to one if cash paid for acquisitions is positive and zero otherwise, both of which are derived from Compustat. We also obtain the number of mergers and the dollar value of all mergers[13] as reported in Thomson ONE Banker's M&A database.[14] The unit of observations is a firm-year, since some of these variables are available only annually. To normalize the financing and investment variables, we divide them by the firm's total assets at the end of the period.

The next part of Table 1 contains control variables that have been used in the literature to explain either the likelihood of CDS introduction or corporate investment. For example, to account for the propensity of CDS trading, Subrahmanyam, Tang, and Wang (2014) include total assets, equity volatility, leverage, EBIT, working capital, cash holdings, asset turnover, retained earnings, net PPE, ROA, excess stock return, whether a firm is rated, and whether the rating is investment-grade. These variables may speak to firms' credit risk and hence investors' demand for CDS as a hedging instrument. To explain corporate investment, Chen and Chen (2012) include firms' cash flow and cash holdings, as well as Tobin's Q. For the latter, we follow Erickson and Whited (2012) in using the enterprise market-to-book ratio, since its distribution is well-behaved and the rest of our variables are also deflated by assets

[12] The change in goodwill can also result from goodwill writedowns or disposals of business units. However, in untabulated tests, we find that our results are robust to adding back goodwill writedowns (*gdwlip* in Compustat) and excluding firm-years reporting discontinued operations (*do*).

[13] We consider the value of all mergers as well as the value of mergers in which the acquirer and target are both publicly-traded firms. We are more confident of the second measure because M&A activities involving private firms are self-reported.

[14] While Compustat's cash paid for acquisitions variable provides some indication of M&A activities, Thomson ONE Banker captures pure stock-based acquisitions and offers a merger count variable. The downside of using Thomson ONE Banker is that its coverage of M&A activities may be limited—a search online shows that it collects data from league tables in the New York Times and the Wall Street Journal, which could imply a bias towards large acquisitions. Numerically, the fraction of firm-years with a merger is 22 percent using Thomson ONE Banker and 42 percent using cash paid for acquisitions being greater than zero. We find similar results when using mergers found in Thomson ONE Banker to derive our merge dummy.

(rather than property, plant, and equipment), and since we examine all forms of investment, not just capital expenditures.

The remainder of Table 1 includes a measure of lenders' FX hedging activities, conditioning variables used in cross-sectional tests to disentangle the channels in which CDS trading affects financing and investment (median industry Q and state defaults), and lastly, variables used by Saretto and Tookes (2013) in their examination of leverage changes around CDS introduction.

[Insert Table 2 here]

Panel B of Table 2 shows the number of firms that began CDS trading during each year of our sample period of 2001-13. The bulk of CDS initiations occurred during the years before the great financial crisis. The overall time-series pattern of CDS introductions is quite similar to that of Subrahmanyam, Tang, and Wang (2016). Their 901 CDS introductions over the 1997-2009 period include both financial and non-financial firms, while we exclude financial firms.

Panel A of Table 2 presents the summary statistics of all variables across CDS firm and non-CDS firms. Although we should always be cautious about over-interpreting univariate comparisons, a quick glance reveals that CDS firms tend to be much larger in terms of total assets, and are much more likely to hold an investment-grade credit rating. They operate at a higher leverage and greater profitability (as measured by EBIT, ROA, and retained earnings), although the volatility of their stock returns is lower. Overall, these univariate comparisons are consistent with the notion that the CDS firms are the more mature ones among the universe of all firms. Turning to the investment and financing variables, we do not see a distinct pattern when comparing the means of these variables across the CDS and non-CDS firms. Some measures of M&A activities, such as the merger dummy and the merger count, average higher among the CDS firms. While this is consistent with Guest et al. (2016)'s findings, we are more interested in changes in firms' investment and financing decisions that are attributed to the onset of CDS trading.

3.2 Methodology

To conduct a more rigorous analysis of the effect of CDS introduction on firms' investment and financing decisions, we estimate the following baseline regression specification:

$$y_{i,t} = \alpha_i + \beta_t + \gamma \text{CDSActive}_{i,t} + \theta' X_{i,t} + \epsilon_{i,t}, \tag{1}$$

where i and t represent firm and year, respectively. Among the included variables, y denotes various investment and financing measures, α firm fixed effects, β year fixed effects, X firm-level control variables, and ϵ the i.i.d. residual term. The main variable of interest, CDSActive, equals one starting from the first full fiscal year following CDS introduction, and is zero otherwise.

This specification allows us to correctly infer γ under the assumption that CDS introduction is exogenous to the left hand side variable y. To the extent that CDSActive is correlated with the residual ϵ, however, the estimate of γ cannot be interpreted as a causal effect. We address this concern in two ways. First, by including a large number of control variables related to both CDS introduction and firms' investment and financing decisions (collectively referred to as X above), the chance of having omitted variables driving both outcomes is reduced.

Second, we adopt a well-documented instrumental variable for CDS introduction—the usage of FX derivatives by banks that served as lenders or underwriters for the sample firm during the preceding five years. Intuitively, banks that use one type of derivatives (FX) to hedge their risks are more likely to employ all types of derivatives (including CDS) for hedging. Moreover, factors that motivate FX hedging should be largely unrelated to firm-specific reasons for financing and investment. Therefore, we have in principle a strong IV that also satisfies the exclusion restriction.[15]

Another concern that we have with the baseline specification arises from earlier summary statistics showing that the CDS sample is quite different from the non-CDS sample, especially

[15] See Minton, Stulz, and Williamson (2009), Saretto and Tookes (2013), and Subrahmanyam, Tang, and Wang (2014) for additional discussions regarding this widely used instrumental variable.

in terms of firm size. These large differences cast doubt on whether they can be adequately controlled for with a linear specification. To address this issue, we use propensity score matching (PSM) to identify control firms that have a similar likelihood of CDS introduction as the treatment firms, but did not actually experience CDS trading at the time of treatment. The matched and presumably more balanced sample is then used to perform the same baseline regression.

To the extent that the treatment and control firms have similar credit risk, investors can hedge the debt of the control firms using the CDS of the treatment firms.[16] If such "proxy hedging" is widely used, the credit supply expansion hypothesized by Saretto and Tookes (2013) would affect not only firms experiencing CDS introduction, but also the matching firms identified through our PSM procedure. In contrast, the empty creditor problem does not affect the matching firms even if their creditors use the treatment firms' CDS for hedging, since the triggering of the CDS is decoupled from their decision to renegotiate the debt contract.[17] As a result, the PSM-based approach may offer a somewhat cleaner estimate of the effect of the empty creditor/debt overhang problem.

We further supplement CDSActive in the baseline specification with an introduction-year dummy (CDSPartialYr), which equals one only during the year of CDS introduction:

$$y_{i,t} = \alpha_i + \beta_t + \gamma_0 \text{CDSPartialYr}_{i,t} + \gamma_1 \text{CDSActive}_{i,t} + \theta' X_{i,t} + \epsilon_{i,t}. \tag{2}$$

If CDS introductions are truly exogenous, this modification would allow us to differentiate the initial expansion of debt capacity and firm investment from the subsequent debt overhang effects. However, it is also possible that CDS trading is introduced as a response to recent or impending M&A transactions. Specifically, we have in mind the scenario in which M&A deal arrangers initiate CDS trading to allow lenders to hedge their risks or to improve their bargaining positions should debt renegotiation become necessary, both of which would help

[16] In the context of customer-supplier relationship, Li and Tang (2016) hypothesize that supplier credit risk can be hedged using the CDS of the customer (often a large firm) due to their close financial link, and the introduction of CDS for the customer can expand the supply of credit for the supplier.

[17] We thank Zhiguo He for pointing this out to us.

increase the supply of debt capital for M&A transactions. This reverse causality is more likely to affect the interpretation of γ_0 than γ_1, however, due to the proximity of M&A activities and CDS introductions that this scenario requires.[18]

Lastly, we augment the baseline specification by interacting CDSActive with certain firm characteristic Z; this is intended to disentangle the various channels through which CDS trading affects firms' investment and financing decisions:

$$y_{i,t} = \alpha_i + \beta_t + (\gamma_0 + \gamma_1 Z_{i,t}) \, \text{CDSActive}_{i,t} + \delta Z_{i,t} + \theta' X_{i,t} + \epsilon_{i,t}. \tag{3}$$

Potential candidates for Z include median industry Q and state defaults, which are defined in Table 1.

4 Empirical Results

4.1 Baseline Regressions

We begin our analysis by examining firms' investment and financing decisions using the panel regression setup of (1). We include as control variables those from Subrahmanyam, Tang, and Wang (2014) for explaining CDS introduction and those from Chen and Chen (2012) for explaining corporate investment. The results are presented in Table 3.

[Insert Table 3 here]

First, we find that annual net debt issuance declines by an average of 1.1 percent of total assets after the beginning of CDS trading, and this estimate is significant at the one-percent level. It represents an economically significant effect as well, given that the sample average of net debt issuance is only 0.8 percent for CDS firms from Table 2. It suggests that firms are letting some of their debt mature without refinancing it with new debt. This result is not what we would expect to see if the main effect of CDS trading is to expand the credit supply. Similarly, the annual change in debt falls by an average of 1.5 percent of total assets

[18] In subsequent analysis, we use quarterly M&A data from Thomson ONE Banker to take a more careful look at the timing of M&A announcements and CDS introductions.

post-CDS, which is also significant at the one-percent level. For CDS firms, Table 2 shows an average annual change in debt of 1.2 percent. These larger numbers, relative to those for net debt issuance, likely reflect debt assumed in acquisitions.

Second, we find that corporate investment generally falls after CDS introduction. Net investment, which is equal to the sum of net capital expenditure, cash paid for acquisitions, and other investments, falls by a moderate 0.3 percent of total assets after CDS trading begins. Among the components of net investment, while net capital expenditure shows a statistically significant increase, it is more than offset by the steeper decline in cash paid for acquisitions, which amounts to around one percent of total assets and is highly significant at the one-percent level. This is also economically significant with cash paid for acquisitions averaging 2.2 percent of total assets for CDS firms.

Third, since asset growth can be attributed to corporate investment in general and M&A activities in particular, we expect to see a decline in asset growth given the decrease of net investment and cash paid for acquisitions. A similar argument can be made given the importance of debt financing to asset growth. The first column of Table 3 confirms this, with the annual change of total assets being lower by 2.1 percent (significant at the one-percent level) during the post-CDS years. This is close to one half of the average value of asset growth for CDS firms, which equals 4.4 percent in Table 2.

Turning our attention to the included control variables, we find that firms generally issue more debt and invest more (including pursuing more M&A activities) and their assets grow faster, when they are smaller, more profitable (with higher EBIT and excess stock returns), safer (with lower leverage and stock return volatility, and investment-grade credit rating), and overvalued (with a higher Tobin's Q).

Because of the rather prominent post-CDS decline in cash paid for acquisitions, we decide to examine firms' M&A activities in greater detail, using a range of variables from Compustat as well as Thomson ONE Banker's M&A database. These results are presented in Table 4.

[Insert Table 4 here]

In the first three columns of Table 4, we examine variables from Compustat: the change in goodwill, which is typically associated with premiums paid in acquisitions, and a merger dummy equal to one if the cash paid for acquisitions is positive. For the merger dummy, either a linear probability model or a conditional logit model is estimated. In the next three columns we use variables from Thomson ONE Banker: the merger count, the value of all M&A transactions, and the value of M&A transactions in which both parties are publicly-traded firms.

Focusing on the coefficients of CDSActive, we identify a rather uniform decline in all of the M&A measures during the post-CDS years. For example, the annual change in goodwill drops by 1.1 percent of total assets, which is significant at the one-percent level. Similarly, in both the linear probability model and the conditional logit model, the likelihood of mergers experiences highly significant reductions. For instance, the likelihood of mergers decreases by 0.073 in the linear probability model, relative to an average of 0.534 for the merger dummy among CDS firms.[19]

From Thomson ONE Banker, the merger count decreases by 0.17 but is not significant. The value of all M&A transactions decreases by 2.7 percent of total assets and is significant at the five-percent level. Lastly, the value of public-public M&A declines by a whopping 12.7 percent of total assets and is significant at the one-percent level. Both of these reductions in the dollar value of mergers are substantial when compared to their respective sample means for CDS firms.[20] These three variables are measured on an annual basis, and are coded as missing if no merger was found during the year. Because of this, the sample sizes associated with these variables are much smaller compared to those using the Compustat variables. Still, we find that M&A activities can be explained by the included control variables in much of the same way that they explain debt issuance and investment in Table 3. Notably,

[19] We also evaluate the marginal effect of the CDSActive coefficient in the conditional logit model, setting all other covariates to their sample means, except Rated and Investment-grade, which are set to their modal values. This shows that the probability of a merger decreases by 0.118, similar to the LPM-based estimate.

[20] Table 2 shows that among CDS firms, the average merger count is 2.2, the average value of all mergers is 9.1 percent of total assets, and the average value of public-public mergers is 15.7 percent of total assets, suggesting that the latter ones are potentially much larger deals than the average merger.

firms with higher profitability (EBIT), higher excess stock returns, and larger cash holdings, as well as lower default risk (leverage and stock return volatility), are associated with higher M&A activities.

4.2 Propensity Score Matching

In this subsection, we repeat the preceding baseline panel regressions using propensity score matched samples. Specifically, the propensity scores are computed according to a probit model of CDS introduction, using most of the variables included by Saretto and Tookes (2013) and Subrahmanyam, Tang and Wang (2014).[21] For each CDS firm observed before its CDS initiation year (treatment), we identify its nearest neighbor in terms of propensity score (control) among either non-CDS firms or CDS firms that have experienced CDS introduction only after that year. As the summary statistics of Table 2 show, CDS and non-CDS firms are quite different in terms of size, leverage, profitability, and credit rating, among other dimensions. By including other CDS firms in the matching procedure, the matching performance is likely to be improved.[22] Indeed, 28.7 percent of our nearest-neighbor matches are CDS firms. When a match is found (with replacement), we include its entire time-series of observations in the matched sample.

[Insert Table 5 here]

In Table 5, we evaluate the performance of the propensity score matching procedure. In Panel A, we compare the model estimates using either the pre-matching or post-matching sample. From the pre-matching sample, we find that larger firms with investment-grade ratings and higher leverage ratios are more likely to experience CDS introduction, consistent with the findings of Saretto and Tookes (2013) and Subrahmanyam, Tang, and Wang (2014).

[21] In this probit model, the dependent variable is equal to zero before CDS introduction for CDS firms, one at CDS introduction, and treated as missing afterwards. For non-CDS firms, the dependent variable is always zero.

[22] Note that both Saretto and Tookes (2013) and Subrahmanyam, Tang, and Wang (2014) consider only non-CDS firms in their matching procedure, although Saretto and Tookes restrict their overall sample to S&P 500 firms only.

When using the post-matching sample, the estimated coefficients decrease in magnitude and statistical significance, and the pseudo-R^2 drops precipitously, suggesting that firms in the post-matching sample are more homogeneous. Further indication that the matching is effective can be found in Panel B, which shows that the propensity scores are very similar across the treatment and control observations. In Panel C, we compare the firm characteristics across the two groups. In contrast to the summary statistics across CDS and non-CDS firms in Table 2, there is no longer a statistically significant difference among most of the firm characteristics.

[Insert Tables 6 and 7 here]

In Table 6, we replicate the analysis presented in Table 3 pertaining to the effect of CDS introduction on firms' debt financing and investment decisions. It shows that net debt issuance, the change in debt, cash paid for acquisitions, and asset growth continue to be lower post-CDS trading. Although the declines are smaller in magnitude (except for asset growth), they remain significant. Meanwhile, the positive coefficient for net capital expenditure is no longer significant, while net investment shows a significant decline. In Table 7, we replicate the in-depth analysis of M&A transactions in Table 4. The conclusion here is also unchanged: post-CDS trading, the change in goodwill, the likelihood and count of mergers, as well as the dollar value of public-public mergers, are all significantly lower. The magnitude of these decreases is comparable to those in Table 4. Overall, our previous findings of lower debt issuance, corporate investment (specifically M&A activities), and asset growth are robust to using a propensity score matched sample.

4.3 Instrumental Variable Regressions

Next, we use an instrumental variable regression approach to address the possible endogeneity of CDS introduction to firms' financing and investment activities. We thank Dragon Tang for sharing his lender FX usage variable, which we explained in Section 3.2. Since his data only extends to the end of 2009, we limit our analysis in this subsection to the sample period

of 2001-09, instead of using our original sample period of 2001-13.

In the first stage of the procedure, we need to generate a predicted value for CDSActive, which is itself a dichotomous variable that takes the value of one post-CDS and zero before. Therefore, we estimate a probit model of CDS trading and present the results in the appendix. There are a few subtle differences between this probit model and the one we estimated in the propensity score matching procedure. First, the sample period here is limited to 2001-09. Second, this version includes the lender FX usage (the instrument) as one of the explanatory variables. Third, we are predicting the likelihood of CDS trading (CDS continues to trade past its initiation year) here, while in the PSM probit model we are predicting the likelihood of CDS introduction (the data are truncated after CDS initiation). From the results in the appendix, we find that lender FX usage is positively related to CDS trading and the coefficient is significant at the one-percent level, confirming lender FX usage as a strong instrument.[23] The results are otherwise similar to those from predicting CDS introduction in Table 5.

[Insert Table 8 here]

The second stage results are then presented in Table 8, in which we combine the investment and financing variables from Tables 3 and 4, dropping some of the variables due to the limitation of space.[24] With the exception of net capital expenditure, all of the variables exhibit a statistically significant decline after the beginning of CDS trading. Most of these estimates are actually larger in size than their counterparts from Tables 3 and 4. For example, the estimated decrease for net debt issuance, cash paid for acquisitions, the change in total assets, the merger likelihood (LPM), and the value of M&A are 4.4, 3.3, 4.9, 10.4, and 9.7 percent, respectively. These estimates can be compared with those from Tables 3 and 4, which are 1.1, 1.0, 2.1, 7.3, and 2.7 percent, respectively.[25] Therefore, our results are also

[23] Formally testing for weak instruments, we find that the cluster-adjusted first-stage F-statistic is well above all weak instrument critical values estimated by Stock and Yogo (2005) for the one endogenous regressor and one instrumental variable case.

[24] The ones being dropped are other investments, the merger dummy (conditional logit), merger count, and the dollar value of public-public mergers.

[25] Although the IV estimates are larger in magnitude, their standard errors are also uniformly bigger in

robust to the use of instrumental variable regressions.

4.4 CDS Introduction Year vs. Post-Introduction Years

In this subsection, we estimate the regression specification of (2), which adds a dummy for the CDS introduction year (CDSPartialYr) to the baseline specification of (1). The purpose is to empirically distinguish the initial expansion of debt capacity and investment upon CDS introduction from the subsequent contraction caused by debt overhang.

[Insert Table 9 here]

Panel A of Table 9 presents the results of these estimations. We notice that during the year of CDS introduction, net investment, cash paid for acquisitions, the change in debt, and the value of M&A transactions are all significantly higher relative to their pre-introduction levels. Turning to the post-introduction years, we find that cash paid for acquisitions, the change in goodwill, the merger likelihood (LPM), net debt issuance, and the change in debt have all declined, similar to our earlier findings.

To the extent that firms' financing and investment decisions are influenced by past M&A activities, we include up to three lags of cash paid for acquisitions in our regressions and present the results in Panel B. Here, we find that net investment, cash paid for acquisitions, and the value of M&A are negatively related to past M&A. On the other hand, the change in assets and the merger likelihood are positively related to past M&A. Controlling for these patterns, however, does not change the CDS introduction-year and post-introduction effects estimated in Panel A.

While the CDS introduction-year increase in debt issuance and M&A activities is broadly consistent with the expansion of debt capacity and investment described in Bolton and Oehmke (2011) and Danis and Gamba (2015), we attempt to take a more refined look at the relative timing of M&A announcements and CDS introductions using quarterly M&A data from the Thomson ONE Banker database. Specifically, we supplement the regressors of a

Table 8 vs. Tables 3 and 4.

linear probability or logit model for CDS initiation with quarterly dummy variables for large M&A announcements.[26] We find that CDS introduction is more likely to occur during the quarter following M&A announcements. Therefore, we are unable to rule out the possibility of CDS trading being initiated by M&A deal arrangers hoping to attract debt capital.

4.5 Cross-Sectional Tests

Even though we have uncovered interesting patterns of debt issuance and M&A transactions during and after the inception of CDS trading, we still need to disentangle the specific mechanisms through which CDS trading affects firms' financing and investment decisions. As discussed in Section 2, we have considered three such mechanisms: 1) the credit supply expansion due to the role of CDS in providing hedging and regulatory capital relief to lenders; 2) the ex ante commitment benefit of CDS in reducing strategic default by borrowers; and 3) the ex post increase in bankruptcy risk and debt overhang. To test each of these possibilities, we estimate panel regressions specified in (3), with net debt issuance as the left hand side variable as well as a conditioning characteristic Z selected to delineate a specific mechanism.[27]

[Insert Table 10 here]

First, we define State Defaults as the ratio of defaulted debt over all debt for firms incorporated in the same state as the sample firm (we exclude defaulted debt from the sample firm's own industry—see Table 1 for a more detailed definition). A higher value of State Defaults would represent a more severe shock to in-state lenders' loan portfolios. To the extent that the sample firm borrows primarily from in-state lenders, the credit expansionary effect of CDS will be particularly large when State Defaults is high. The last two columns of Table 10 confirms this conjecture, where we define Z as a dummy variable equal to one if

[26] These regressions include the same control variables used in our propensity score estimation and are performed using data on CDS firms only. Large mergers are defined as above median or 75th percentile in dollar value.

[27] In additional untabulated results, we include several investment measures as the dependent variable and the findings are similar to what we present below on net debt issuance.

State Defaults is above the 75th percentile.[28] It shows that the interaction between Z and CDSActive fetches a positive and significant coefficient at the one-percent level. However, the "unconditional" coefficient on CDSActive is negative and significant, and larger in magnitude in comparison.

Second, we let Z be a dummy variable equal to one if a firm-year's median industry Q is above the 75th percentile of median industry Q across all firm-years. As the median industry Q proxies for the expected renegotiation surplus in a liquidity default, the creditors of such firms are likely to over-insure their stakes, thus turning into extra tough negotiators in debt workouts. As shown by Bolton and Oehmke (2011), this is likely to increase the firm's debt capacity and investment, but only at the beginning of CDS trading. On the other hand, the increased likelihood of bankruptcy (Subrahmanyam, Tang, and Wang, 2014) and more severe debt overhang (Wong and Yu, 2017) are likely to have a persistent and negative effect on debt financing and investment after CDS introduction. While ideally we would like to distinguish these effects by adding the interaction between Z and CDSPartialYr to (3), in practice we do not have a sufficient amount of data to reliably estimate this additional term. Therefore, we focus on the interaction between Z and CDSActive. In the second column of Table 10, we find that this interaction term indeed has a negative coefficient significant at the five-percent level, while the coefficient of CDSActive is not significant. This suggests that the negative effect of CDS introduction on net debt issuance is concentrated among the high median industry Q firms.

Overall, considering the results of Tables 9 and 10, it seems that all three mechanisms are at work in the data, although the debt overhang effect likely plays a major role, resulting in net debt issuance and M&A activities being lower during the post-CDS introduction period.

[28] Due to the difficulties in explaining the behavior of zero-leverage firms (Strebulaev and Yang, 2013), we perform one regression for the entire sample and another with zero-leverage firm-years removed.

4.6 Debt Expansion around Mergers

Mergers are typically associated with a significant increase in firm leverage, which indicates the importance of debt financing in fueling M&A activities. This is also consistent with an increase in debt capacity following mergers, perhaps as a result of the coinsurance effect lowering the default risk of the merged firm (Ghosh and Jain, 2000). In this subsection, we will estimate the expansion of debt (measured by net debt issuance, the change in debt, and changes in book and market leverage) around M&A activities, and compare the estimates before and after the introduction of CDS trading.

[Insert Table 11 here]

Table 11 presents the related results, with net debt issuance, the change in debt, the change in book leverage, or the change in market leverage as the dependent variable, and using either all firm-years or restricting to firm-years with positive lagged book leverage. We first notice that the coefficient on the merger dummy (defined as one if cash paid for acquisitions is positive) is positive and highly significant across the board. This confirms that firms generally increase debt after mergers. The average increase amounts to around two to three percentage points of the book or market leverage ratio. This increase is slightly larger for the change in debt than net debt issuance, likely due to acquirers taking on target firms' debt rather than issuing debt for cash. Next, we find that the coefficient on the interaction between the merger dummy and CDSActive is mostly negative and significant. Therefore, the sum of these two coefficients represents a sizable reduction of the debt expansion around mergers when CDS contracts can be traded. Finally, we notice that most of the coefficients on CDSActive are not significant, suggesting that the effect of CDS trading on firms' use of debt is minimal when they are not pursuing M&A opportunities.

In summary, these results confirm the importance of M&A activities to firms' debt financing decisions, and reveal the role of CDS trading in diminishing the debt capacity expansion following mergers. They suggest that our earlier findings of lower M&A activities are driven

by firms' reluctance to use debt financing in the post-CDS environment, likely due to the accentuated effect of debt overhang.[29]

4.7 Changes in Leverage

The last set of results we present are replications of Saretto and Tookes' (2013) leverage regressions using book leverage and market leverage. In light of our evidence documenting the reduction of net debt issuance and M&A activities, as well as the slowdown in asset growth, it remains unclear how firm leverage will respond to CDS trading. Nonetheless, Saretto and Tookes have shown extensively that firm leverage increases after CDS introduction. Therefore, we attempt to replicate their results on leverage by following closely their regression specification.

Specifically, we regress book or market leverage on a list of explanatory variables largely the same as those used by Saretto and Tookes. The definitions of these variables can be found near the end of Table 1. The only ones from their list that we do not include are whether the firm has a commercial paper program, and the principal-weighted average maturity of the firm's debt. To this list, we add up to three lags of past M&A considerations, as well as the CDS introduction year dummy and CDSActive.

[Insert Table 12 here]

Table 12 shows that firm leverage rises sharply during the CDS introduction year by around two percentage points relative to the pre-introduction baseline. There is also an increase during the post-introduction years relative to the pre-introduction baseline, but this increase is somewhat smaller and less significant. Our estimates are quite close in magnitude to the differences-in-differences estimates of leverage changes given in Saretto and Tookes' Table 6. Overall, this behavior of leverage is consistent with firms using significantly more

[29] In further analysis, we ask whether the reduced debt capacity expansion around mergers post-CDS introduction is caused by a shift away from debt financing while holding constant the size of the deals. We find this not to be the case. Still, the average deal size and the frequency of deals are both lower after CDS introduction.

debt during the CDS introduction year, but cutting back on the use of debt during the post-introduction years.

5 Conclusion

In this paper, we examine the effect of CDS trading on firm investment and debt financing. Though Bolton and Oehmke (2011) and Danis and Gamba (2015) predict an increase in debt capacity and investment due to the ex ante commitment benefit of CDS (in reducing strategic default), we identify an increase in net debt issuance and M&A activities only during the CDS introduction year. Meanwhile, we find net debt issuance and M&A activities to be lower during the post-CDS introduction years, which seems more consistent with the higher bankruptcy risk and accentuated debt overhang problem emphasized by Wong and Yu (2017). Our results are produced using a differences-in-differences regression design, exploiting the staggered initiation dates of CDS trading during 2001-13, and they remain robust to using propensity score matched samples as well as instrumental variable regressions.

Although firm investment has several components, we focus on M&A activities because they seem to fit Bolton and Oehmke's description of investment projects for which creditors might have a tendency to over-insure their claims with CDS (e.g., high renegotiation surplus and multiple creditors). This over-insurance raises the likelihood of failed debt restructuring and bankruptcy, and exacerbates the debt overhang problem. Consistent with this argument, we find that the frequency and size of mergers, as well as the increase in leverage around these mergers, are lower post-CDS introduction.

Furthermore, we use more refined tests to show empirical support for the credit supply expansion hypothesis of Saretto and Tookes (2013), though the overall post-CDS introduction effect is dominated by the debt overhang concern in the opposite direction. In conjunction with the CDS introduction-year increase in net debt issuance and M&A activities, these results enrich our understanding of the non-trivial impact of CDS trading on corporate investment and financing.

To continue this line of inquiry, it seems that empirical research on the real effects of CDS trading could be better guided by an extension of the theoretical models to a more realistic setting of repeated debt refinancing. In addition, it may be worthwhile to examine changes in the priority structure of corporate debt (e.g., Rauh and Sufi, 2010; Hackbarth and Mauer, 2012) after CDS introduction, since firms can use additional secured debt to cope with the effect of debt overhang (Myers, 1977). We leave the exploration of these interesting issues to future research.

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Table 1: Definitions of variables

Variable	Definition
CDSActive	A dummy variable equal to one starting the first full fiscal year in which a firm has CDS trading, and for all fiscal years thereafter. The variable is equal to zero otherwise.
CDS Partial Year	A dummy variable equal to one for the first fiscal year in which a firm has CDS trading, and equal to zero otherwise.
ΔAssets	The year-over-year change in assets (at), scaled by assets (at).
Net Investment	Capital expenditures (capx) less PPE sales (sppe) plus cash paid for acquisitions (acq) plus increase in investments (ivch) less sale of investments (siv), scaled by assets (at).
Net Capex	Capital expenditures (capx) less PPE sales (sppe), scaled by assets (at).
Cash for Acquisitions	The cash paid for acquisitions, from the cash flow statement, scaled by assets (at).
Other Investment	Increase in investment (ivch) less sale of investment (siv), scaled by assets (at).
Net Debt Issuance	Debt issuance (dltis) less debt repayments (dltr) plus change in short-term debt (dlcch), scaled by assets (at).
Δ Debt	Change in the sum of debt in current liabilities (dlc) and long-term debt (dltt), scaled by assets (at).
ΔGoodwill	The change in goodwill, scaled by assets (at).
Merger Dummy	A dummy equal to one if Cash for Acquisitions is greater than zero, and equal to zero otherwise.
Merger Count	The number of mergers reported in Thomson ONE Banker during the fiscal year. Coded as missing if no mergers were found.
Value of M&A	Value of all M&A transactions reported in Thomson ONE Banker during the fiscal year in which the acquiring firm retained majority control, scaled by total assets.
Value of M&A, Public-Public	Value of M&A transactions reported in Thomson ONE Banker during the fiscal year in which the acquiring firm retained majority control, and where both parties were publicly-traded firms, scaled by total assets.
Ln(Assets)	The natural logarithm of total assets (at) of a firm, in billions of dollars.
Net PPE	Net Property, plant, and equipment (ppent), scaled by assets.
Book Leverage	The book value of debt (dlc + dltt) divided by total assets (at).
EBIT	Earnings before interest and taxes (pi + xint), scaled by assets (at).
Working Capital	Current assets (act) less current liabilities (lct), scaled by assets (at).
Cash	Cash holdings (che), scaled by assets (at).
Asset Turnover	Sales (sale), scaled by assets (at).
Retained Earnings	Retained earnings (ret), scaled by assets (at).
ROA	Net income before extraordinary items and discontinued operations (ib), scaled by assets (at).
Volatility	Annualized standard deviation of trailing 252-day stock returns, as of the month before current year earnings are announced.
Excess Stock Return	Compounded 12-month stock returns less the compounded 12-month returns from the CRSP value-weighted index.
Investment-grade	A dummy variable equal to one if a firm has a long-term S&P issuer-level credit rating above BB+, and zero otherwise.
Rated	A dummy variable equal to one if a firm has an active long-term S&P issuer-level credit rating, and zero otherwise.
Q	Tobin's Q, as defined in Erickson and Whited (2012). Computed as (market capitalization (from CRSP) + at + ceq –txditc) /at.
Lender FX Usage	The amount of foreign exchange derivatives used for hedging (not trading) purposes relative to total assets of the bank holding companies that a firm has done business with during the past five years. The final variable is computed as the average across all banks that have served either as bond underwriter (based on the Mergent FISD database) or a lead syndicate member (based on Dealscan) over the past five years.
Median Industry Q	The median of Q for each firm-year, by GICS industry.
State Defaults	The sum of defaulted total debt (dltt + dlc) for all Compustat firms headquartered in the firm's state each year, less the defaulted debt for all firms in the same SIC 3-digit industry headquartered in that state in that year, divided by the sum of total debt for all Compustat

	firms headquartered in the firm's state each year. The default data is obtained from Bloomberg. Debt amounts for defaults occurring within the subsequent fiscal year after Compustat data ends are taken from the prior fiscal year. Firms with total assets (at) missing in Compustat are excluded from all calculations.
Earnings Volatility	The five-year standard deviation of past annual changes in net income (ib), divided by total assets (at).
Abnormal Earnings	The change in EPS (epspx), divided by the year-end share price (from CRSP).
Tax Credits	Tax credits (itcb) divided by total assets (at).
Loss Carryforwards	Tax loss carryforwards (tlcf) divided by total assets (at).
Median Industry Market Leverage	The median if the SIC 3-digit market leverage for each year.
Median Industry Book Leverage	The median if the SIC 3-digit book leverage for each year.
Market to Book	Market capitalization as of fiscal year-end (from CRSP), divided by total assets (at) minus total liabilities (lt).

Table 2, Panel A: Summary statistics

This table presents the summary statistics for the variables used in our study. The sample period is from 2001 to 2013. The definitions of the variables are provided in Table 1.

	Non-CDS Firms (n = 35,376)					CDS Firms (n = 4,818)				
	mean	**sd**	**p25**	**p50**	**p75**	**mean**	**sd**	**p25**	**p50**	**p75**
ΔAssets	0.025	0.242	-0.051	0.045	0.140	0.044	0.174	-0.021	0.042	0.110
Net Investment	0.075	0.093	0.021	0.051	0.106	0.075	0.075	0.030	0.058	0.098
Net Capex	0.053	0.060	0.016	0.033	0.066	0.051	0.047	0.021	0.039	0.066
Cash for Acq.	0.022	0.058	0.000	0.000	0.010	0.022	0.053	0.000	0.000	0.016
Other Investment	0.000	0.039	0.000	0.000	0.000	0.001	0.027	0.000	0.000	0.001
Net Debt Issuance	0.004	0.088	-0.024	0.000	0.018	0.008	0.075	-0.024	-0.001	0.032
Δ Debt	0.007	0.098	-0.023	0.000	0.026	0.012	0.084	-0.023	0.000	0.038
Δ Goodwill	0.008	0.062	0.000	0.000	0.005	0.011	0.060	0.000	0.000	0.010
Merger Dummy	0.378	0.485	0.000	0.000	1.000	0.534	0.499	0.000	1.000	1.000
Merger Count	1.658	1.296	1.000	1.000	2.000	2.175	1.938	1.000	2.000	3.000
Value of M&A	0.148	0.167	0.034	0.091	0.200	0.091	0.137	0.011	0.039	0.112
Value of M&A (Public-Public)	0.255	0.256	0.082	0.186	0.350	0.157	0.235	0.020	0.080	0.206
Ln(Assets)	6.124	1.674	4.932	6.000	7.122	8.837	1.150	7.989	8.771	9.647
Net PPE	0.292	0.242	0.099	0.211	0.434	0.342	0.241	0.134	0.290	0.530
Book Leverage	0.207	0.207	0.012	0.161	0.331	0.306	0.179	0.184	0.282	0.396
EBIT	0.025	0.189	-0.010	0.065	0.119	0.083	0.099	0.048	0.084	0.130
Working Capital	0.249	0.228	0.068	0.229	0.411	0.114	0.145	0.000	0.086	0.206
Cash	0.194	0.202	0.035	0.117	0.293	0.098	0.117	0.019	0.056	0.136
Asset Turnover	1.039	0.754	0.507	0.866	1.373	0.945	0.658	0.470	0.798	1.196
Retained Earnings	-0.190	1.124	-0.206	0.115	0.333	0.159	0.502	0.046	0.207	0.382
ROA	-0.010	0.177	-0.026	0.033	0.075	0.039	0.086	0.017	0.044	0.078
Volatility	0.582	0.294	0.369	0.508	0.720	0.398	0.211	0.255	0.346	0.479
Excess Returns	0.100	0.612	-0.268	-0.014	0.294	0.100	0.446	-0.152	0.034	0.252
Investment-grade	0.080	0.272	0.000	0.000	0.000	0.653	0.476	0.000	1.000	1.000
Rated	0.226	0.418	0.000	0.000	0.000	0.945	0.228	1.000	1.000	1.000
Q	1.730	1.293	0.960	1.318	2.020	1.650	0.966	1.082	1.365	1.864
Lender FX Usage	0.000	0.002	0.000	0.000	0.000	0.003	0.009	0.000	0.000	0.002
Median industry Q	1.458	0.463	1.150	1.325	1.632	1.339	0.353	1.103	1.255	1.498
Above 75th Percentile of Median Industry Q	0.519	0.500	0.000	1.000	1.000	0.412	0.492	0.000	0.000	1.000
State Defaults	0.006	0.031	0.000	0.001	0.003	0.005	0.025	0.000	0.000	0.002
Above 75th Percentile of State Defaults	0.256	0.436	0.000	0.000	1.000	0.232	0.422	0.000	0.000	0.000
Δ Book Leverage	0.004	0.088	-0.028	0.000	0.021	0.002	0.068	-0.031	-0.005	0.024
Δ Market Leverage	0.003	0.114	-0.036	0.000	0.033	0.000	0.099	-0.047	-0.005	0.037
Earnings Volatility	0.088	0.139	0.017	0.039	0.093	0.048	0.084	0.011	0.023	0.048
Abnormal Earnings	-0.021	0.368	-0.034	0.004	0.031	-0.019	0.293	-0.020	0.005	0.022
Tax Credits	0.000	0.001	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000
Loss Carryforwards	0.187	0.556	0.000	0.000	0.081	0.060	0.207	0.000	0.000	0.037
Median Industry Market Leverage	0.185	0.193	0.021	0.115	0.294	0.265	0.193	0.100	0.239	0.415
Median Industry Book Leverage	0.166	0.141	0.044	0.138	0.267	0.231	0.136	0.123	0.240	0.337
Market to Book	2.315	3.116	0.863	1.620	2.847	2.759	3.297	1.312	2.035	3.303

Table 2, Panel B

This table shows the fiscal year of CDS introduction for CDS sample firms.

Year	Introductions	Percent of total
2001	10	1.81
2002	152	27.44
2003	94	16.97
2004	99	17.87
2005	79	14.26
2006	49	8.84
2007	21	3.79
2008	29	5.23
2009	5	0.9
2010	3	0.54
2011	4	0.72
2012	6	1.08
2013	3	0.54
	554	

Table 3: CDS introduction, capital expenditures, and financing: differences-in-differences estimations

This table presents the results of regressions of investment and financing variables on a dummy for the years in which a firm has active CDS trading and control variables. All variables are defined in Table 1. All control variables are from the prior fiscal year. All regressions include year and firm fixed effects. Heteroskedasticity-robust *t*-statistics adjusted for clustering within firms are in parentheses. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

	ΔAssets	Net Investment	Net Capex	Cash for Acq.	Other Inv.	Net Debt Issuance	Δ Debt
CDSActive	-0.0209***	-0.00349	0.00485***	-0.0103***	0.00111	-0.0112***	-0.0149***
	(-3.05)	(-1.31)	(3.42)	(-5.36)	(0.87)	(-3.66)	(-4.37)
Ln(Assets)	-0.126***	-0.0125***	-0.0044***	-0.009***	0.00171**	-0.0141***	-0.0198***
	(-24.48)	(-6.42)	(-3.72)	(-7.25)	(2.41)	(-7.19)	(-8.88)
PPE	0.196***	0.0291***	-0.0123*	0.0326***	0.0114***	0.0619***	0.0476***
	(7.75)	(2.94)	(-1.82)	(5.52)	(3.19)	(5.90)	(4.20)
Book Lev.	-0.151***	-0.0908***	-0.0347***	-0.0364***	-0.0101***	-0.257***	-0.330***
	(-9.30)	(-14.78)	(-10.87)	(-8.95)	(-3.74)	(-32.47)	(-40.01)
EBIT	0.238***	0.104***	0.0372***	0.0611***	0.00386	0.0856***	0.102***
	(5.68)	(7.06)	(4.39)	(6.46)	(0.51)	(5.09)	(5.41)
Work. Cap.	0.0998***	0.0417***	0.00384	0.0281***	0.00853**	0.0319***	0.0546***
	(4.69)	(5.77)	(1.12)	(6.06)	(2.33)	(3.43)	(5.22)
Cash	-0.0779***	0.0832***	0.0101**	0.0651***	0.000163	-0.0558***	-0.0785***
	(-3.25)	(9.15)	(2.40)	(11.22)	(0.03)	(-5.47)	(-6.90)
Turnover	0.0272***	0.00289	0.00201	0.00107	0.000852	-0.000881	-0.00364
	(4.16)	(1.32)	(1.53)	(0.70)	(0.94)	(-0.34)	(-1.25)
Ret. Earn.	-0.0295***	0.00530***	0.00414***	0.0045***	-0.0026***	-0.000242	-0.00196
	(-6.30)	(3.68)	(5.98)	(4.87)	(-3.42)	(-0.15)	(-1.08)
ROA	-0.0595	-0.0739***	-0.0259***	-0.0426***	-0.00369	-0.0900***	-0.0943***
	(-1.33)	(-4.71)	(-2.96)	(-4.42)	(-0.43)	(-5.16)	(-4.83)
Volatility	-0.0828***	-0.0247***	-0.0060***	-0.0177***	0.000630	-0.0177***	-0.0227***
	(-10.63)	(-8.81)	(-4.06)	(-9.96)	(0.45)	(-5.44)	(-6.24)
Excess Ret's	0.0375***	0.00691***	0.00252***	0.002***	0.00187***	0.00125	0.00174
	(18.11)	(7.69)	(5.65)	(3.38)	(4.37)	(1.28)	(1.61)
Inv.-grade	0.0162**	0.00768***	0.00121	0.00277	0.00239*	0.00514	0.00398
	(2.34)	(2.61)	(0.82)	(1.34)	(1.93)	(1.57)	(1.14)
Rated	0.0191**	-0.00490	0.00151	-0.00463**	-0.000703	0.00795**	0.00923**
	(2.44)	(-1.39)	(0.82)	(-1.98)	(-0.51)	(2.15)	(2.24)
Q	0.0412***	0.00860***	0.00528***	0.000256	0.00232***	0.00611***	0.00544***
	(19.62)	(10.62)	(12.80)	(0.53)	(5.25)	(6.98)	(5.88)
Constant	0.784***	0.138***	0.0779***	0.0716***	-0.0203***	0.146***	0.213***
	(18.85)	(8.75)	(8.16)	(7.32)	(-3.44)	(9.29)	(11.90)
Obs.	40,194	40,194	40,194	40,194	40,194	40,194	40,124
Adj. R^2	0.234	0.099	0.082	0.057	0.012	0.136	0.170
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 4: CDS introduction and merger activity: differences-in-differences estimations

This table presents the results of regressions of merger activity variables on a dummy for the years in which a firm has active CDS trading and control variables. All variables are defined in Table 1. All control variables are from the prior fiscal year. All regressions include year and firm fixed effects. Heteroskedasticity-robust *t*-statistics adjusted for clustering within firms are in parentheses. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

		Linear Prob.	Cond. Logit			
	ΔGoodwill	Merger Dummy	Merger Dummy	Merger Count	Value of M&A	Value of M&A (only public-public)
CDSActive	-0.0112***	-0.0734***	-0.533***	-0.171	-0.0270**	-0.127***
	(-4.93)	(-4.44)	(-4.51)	(-1.60)	(-2.34)	(-3.06)
Ln(Assets)	-0.0112***	0.0383***	0.247***	0.108*	-0.0866***	-0.101*
	(-8.71)	(4.10)	(3.78)	(1.92)	(-7.93)	(-1.94)
PPE	0.0902***	-0.0713	-0.777**	-0.0434	0.0450	0.165
	(15.11)	(-1.56)	(-2.28)	(-0.16)	(0.81)	(0.73)
Book Lev.	-0.00963**	-0.185***	-1.312***	-0.841***	-0.0269	0.189
	(-2.29)	(-6.85)	(-6.44)	(-4.36)	(-0.80)	(1.21)
EBIT	0.0139	0.219***	1.508***	1.546**	0.166	0.984
	(1.15)	(2.98)	(2.74)	(2.46)	(1.47)	(1.16)
WC	0.0525***	0.0982***	0.939***	0.369	0.141**	0.00459
	(9.54)	(2.80)	(3.47)	(1.45)	(2.57)	(0.02)
Cash	0.0739***	0.148***	0.988***	-0.0151	0.138**	0.278
	(11.46)	(3.54)	(3.21)	(-0.05)	(2.16)	(1.12)
Turnover	0.0116***	-0.0415***	-0.250***	-0.0881	0.0202	-0.00462
	(6.32)	(-3.53)	(-2.97)	(-1.17)	(1.20)	(-0.05)
Ret. Earn.	-0.000972	0.0106	0.191***	-0.0580	0.0642***	0.129
	(-0.87)	(1.63)	(3.21)	(-1.32)	(4.42)	(1.38)
ROA	-0.00289	-0.0681	-0.263	-1.182*	-0.0796	-0.749
	(-0.23)	(-0.87)	(-0.45)	(-1.87)	(-0.67)	(-0.95)
Volatility	-0.00592***	-0.128***	-0.930***	-0.286***	0.000303	0.227*
	(-2.88)	(-8.82)	(-8.36)	(-2.60)	(0.01)	(1.79)
Ex. Ret	0.00387***	0.0200***	0.150***	0.119***	0.00187	0.0472
	(6.18)	(5.00)	(5.24)	(3.28)	(0.26)	(1.24)
Inv.-grade	0.00356	0.00877	0.0316	-0.0910	0.0139	0.102*
	(1.55)	(0.45)	(0.24)	(-0.60)	(0.95)	(1.67)
Rated	-0.00471*	-0.0158	-0.0557	0.0702	-0.00694	-0.0556
	(-1.87)	(-0.95)	(-0.52)	(0.55)	(-0.37)	(-0.78)
Q	0.00363***	0.00143	-0.00305	-0.0146	0.0152***	0.00603
	(6.62)	(0.40)	(-0.12)	(-0.52)	(3.33)	(0.30)
Constant	0.0225**	0.239***		1.222***	0.660***	0.770
	(2.19)	(3.23)		(2.60)	(7.08)	(1.50)
Obs.	40,194	39,444	26,845	8,565	5,831	1,015
Adj. R^2	0.080	0.028		0.016	0.144	0.256
Pseudo R^2			0.046			
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes	Yes

Table 5: Propensity score matching samples

This table summarizes the propensity score matched samples for firms initiating CDS trading. Panel A shows the results of propensity score estimation, using the pre-matching and matched samples. All variables are defined in Table 1. All independent variables are from the fiscal year prior to the treatment firm-year. NN1 uses one-nearest-neighbor matching based on the propensity score, using matching with replacement. All regressions include year and industry (using Fama-French 12-industry categories) fixed effects, and *t*-statistics are calculated using standard errors clustered at the firm level. Panel B shows propensity score summary statistics for both treatment and matching/control firm-years, for the year in which the match was made. Panel C presents tests of mean differences in lagged predictor variables between treatment and matching/control firm-years, for the year in which the match was made. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

Panel A: Pre- and post-matching propensity score parameters		
	Pre-matching	Post –matching
		NN1
Capex	-0.108	0.405
	(-0.17)	(0.62)
Ln(Assets)	0.248***	0.0746***
	(11.82)	(2.86)
PPE	-0.159	-0.0207
	(-1.03)	(-0.13)
Book Leverage	0.859***	0.442**
	(5.15)	(2.42)
EBIT	-0.307	0.736
	(-0.35)	(0.82)
Working Capital	0.0645	-0.209
	(0.28)	(-0.81)
Cash	-0.362	-0.479
	(-1.28)	(-1.54)
Asset Turnover	0.0245	-0.0128
	(0.52)	(-0.25)
Retained Earnings	-0.0169	-0.0334
	(-0.29)	(-0.48)
ROA	-0.00873	-0.923
	(-0.01)	(-0.89)
Volatility	-0.303*	-0.0929
	(-1.78)	(-0.48)
Excess Returns	0.00623	-0.0280
	(0.12)	(-0.45)
Investment-grade	0.344***	0.145**
	(5.13)	(1.98)
Rated	0.947***	0.266**
	(10.20)	(2.28)
Constant	-6.081***	-3.072***
	(-17.15)	(-8.94)
Observations	32,863	5,624
Pseudo R^2	0.367	0.099
Year F.E.	Yes	Yes
Industry F.E.	Yes	Yes

Panel B: Propensity score summary statistics: treatments and controls

	mean	sd	min	p5	p25	p50	p75	p95	max
Treatment	0.135787	0.085539	0.000211	0.012429	0.073197	0.123390	0.186787	0.295113	0.468337
Controls	0.135831	0.085724	0.000211	0.012450	0.073142	0.123081	0.186601	0.295290	0.477446
Absolute Difference	0.000371	0.000949	0.000000	0.000007	0.000048	0.000149	0.000337	0.001100	0.013385

Panel C: Mean differences in firm characteristics: treatments and controls

	Treatments	Controls	Difference	T-stat
Capex	0.053	0.051	0.003	(1.25)
Ln(Assets)	8.744	8.710	0.034	(0.54)
PPE	0.341	0.336	0.005	(0.40)
Book Leverage	0.325	0.312	0.013	(1.39)
EBIT	0.076	0.071	0.005	(0.82)
Working Capital	0.099	0.107	-0.008	(-1.05)
Cash	0.090	0.095	-0.005	(-0.87)
Asset Turnover	0.934	0.929	0.005	(0.14)
Retained Earnings	0.129	0.141	-0.012	(-0.50)
ROA	0.031	0.030	0.001	(0.22)
Volatility	0.382	0.377	0.005	(0.51)
Excess Returns	0.126	0.121	0.005	(0.18)
Investment-grade	0.687	0.739	-0.053**	(-2.08)
Rated	0.964	0.976	-0.012	(-1.18)

Table 6: CDS introduction, capital expenditures, and financing: differences-in-differences estimations with propensity score matching

This table presents the results of regressions of investment and financing variables on a dummy for the years in which a firm has active CDS trading and control variables, using propensity score matched samples for firms initiating CDS trading. All variables are defined in Table 1. All control variables are from the prior fiscal year. Propensity scores are based on one-nearest-neighbor matching, using matching with replacement. All regressions include year and firm fixed effects. Heteroskedasticity-robust *t*-statistics adjusted for clustering within firms are in parentheses. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

	ΔAssets	Net Investment	Net Capex	Cash for Acq.	Other Inv.	Net Debt Issuance	Δ Debt
CDSActive	-0.0219***	-0.00459*	0.000397	-0.00626***	0.000573	-0.00563*	-0.00661*
	(-3.37)	(-1.72)	(0.30)	(-3.14)	(0.44)	(-1.81)	(-1.92)
Ln(Assets)	-0.110***	-0.0126***	0.00113	-0.0152***	0.00181	-0.028***	-0.0401***
	(-11.70)	(-3.41)	(0.59)	(-5.72)	(1.38)	(-7.80)	(-9.07)
PPE	0.175***	0.0616***	0.0304***	0.0136	0.0164***	0.0608***	0.0236
	(4.69)	(4.37)	(3.65)	(1.26)	(2.70)	(3.97)	(1.26)
Book Lev.	-0.0983***	-0.0651***	-0.0251***	-0.0342***	-0.00259	-0.220***	-0.259***
	(-3.93)	(-5.45)	(-4.81)	(-3.56)	(-0.43)	(-15.46)	(-18.50)
EBIT	0.294***	0.122***	0.0283*	0.0798***	0.0113	0.170***	0.223***
	(3.14)	(3.88)	(1.93)	(3.78)	(0.55)	(4.40)	(4.95)
Work. Cap.	0.129***	0.0675***	0.00342	0.0433***	0.0168**	0.0439**	0.0638***
	(3.03)	(4.73)	(0.58)	(4.40)	(2.13)	(2.56)	(3.01)
Cash	-0.154***	0.0794***	0.0103*	0.0716***	-0.00689	-0.118***	-0.147***
	(-2.76)	(3.36)	(1.65)	(4.86)	(-0.48)	(-5.40)	(-5.31)
Turnover	0.0344***	0.0111**	0.00445**	0.00671**	0.000205	-0.00675	-0.00508
	(2.96)	(2.51)	(2.06)	(1.99)	(0.10)	(-1.11)	(-0.73)
Ret. Earn.	-0.0104	0.0170***	0.00346*	0.0125***	0.000999	0.0122**	0.0133***
	(-0.79)	(3.96)	(1.81)	(4.91)	(0.38)	(2.57)	(2.86)
ROA	-0.0372	-0.0681*	-0.0102	-0.0481**	-0.00615	-0.120***	-0.175***
	(-0.34)	(-1.89)	(-0.61)	(-2.21)	(-0.24)	(-2.66)	(-3.43)
Volatility	-0.0600***	-0.0233***	-0.0074***	-0.0181***	0.00336	-0.000932	-0.0143
	(-3.27)	(-3.75)	(-2.72)	(-4.15)	(0.93)	(-0.10)	(-1.34)
Excess Ret's	0.0368***	0.00549***	0.00153**	0.00254*	0.00126	0.00255	0.00448*
	(8.16)	(2.97)	(2.16)	(1.90)	(1.41)	(1.24)	(1.80)
Inv.-grade	0.00805	0.00656**	0.000798	0.00119	0.00386***	0.00506	0.00752*
	(0.95)	(2.02)	(0.51)	(0.52)	(2.87)	(1.28)	(1.71)
Rated	-0.000248	-0.0105	-0.00272	-0.00277	-0.00474	0.00589	-0.00128
	(-0.02)	(-1.64)	(-0.76)	(-0.66)	(-1.61)	(0.83)	(-0.16)
Q	0.0252***	0.00749***	0.00568***	0.000262	0.00118	0.0078***	0.00589**
	(6.18)	(4.57)	(7.28)	(0.19)	(1.22)	(3.65)	(2.44)
Constant	0.951***	0.151***	0.0258	0.147***	-0.0233*	0.301***	0.451***
	(9.80)	(4.07)	(1.31)	(5.46)	(-1.92)	(8.16)	(9.83)
Obs.	10,442	10,442	10,442	10,442	10,442	10,442	10,433
Adj. R^2	0.190	0.110	0.097	0.074	0.010	0.145	0.149
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 7: CDS introduction and merger activity: differences-in-differences estimations with propensity score matching

This table presents the results of regressions of merger activity variables on a dummy for the years in which a firm has active CDS trading and control variables, using propensity score matched samples for firms initiating CDS trading. All variables are defined in Table 1. All control variables are from the prior fiscal year. Propensity scores are based on one-nearest-neighbor matching, using matching with replacement. All regressions include year and firm fixed effects. Heteroskedasticity-robust *t*-statistics adjusted for clustering within firms are in parentheses. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

		Linear Prob.	Cond. Logit			
	ΔGoodwill	Merger Dummy	Merger Dummy	Merger Count	Value of M&A	Value of M&A (only public-public)
CDSActive	-0.00562**	-0.0694***	-0.567***	-0.246**	-0.00835	-0.0923**
	(-2.23)	(-3.63)	(-4.09)	(-2.09)	(-0.66)	(-2.25)
Ln(Assets)	-0.0165***	0.0118	-0.0130	0.142	-0.112***	-0.175***
	(-6.15)	(0.64)	(-0.09)	(1.21)	(-5.37)	(-3.18)
PPE	0.0602***	-0.243***	-2.099***	-0.565	0.0605	0.289
	(5.05)	(-2.62)	(-2.96)	(-1.09)	(0.75)	(0.73)
Book Lev.	-0.00890	-0.111	-0.621	-1.029**	0.0721	0.200
	(-0.96)	(-1.59)	(-1.26)	(-2.17)	(1.20)	(1.50)
EBIT	0.0572**	0.512**	3.170**	4.939***	0.320*	0.990
	(2.28)	(2.54)	(1.96)	(3.14)	(1.84)	(1.10)
WC	0.0314***	0.163**	0.645	0.109	0.0718	0.247
	(2.68)	(1.97)	(1.03)	(0.18)	(0.96)	(0.82)
Cash	0.0785***	0.0526	0.818	-0.360	0.0594	-0.0356
	(4.90)	(0.45)	(0.97)	(-0.40)	(0.62)	(-0.11)
Turnover	0.0107***	-0.0539**	-0.350*	-0.155	0.00310	0.0541
	(3.08)	(-2.03)	(-1.88)	(-0.86)	(0.13)	(0.47)
Ret. Earn.	0.00942**	0.0740***	0.901***	-0.164	0.157***	0.267***
	(2.05)	(2.78)	(4.37)	(-1.54)	(9.89)	(7.39)
ROA	-0.0418	-0.244	-0.680	-4.024***	-0.276	-1.135
	(-1.56)	(-1.08)	(-0.35)	(-2.59)	(-1.46)	(-1.34)
Volatility	0.00658	-0.166***	-1.361***	-0.659*	0.0363	0.163
	(1.36)	(-4.29)	(-4.64)	(-1.77)	(0.96)	(0.98)
Ex. Ret	0.00904***	0.0308***	0.278***	0.109	-0.00177	0.0279
	(5.81)	(3.11)	(3.90)	(1.33)	(-0.21)	(0.74)
Inv.-grade	0.00673**	-0.00686	-0.228	-0.182	0.0308	0.152**
	(2.29)	(-0.30)	(-1.42)	(-1.01)	(1.51)	(2.07)
Rated	-0.00356	0.0181	0.366*	-0.844*	-0.0616	-0.164*
	(-0.65)	(0.47)	(1.67)	(-1.85)	(-1.60)	(-1.72)
Q	0.00442**	-0.00926	-0.126	-0.115*	0.0167**	0.0109
	(2.57)	(-0.86)	(-1.61)	(-1.67)	(2.41)	(0.66)
Constant	0.106***	0.563***		2.768**	1.030***	1.597**
	(4.09)	(3.10)		(2.23)	(4.77)	(2.55)
Obs.	10,491	10,296	7,108	2,897	1,956	520
Adj. R^2	0.079	0.030		0.020	0.168	0.371
Pseudo R^2			0.056			
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes	Yes

Table 8: Instrumental Variable Regressions

This table presents the results of instrumental variable regressions of investment, financing, and merger activity variables on the predicted probability of CDS trading from a first-stage model (Appendix). The instrument used is banks' foreign exchange hedging. All variables are defined in Table 1. All control variables are from the prior fiscal year. Regressions include year and firm fixed effects. Heteroskedasticity-robust *t*-statistics adjusted for clustering within firms are in parentheses. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

	ΔAssets	Net Investment	Net Capex	Cash for Acq.	Net Debt Issuance	Δ Debt	Δ Goodwill	Merger Dummy	Value of M&A
CDSActive	-0.049***	-0.018***	0.0110***	-0.033***	-0.0442***	-0.059***	-0.027***	-0.104***	-0.0973***
	(-2.97)	(-3.01)	(3.47)	(-7.64)	(-6.73)	(-7.38)	(-5.27)	(-2.89)	(-3.71)
Ln(Assets)	-0.153***	-0.016***	-0.004***	-0.012***	-0.0181***	-0.026***	-0.013***	0.0351***	-0.0975***
	(-22.51)	(-6.65)	(-3.03)	(-8.08)	(-7.34)	(-9.26)	(-7.94)	(3.33)	(-6.76)
PPE	0.195***	0.0134	-0.036***	0.039***	0.0732***	0.0460***	0.0989***	-0.0475	0.108*
	(6.28)	(1.11)	(-4.42)	(5.31)	(5.71)	(3.21)	(13.73)	(-0.89)	(1.65)
Leverage	-0.150***	-0.099***	-0.035***	-0.040***	-0.297***	-0.379***	-0.00907*	-0.179***	-0.0539
	(-7.70)	(-13.50)	(-9.42)	(-8.49)	(-32.20)	(-38.27)	(-1.78)	(-5.84)	(-1.39)
EBIT	0.214***	0.0930***	0.0379***	0.053***	0.0792***	0.0939***	0.00861	0.175**	0.0562
	(4.38)	(5.76)	(4.40)	(5.03)	(4.22)	(4.37)	(0.59)	(2.17)	(0.44)
Working Cap.	0.0959***	0.0444***	0.00426	0.031***	0.0367***	0.0657***	0.0559***	0.102***	0.173***
	(3.80)	(5.46)	(1.14)	(5.80)	(3.53)	(5.57)	(8.41)	(2.64)	(2.78)
Cash	-0.0651**	0.0894***	0.0107**	0.071***	-0.0619***	-0.089***	0.0822***	0.198***	0.120*
	(-2.29)	(8.66)	(2.41)	(10.79)	(-5.23)	(-6.81)	(10.44)	(4.29)	(1.71)
Turnover	0.0421***	0.00571**	0.00323**	0.00270	-0.000311	-0.00381	0.0144***	-0.0353***	0.0309
	(5.48)	(2.25)	(2.27)	(1.51)	(-0.10)	(-1.10)	(6.23)	(-2.67)	(1.51)
Ret. Earn.	-0.031***	0.0069***	0.0045***	0.006***	-0.000354	-0.000906	-0.000421	0.00986	0.0761***
	(-5.64)	(4.01)	(5.74)	(5.33)	(-0.19)	(-0.45)	(-0.29)	(1.37)	(4.96)
ROA	-0.0451	-0.071***	-0.030***	-0.036***	-0.0892***	-0.092***	-0.000563	-0.0314	0.0393
	(-0.87)	(-4.08)	(-3.36)	(-3.37)	(-4.52)	(-4.09)	(-0.04)	(-0.37)	(0.30)
Volatility	-0.078***	-0.025***	-0.007***	-0.017***	-0.0161***	-0.020***	-0.00318	-0.126***	0.00517
	(-9.26)	(-8.03)	(-4.15)	(-8.78)	(-4.72)	(-5.24)	(-1.39)	(-8.17)	(0.20)
Excess Ret.	0.0327***	0.0061***	0.0025***	0.0014**	0.000372	0.000975	0.0032***	0.0169***	0.00480

	(14.52)	(6.16)	(5.08)	(2.21)	(0.35)	(0.82)	(4.50)	(3.90)	(0.59)
Inv. Grade	0.0181**	0.00595*	0.00118	0.00134	0.00447	0.00178	0.00376	0.00864	0.0263
	(2.12)	(1.79)	(0.72)	(0.57)	(1.16)	(0.41)	(1.34)	(0.43)	(1.41)
Rated	0.0144	-0.00488	0.000115	-0.00347	0.00976**	0.0100**	-0.00465	0.0114	-0.00769
	(1.49)	(-1.15)	(0.05)	(-1.19)	(2.16)	(1.98)	(-1.46)	(0.61)	(-0.30)
Q	0.0422***	0.0086***	0.0051***	0.00005	0.00606***	0.0054***	0.0039***	0.00106	0.0140***
	(17.77)	(9.47)	(11.30)	(0.10)	(6.35)	(5.32)	(6.17)	(0.27)	(2.70)
Observations	31,302	31,302	31,302	31,302	31,302	31,248	31,302	30,657	3,803
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 9, Panel A: CDS Introduction, including partial-year dummy

This table presents the results of regressions of investment and financing variables on a dummy for the years in which a firm has active CDS trading, a dummy for the (partial year) year of CDS introduction, and control variables. All other variables are defined in Table 1. All independent variables are from the prior fiscal year. Regressions include year and firm fixed effects. Heteroskedasticity-robust *t*-statistics adjusted for clustering within firms are in parentheses. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

	ΔAssets	Net Investment	Net Capex	Cash for Acq.	Net Debt Issuance	Δ Debt	Δ Goodwill	Merger Dummy	Value of M&A
CDSActive	-0.0135	0.000180	0.00479***	-0.00646***	-0.00948**	-0.0108**	-0.0090***	-0.0620***	-0.00940
	(-1.48)	(0.06)	(2.73)	(-2.67)	(-2.47)	(-2.47)	(-3.07)	(-3.03)	(-0.59)
CDS_partial_	0.0180	0.00893**	-0.000142	0.00937**	0.00409	0.00993*	0.00531	0.0282	0.0361*
	(1.61)	(2.04)	(-0.08)	(2.50)	(0.88)	(1.82)	(1.17)	(1.24)	(1.81)
Ln(Assets)	-0.126***	-0.0126***	-0.00435***	-0.00908***	-0.0142***	-0.0200***	-0.0112***	0.0380***	-0.088***
	(-24.52)	(-6.47)	(-3.72)	(-7.31)	(-7.21)	(-8.92)	(-8.74)	(4.07)	(-7.96)
PPE	0.196***	0.0292***	-0.0123*	0.0327***	0.0619***	0.0477***	0.0902***	-0.0710	0.0451
	(7.76)	(2.95)	(-1.82)	(5.54)	(5.90)	(4.21)	(15.12)	(-1.56)	(0.81)
Leverage	-0.151***	-0.0909***	-0.0347***	-0.0365***	-0.257***	-0.330***	-0.00967**	-0.186***	-0.0270
	(-9.31)	(-14.79)	(-10.87)	(-8.97)	(-32.47)	(-40.00)	(-2.30)	(-6.86)	(-0.80)
EBIT	0.238***	0.104***	0.0372***	0.0611***	0.0856***	0.102***	0.0139	0.219***	0.166
	(5.68)	(7.07)	(4.39)	(6.46)	(5.09)	(5.41)	(1.15)	(2.98)	(1.47)
Working Cap.	0.0997***	0.0417***	0.00384	0.0280***	0.0319***	0.0546***	0.0525***	0.0981***	0.141**
	(4.69)	(5.77)	(1.12)	(6.05)	(3.42)	(5.22)	(9.54)	(2.80)	(2.57)
Cash	-0.0778***	0.0832***	0.0101**	0.0651***	-0.0557***	-0.0784***	0.0740***	0.149***	0.137**
	(-3.25)	(9.16)	(2.40)	(11.23)	(-5.47)	(-6.90)	(11.47)	(3.54)	(2.14)
Turnover	0.0271***	0.00286	0.00201	0.00104	-0.000894	-0.00368	0.0116***	-0.0415***	0.0189
	(4.15)	(1.31)	(1.53)	(0.68)	(-0.34)	(-1.26)	(6.32)	(-3.54)	(1.12)
Ret. Earn.	-0.0294***	0.00533***	0.00414***	0.00454***	-0.000226	-0.00192	-0.000951	0.0107*	0.0645***
	(-6.28)	(3.71)	(5.98)	(4.91)	(-0.14)	(-1.05)	(-0.85)	(1.65)	(4.42)
ROA	-0.0595	-0.0739***	-0.0259***	-0.0427***	-0.0900***	-0.0943***	-0.00291	-0.0682	-0.0808
	(-1.33)	(-4.71)	(-2.96)	(-4.42)	(-5.16)	(-4.83)	(-0.23)	(-0.88)	(-0.68)
Volatility	-0.0829***	-0.0247***	-0.00604***	-0.0178***	-0.0177***	-0.0228***	-0.0060***	-0.129***	0.000646
	(-10.64)	(-8.84)	(-4.06)	(-10.02)	(-5.45)	(-6.27)	(-2.91)	(-8.83)	(0.03)
Excess Ret.	0.0375***	0.00691***	0.00252***	0.00198***	0.00125	0.00174	0.00387***	0.0200***	0.00185
	(18.11)	(7.70)	(5.65)	(3.38)	(1.28)	(1.61)	(6.18)	(5.00)	(0.25)
Inv. Grade	0.0159**	0.00751**	0.00121	0.00259	0.00506	0.00379	0.00345	0.00824	0.0112
	(2.29)	(2.56)	(0.82)	(1.26)	(1.55)	(1.08)	(1.50)	(0.42)	(0.76)
Rated	0.0190**	-0.00496	0.00151	-0.00470**	0.00792**	0.00916**	-0.00475*	-0.0159	-0.00788
	(2.43)	(-1.41)	(0.82)	(-2.01)	(2.14)	(2.22)	(-1.89)	(-0.96)	(-0.42)

Q	0.0412***	0.00860***	0.00528***	0.000257	0.00611***	0.00544***	0.00363***	0.00143	0.0153***
	(19.63)	(10.62)	(12.80)	(0.53)	(6.98)	(5.88)	(6.63)	(0.40)	(3.34)
Constant	0.785***	0.138***	0.0779***	0.0719***	0.146***	0.213***	0.0227**	0.240***	0.664***
	(18.88)	(8.77)	(8.16)	(7.33)	(9.29)	(11.92)	(2.20)	(3.24)	(7.10)
Observations	40,194	40,194	40,194	40,194	40,194	40,124	40,194	39,444	5,831
Adj. R^2	0.234	0.099	0.082	0.057	0.136	0.170	0.080	0.028	0.145
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 9, Panel B: CDS Introduction, including partial-year dummy, with M&A lags

This table presents the results of regressions of investment and financing variables on a dummy for the years in which a firm has active CDS trading, a dummy for the (partial year) year of CDS introduction, control variables, and three lags of Cash for Acq. All other variables are defined in Table 1. All independent variables are from the prior fiscal year. Regressions include year and firm fixed effects. Heteroskedasticity-robust *t*-statistics adjusted for clustering within firms are in parentheses. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

	ΔAssets	Net Investment	Net Capex	Cash for Acq.	Net Debt Issuance	Δ Debt	Δ Goodwill	Merger Dummy	Value of M&A
CDSActive	-0.00910	0.00009	0.00470***	-0.00680***	-0.00832**	-0.0095**	-0.0090***	-0.06***	-0.00487
	(-0.99)	(0.03)	(2.70)	(-2.63)	(-2.10)	(-2.13)	(-3.14)	(-2.73)	(-0.30)
CDS_partial_year	0.0187*	0.0100**	-0.00002	0.0101***	0.00482	0.0105*	0.00615	0.0351	0.0407**
	(1.67)	(2.26)	(-0.01)	(2.61)	(1.02)	(1.90)	(1.34)	(1.57)	(2.11)
Ln(Assets)	-0.126***	-0.0107***	-0.00365***	-0.00802***	-0.0147***	-0.021***	-0.011***	0.029***	-0.085***
	(-23.67)	(-5.18)	(-3.02)	(-5.76)	(-7.02)	(-8.92)	(-8.06)	(2.85)	(-8.36)
PPE	0.221***	0.0298***	-0.00584	0.0256***	0.0658***	0.0557***	0.0898***	-0.0132	0.0348
	(8.60)	(2.95)	(-0.87)	(4.06)	(5.96)	(4.57)	(13.89)	(-0.27)	(0.59)
Leverage	-0.164***	-0.0867***	-0.0330***	-0.0344***	-0.256***	-0.328***	-0.0103**	-0.22***	-0.0141
	(-9.76)	(-13.43)	(-10.12)	(-8.00)	(-30.71)	(-37.89)	(-2.29)	(-7.59)	(-0.38)
EBIT	0.233***	0.107***	0.0388***	0.0626***	0.0913***	0.104***	0.0136	0.214***	0.103
	(5.39)	(6.93)	(4.44)	(6.40)	(5.17)	(5.29)	(1.08)	(2.81)	(0.89)
Working Cap.	0.113***	0.0385***	0.00331	0.0253***	0.0353***	0.0590***	0.0572***	0.135***	0.134**
	(5.14)	(5.10)	(0.97)	(5.15)	(3.58)	(5.32)	(9.95)	(3.67)	(2.34)
Cash	-0.0739***	0.0749***	0.0111**	0.0607***	-0.0616***	-0.081***	0.0730***	0.208***	0.142**
	(-2.95)	(7.70)	(2.52)	(9.69)	(-5.76)	(-6.64)	(10.63)	(4.66)	(2.13)
Turnover	0.0302***	0.00138	0.00343**	-0.00283*	-0.00292	-0.00476	0.0102***	-0.04***	0.00403
	(4.35)	(0.58)	(2.47)	(-1.71)	(-1.03)	(-1.48)	(5.26)	(-2.83)	(0.24)
Ret. Earn.	-0.0280***	0.00461***	0.00393***	0.00390***	-0.000408	-0.00211	-0.000474	0.0108	0.0664***
	(-5.25)	(2.89)	(5.08)	(3.96)	(-0.21)	(-0.97)	(-0.38)	(1.53)	(4.00)
ROA	-0.0765*	-0.0762***	-0.0269***	-0.0444***	-0.0950***	-0.097***	-0.00535	-0.0749	-0.0356
	(-1.65)	(-4.67)	(-2.97)	(-4.45)	(-5.17)	(-4.73)	(-0.40)	(-0.93)	(-0.29)
Volatility	-0.0729***	-0.0244***	-0.00586***	-0.0192***	-0.0193***	-0.024***	-0.0054**	-0.13***	0.0142
	(-9.12)	(-8.42)	(-3.89)	(-10.19)	(-5.56)	(-6.10)	(-2.51)	(-8.26)	(0.64)
Excess Ret.	0.0361***	0.00645***	0.00260***	0.00149**	0.000549	0.000822	0.0037***	0.020***	0.00107
	(17.25)	(7.06)	(5.82)	(2.52)	(0.54)	(0.73)	(5.78)	(4.73)	(0.14)
Inv. Grade	0.0174**	0.00741**	0.00130	0.00229	0.00567*	0.00505	0.00325	0.00372	0.0107
	(2.50)	(2.45)	(0.88)	(1.05)	(1.70)	(1.42)	(1.39)	(0.19)	(0.73)
Rated	0.0170**	-0.00608*	0.000822	-0.00474*	0.00641*	0.00674	-0.00457*	-0.0133	-0.00960
	(2.13)	(-1.67)	(0.44)	(-1.91)	(1.67)	(1.58)	(-1.76)	(-0.78)	(-0.50)
Q	0.0416***	0.00917***	0.00520***	0.000544	0.00695***	0.0060***	0.0039***	0.000242	0.0187***

	(18.38)	(10.44)	(11.36)	(0.99)	(6.97)	(5.73)	(6.51)	(0.06)	(3.72)
Cash for Acq., lag1	0.125***	-0.0453***	0.00650**	-0.0620***	-0.0167*	0.00528	0.00181	0.462***	-0.0824*
	(6.13)	(-4.86)	(1.97)	(-7.91)	(-1.66)	(0.50)	(0.22)	(9.34)	(-1.88)
Cash for Acq., lag2	0.0856***	-0.0331***	0.00352	-0.0441***	-0.00611	0.0104	-0.00250	0.115**	-0.0840**
	(4.28)	(-3.82)	(1.10)	(-6.25)	(-0.63)	(0.99)	(-0.31)	(2.58)	(-2.28)
Cash for Acq., lag3	0.0817***	-0.0274***	0.000189	-0.0318***	-0.00828	0.00298	-0.00105	0.0284	-0.0399
	(4.00)	(-3.45)	(0.06)	(-4.71)	(-0.94)	(0.30)	(-0.13)	(0.69)	(-1.13)
Constant	0.768***	0.129***	0.0694***	0.0753***	0.150***	0.222***	0.0235**	0.259***	0.659***
	(17.84)	(7.90)	(7.06)	(6.98)	(9.01)	(11.54)	(2.14)	(3.25)	(7.51)
Observations	37,223	37,223	37,223	37,223	37,223	37,157	37,223	36,570	5,438
Adj. R^2	0.223	0.098	0.078	0.065	0.139	0.169	0.080	0.032	0.155
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 10: CDS introduction and net debt issuance: cross-sectional tests

This table presents the results of regressions of net debt issuance on a dummy for the years in which a firm has active CDS trading, control variables, and interactive partition dummy variables. All variables are defined in Table 1. All control variables are from the prior fiscal year. Regressions include year and firm fixed effects, and separate regressions are run for all firm-years as well as firm-years where lagged book leverage is greater than zero. Heteroskedasticity-robust *t*-statistics adjusted for clustering within firms are in parentheses. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

	Above 75th percentile of median industry-year Q		Above 75th percentile of state defaults	
	All firm-years	Lagged positive leverage firm-years	All firm-years	Lagged positive leverage firm-years
CDSActive	-0.000217	0.00852	-0.0123***	-0.0106***
	(-0.03)	(1.01)	(-3.81)	(-3.20)
Conditioning variable	0.0083***	0.0122***	-0.00112	-0.00182
	(3.19)	(3.88)	(-0.84)	(-1.21)
CDSactive x Conditioning variable	-0.00832	-0.0137**	0.00624**	0.00802***
	(-1.39)	(-2.22)	(2.33)	(2.87)
Ln(Assets)	-0.015***	-0.0207***	-0.0143***	-0.0169***
	(-7.57)	(-9.10)	(-6.41)	(-6.68)
PPE	0.0624***	0.0675***	0.0717***	0.0810***
	(5.90)	(5.69)	(6.12)	(6.42)
Leverage	-0.258***	-0.292***	-0.254***	-0.255***
	(-32.54)	(-34.02)	(-29.47)	(-28.64)
EBIT	0.0989***	0.113***	0.0953***	0.102***
	(5.84)	(5.36)	(5.34)	(4.81)
Working Cap.	0.0317***	0.0242**	0.0308***	0.0347***
	(3.40)	(2.37)	(2.97)	(2.99)
Cash	-0.050***	-0.0421***	-0.0562***	-0.0662***
	(-4.89)	(-3.52)	(-4.95)	(-5.07)
Turnover	0.000555	0.000558	-0.000745	-0.000408
	(0.21)	(0.18)	(-0.26)	(-0.13)
Ret. Earn.	-0.000772	-0.00338	-0.000211	-0.000637
	(-0.46)	(-1.47)	(-0.12)	(-0.29)
ROA	-0.101***	-0.115***	-0.100***	-0.106***
	(-5.75)	(-5.18)	(-5.41)	(-4.79)
Volatility	-0.018***	-0.0195***	-0.0206***	-0.0220***
	(-5.61)	(-5.14)	(-5.80)	(-5.60)
Excess Ret.	0.0034***	0.00374***	0.00112	0.000495
	(3.72)	(3.48)	(1.03)	(0.41)
Inv. Grade	0.00541	0.00469	0.00366	0.00230
	(1.64)	(1.38)	(1.03)	(0.63)
Rated	0.00770**	0.00661*	0.00975**	0.0119***
	(2.07)	(1.66)	(2.43)	(2.82)
Q			0.00614***	0.00840***
			(6.41)	(6.88)
Constant	0.144***	0.201***	0.144***	0.161***
	(9.46)	(11.04)	(8.18)	(7.90)
Observations	40,196	34,273	33,816	29,654
Adj. R^2	0.134	0.160	0.136	0.139
Year F.E.	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes

Table 11: CDS introduction and merger-related leverage changes

This table presents the results of regressions of yearly leverage changes on a dummy for the years in which a firm has active CDS trading, a dummy for merger firm-years, the interaction between these two variables, and control variables. Regressions include year and firm fixed effects, and separate regressions are run for all firm-years as well as firm-years where lagged book leverage is greater than zero. Heteroskedasticity-robust *t*-statistics adjusted for clustering within firms are in parentheses. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

	Net Debt Issuance		Δ Debt		Δ Book Leverage		Δ Market Leverage	
	All firm-years	Lagged positive leverage firm-years	All firm-years	Lagged positive leverage firm-years	All firm-years	Lagged positive leverage firm-years	All firm-years	Lagged positive leverage firm-years
CDSActive	-0.00613*	-0.00266	-0.00701*	-0.00246	0.00103	0.00298	-0.00521	-0.00308
	(-1.79)	(-0.76)	(-1.91)	(-0.65)	(0.30)	(0.83)	(-1.28)	(-0.73)
Merger Dummy	0.0316***	0.0349***	0.0408***	0.0450***	0.0198***	0.0201***	0.0265***	0.0284***
	(22.61)	(21.84)	(26.76)	(25.82)	(15.18)	(13.56)	(15.85)	(14.71)
Merger Dummy x CDS Active	-0.00511*	-0.00756**	-0.00919***	-0.0124***	-0.0104***	-0.0107***	-0.00348	-0.00517
	(-1.72)	(-2.46)	(-2.81)	(-3.64)	(-3.71)	(-3.67)	(-0.99)	(-1.41)
Ln(Assets)	-0.0156***	-0.0185***	-0.0203***	-0.0241***	0.00834***	0.0100***	0.0154***	0.0207***
	(-7.90)	(-8.12)	(-9.19)	(-9.34)	(4.43)	(4.69)	(7.16)	(8.30)
PPE	0.0656***	0.0771***	0.0544***	0.0651***	0.0101	0.0190*	0.0272**	0.0429***
	(6.20)	(6.68)	(4.87)	(5.28)	(1.00)	(1.71)	(2.18)	(3.05)
Leverage	-0.253***	-0.250***	-0.323***	-0.321***	-0.318***	-0.320***	-0.261***	-0.257***
	(-32.04)	(-30.04)	(-39.53)	(-35.61)	(-36.42)	(-35.25)	(-30.70)	(-27.92)
EBIT	0.0808***	0.0880***	0.0905***	0.100***	0.0417**	0.0547***	0.0494**	0.0673**
	(4.77)	(4.32)	(4.90)	(4.52)	(2.36)	(2.59)	(2.23)	(2.52)
Working Cap.	0.0263***	0.0305***	0.0492***	0.0604***	0.0328***	0.0427***	0.0526***	0.0625***
	(2.78)	(2.83)	(4.73)	(5.05)	(3.28)	(3.69)	(5.11)	(5.27)
Cash	-0.0575***	-0.0709***	-0.0815***	-0.0999***	-0.0470***	-0.0600***	-0.0574***	-0.0644***
	(-5.59)	(-5.84)	(-7.21)	(-7.32)	(-4.29)	(-4.53)	(-5.07)	(-4.67)
Turnover	0.000515	0.000677	-0.00104	-0.00181	-0.00502*	-0.00668**	-0.00338	-0.00558
	(0.19)	(0.22)	(-0.36)	(-0.54)	(-1.96)	(-2.33)	(-1.10)	(-1.58)
Ret. Earn.	-0.000368	-0.000578	-0.00266	-0.00320	-0.00264	-0.000671	-0.00296	-0.00120
	(-0.21)	(-0.27)	(-1.43)	(-1.37)	(-1.36)	(-0.28)	(-1.50)	(-0.46)
ROA	-0.0913***	-0.0977***	-0.0908***	-0.0982***	-0.0750***	-0.0960***	-0.0640***	-0.0806***
	(-5.16)	(-4.53)	(-4.72)	(-4.17)	(-4.00)	(-4.16)	(-2.78)	(-2.85)

Volatility	-0.0135***	-0.0141***	-0.0180***	-0.0191***	0.00465	0.00645*	-0.0722***	-0.0796***
	(-4.12)	(-3.81)	(-4.98)	(-4.66)	(1.34)	(1.66)	(-16.94)	(-16.48)
Excess Ret.	0.000669	4.36e-05	0.00123	0.000516	-0.0078***	-0.0094***	0.00253**	0.00255*
	(0.68)	(0.04)	(1.14)	(0.42)	(-8.20)	(-8.94)	(2.25)	(1.95)
Inv. Grade	0.00474	0.00393	0.00421	0.00301	-0.000730	-0.00141	0.0113***	0.00906**
	(1.43)	(1.17)	(1.19)	(0.84)	(-0.24)	(-0.46)	(2.70)	(2.12)
Rated	0.00908**	0.0108***	0.0106***	0.0126***	0.00812**	0.00838**	0.00515	0.00545
	(2.48)	(2.80)	(2.64)	(2.96)	(2.16)	(2.15)	(1.21)	(1.23)
Q	0.00594***	0.00841***	0.00529***	0.00795***	0.000892	0.000590	0.0111***	0.0176***
	(6.73)	(7.29)	(5.69)	(6.52)	(1.03)	(0.51)	(12.54)	(14.52)
Constant	0.140***	0.158***	0.193***	0.220***	0.0107	0.00285	-0.0790***	-0.131***
	(8.85)	(8.38)	(10.91)	(10.38)	(0.68)	(0.16)	(-4.42)	(-6.23)
Observations	39,444	33,702	39,376	33,653	39,376	33,653	39,366	33,644
Adj. R^2	0.155	0.158	0.194	0.196	0.172	0.174	0.226	0.255
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 12: Leverage levels upon CDS introduction, including partial-year dummy, with M&A transaction lags

This table presents the results of regressions of leverage on a dummy for the years in which a firm has active CDS trading, a dummy for the (partial year) year of CDS introduction, and control variables. All other variables are defined in Table 1. All independent variables are from the prior fiscal year. Regressions include year and firm fixed effects. Heteroskedasticity-robust *t*-statistics adjusted for clustering within firms are in parentheses. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

	Book Leverage	Market Leverage
CDSActive	0.0149	0.0192*
	(1.59)	(1.80)
CDS_partial_year	0.0199***	0.0208**
	(2.61)	(2.19)
Ln(Assets)	0.0255***	0.0605***
	(5.46)	(12.25)
PPE	0.0744***	0.117***
	(3.35)	(4.78)
EBIT	-0.140***	-0.174***
	(-9.81)	(-12.70)
Investment-grade	-0.0285***	-0.0443***
	(-3.96)	(-5.06)
Rated	0.0571***	0.0573***
	(7.39)	(6.89)
Median Industry Book Leverage	0.229***	
	(9.27)	
Median Industry Market Leverage		0.251***
		(14.00)
Market-to-book	-0.00139**	-0.00329***
	(-2.30)	(-7.40)
Earnings Volatility	0.0726***	0.0488**
	(3.24)	(2.29)
Abnormal Earnings	0.00257	-0.00170
	(0.83)	(-0.49)
Tax Credits	6.451***	12.14***
	(3.86)	(4.72)
Loss Carryforwards	0.0192**	0.0171***
	(2.55)	(3.04)
Cash for Acq., lag1	0.106***	0.0789***
	(7.25)	(4.59)
Cash for Acq., lag2	0.102***	0.0807***
	(6.78)	(4.72)
Cash for Acq., lag3	0.0653***	0.0622***
	(4.85)	(3.99)
Constant	-0.0116	-0.270***
	(-0.32)	(-6.98)
Observations	26,174	26,130
Adj. R^2	0.089	0.204
Year F.E.	Yes	Yes
Firm F.E.	Yes	Yes

Appendix: Probit model for CDS trading/IV first-stage

Capex	-1.307**
	(-2.01)
Ln(Assets)	0.378***
	(12.46)
PPE	0.127
	(0.64)
Leverage	0.886***
	(4.68)
EBIT	-0.880
	(-1.06)
Working Cap.	0.0272
	(0.10)
Cash	0.138
	(0.45)
Turnover	0.106**
	(1.97)
Ret. Earn.	-0.0123
	(-0.16)
ROA	0.375
	(0.42)
Volatility	-0.313**
	(-2.50)
Excess Ret.	-0.0181
	(-0.60)
Inv. Grade	0.514***
	(6.78)
Rated	1.253***
	(13.36)
Lender FX	16.70***
	(3.89)
Constant	-4.884***
	(-15.08)
Observations	31,417
Pseudo R^2	0.507
Year F.E.	Yes
Industry F.E.	Yes