CDS Channels of Influence on Discretionary Accruals

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This paper finds that the initiation of trading in credit default swaps (CDS) improves earnings quality by reducing absolute abnormal earnings accruals in CDS firms. We show that the channels of reduction in discretionary accruals are through a firm's high accounts payable and low cash holdings related to negative accruals and trade credit exposures. In turn, significantly high discretionary accruals compel the firm to improve cash holdings, cash flows, and working capital when probability of default increases. In the longer run, this leads to higher EPS and improved firm value. Thus generation of public information via the CDS market reduces information asymmetry in the trade credit market and enforces greater discipline in discretionary accounts reporting.

Keywords: Credit default swaps, Earnings quality, Absolute abnormal earnings accruals, Trade credit exposures

JEL Classification: M40, M41, G30

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Abstract

This paper finds that the initiation of trading in credit default swaps (CDS) improves earnings quality by reducing absolute abnormal earnings accruals in CDS firms. We show that the channels of reduction in discretionary accruals are through a firm's high accounts payable and low cash holdings related to negative accruals and trade credit exposures. In turn, significantly high discretionary accruals compel the firm to improve cash holdings, cash flows, and working capital when probability of default increases. In the longer run, this leads to higher EPS and improved firm value. Thus generation of public information via the CDS market reduces information asymmetry in the trade credit market and enforces greater discipline in discretionary accounts reporting.

1 Introduction

Credit default swap (CDS)[1] is a derivative contract that allows a debt holder to buy credit protection against default on the debt while at the same time holding on to the contractual control rights (e.g., to enforce, waive, or modify the terms of the debt contract), and other legal rights (e.g., to sue company directors and officers under securities and other laws, including rights to participate in bankruptcy proceedings). See Hu and Black (2008) and Yavorsky (2009). When debt holders hedge using CDS, they can recover their debts completely while avoiding protracted renegotiations that delays debt recovery. Hence debt holders may no longer have incentives to continuously monitor credit-risky borrowers. At the same time, debt holders are reluctant to make concessions on their part in debt renegotiations process that may lead to inefficient bankruptcy or liquidation (Lubben, 2007; Hu and Black, 2008; Bolton and Oehmke, 2011; Stulz, 2010; Subrahmanyam et al., 2014; Narayanan and Uzmanoglu, 2014; Chakraborty et al., 2015, and Colonnello et al., 2016). Thus borrowers (or borrower-firms) may attempt to avoid debt renegotiations or imminent credit event by discretionary changes of corporate financial policies and accounting practices such as discretionary earnings accruals - see Subrahmanyam, Tang, and Wang (2017). For examples, Jones (1991), Dechow, Sloan, and Sweeney (1995), Kothari et al. (2005), Roychowdhury and Martin (2013), amongst many studies, have pointed to use of discretionary earnings accruals in adjusting earnings to improve on short-run corporate problems. With presumably

[1] The Credit Default Swap (CDS) market is a derivatives market that facilitates the management of credit risk. The CDS or credit protection buyer pays a periodic fee to the protection seller for a contingent payment associated with a reference entity's credit event.

less creditor monitoring, Martin and Roychowdhury (2015) empirically showed that firms exhibited less conservatism and more earnings management. But Kim et al. (2017) showed that shareholders increased information demand as a result, and managers increased voluntary disclosures. Further, Francis, Nanda, and Olsson (2008) showed that more voluntary disclosures are related to better earnings quality. Thus the introduction of CDS has mixed results so far in its impact on firm's earning quality.

However, extending from accounting literature to the finance literature, many studies have shown the presence of other parties such as speculators, hedgers, and financial analysts, besides the debt holders, in both the CDS and the stock market, who have incentives to collect and monetize information. See Acharya and Johnson (2007), Berndt and Ostrovnaya (2007), Ni and Pan (2011), Qiu and Yu (2012), Kryzanowski, Perrakis, and Zhong (2017), and Lee, Naranjo, and Velioglu (2017); the studies found significant impact of CDS spreads on stock prices. Batta, Qiu, and Yu (2016) showed that CDS prices themselves provided useful information leading to reduction of errors in financial analysts' earnings forecasts. Li and Tang (2016) also showed that CDS trading provided more information to suppliers. Thus with CDS trading, the CDS firms (firms with CDS traded on their debts) would have incentives to improve accruals management and earnings quality since otherwise bad credit news would be quickly relayed to the stock market and would negatively affect shareholders' value.

The contribution of this paper is in directly addressing the question if CDS trade initiation influences management's discretionary accruals, and what are the channels by which this influence is effected. While the CDS information leads to more accurate analysts' earnings forecasts and more corporate voluntary disclosures such as management earnings forecasts, it is not known if quarter by quarter management continues to exercise discretionary accruals as usual. Unlike Kothari, Leone, and Wasley (2005), we are not studying firms that use earnings management to meet management earnings forecasts. We consider all CDS and non-CDS firms in the largest sample possible from Markit and Compustat databases. Moreover, we study key firm variables such as accounts payable, accounts receivable, and cash holdings to throw light on firms' changes in accruals discretion. Besides information demand by shareholders at the start of CDS trading, our study also shows the effect of CDS information on trade credit exposures and how market information drives firm's discipline to improve earnings quality (less discretionary accruals and better future earnings predictability) that can lead to higher future firm value. Thus quality earnings management is seen both as a product of an informative CDS market, as well as a productive factor in value creation.

We investigate the impact of post-CDS trade initiation on discretionary earnings management decisions. Corporate managers may misuse earnings management in misleading stakeholders about the underlying economic performance of the firms (Healy and Wahlen, 1998). For instance, firms can delay the reporting of financial losses by increasing earnings accruals via booking earnings in advance before cash is received. However, it comes with a cost (Dechow, Sloan, and Sweeney, 1996) when creditors and investors find out that corporate managers are manipulating the numbers. Corporate managers may also delay the reporting of financial gains via negative accruals by accounting for payables before payment, perhaps to lower tax as in Jones (1991). Although the onset of CDS trading reduces lenders' risk due to insurance and thus incentive to monitor, it may increase other stakeholders' (e.g. shareholders, product suppliers, etc.) risk if the firms should shirk and steer toward higher distress risk. Other stakeholders who learn from CDS prices would influence the borrowing firms to enhance transparency and reduce earnings management activities and thus also distress risk. Therefore we posit that post-CDS trade initiation can reduce intentional earnings manipulation of the underlying borrowing firms as their traded CDS provide additional distress information.

We examine quarterly discretionary earnings management activities for U.S. firms from 1973 Q1 to 2016 Q4. Specifically we assume significant discretionary activities are reflected in abnormal earnings accruals. The discretionary earnings manipulation metrics we focus on are absolute or unsigned abnormal earnings accruals suggested by Jones (1991) and the modified Jones's abnormal accruals model in Dechow et at. (1995). The "absolute" or "unsigned" accrual model estimation errors do not differentiate income-increasing from income-decreasing discretionary earnings management. We use the absolute errors from this absolute abnormal discretionary accruals model to measure earnings management activities. Recent accounting literature extensively use this absolute accruals model to measure earnings quality (e.g., Warfield, Wild, and Wild, 1995; Dechow and Dichev, 2002; Frankel, Johnson, and Nelson, 2002; Klein, 2002; Chung and Kallapur, 2003; Myers, Myers, and Omer, 2003; Leuz, Nanda, and Wysocki, 2003; Aboody, Hughes, and Liu, 2005; Bergstresser and Philippon, 2006). Post-CDS trade initiation is measured as a CDS trading dummy in Saretto and Tookes (2013), Subrahmanyam et al. (2014), and Li and Tang (2016). We find that post-CDS trade initiation improves earnings reporting quality by significantly reducing the absolute abnormal accruals after controlling for the economic determinants of earnings quality. Furthermore, we conduct three additional endogeneity tests to rule out the possibility that firms with higher earnings quality choose to initiate CDS trading. The three endogeneity tests are: (1) event study, (2) propensity score matching, and (3) 2SLS.

How does post-CDS trade initiation reduce absolute abnormal discretionary earnings accruals? Firstly, we find that CDS trading reduces absolute abnormal accruals in firms where accounts payables to contract suppliers are higher. The reduction is affected by or channelled through contract suppliers' trade credit exposure. To be more precise, contract suppliers who supply trade credits to customer firms may stop providing intermediate goods when their customer firms are financially distressed (Cunat, 2006). If the CDS market can offer the credit risk information of customer firms to the contract suppliers, CDS prices then become a monitoring tool used by the contract suppliers.

Some CDS firms may arrange for more purchases of intermediate goods and thus bigger accounts payable with delayed payments. But with CDS providing market credit information on the firm, more negative earnings accruals could signal cash flow problems and lead to credit downgrades. This could have a dire effect on future trade credits with suppliers. Hence firms with higher trade debts or accounts payables are more driven to reduce negative accruals as a result of CDS market news. We conduct further analysis to see which types of firms are more sensitive to the contract suppliers' trade credits. We find that contract suppliers' trade credit exposure effect is stronger for median credit-rated CDS firms.[2]. This is because median credit-rated firms are more sensitive to CDS information. Specifically, there is more incentive and feasibility for median credit-rated firms to change their corporate fundamentals by improving operational efficiency compared with low-rated firms that are under financial distress, and high-rated firms that far removed from financial distress.

Secondly, we find that the post-CDS trading initiation have stronger impacts on low cash holding firms. On average firms with low cash holding may have liquidity issues. Otherwise most firms would adopt conservative liquidity management corporate practice by holding more cash (Subrahmanyam, Tang, and Wang, 2017) in order to gain more bargaining power over tougher creditors (see Bolton and Oehmke (2011)). Thus firms with low cash holding may be subject to more scrutiny by creditors including trade credit suppliers. CDS trading provides more market information about the firms and will reduce the ability of such firms to utilize discretionary accruals whether to book future incomes or to delay credit payments. Thirdly, we examine how firms with high earnings management activities respond to higher default probability. Theoretically, it is optimal for firms to adopt risk-management activities to reduce financial distress risk (Purnanandam, 2007). To test this, we focus on the firms with CDS prices and bootstrap the default probability from the entire CDS curve at a quarterly frequency based on the Hull and White (2000)s' reduced-form CDS pricing framework. We examine whether the higher default probability of firms with greater earnings management activities predicts (1) more conservative future liquidity management activities and (2) better future operational efficiency. Consistently, we find that firms with

[2]We classify firms into high, median, and low rating groups by classifying: (i) A group or high credit rating: AAA, AA+, AA, AA-; (ii) B group or median credit rating, BBB+,BBB,BBB-,BB+,BB,BB-,B,B-,B+; and (iii) C or low credit rating: CCC+, CCC, CCC-, CC, D, SD.

higher default probability this quarter will accumulate more cash, increase operating cash flows, and increase net working capital in the next quarter and into the next year. This enhancement is more pronounced for firms with higher absolute abnormal discretionary accruals. This finding is consistent with optimal actions to reduce financial distress risk by enhancing firms' financial health and fundamental strength (Warner, 1977; Shleifer and Vishny, 1992; Opler and Titman, 1994; Andrade and Kaplan, 1998; among many studies). It is also consistent with the theory that income-increasing accruals are effectively good signals used by the distressed firms as the signals are costly - see Jensen (2019).

Lastly, we investigate the value implication of post-CDS trade initiation. Dye (1985) showed that high valuation uncertainty predicts low firm value. Built upon this insight, we study whether firms with CDS trading will have higher valuation than firms without CDS trading when high absolute abnormal discretionary accruals are high. Using one-quarter ahead earnings per share (EPS) growth as the proxy for valuation growth, we find that the average annual earnings growth of CDS trading firms are on average 9% higher than firms without CDS trading when absolute abnormal discretionary accruals are higher than the cross-sectional medians. It suggests that the CDS market serves as an external information channel that reduces the valuation uncertainty.

The remainder of the paper is organized as follows. Section 2 develops the testable hypotheses. Section 3 describes the data sample and the variables measurements. Section 4 presents the empirical results. Section 5 contains the conclusions.

2 Hypotheses Development

Earnings management is a key accounting practice to smooth earnings. Earnings management are used for signalling, increasing contract efficiency (smoothing transitory components of income), and may be used for maintaining the short-run operating efficiency of a firm. Managers may exercise discretions to adjust reported working capital such as using different inventory cost method, adjusting revenue and expense recognitions, changing of accounting methods, and so on. These are critical ingredients in firms' operation management process (see Healy and Wahlen, 1998). Earnings management occurs because insiders have better access to private information that is not available to outsiders. It creates non-diversifiable information risk to investors (see O'Hara, 2003; Easley and O'Hara, 2004; Leuz and Verrecchia, 2004), and may harm firm value if the practice is opportunistic. Bhattacharya, Desai, and Venkataraman (2013) found that poor earnings quality is related to high information risk, which is proxied by idiosyncratic volatility. Specifically, one example of possible reduction in firm value is the case when insiders use their discretions to mislead stakeholders about the underlying economic performance of the firm, such as inflating current earnings or delating credit payments to hide losses. Dechow, Sloan, and Sweeney (1996) found that these bad earnings management practices come with cost when the manipulations are revealed to the market. The firm will consequently face a high cost of capital (Brealey, Leland, and Pyle, 1977; Wittenberg-Moerman, 2008; Tang, 2009). If outsiders can be informed about the potential credit risk exposures via the CDS market, insiders will find it costly to manage earnings as this will be viewed negatively. Thus management will reduce earnings management activities.

We employ absolute abnormal discretionary accruals as a proxy for excessive earnings management activities, following existing studies. The general idea of absolute abnormal discretionary accruals is that if the "normal" component, such as are necessary and within accepted accounting practices, of total accruals is modeled properly, the abnormal component will be negligible. Large and persistent absolute abnormal discretionary accruals indicate earnings distortions and poor earnings quality. Therefore, we propose the following testable hypothesis 1:

Hypothesis 1. Ceteris paribus, post-CDS trade initiation reduces absolute abnormal discretionary accruals.

We investigate how post-CDS trade initiation reduces absolute abnormal discretionary accruals. Firstly, we focus on the role of trade credit, which serves as the crucial source of short-term external finance channel. The trade credit is sizable for U.S. markets. For example, using a sample of non-financial U.S. firms from 1973 to 2016, we show that aggregate accounts payable add up to 18.2% of the total assets, whereas the debt in current liability only accounts for 10.6% of total assets. Supplier firms monitor the CDS customer firms' corporate actions and would threaten to cut off future supplies in the event of customer firms showing financial distress. Cunat (2006) showed that contract suppliers who supply trade credits to customer firms actually stop providing intermediate goods when their customers are under financial distress. The CDS market prices provide the suppliers public information of the customer firms' current credit status. Higher CDS prices may signal the customer firms' inability or difficulty to make repayments. Hence, this will signal a deterioration in customer firms' creditworthiness. Thus customer firms would be more wary of excessive earnings manipulations as repercussions from a bad CDS signal would be even more devastating for the firms. Further, we posit that the influence of supplier firms or credit lenders on earnings management activities of customer firms belonging to the median credit-rated group should be larger than the higher rating group and the low rating group because it is easier for median credit rated firms to change their corporate fundamentals by improving operational efficiency compared to low-rated firms that are under financial distress or to high-rated firms that are not under pressure from financial distress. Therefore we propose the following testable hypothesis 2:

Hypothesis 2. Ceteris paribus, post-CDS trade initiation reduces absolute abnormal discretionary accruals channeled through accounts payable changes in CDS firms. The impact is more pronounced for median credit-rated borrower firms.

Corporate borrowers attempt to adopt conservative liquidity management practice by holding more cash (Subrahmanyam, Tang, and Wang, 2017) in order to gain more bargaining power over creditors who use CDS information. Although the CDS market reduces debt holders' incentive to continuously monitor the borrowers who face high distress risks as the creditors are accorded full insurance (Bolton and Oehmke, 2010), CDS may increase external monitoring incentives for other stakeholders such as equity holders and product suppliers because they find it costly to use CDS and are equally vulnerable to distress and bankruptcy risks. Thus there are reasons why firms would want to adopt risk-management activities to reduce distress risk (Purnanandam, 2007). In particular, firms with low cash holdings and that are more susceptible to distress would be more sensitive to the external monitoring activities by outsiders and stakeholders. These firms' would show more improvements in earnings management by reducing absolute abnormal discretionary accruals. Earnings management improvement also serves as a positive signal. Hence hypothesis 3a:

Hypothesis 3a. Ceteris paribus, post-CDS trade initiation reduces absolute abnormal discretionary accruals more significantly in borrowers with low cash holdings.

In line with the above hypothesis, firms could make extra efforts to improve cash holdings, operational cash flows, and net working capitals. Firms would likely do so when there is strong external monitoring provided by their CDS prices. This is particularly so when the firm's default risk at quarter t is determined by the CDS market to be high, and the firm would be induced to take more conservative corporate actions with regard to liquidity management and improving operational efficiency in the future.

Hypothesis 3b. Higher default risk at quarter t may predict more conservative corporate actions and better operational efficiency in the future. The predictive power is more pronounced for firms with high earnings management activities.

CDS market prices can signal the distress risk through observed CDS prices. The CDS price information allows external monitoring by stakeholders such as creditors, investors (equity holders, speculators and stock-CDS arbitrageurs), and supply contractors, and influences firms toward more conservative corporate actions with reduced abnormal earnings management activities. Dye (1985) developed a partial voluntary disclosure model showing that firm value should reduce if the firm faces high asset value measurement uncertainty. If CDS information can reduce the earnings measurement uncertainty, it would increase the firm value. Thus, we propose the following hypothesis 4:

Hypothesis 4. Ceteris paribus, the value of firms with CDS trading should be higher than firms without CDS trading.

3 Sample, Variables, and Summary Statistics

3.1 Sample

We obtain CDS information of U.S. listed firms from Markit, the leading industry source for credit pricing data. Markit Group collects CDS quotes from a large number of contributing banks and then cleans them to remove outliers and stale prices. We identify CDS trading firms using Markit RED file that provides the detailed contract-level information about CDS prices. We collect quarterly firm-level financial data from COMPUSTAT North America that are used in our empirical analyses. We first combine COMPUSTAT and CDS information from Markit primarily using the first six digit CUSIP and then, for the rest of the firms that could not be matched using CUSIP, we manually match the firms across the two databases by using long-legal names. We also obtain bond trading volume data from TRACE to compute peer firms' trading volumes following Oehmke and Zawadowski (2013) and Boehmer et al. (2015). We obtain the Fama-French 48 industry classification from Professor Ken French's website. The overall sample of firms covers the period from 1973Q1 to 2016Q4. It is important to incorporate periods before 1994Q1, when the CDS market was launched, to see the time-series difference for firm data with and without CDS trading.

Various accounting and economic variables are employed in this study, and Table 1A shows their definitions.

[Table 1A about here]

Table 1B reports the sample distribution of CDS firms versus non-CDS firms from 1994 to 2016. The CDS market started in 1994Q1 with 21 reference entities having CDS contracts[3]. This number rose to 621 in 2007 but reduced to 401 in 2016. There is a total 849 unique reference entities with traded CDS contracts and a total of 14,771 unique non-CDS firms in our sample.

[3]Note that the CDS prices provided by Markit are available only after 2001 from their daily CDS data tape, but the number of firms can be traced back to 1994 using Markit RED file.

[Table 1B about here]

3.2 Variables Construction

3.2.1 CDS Trading and CDS Traded dummies. The key variable of interest is CDS Trading dummy. We construct the CDS Trading dummy following Saretto and Tookes (2013). In particular, we define that CDS Trading is equal to one at time t for a firm if there are CDS contracts written on the reference firm at time t, and it is equal to zero otherwise. In other words, after CDS started trading for a firm i, and before the contract expires, the time series for CDS Trading will show CDS $\text{Trading}_{i,t}$ as 1 at t till expiry, while it will be zero before t. We identify the CDS Trading dummy using the RED file provided by Markit. The RED file provides the detailed contract-level information about which date the CDS contract started and which date it expired. For such a firm where there is CDS trading at any time t within the sample period of the firm, e.g. from 1994 to 2016, then the variable CDS Traded dummy equals to one at every t. If there is a firm whereby no CDS ever traded within the entire sample period, then its CDS Traded dummy equals to zero at every t. This follows aretto and Tookes (2013) in order to control for time-invariant unobservable differences between CDS and non-CDS firms.

3.2.2 Measure absolute abnormal discretionary earnings accruals. We consider two different measures of earnings manipulation. They are absolute abnormal total accruals and absolute abnormal current accruals. We use absolute or unsigned accruals measure in order to measure possibilities of both positive and negative accruals, and deviations in general as decrease in earnings quality. We do not use other measures such as matched measures in Kothari, Leone, and Wasley (2005) as our purpose is not to match performances.

Jones (1991) accruals model: |EQ1|. To measure the abnormal total accruals for each firm j in quarter t, we first perform the cross-sectional regression for each of Fama and French 48 industry classifications. We require that the cross-sectional dataset contains at least 20 firms in each industry within each quarter. Specifically, for each quarter t and each industry k (k=1,2,...,48), we run

$$\frac{\text{TA}_{j,k,t}}{\text{Asset}_{j,k,t-1}} = \gamma_{1,k,t}\frac{1}{\text{Asset}_{j,k,t-1}} + \gamma_{2,k,t}\frac{\Delta\text{REV}_{j,k,t}}{\text{Asset}_{j,k,t-1}} + \gamma_{3,k,t}\frac{\text{PPE}_{j,k,t}}{\text{Asset}_{j,k,t-1}} + \epsilon_{j,k,t}$$

where $\text{TA}_{j,k,t}$ is total accruals of firm j, $\text{Asset}_{j,k,t-1}$ is total asset of firm j at quarter t-1, $\Delta\text{REV}_{j,k,t}$ is firm j's quarterly change in revenue, and $\text{PPE}_{j,k,t}$ is firm j's gross value of property, plant, and equipment in quarter t.

We collect the industry-quarter parameters to obtain the firm-specific fitted total non-discretionary accruals ($\text{NA}_{j,k,t}$) for firm j in quarter t as

$$\text{NA}_{j,k,t} = \hat{\gamma}_{1,k,t}\frac{1}{\text{Asset}_{j,k,t}} + \hat{\gamma}_{2,k,t}\frac{\Delta\text{REV}_{j,k,t}}{\text{Asset}_{j,k,t}} + \hat{\gamma}_{3,k,t}\frac{\text{PPE}_{j,k,t}}{\text{Asset}_{j,k,t}}$$

The absolute or unsigned abnormal accruals of firm j in quarter t or $|\text{EQ1}|_{j,k,t}$ is defined as

$$|\text{EQ1}|_{j,k,t} = |\frac{\text{TA}_{j,k,t}}{\text{Asset}_{j,k,t-1}} - \text{NA}_{j,k,t}|\ .$$

Modified Jones model by Dechow et al. (1995): |EQ2|. To measure the abnormal current accruals for each firm j in quarter t, we first perform the cross-sectional regression for each industry,

$$\frac{\text{TCA}_{j,k,t}}{\text{Asset}_{j,k,t-1}} = \gamma_{1,k,t}\frac{1}{\text{Asset}_{j,k,t-1}} + \gamma_{2,k,t}\frac{\Delta\text{REV}_{j,k,t} - \Delta\text{AR}_{j,k,t}}{\text{Asset}_{j,k,t-1}} + \epsilon_{j,k,t}$$

where $\text{TCA}_{j,k,t}$ is current accruals of firm j, $\text{Asset}_{j,k,t-1}$ is total asset at quarter t-1, $\Delta\text{REV}_{j,k,t}$ is firm j's quarterly change in revenues, and $\Delta\text{AR}_{j,k,t}$ is firm j's change in account receivable in quarter t.

For each firm j in quarter t, we obtain the fitted current accruals as

$$\text{NCA}_{j,k,t} = \hat{\gamma}_{1,k,t}\frac{1}{\text{Asset}_{j,k,t-1}} + \hat{\gamma}_{2,k,t}\frac{\Delta\text{REV}_{j,k,t} - \Delta\text{AR}_{j,k,t}}{\text{Asset}_{j,k,t-1}}$$

$|\text{EQ2}|_{j,k,t}$ is defined as

$$|\text{EQ2}|_{j,k,t} = |\frac{\text{TCA}_{j,k,t}}{\text{Asset}_{j,k,t-1}} - \text{NCA}_{j,k,t}|$$

Constructing TA, TCA, and CFO. We construct total accruals $TA_{j,k,t}$, current accruals $TCA_{j,k,t}$, and cash flow from operations $CFO_{j,k,t}$ by,

$$\begin{aligned}
\text{TA}_{j,k,t} &= \Delta\text{CA}_{j,k,t} - \Delta\text{CL}_{j,k,t} - \Delta\text{CASH}_{j,k,t} + \Delta\text{STDEBT}_{j,k,t} - \text{DEPN}_{j,k,t} \\
\text{TCA}_{j,k,t} &= \Delta\text{CA}_{j,k,t} - \Delta\text{CL}_{j,k,t} - \Delta\text{CASH}_{j,k,t} + \Delta\text{STDEBT}_{j,k,t} \\
\text{CFO}_{j,k,t} &= \text{NIBE}_{j,k,t} - \text{TA}_{j,k,t}
\end{aligned}$$

where $\Delta\text{CA}_{j,k,t}$ is firm j's change in current assets in quarter t, $\Delta\text{CL}_{j,k,t}$ is firm j's change in current liabilities in quarter t, $\Delta\text{CASH}_{j,k,t}$ is firm j's change in cash in quarter t, $\Delta\text{STDEBT}_{j,k,t}$

is firm j's change in short-term debt in quarter t, $\text{DEPN}_{j,k,t}$ is firm j's depreciation and amortization expense in quarter t, and $\text{NIBE}_{j,k,t}$ is firm j's net income before extraordinary items in quarter t. We consider EQ1 and EQ2 as well as their absolute values $|EQ_1|$ and $|EQ_2|$ as proxies for firm's earnings quality.

3.2.3 Default probability curve. We start by estimating the term structure of default probabilities, which are risk-neutral default probabilities by a given maturity for a given name. In general, such probabilities are directly related to the fundamental performance of a firm (Bai and Wu, 2016). We use the closed-form solution based on Hull and White (2000) to bootstrap the entire default probability curve from the given single-name CDS spreads for different maturities. Suppose the different increasing maturities of the CDS are $t_0 < t_1 < t_2 < t_3 < ... < t_i < ... < T$, and Δ_i is the time interval between adjacent maturities, i.e. $\Delta_i = t_{i+1} - t_i$. In our CDS spread curve data, we assume quarterly interval payments, so $\Delta_i = \Delta = \frac{1}{4}$. The CDS spread curve provides for six months, 1 year, 5 years, 10 years, and 30 years price points. Using cubic spline we could approximate all intermediate price points on the curve. Thus, $t_2 = \frac{1}{2}$, $t_4 = 1$, $t_{20} = 5$, $t_{40} = 10$, and $t_{120} = 30$. The survival function $Q(t_i) = \text{Prob}(\tau > t_i)$ is probability of survival up to and including time t_i, where τ is the random time of default. Then

$$Q(t_i) = \exp[-\sum_{j=0}^{i-1} h(t_j)\Delta]$$

where $h(t_j)$ is the risk-neutral hazard rate function at time t_j over Δ.

In equilibrium, the fair CDS spread $s(t_i)$ for a maturity of t_i can be written as

$$s(t_i)\sum_{j=0}^{i-1} B(0,t_j)Q(t_j) = (1-\hat{R})\sum_{j=0}^{i} B(0,t_j)\big[Q(t_{j-1}) - Q(t_j)\big]$$

where $Q(t_{-1} \equiv 1)$, $Q(t_0 = 1)$, $\hat{R}$ is the expected recovery rate on the reference obligation provided by Markit, and $B(0,t_j)$ is the risk-free discount factor or zero coupon bond price with maturity at t_j starting at t_0. To avoid clumsy notations we assume annualizing factors are accounted for in the above formula. Given the observed spread $s(t_1)$ and term structure of risk-free interest, we can find $Q(t_1) = 1 - \big[s(t_1)/((1-\hat{R})(B(0,t_1))\big]$ and hence $h(t_0) = -\ln Q(t_1)/\Delta$. Bootstrapping the CDS spread curve, we can accordingly find $Q(t_2)$, $h(t_1)$, then $Q(t_3)$, $h(t_2)$, and so on. The default probability curve $PD(t_i)$ and survival function $Q(t_i)$ are given by the following relationship

$$PD(t_i) = P[\tau <= t_i] = 1 - Q(t_i)\ .$$

The 5-year default probability is used as a predictive variable in one of our regressions.

3.2.4 Control variables. We list all control variables used in this study. The construction details of the control variables can be found in Table 1A. Control variables include the following:

(a) Total asset: As discuss in Dechow and Dichev (2002), |EQ| is expected to decrease in firm size because large firms tend to have more stable and predictable operations and therefore smaller abnormal discretionary earnings accruals.

(b) Sales Volatility & Cashflow volatility: As discussed in Dechow and Dichev (2002), |EQ| is expected to increase in cash flow volatility and sales volatility because the high volatilities of both measures indicate high uncertainty in the operating environment or poor cash management practices, resulting in large abnormal discretionary earnings accruals.

(c) Incidence of negative earnings realization or Loss: As discussed in Dechow and Dichev (2002), |EQ| is expected to increase with incidences of negative earnings because firms with poor profitability track records tend to have noisy operational environment and therefore high abnormal discretionary earnings accruals.

(d) Operation cycle: As discussed in Dechow and Dichev (2002), |EQ| is expected to increase in the length of operating cycle because longer operating cycles indicate more uncertainty and therefore higher abnormal discretionary earnings accruals.

(e) Change in Sales Growth: We follow Demerjian, Lev, Lewis, and McVay (2013) to control for the change in sales growth.

(f) Book Leverage: |EQ| is expected to decrease in book leverage because leverage can induce additional monitor on the management team and will thus limit the earnings management activities.

(g) Market-to-Book decile is used in Hribar and Nichols (2007) in place of the exact ratio. As discussed by Bergstresser and Philippon (2006), |EQ| is expected to increase in market-to-book because high market-to-book indicates more growth option, which is associated with volatile operating environments of firms that may use more stock-based compensations.

3.3 Summary Statistics

Tables 1C and 1D report the summary statistics of the main variables used in the analysis.

[Tables 1C, 1D about here]

Table 1C reports the descriptive statistics of the variables for CDS firms and non-CDS firms in the data sample respectively. The sample mean and standard deviation of absolute abnormal discretionary earnings accruals measures |EQ| for the CDS firms are lower than those of the non-CDS firms. Additionally, we find that CDS traded firms are larger in capital sizes with lower cash flow volatility, lower sales volatility, higher market-to-book decile, shorter operation cycle, less loss records, and higher book leverage ratio. These characteristics show initial evidence that CDS trading firms have more efficient operational environments than non-CDS trading firms. The data involving CDS firms are from 1994 through 2016.

Table 1D reports time-series correlations for the variables. The earnings quality measures |EQ1| and |EQ2| are highly correlated with each other. It is notable that earnings quality measures are negatively related to the CDS Trading variable, which indicates that CDS Trading correlates with better earnings quality. In addition, the control variables are not highly correlated and thus it is not likely that multicollinearity will be an issue in our regression results.

4 Empirical Results

4.1 Does CDS Trading Reduce Abnormal Earnings Management Activities?

To test Hypothesis 1 whether post-CDS trade initiation reduces absolute abnormal earnings manipulation of CDS firms, we use the following panel regression across firms i and time t.

$$\begin{aligned} |\mathrm{EQ}_{i,t}| &= \alpha + \beta_1 \text{ CDS Trading}_{i,t} I[\mathrm{EQ}_{i,t} < 0] + \beta_2 \text{ CDS Trading}_{i,t} I[\mathrm{EQ}_{i,t} > 0] \\ &\quad + \beta_3 \text{ CDS Traded}_{i,t} + \mathrm{X}_{i,t}\,\theta + \epsilon_{i,t} \end{aligned} \tag{1}$$

where $EQ_{i,t}$ is firm abnormal discretionary accruals. In particular, we use two different measures of $|\mathrm{EQ}_{i,t}|$. As discussed in Section 3.2.2, $|\mathrm{EQ1}_{i,t}|$ is absolute abnormal accruals based on Jone's discretionary accruals model and $|\mathrm{EQ2}_{i,t}|$ is absolute abnormal accruals based on modified Jone's discretionary accruals model. $I[\mathrm{EQ}_{i,t} < 0]$ and $I[\mathrm{EQ}_{i,t} > 0]$ are dummy variables.

We split the effect of CDS trading on $|\mathrm{EQ}_{i,t}|$ into two parts, viz. ($\text{CDS Trading}_{i,t} * I[\mathrm{EQ}_{i,t} < 0]$) and ($\text{CDS Trading}_{i,t} * I[\mathrm{EQ}_{i,t} > 0]$), to rigorously examine whether the impact of the post-CDS trade initiation on earnings management is more pronounced for upward earnings manipulation $\mathrm{EQ}_{i,t} > 0$ or downward earnings manipulation $\mathrm{EQ}_{i,t} < 0$, or for both.

X is an $N \times 8$ matrix of control variables including total asset, sales volatility, cash flow volatility, loss, operation cycle, changes in sales growth, book leverage, and market-to-book decile. θ is an 8×1 vector of slope coefficients. The signs of the coefficients on the control variables are discussed in section 3.2.4. For the detailed information of control variables please refer to Table 1A.

For the panel regression , we include industry fixed effect and quarter fixed effect. The industry classification we use is the Fama-French 48 industry classification. The standard errors are clustered by industry and quarter. The null hypothesis that CDS trading does not reduce absolute abnormal discretionary accruals, is given by $\beta_1 \geq 0$ and $\beta_2 \geq 0$. The alternative hypothesis, CDS trading reduces absolute abnormal discretionary accruals, is given by $\beta_1 < 0$ and $\beta_2 < 0$. Data in the table and all following tables are from 1994 through 2016.

[Table 2 about here]

Table 2 presents the result of regression of Eq.(1). In the first column, absolute abnormal discretionary total accruals |EQ1| is regressed on CDS dummies only. The estimation results indicate that CDS trade initiation significantly reduces earnings manipulation. β_1 and β_2 are both significantly negative from zero: β_1=-0.0123 (t-stat=-5.61) and β_2=-0.0072 (t-stat=-5.70). This result is consistent with hypothesis H1. Moreover, the estimation result in Column (1) is economically significant. Considering that the sample mean of |EQ1| is 0.05 (see Table 1C), the coefficient of β_1+β_2=-0.195 translates into a 39% (-0.195/0.05) decrease in the |EQ1|. In the second column, we control for the economic determinants of absolute discretionary accruals suggested by existing literature. As we can see, β_1 and β_2 are still statistically significant. After control for the potential covariates in |EQ1|, the economic significance reduces from 39% to 24.2% or (-0.0089-0.0032)/0.05. Additionally, signs of control variables are consistent with the prediction concluded by existing studies. The theoretically correct prediction signs are shown next to the variable names in the Tables. In addition, we find that $|\beta_1| > |\beta_2|$. This shows that CDS trade initiation has relatively stronger impact on |EQ1| when EQ1 < 0.

Negative EQ implies the accruals is lower than that of the average in a model. This suggests the current liability (adjusted for short-term debt) is relatively greater than the current asset (adjusted for cash and PPE). Since current liability (adjusted for short-term debt) contains the credit lenders' risk exposure, ceteris paribus, the greater current liability implies the higher credit risk exposure of credit lenders. $\beta_2 < 0$ suggests that the onset of CDS leads to closer monitoring of firm's performance by creditors, investors, and contract suppliers through observing CDS price signals. This close watch influences the management to improve earnings quality through reducing the absolute earnings management accrual errors. In columns (3) and (4), we use alternative earnings management measure |EQ2|, which is from modified Jone's model. We find similar results compared with those in columns (1) and (2). In particular, β_1 and β_2 are statistically significantly negative. Overall, our empirical results suggest that CDS trade initiation reduces earnings manipulation.

4.2 Addressing Potential Endogeneity Issue

In this subsection, we consider three approaches to address any endogeneity issue with regard to the accruals measure possibly affecting the introduction of CDS on the firm. Firstly, we conduct an event study by identifying quarterly changes in the absolute discretionary earnings accruals before and after the quarter when there is CDS is first written on the firm. Secondly, we use a propensity score matching approach to examine the incremental effects of CDS trading on earnings accruals to mitigate the concern that the CDS trading group is not randomly assigned. Thirdly, we adopt a two-stage least square (2SLS) approach to assess the impact on absolute abnormal discretionary accruals.

Changes in earnings quality around the CDS trade initiation We focus on changes in |EQ| three quarter before a CDS trade initiation to three quarters following the initiation. We compute sample average of log change of |EQ| for CDS trading firms six quarters around the CDS trade initiation event. The inference is drawn by using a t-statistics of sample mean of change of |EQ| for each quarter. Table 3 reports the results. By defining the CDS trading event exogenously and examining abnormal accruals changes around these exogenous events, we are testing for CDS initiation impact conditional on the exogenous events and thus avoid endogeneity issues around the time series regressions involving CDS Trading dummy.

[**Table 3 about here**]

In Table 3, we see a significant drop in earnings quality of firms with CDS trading. There is a 24% reduction in |EQ1| from t=0 to t=1 where t=0 indicates the quarter with CDS trade initiation and t=1 indicates one quarter after CDS introduction. The effect is statistically significant at 1% significant level and there is no significant change for the rest of quarters. Similarly, we see a 34.5% decrease in |EQ1| from t=0 to t=1. We do not see a significant time-trend before or after the first quarter event window, suggesting that the onset of CDS trading serves as a structural break for the firms' earnings quality.

Propensity Score Matching We employ a propensity score matching approach to identify a control group of non-CDS traded firms, compared with the group of CDS trading firms with similar characteristics, in order to address the potential selection bias that the CDS trading firms are not randomly assigned. Propensity score matching is a matching technique facilitating causal inference in non-experimental settings by constructing a control group that is similar to a treatment group (Rosenbaum and Rubin,1983). There are two steps. Firstly, we estimate the propensity of CDS trading initiation, Φ(CDS TRading), by using the following Probit regression model.

$$\begin{aligned}\Phi^{-1}(\text{CDS Trading}_{i,t}) \;=\;& \gamma_0 + \gamma_1\ \text{TotalAsset}_{i,t} + \gamma_2\ \text{SalesVolatility}_{i,t} \\ & +\gamma_3\ \text{CashFlowVolatility}_{i,t} + \gamma_4\ \text{Loss}_{i,t} + \gamma_5\ \text{OperationCycle}_{i,t} \\ & +\gamma_6\ \Delta\text{SalesGrowth}_{i,t} + \gamma_7\ \Delta\text{Book Leverage}_{i,t} \\ & +\gamma_8\ \Delta\text{Market-to-Book decile}_{i,t} + e_{i,t}\end{aligned}$$

where $\Phi(x)$ is the normal cumulative distribution function of x.

Secondly, we pair each CDS firm with a control group firm with similar probability score estimated from the Probit model in the first step and then run a panel regression model on the sub-sample of paired firms to examine the CDS trading effects on earnings quality. We attempt to see whether point estimates of β_1 and β_2 in Eq.(1) are still significantly negative after pairing each treatment firm (firm with CDS trading) with a control group (matching) firm or firm without CDS trading. Table 4 reports the results.

[Table 4 about here]

In Column (1) of Table 4 panel A, we see that total assets, sales volatility, cash flow volatility, loss, operation cycle, change of sales growth, book leverage, and market-to-book decile of CDS trading firms are significantly different from firms without CDS trading when the pair are chosen without matching. The numbers in column (1) show the difference in average of the CDS firm characteristics using all CDS Traded firms in the sample, and the average of the non-CDS firm characteristics using all non-CDS Traded firms in the sample. The sales volatility, cash flow volatility, incidence of negative earnings realization, and operation cycle measures for the CDS firms are lower. This indicates the economic fundamentals of CDS trading firms are stronger. When only matching non CDS firms are paired with CDS firms with each pair having the same probability score (with difference less than 1% based on the CDS firm score), the average of the differences in each pair is found and reported in column (2). In column (2), we find that the mean difference between the matched sample and treated sample (CDS trading) reduces dramatically and becomes statistically insignificant. This suggests that the matched or control firms have almost the same firm characteristics as the treatment or CDS trading firms when their probit scores on

CDS Trading are similar.

Having established a sample containing matched CDS Traded and non-CDS Traded firms, we next revisit the CDS effect using the panel model in Eq.(1). Panel B of Table 4 reports the regression results using the sub-sample of paired firms. Both the point estimates of slope coefficients and the t-statistics are largely similar after we rerun the Eq.(1) with either the |EQ1| or |EQ2| as dependent variables. This shows that the results in Table 2 are not biased due to sample selection.

2SLS approach We estimate a 2SLS model to mitigate the concern of reverse causality or the endogeneity of CDS Trading variable. The instrumental variable we are using is change in industry peers' bond trading volume ($\text{IBTV}_{i,t}$), which captures bond investors' hedging and speculative demand in the CDS market and is thus correlated with CDS Trading. However, it is not expected to be directly related to the errors in the discretionary earnings accruals model, following Oehmke and Zawadowski (2013), Boehmer et al. (2015), and Kim et al. (2015). IBTV is expected to be a suitable instrument because (1) the correlation between IBTV and CDS trading is positive at 0.26 as shown in Table 1D; (2) there is low correlation with earnings quality measure |EQ1| and |EQ2| surprises.

In the first stage regression, we employ the Probit model of CDS trading ($\text{CDS Trading}_{i,t}$) on $\text{IBTV}_{i,t}$ together with other covariates,

$$\Phi^{-1}(\text{CDS Trading}_{i,t}) = \alpha + \gamma \text{IBTV}_{i,t} + X_{i,t}\theta + e_{i,t} \tag{2}$$

The choice to use Probit model is because our $\text{CDS Trading}_{i,t}$ is a binary variable. Next, we obtain the fitted CDS trading dummy, $\widehat{\text{CDS Trading}}_{i,t}$ using Eq.(2). In the second stage, we run Eq.(1) by replacing $\text{CDS Trading}_{i,t}$ with $\widehat{\text{CDS Trading}}_{i,t}$ as follows.

$$\begin{aligned} |\text{EQ}_{i,t}| \;=\; & \alpha + \beta_1 \widehat{\text{CDS Trading}}_{i,t} I[\text{EQ}_{i,t} < 0] + \beta_2 \widehat{\text{CDS Trading}}_{i,t} I[\text{EQ}_{i,t} > 0] \\ & + \beta_3 \text{ CDS Traded}_{i,t} + \text{X}_{i,t}\ \theta + \epsilon_{i,t} \end{aligned}$$

where β_1 and β_2 are expected to be significantly negative. Table 5 reports the results.

[Table 5 about here]

In Table 5, column (1) shows the estimation results of the Probit model of Eq.(2). The point estimate γ of Eq.(2) is 0.6537, which is statistically significant within 1% level, suggesting that the increase of hedge demand of credit risk (proxied by peer's bond trading volume) raises the likelihood of CDS trading. In columns (2) and (3), we regress |EQ1| or else |EQ2| on fitted CDS Trading variable obtained from column (1) of the regression using

Eq.(2). We find that β_1 and β_2 are negative and statistically significant for the both columns. β_1=-0.0141 with t-stat=-4.42, β_2=-0.0058 with t-stat=-2.90 for column (2) with dependent variable of |EQ1| and β_1=-0.0215 with t-stat=-4.40, β_2=-0.0096 with t-stat=-3.70 for column (3) with dependent variable of |EQ2|. Overall, the dummy variable of CDS Trading has negative and significant impact on absolute discretionary accruals |EQ|.

4.3 The Role of Trade Credit

In order to examine Hypothesis 2, we use the following specification

$$\begin{aligned} |\mathrm{EQ}_{i,t}| \;=\;& \alpha + \beta_1 \text{ CDS Trading}_{i,t}\, I[\mathrm{EQ}_{i,t} < 0] + \beta_2 \text{ CDS Trading}_{i,t}\, I[\mathrm{EQ}_{i,t} > 0] \\ & + \beta_3\, \Delta\mathrm{AP}_{i,t} \text{ CDS Trading}_{i,t}\, I[\mathrm{EQ}_{i,t} < 0] + \beta_4\, \Delta\mathrm{AP}_{i,t} \text{ CDS Trading}_{i,t}\, I[\mathrm{EQ}_{i,t} > 0] \\ & + \beta_5\, \Delta\mathrm{AR}_{i,t} * \text{CDS Trading}_{i,t}\, I[\mathrm{EQ}_{i,t} < 0] + \beta_6\, \Delta\mathrm{AR}_{i,t} \text{ CDS Trading}_{i,t}\, I[\mathrm{EQ}_{i,t} > 0] \\ & + \beta_7 \text{ CDS Traded}_{i,t} + \beta_8\, \Delta\mathrm{AP}_{i,t} + \beta_9\, \Delta\mathrm{AR}_{i,t} + X_{i,t}\theta + \epsilon_{i,t} \end{aligned} \tag{3}$$

Eq.(3) is built upon our baseline regression Eq.(1) with two additional variables of $\Delta\mathrm{AP}_{i,t}$, the quarterly change in account payable, and $\Delta\mathrm{AR}_{i,t}$, the quarterly change in account receivable. Account payable is a trade credit account considering that a supplier allows the customer firm to delay payment for goods under delivery. We focus on the point estimate of β_3 on ($\Delta\mathrm{AP}_{i,t}$ CDS $\mathrm{Trading}_{i,t}$ $I[\mathrm{EQ}_{i,t} < 0]$).

A negative $\mathrm{EQ}_{i,t}$ suggests the current liability is on average larger than the current asset. We expect that $|\mathrm{EQ}_{i,t}|$ given negative $EQ_{i,t}$ may be more sensitive to $\Delta AP_{i,t}$ when there is $CDSTrading$ due to the influence of trade credit suppliers. The rationale is that if there exists information asymmetry between firms and their trade credit suppliers, the CDS trading should reduce the absolute abnormal discretionary earnings accruals because the CDS provides information to the trade credit suppliers about their credit risk exposure to the CDS firm.

[Table 6 about here]

Table 6 reports the empirical results of Eq.(3). In Column (1) where |EQ1| is the dependent variable, we see that a point estimate of β_3 is significantly negative at -0.0071 with a t-stat of -1.99 (statistically significant at 5% significance level). Point estimates of β_4, β_5, and β_6 are all statistically insignificant from zero. The results show that increase in trade credit or credit suppliers' trade exposure would reduce earnings management activities when the firm would face larger trade credit exposures. In Column (2), we estimate Eq.(3) by considering |EQ2| as a dependent variable, and find similar and consistent results with respect to Column (1).

Hypothesis 2 also posits that credit lenders' trade credit effect should be more significant for median credit rating firms than high rating or poor rating firms because it is easier for median credit rating firms to adjust their corporate fundamentals by improving operational efficiency compared. Low rating firms that are deeply under financial distress would find it difficult to switch corporate fundamentals when they are cash-strapped and could not take more risks. High rating firms are far removed from financial distress and would not see immediate need to change corporate fundamentals. To test this, we split our sample into high, median, and low rating groups using the ratings data obtained from COMPUSTAT's S&P domestic long term issuer credit rating file. In particular, COMPUSTAT S&P domestic long term issuer credit rating covers AAA, AA+, AA, AA-,A+,A,A-,BBB+,BBB,BBB-,BB+,BB,BB-,B+,B,B-,CCC+,CCC,CCC-,CC, D, SD. We then group firms into high, median, and low rating groups by classifying:

(a) High rating group: AAA, AA+, AA, AA-

(b) Middle rating group, BBB+,BBB,BBB-,BB+,BB,BB-,B,B-,B+

(c) Low rating group: CCC+, CCC, CCC-, CC, D, SD

[**Table 7 about here**]

In Table 7, we see that the point estimates of β_3's are only statistically significant for the median rating group (for Column (2) and Column (5)). However, the point estimates of β_3's are statistically insignificant for other rating group (see columns (1), (3), (4), and (6)). These evidence suggests that the middle credit firms are more able to improve their economic fundamentals in order to prevent loss of supplier credits. Overall, the empirical results support hypothesis 2.

4.4 Conservative Liquidity Management

In order to test hypothesis 3a, we partition the full data sample into high and low cash holdings sub-samples of firms based on the cross-sectional median of cash holdings of all the firms. Consistent with H3a, we find that the CDS trading effect on absolute abnormal discretionary earnings accruals is more pronounced when cash holding of a firm is low, i.e. below a cross-sectional median. In column (1) of Table 8, a point estimate of β_1 of -0.0038 with a t-stat of -3.22 and a point estimate of β_2 of -0.0031 with a t-stat of -3.76 are both statistically significant at 1% significance level for the low cash holding firms. However, point estimates for both β_1 and β_2 are statistically insignificant for high cash holding firms in column (2). Similar results are obtained in Columns (3) and (4) for $|\mathrm{EQ2}_{i,t}|$. In the high cash holding firms, the CDS information effect is weakened because of a reduction of credit lenders' monitoring incentives given better corporate liquidity in the high cash holding firms.

[**Table 8 about here**]

Connected with the liquidity management issue is the hypothesis 3b that higher default risk indicated by CDS spreads would compel the affected firms to undertake more conservative corporate actions such as increasing future cash holdings, operational cash flows, and net working capitals. We also investigate if there is any difference in the intensity of corporate actions across the group of firms with high absolute abnormal accruals and the other group with lower absolute abnormal accruals. Presumably the former group has more to make amends if indeed CDS spreads and the derived probability of default are effective in sending market information to investors. We conduct the following regression:

$$\Delta CP_{i,t+1\rightarrow t+4} = \alpha + \beta_1 \; PD_{i,t} + \epsilon_{i,t+1\rightarrow t+4} \tag{4}$$

where $\Delta CP_{i,t+1}$ is the one-year ahead change of corporate liquidity management. For measures of $\Delta CP_{i,t+1}$, we consider three different proxies for corporate actions with regard to liquidity management, viz. change of future cash holdings, change of operational cash flows, and change of net working capitals. The change is computed as the 1-year ahead or 4-quarters ahead measure subtracted by the current measure. For the predictive or explanatory variable $PD_{i,t}$ that is the probability of default estimated using the method described in section 3.2.3, we estimate the degree of distress risk from CDS market using 5-year default probabilities developed based on the entire CDS curve following Hull and White (2000)s' reduced-form CDS pricing framework. In the regressions, we restrict the sample to only firms with CDS prices. We also split the CDS trading sample by half using separately both |EQ1| and |EQ2| based on their quarterly cross-sectional medians. Using panel regression we include the industry (Fama-French 48 industry classification) and quarter fixed effects and also clustering standard error by industry and quarter. The predictive regressions Eq.(4) are run for both the high and low absolute abnormal discretionary accruals groups. We expect to see stronger predictive power of default probability on conservative future corporate liquidity practices for the low earnings quality (high $|EQ|$) group.

[**Table 9 about here**]

Table 9 reports the empirical results. Panel A of Table 9 shows the results where we partition our sample using $|EQ1|$ and panel B shows the results where we partition our sample using $|EQ2|$. In Panel A, we see that the 5-year default probability predicts more conservative liquidity management actions in future. In Column (2) of panel A, we see that a 1 percent increase in default probability will induce firms to hold 5.4% more cash over the next year when $|EQ1|$ is high, whereas the impact is only 2.0% for the low $|EQ1|$ group. Besides, higher 5-year default probability also predicts a 1.4% (Column (4) of panel A) higher future operating cash flow for the high $|EQ1|$ group compared with 0.1% (Column (3) of panel A) for the low $|EQ1|$ group. Similarly, higher 5-year default probability also predicts a 4.6% (Column (6) of panel A) higher net working capital growth for the high $|EQ1|$ group compared with 2.8% (Column (5) of panel A) for the low $|EQ1|$ group.

The empirical results reported in the panel B for the high/low |EQ2| sample are consistent with those reported in Panel A, except that the estimated coefficients of the low |EQ2| group are now not significantly different from zero. Overall, the results indicate that when default risk increases, firms tend to manage their earnings less and adopt the more conservative liquidity management policy in the following year or generally in the future. The enhancement of operational efficiencies includes improving the future operating cash flows and working capitals. The evidence suggests that conservative corporate liquidity management practice coincides with high default risk and less earnings management activities. Hypothesis 3b is thus supported. Hypothesis 3b shows that earnings management quality itself can be a conditioning variable, effectively a causal variable, for firm's efforts to improve liquidity management relative to CDS price signals when higher default is indicated.

4.5 Value Implication

We use the following regression to test hypothesis 4 that ceteris paribus the value of firms with CDS trading should be higher than firms without CDS trading.

$$\begin{aligned} \Delta \mathrm{V}_{i,t+1} &= \alpha + \beta_1 \text{ CDS Trading}_{i,t} \text{ High}|\text{ EQ}_{i,t}| + \beta_2 \text{ CDS Trading}_{i,t} \\ &\quad + \beta_3 \text{ High}|\text{ EQ}_{i,t}| + X_{i,t}\theta + \epsilon_{i,t+1} \end{aligned} \tag{5}$$

where $\Delta \mathrm{V}_{i,t+1}$ is the one-quarter ahead change of value of firm proxied by using change of EPS (exclude special items) from quarter t to quarter t+1. High |EQ| is a dummy variable that is equal to one at t if at t the value of $|\mathrm{EQ}_{i,t}|$ is greater than the cross-sectional median. Similar, we consider two measures of |EQ1| and |EQ2| as explanatory variables.

According to Dye (1985)s' insight, high discretionary accruals should be associated with negative firm value changes, suggesting that $\beta_3 < 0$. Since we expect CDS market to provide information and thus reduce the measurement uncertainty, the presence of CDS Trading (dummy equals to one where there is CDS trading) together with high absolute abnormal accruals would actually provide for positive adjustment to value on top of the negative effect of standalone high |EQ| va;ue.

[Table 10 about here]

Table 10 reports the impacts of discretionary earnings management on future EPS changes. Panel A considers the case of |EQ1| and panel B considers the case of |EQ2|. Column (1) reports the full-sample estimation results of Equation (5) without including the CDS trading dummy and the interaction term between CDS trading dummy and high abnormal discretionary earnings accruals. Column (2) reports the sub-sample estimation results of Equation (5) by considering firms without CDS trading. Column (3) reports the sub-sample estimation results of Equation (5) by considering only firms with CDS trading. Column (4) reports the full-sample estimation results of Equation (5) by considering CDS trading dummy and the interaction term between CDS trading dummy and high abnormal discretionary earnings accruals.

In Table 10, we find that the abnormal discretionary earnings accruals have negative impacts on future earnings. In columns (1) and (2) of panel A, we find that the next quarter change in value (proxied by change of EPS) of firms with high abnormal discretionary earnings accruals (measured at quarter t) are about 2.2% lower than other firms. However, this is not significant in the sample of firms with CDS trading as shown in column (3). By combining CDS trading sample and non-CDS trading sample in column (4), we find that the point estimate of High |EQ1| $\times$ CDS Trading is significant and positive at 9%. By contrast, firms with High |EQ1| is on average running at a relative loss of about -2.7% (a t-stat of -3.30). The results suggest that firms with CDS trading in fact generate positive earnings next quarter or in the near future as a result of firms' efforts and sensitivities to reduce earning management activities. Panel B shows similar results for |EQ2|. Overall, the empirical evidence supports hypothesis 4.

5 Conclusions

The contribution of this paper is in directly addressing the question if CDS trade initiation influences management's discretionary accruals, and what are the channels by which this influence is effected. While the CDS information leads to more accurate analysts' earnings forecasts and more corporate voluntary disclosures such as management earnings forecasts, it is not known if quarter by quarter management continues to exercise discretionary accruals as usual. We consider all CDS and non-CDS firms in the largest sample possible from Markit and Compustat databases. We show that the CDS market conveys distress risk information to creditors, investors, and supplier contractors and thus reduce management's incentives to undertake earnings manipulations. The presence of CDS trading in a firm has positive effect on its earnings quality via efforts by the firm to improve earnings quality as the latter has effect on the supply of credit in the firm's business operations. We conduct three different econometric tests to rule out the endogeneity possibility that firms with good earnings quality attract CDS trading on their entities.

We show that the reduction of earnings manipulation or absolute abnormal discretionary earnings accruals is channeled through contract suppliers trade credit exposures to the firm, through corporate liquidity management policy, and through the effect of increase in 5-year default probability inferred from the credit spread curve. The study of key firm variables such as accounts payable, accounts receivable, and cash holdings throws light on firms' changes in accruals discretion. Besides information demand by shareholders at the start of CDS trading, our study also shows the effect of CDS information on trade creditors and how market information provides discipline for earnings management that can lead to higher future firm value. Thus quality earnings management is seen both as a product of an informative CDS market, as well as a productive factor in value creation.

Table 1A. Definitions of variables used in this study.

EQ

Abnormal Discretionary accruals (broadly addressed as abnormal discretionary earnings accruals). This is the estimation error computed from an accruals estimation model.

|EQ1|

This type of variable is used in Jone (1991)'s model to compute the unsigned abnormal discretionary earnings accruals. For the detailed methodology, please refer to Section 3.2.2. Source: Compustat and Professor Ken French's Website for Fama-French 48 industries.

|EQ2|

This type of variable is used in the modified version of Jone (1991)'s model. For the detailed methodology please refer to Section 3.2.2. Source: Compustat and Professor Ken French's Website.

CDS Trading

This dummy variable is equal to one at quarter t for a firm if there are CDS contracts written on the reference firm at quarter t, and it is equal to zero otherwise. In other words, after CDS started trading for a firm i, and before the contract expires, the time series for CDS Trading will show CDS $\text{Trading}_{i,t}$ as 1 at t till expiry, while it will be zero before t. Such a variable is also used in Sareto and Tookes (2013), Subrahmanyam, Tang, and Wang (2017) and Li and Tang (2016). Source: Combined RED obligation file and RED entity from Markit.

CDS Traded

For such a firm where there is CDS trading at any time t within the sample period of the firm, e.g. from 1994 to 2016, then this dummy variable equals to one at every t. If there is a firm whereby no CDS ever traded within the entire sample period, then its CDS Traded dummy equals to zero at every t. This follows aretto and Tookes (2013) in order to control for time-invariant unobservable differences between CDS and non-CDS firms.

Total Asset TA ($ billions)

The book value of total assets (ATQ) of firm i in year-quarter t , following Bhattacharya, Desai, and Venkataraman (2013). Source: Compustat.

SalesVolatility

The standard deviation of sales over the past three years, following Demerjian, Lev, Lewis, and McVay (2013). Source: Compustat.

CashFlowVolatility

The standard deviation of cash from operations over the last three years, following Demerjian, Lev, Lewis, and McVay (2013). The operating cash flow is computed using net income minus total accruals. Source: Compustat.

Loss (Past losses)

The percentage of years reporting losses in net income (NIQ) in the last three years. Source: Compustat.

OperCycle (Operation cycle)

The length of the firms operating cycle, defined as sales turnover plus days in inventory, and is averaged over the past 3 years, following Demerjian, Lev, Lewis, and McVay (2013). Source: Compustat.

Change of sales growth (Δ SalesGrowth)

The quarterly change in sales growth defined as current quarter's sales growth less prior quarter's sales growth, following Demerjian, Lev, Lewis, and McVay (2013). Source: Compustat.

Lev

The firm's book leverage ratio is by total debt over total asset. Source: Computstat.

Market-to-Book decile

The firm's market-to-book ratio is computed and then in quarter t, it is sorted into ten deciles and the rank is used in the regression to avoid too much noise in the exact ratio number. This follows Hribar and Nichols (2007). Source: Compustat.

Δ AP (Change of Accounts Payable)

The quarterly change of Account payable (Trade account). This item represents only trade obligations due within one year or the normal operating cycle of the company. The item is recorded as APQ. Source: Compustat.

Δ AR (Change of Accounts Receivable)

The quarterly change of Account receivable (Trade account). This item represents amounts on open account, net of applicable reserves, owed by customers for goods and services sold in the ordinary course of business. This item is recorded as RECTRQ. Source: Compustat.

IBTV

Industry peers' trading volume serves as instrumental variable, following Oehmke and Zawadowski (2013), Boehmer et al. (2014), and Kim et al. (2015). This variable purports to only influence bond investors' hedging/speculative demand, but not affect the earnings quality. We construct this variable by summing the individual bonds into (Fama-French 48) industry levels. Then in order to assign this total value for firm j in industry k in quarter t, we remove firm j's own trading volume from this total. Source: TRACE and Professor Ken French's website.

Default probability

The default probability is bootstrapped from the CDS spread curve at the same time

t. Supposing default occurs at time τ. The default probability for a maturity term t is $\text{Prob}(\tau < t)$. The 5-year default probability $\text{Prob}(\tau < 5)$ is used in this study. Source: Markit for CDS price information and ICAP for zero discount curve.

Table 1B. Distribution of CDS firms versus non-CDS firms. The table reports the sample distribution of CDS firms versus non-CDS U.S. firms from 1994 to 2016. A CDS firm is one with CDS trading on its entities such as its traded debt. CDS started trading in 1994. New CDS firms emerged due to trading interest in the firms' entities. The CDS on a firm stops trading when a default or credit event occurs on the entity or on the firm. There is a total of 849 unique CDS firms and a total of 14,771 unique non-CDS firms in our sample.

Year	CDS firms	Non-CDS firms
1994	21	4513
1995	45	4741
1996	66	4928
1997	95	5083
1998	166	5246
1999	231	5078
2000	288	4825
2001	406	4458
2002	473	4338
2003	563	3947
2004	630	3705
2005	642	3535
2006	624	3477
2007	621	3359
2008	575	3250
2009	545	3228
2010	528	3095
2011	511	2970
2012	487	2925
2013	469	2881
2014	449	2877
2015	428	2945
2016	401	2888

Table 1C. Summary statistics for main variables. The table provides summary statistics for our sample of 530,021 firm-quarter observations from 1971Q1-2016Q4. This comprises 492,761 for non-CDS trading firm observations and 37,260 for CDS trading firm observations. CDS started trading in 1994. The summary statistics include sample mean, sample standard deviation (S.D.), 25^{th} percentile (0.25Q), median, and 75^{th} percentile (0.75Q) observations. Panel A is the descriptive statistics for the non-CDS sample, while panel B reports the descriptive statistics for the CDS trading sample. Please refer to Table 1A for details of the variables definitions and constructions. We winsorize all continuous variables at 1% and 99% levels.

Panel A: The Non-CDS sample

Variable	Mean	S.D.	0.25Q	Median	0.75Q
|EQ1|	0.06	0.24	0.01	0.03	0.06
|EQ2|	0.05	0.25	0.01	0.02	0.05
BookLeverage	0.24	0.21	0.05	0.21	0.37
OperCycle	3.67	2.54	3.30	4.44	4.97
Loss	0.39	0.33	0.08	0.25	0.58
Market-to-Book decile	2.56	3.90	0.98	1.66	2.95
TA (in $ billions)	1.34	4.88	0.04	0.18	0.80
CashFlowVolatility	0.06	0.08	0.02	0.04	0.07
SalesVolatility	0.06	0.06	0.02	0.04	0.07
Cash Holding	0.07	0.23	0.00	0.01	0.05
Δ SalesGrowth	0.00	0.44	-0.15	0.00	0.15
rating	14.25	4.31	11.00	15.00	16.00
ΔAP	0.02	0.37	-0.14	0.02	0.18
ΔAR	0.00	0.30	0.00	0.00	0.00
IBTV	1.11	1.50	0.00	0.00	3.12

Panel B: The CDS sample

Variable	Mean	S.D.	0.25Q	Median	0.75Q
|EQ1|	0.04	0.14	0.01	0.02	0.04
|EQ2|	0.03	0.08	0.01	0.01	0.03
BookLeverage	0.32	0.16	0.20	0.30	0.41
OperCycle	3.28	3.30	3.47	4.32	4.77
Loss	0.24	0.22	0.08	0.17	0.33
Market-to-Book decile	2.87	4.14	1.32	2.10	3.40
TA (in $ billions)	19.57	25.86	4.09	9.57	23.72
CashFlowVolatility	0.04	0.02	0.03	0.04	0.05
SalesVolatility	0.04	0.04	0.01	0.02	0.04
Cash Holding	0.00	0.02	0.00	0.00	0.00
Δ SalesGrowth	0.00	0.31	-0.10	0.00	0.11
rating	11.13	3.34	9.00	11.00	13.00
ΔAP	0.01	0.34	-0.08	0.01	0.10
ΔAR	0.04	0.49	-0.01	0.00	0.04
IBTV	2.65	1.14	3.08	3.14	3.17

Table 1D. Correlations between the variables used in this study.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
(1) CDS Trading	1.00																
(2)CDS Traded	0.22	1.00															
(3) |EQ1|	-0.02	0.00	1.00														
(4) |EQ2|	-0.03	0.00	0.95	1.00													
(5) BookLeverage	0.10	0.03	-0.02	-0.03	1.00												
(6) OperCycle	-0.03	-0.01	0.02	0.02	-0.03	1.00											
(7) Loss	-0.11	-0.02	0.08	0.07	0.09	0.09	1.00										
(8) Market-to-Book decile	0.02	0.00	0.04	0.04	-0.09	-0.05	0.08	1.00									
(9) TA(in Billions)	0.49	0.11	-0.03	-0.03	0.06	-0.05	-0.13	0.00	1.00								
(10) CashFlowVolatility	-0.06	-0.01	0.08	0.08	-0.12	0.03	0.33	0.19	-0.07	1.00							
(11) SalesVolatility	-0.11	-0.02	0.04	0.04	-0.03	0.01	0.14	0.05	-0.11	0.22	1.00						
(12) Cash Holding	-0.09	-0.02	0.03	0.03	-0.07	0.12	0.21	0.10	-0.09	0.16	0.15	1.00					
(13) Δ SalesGrowth	0.00	0.00	0.00	0.00	0.00	-0.02	0.00	0.00	0.00	-0.01	0.00	0.00	1.00				
(14) Rating	-0.01	0.01	0.01	0.01	-0.01	-0.02	-0.02	0.02	0.00	0.00	0.00	0.01	0.12	1.00			
(15) ΔAP	0.03	0.02	0.00	0.00	0.01	-0.03	-0.02	0.01	0.02	-0.01	-0.01	-0.02	0.09	0.07	1.00		
(16) ΔAR	-0.19	-0.04	0.02	0.02	0.00	-0.03	0.20	-0.01	-0.22	0.10	0.07	0.00	0.00	0.00	0.00	1.00	
(17) IBTV	0.26	0.04	0.03	0.02	-0.08	-0.16	0.09	0.05	0.19	0.10	-0.15	-0.18	0.00	-0.01	0.03	0.08	1.00

Table 2. CDS trading and absolute discretionary accruals: Baseline panel regression results. This table presents estimates in 4 regressions (1) - (4) of the effect of CDS trading on absolute or unsigned discretionary accruals in a 530,021 firm-quarter observations including both firms with CDS trading and firms without CDS trading using an industry-quarter fixed effect panel regression model with clustered standard errors by industry and quarter. The sample period is from 1973Q1-2016Q4. The dependent variables are Jones' 1991 discretionary accruals |EQ1| or else the modified Jones' 1991 accruals |EQ2| by Dechow et at. (1995) at quarter t. The control variables include total assets (in $ billions), sales volatility, cash flow volatility, an incidence of negative earnings realization (we denote as a loss in the regression table), operation cycle, change of sales growth (Δ sales growth), book leverage, market-to-book decile, CDS trading dummy, and CDS Traded dummy. The latter is to control for time-invariant unobservable differences between CDS and non-CDS firms as suggested by Saretto and Tookes (2013). See Table 1A for discussion of detailed construction of the control variables. The coefficients of interest are β_1 and β_2, which capture the impact of the inception of CDS trading on absolute abnormal discretionary accruals. We posit that $\beta_1 < 0$ and $\beta_2 < 0$. ***,**, and * denote significance at the 1%, 5%, and 10% level respectively. The numbers in the parentheses are t-statistics. We include the industry (we use Fama-French 48 industry classification) and quarter fixed effect and clustering standard error by industry and quarter. We winsorize all continuous variables at 1% and 99% levels. For convenience, we show (+) or (-) beside the explanatory variables to indicate the expected signs of the estimated coefficients.

	(1) |EQ1|	(2) |EQ1|	(3) |EQ2|	(4) |EQ2|
CDS Trading × I[EQ < 0], β_1 (-)	-0.0123***	-0.0089***	-0.0172***	-0.0140***
	(-5.61)	(-4.82)	(-4.86)	(-4.51)
CDS Trading × I[EQ > 0], β_2 (-)	-0.0072***	-0.0032***	-0.0084***	-0.0048***
	(-5.70)	(-2.70)	(-6.44)	(-4.05)
CDS Traded, β_3	-0.0127***	-0.0034***	-0.0123***	-0.0037***
	(-32.60)	(-9.09)	(-27.65)	(-9.49)
Total Asset(-)		-0.0001***		-0.0001***
		(-6.12)		(-4.14)
Sales Volatility(+)		0.1139***		0.1143***
		(19.64)		(15.92)
CashFlowVolatility(+)		0.1400***		0.1355***
		(14.13)		(12.28)
Loss(+)		0.0339***		0.0304***
		(25.42)		(15.37)
Operation Cycle(+)		0.0012***		0.0011***
		(3.94)		(3.81)
Δ Sales Growth(+)		0.0051***		0.0040***
		(5.43)		(4.61)
Book Leverage(-)		-0.0041***		-0.0095***
		(-2.82)		(-5.03)
Market-to-Book decile(+)		0.0010***		0.0010***
		(7.48)		(8.25)
Intercept	0.0570***	0.0218***	0.0499***	0.0177***
	(439.29)	(11.12)	(252.51)	(9.53)
R-sq	0.256	0.266	0.141	0.147
adj. R-sq	0.247	0.257	0.13	0.136

Table 3. Event study of change of absolute discretionary earnings accruals from end of quarter t-1 to end of quarter t over period [t-1,t]. This table presents the changes in absolute discretionary earnings accruals for CDS firms from end of quarter t-1 to end of quarter t over period [t-1,t]. For these firms, the first period is [-4,-3] which is end of 4th quarter before incepton of CDS trading on the firm's entity to end of 3rd quarter before inception. The last period in the event study is the end of the 2nd quarter after inception of CDS trading till the end of the 3rd quarter. The measurement of accruals is either the estimated $|EQ1|$ or estimated $|EQ2|$. The change is the log-change of the estimated $|EQ1|$ or else $|EQ2|$. The reported statistics are the means and t-statistics based on the sample standard errors. Standard t-statistics are reported in the brackets. The period of this analysis is from 1994Q1 to 2016Q4. The first CDS trading starts at 1994 in our sample. ***,**, and * denote significance at the 1%, 5%, and 10% level respectively.

[t-1,t]	[-4,-3]	[-3,-2]	[-2,-1]	[-1,0]	[0,1]	[1,2]	[2,3]
$\Delta|EQ1|$	0.019	-0.102*	-0.051	-0.082*	-0.241***	-0.055	-0.055
t-statistic	(0.401)	(-1.971)	(-1.040)	(-1.823)	(-4.529)	(-1.091)	(-1.148)
$\Delta|EQ2|$	-0.057	-0.023	-0.070	0.045	-0.345****	-0.089*	-0.089*
t-statistic	(-1.209)	(-0.460)	(-1.436)	(0.988)	(-6.800)	(-1.761)	(-1.866)

Table 4. Difference-in-difference design with propensity score matching technique. The sample contains 52,135 observations from 1973Q1 to 2016Q4. The empirical research design of a difference-in-difference design is discussed in section 4.2. Each CDS firm (treatment group) is matched to a non CDS firm (control group) where the probit estimates or propensity scores of CDS Trading of the two fall within 1% difference. The dependent variables are Jones' 1991 absolute abnormal discretionary accruals |EQ1| or modified Jones' 1991 accruals |EQ2| by Dechow et at. (1995) at quarter t. Panel A column (1) shows the difference in average of the CDS firm characteristics using all CDS Traded firms in the sample, and the average of the non-CDS firm characteristics using all non CDS Traded firms in the sample. Column (2) shows the average of the differences of characteristics in the matched pairs. Panel B reports the industry & quarter panel regression results by only considering the matched firms in the treatment group and control group. The coefficients of interest are β_1 and β_2, which capture the impact of the inception of CDS trading on abnormal discretionary earnings accruals. We posit that $\beta_1 < 0$ and $\beta_2 < 0$. ***,**, and * denote significance at the 1%, 5%, and 10% level respectively. The numbers in the parentheses are t-statistics. We include the industry (we use Fama-French 48 industry classification) and quarter fixed effect and clustering standard error by industry and quarter. We winsorize all continuous variables at 1% and 99% levels. For convenience, we show (+) or (-) beside the explanatory variables to indicate the expected signs of the estimated coefficients.

Panel A: Before & After match

	Before Match	**After Match**
TotalAsset	14.918***	0.602
SalesVolatility	-0.023***	0.001
CashFlowVolatility	-0.017***	0.001
Loss	-0.146***	0.015
OperationCycle	-0.291***	0.067
Δ Sales Growth	0.004**	-0.001
Book Leverage	0.116***	-0.008
Market-to-Book decile	0.439***	-0.163

Panel B: Difference-in-difference design results

	|EQ1|	|EQ2|
CDS Trading × I[EQ < 0],β_1 (-)	-0.0078***	-0.0147***
	(-2.64)	(-3.97)
CDS Trading × I[EQ > 0],β_2 (-)	-0.0091***	-0.0038*
	(-3.95)	(-1.83)
Total Asset(-)	-0.0001**	-0.0001***
	(-2.49)	(-3.89)
Sales Volatility(+)	0.1271***	0.1481***
	(2.77)	(2.80)
CashFlowVolatility(+)	0.4333***	0.3730***
	(4.47)	(3.85)
Loss(+)	0.0309***	0.0287**
	(2.85)	(2.32)
Operation Cycle(+)	0.0006*	0.0004**
	(1.79)	(2.10)
Δ Sales Growth(+)	0.0080**	0.0049**
	(2.11)	(2.00)
Book Leverage(-)	0.0017*	-0.0013
	(1.78)	(-1.33)
Market-to-Book decile(+)	0.0019	0.0022
	(0.87)	(1.50)
Intercept	0.0182***	0.0004
	(2.89)	(0.07)
R-sq	0.179	0.052
adj. R-sq	0.176	0.049

Table 5. 2SLS results. Table 5 reports the 2SLS estimation results. The sample contains 530,021 observations from 1973Q1 to 2016Q4. In column (1), we report the probit regression result. In particular, we run $\Phi^{-1}(CDS \text{ Trading}_{i,t}) = \alpha + \gamma \text{IBTV}_{i,t} + X_{i,t}\theta + e_{i,t}$ where Φ is the normal cumulative distribution function. The variable $\text{IBTV}_{i,t}$, that is industry peers' trading volume, serves as instrumental variable following Oehmke and Zawadowski (2013), Boehmer et al. (2014), and Kim et al. (2015). This variable should only influence bond investors' hedging/speculative demand but not affect the earnings quality surprises. We construct this variable by summing the individual bond trading volunmes into (Fama-French 48) industry level aggregate. We control for total asset (in $ billions), sales volatility, cash flow volatility, an incidence of negative earnings realization (we denote as a loss in the regression table), operation cycle, change of sales growth Δ sales growth), book leverage, and market-to-book decile. In the second stage, we run |EQ| on fitted $\Phi{-}1(CDSTrading)$ derived from the first stage Probit model. We include CDS Trading dummy and CDS Traded dummy to control for time-invariant unobservable differences between CDS and non-CDS firms as suggested by Saretto and Tookes (2013). See Table 1A for discussion of detailed construction of control variables. The coefficients of interest are β_1 and β_2, that capture the impact of the inception of CDS trading on abnormal discretionary earnings accruals. We posit that $\beta_1 < 0$ and $\beta_2 < 0$. ***,**, and * denote significant at the 1%, 5%, and 10% level respectively. The numbers in the parentheses are t-statistics. We include the industry (we use Fama-French 48 industry classification) and quarter fixed effect and clustering standard error by industry and quarter. We winsorize all continuous variables at 1% and 99% levels. For convenience, we show (+) or (-) beside the explanatory variables to indicate the expected signs of the estimated coefficients.

	(1) CDS Trading **1st Stage**	(2) |EQ1| **2nd Stage**	(3) |EQ2|
IBTV (+)	0.6537***		
	(160.99)		
CDS Trading × I[EQ1 < 0],β_1 (-)		-0.0141***	
		(-4.42)	
CDS Trading × I[EQ1 > 0],β_2 (-)		-0.0058***	
		(-2.90)	
CDS Trading × I[EQ2 < 0],β_1 (-)			-0.0215***
			(-4.40)
CDS Trading × I[EQ2 > 0],β_2 (-)			-0.0096***
			(-3.70)
CDS Traded,β_3		-0.0018***	-0.0012
		(-3.06)	(-1.46)
Total Asset(-)	0.0144***	-0.0001***	-0.0000**
	(34.21)	(-5.00)	(-2.15)
Sales Volatility(+)	-0.5773***	0.1139***	0.1144***
	(-4.15)	(19.68)	(15.92)
CashFlowVolatility(+)	0.9544***	0.1404***	0.1360***
	(8.23)	(14.11)	(12.26)
Loss(+)	-0.0841***	0.0339***	0.0304***
	(-2.86)	(25.51)	(15.35)
Operation Cycle(+)	-0.0082***	0.0012***	0.0011***
	(-3.19)	(3.93)	(3.78)
Δ Sales Growth(+)	-0.0031	0.0051***	0.0040***
	(-0.17)	(5.44)	(4.61)
Book Leverage(-)	0.9157***	-0.0039***	-0.0091***
	(22.71)	(-2.73)	(-5.03)
Market-to-Book decile(+)	0.0267***	0.0010***	0.0010***
	(15.43)	(7.50)	(8.24)
Intercept	-0.9617***	0.0218***	0.0176***
	(-10.52)	(11.05)	(9.25)
R-sq		0.266	0.147
adj. R-sq		0.256	0.136

Table 6. CDS trading effect on discretionary accruals through firms' accounts payable to contract suppliers. This table presents the estimates result of Eq.(3) in the sample of 530,021 firm-quarter observations including both firms with CDS trading and firms without CDS trading, using an industry-quarter fixed effect panel regression model with clustering for standard errors by industry and quarter. The sample period is from 1973Q1 to 2016Q4. The dependent variables are Jones' 1991 discretionary accruals |EQ1| or else modified Jones' 1991 accruals |EQ2| by Dechow et at. (1995) at quarter t. ΔAP_t is quarterly change in accounts payable (trade account) on the liability side of the balance sheet of the firm. ΔAR_t is quarterly change in account receivable (trade account) on the asset side of the balance sheet of the firm. The control variables and their predictions are discussed in 3.2.4. The control variables include change in accounts receivable, change in accounts payable, total assets (in $ billions), sales volatility, cash flow volatility, an incidence of negative earnings realization (we denote as a loss in the regression table), operation cycle, change of sales growth (Δ sales growth), book leverage, market-to-book decile, CDS trading dummy, and CDS Traded dummy. The latter is to control for time-invariant unobservable differences between CDS and non-CDS firms as suggested by Saretto and Tookes (2013). The coefficients of interest are β_1 and β_2, which capture the impact of the inception of CDS trading on abnormal discretionary earnings accruals. We posit that $\beta_1 < 0$ and $\beta_2 < 0$. ***,**, and * denote significant at the 1%, 5%, and 10% level respectively. The numbers in the parentheses are t-statistics. We include the industry (we use Fama-French 48 industry classification) and quarter fixed effect and clustering standard error by industry and quarter. We winsorize all continuous variables at 1% and 99% levels. For convenience, we show (+) or (-) beside the explanatory variables to indicate the expected signs of the estimated coefficients.

	|EQ1|	|EQ2|
CDS Trading × I[EQ < 0], β_1, (-)	-0.0085***	-0.0142***
	(-4.38)	(-4.39)
CDS Trading × I[EQ > 0], β_2, (-)	-0.0031**	-0.0047***
	(-2.42)	(-3.73)
CDS Trading ∗ I[EQ < 0] ∗ ΔAP, β_3, (-)	**-0.0071****	**-0.0188****
	(-1.99)	**(-2.37)**
CDS Trading ∗ I[EQ < 0] ∗ ΔAR, β_4, (≈0)	0.0012	-0.0017
	-(0.77)	(-0.63)
CDS Trading ∗ I[EQ > 0] ∗ ΔAP, β_3, (≈0)	-0.0052	-0.0088
	(-0.67)	(-1.19)
CDS Trading ∗ I[EQ > 0] ∗ ΔAR, β_4, (≈0)	0.0031	0.0021
	(1.40)	(1.26)
CDS Traded	-0.0034***	-0.0037***
	(-8.84)	(-8.82)
Δ AR	-0.0002	0.0009
	(-0.12)	(0.55)
Δ AP	0.0059***	0.0049***
	(3.41)	(2.69)
Total Asset(-)	-0.0001***	-0.0001***
	(-6.06)	(-3.85)
Sales Volatility(+)	0.1092***	0.1105***
	(17.95)	(14.24)
CashFlowVolatility(+)	0.1596***	0.1545***
	(12.73)	(11.37)
Loss(+)	0.0325***	0.0296***
	(21.31)	(12.98)
Operation Cycle(+)	0.0011***	0.0011***
	(3.37)	(3.54)
Δ Sales Growth(+)	0.0044***	0.0035***
	(4.24)	(3.61)
Book Leverage(-)	-0.0036**	-0.0094***
	(-2.28)	(-4.45)
Market-to-Book decile(+)	0.0008***	0.0010***
	(6.63)	(7.38)
Intercept	0.0214***	0.0173***
	(9.89)	(8.63)
R-sq	0.253	0.145
adj. R-sq	0.242	0.133

Table 7. CDS trading effect on discretionary accruals through firms' accounts payable to contract suppliers where firms are sorted into different credit ratings. Columns (1)-(3) ((4)-(6)) report the estimation result with respect to dependent variables |EQ1| (|EQ2|). They are Jones' 1991 discretionary accruals |EQ1| or else modified Jones' 1991 accruals |EQ2| by Dechow et at. (1995) at quarter t. Columns (1), (4) are from A group, (2), (5) are from B group, and (3), (6) are from C group. A group comprises firms with AAA, AA+, AA, and AA- credit ratings. B group comprises firms with BBB+, BBB, BBB-, BB+, BB, BB-, B+, B, and B- ratings. C group comprises CCC+, CCC, CCC-, CC, D, and SD ratings. The regressors and control variables follow those in Table 6. The table presents the estimation results of Eq.(3) in the sample of 530,021 firm-quarter observations including both firms with CDS trading and firms without CDS trading, using an industry-quarter fixed effect panel regression model with clustering for standard errors by industry and quarter. The sample period is from 1973Q1 to 2016Q4. The coefficients of interest are β_1 and β_2, which capture the impact of the inception of CDS trading on abnormal discretionary earnings accruals. We posit that $\beta_1 < 0$ and $\beta_2 < 0$. ***,**, and * denote significant at the 1%, 5%, and 10% level respectively. The numbers in the parentheses are t-statistics. We include the industry (we use Fama-French 48 industry classification) and quarter fixed effect and clustering standard error by industry and quarter. We winsorize all continuous variables at 1% and 99% levels. For convenience, we show (+) or (-) beside the explanatory variables to indicate the expected signs of the estimated coefficients.

	(1) A group |EQ1|	(2) B group |EQ1|	(3) C or below |EQ1|	(4) A group |EQ2|	(5) B group |EQ2|	(6) C or below |EQ2|
CDS Trading $\times$ I[EQ $<$ 0], β_1, (-)	-0.0140**	-0.0092***	-0.0091**	-0.0166**	-0.0154***	-0.0101*
	(-2.04)	(-4.11)	(-2.05)	(-2.38)	(-4.32)	(-1.76)
CDS Trading $\times$ I[EQ $>$ 0], β_2, (-)	-0.0063**	-0.0027*	-0.004	-0.0083*	-0.0053***	0.0021
	(-2.11)	(-1.75)	(-0.88)	(-1.68)	(-2.98)	(0.51)
CDS Trading $*$ I[EQ $<$ 0] $*$ ΔAP, β_3, (-)	**-0.0129**	**-0.0078***	**-0.007**	**-0.0243**	**-0.0179****	**-0.0122**
	(-0.96)	**(-1.66)**	**(-0.41)**	**(-1.21)**	**(-2.20)**	**(-0.82)**
CDS Trading $*$ I[EQ $<$ 0] $*$ ΔAR, β_4, ($\approx$0)	-0.0055	0.0004	0.0089	-0.0065	-0.0021	0.0074*
	(-1.27)	(0.18)	(1.54)	(-1.38)	(-0.55)	(1.72)
CDS Trading $*$ I[EQ $>$ 0] $*$ ΔAP, β_3, ($\approx$0)	0.0005	-0.0091	-0.0074	-0.0056	-0.0116	-0.0079
	(0.05)	(-0.86)	(-1.35)	(-0.62)	(-1.17)	(-1.28)
CDS Trading $*$ I[EQ $>$ 0] $*$ ΔAR, β_4, ($\approx$0)	-0.0066	0.0041	-0.0018	-0.0051	0.0029	-0.0004
	(-1.52)	(1.21)	(-0.47)	(-1.15)	(1.21)	(-0.13)
CDS Traded	-0.0045***	-0.0020***	-0.0037***	-0.0044***	-0.0022***	-0.0051***
	(-5.06)	(-3.43)	(-3.20)	(-5.45)	(-3.88)	(-4.72)
Δ AR	0.004	0.001	-0.0034	0.0059	0.001	-0.0019
	(1.01)	(0.57)	(-1.38)	(1.29)	(0.49)	(-0.79)
Δ AP	0.008	0.0068***	0.0014	0.0084	0.0050***	0.0014
	(1.07)	(4.76)	(0.77)	(1.01)	(3.61)	(0.79)
Total Asset(-)	-0.0001*	-0.0002***	-0.0002**	-0.0001*	-0.0001***	-0.0001
	(-1.77)	(-7.02)	(-2.10)	(-1.67)	(-4.13)	(-0.76)
Sales Volatility(+)	0.1727***	0.1028***	0.0882***	0.1686***	0.1040***	0.0923***
	(8.58)	(16.05)	(5.62)	(7.46)	(13.14)	(5.16)
CashFlowVolatility(+)	0.1108***	0.1655***	0.1644***	0.1133***	0.1586***	0.1590***
	(4.61)	(12.50)	(7.11)	(4.47)	(10.62)	(6.76)
Loss(+)	0.0390***	0.0326***	0.0333***	0.0375***	0.0290***	0.0285***
	(7.76)	(18.63)	(11.25)	(6.25)	(11.85)	(8.86)
Operation Cycle(+)	0.0004	0.0013***	0.0011***	0.0005	0.0012***	0.0008***
	(0.81)	(3.56)	(3.78)	(0.91)	(3.43)	(2.88)
Δ Sales Growth(+)	-0.002	0.0057***	0.0033*	-0.0034	0.0047***	0.0015
	(-0.34)	(4.26)	(1.89)	(-0.53)	(3.59)	(0.93)
Book Leverage(-)	-0.0066	-0.0027*	-0.0046	-0.0092*	-0.0087***	-0.0099**
	(-1.54)	(-1.69)	(-0.98)	(-1.86)	(-4.20)	(-2.14)
Market-to-Book decile(+)	0.0012**	0.0008***	0.0008**	0.0014**	0.0009***	0.0008**
	(1.97)	(5.92)	(2.27)	(2.26)	(6.36)	(2.31)
Intercept	0.0204***	0.0216***	0.0235***	0.0145***	0.0175***	0.0203***
	(11.23)	(8.83)	(10.81)	(6.62)	(7.51)	(10.28)
No. of Obs.	69496	361354	48127	69496	361354	48127
R-sq	0.327	0.264	0.47	0.219	0.143	0.37
adj. R-sq	0.259	0.25	0.396	0.141	0.127	0.282

Table 8. High cash holding firms versus low cash holding firms. In this table, we partition our sample into low cash holding and high cash holding based on the cross-sectional median of cash holdings of firms in the sample. The sample period is from 1973Q1-2016Q4. The dependent variables are Jones' 1991 discretionary accruals |EQ1| or else modified Jones' 1991 accruals |EQ2| by Dechow et at. (1995) at quarter t. The control variables include total assets (in $ billions), sales volatility, cash flow volatility, an incidence of negative earnings realization (we denote as a loss in the regression table), operation cycle, change of sales growth (Δ sales growth), book leverage, market-to-book decile, CDS trading dummy, and CDS Traded dummy. The latter is to control for time-invariant unobservable differences between CDS and non-CDS firms as suggested by Saretto and Tookes (2013). The coefficients of interest are β_1 and β_2, which capture the impact of the inception of CDS trading on abnormal discretionary earnings accruals. We posit that $\beta_1 < 0$ and $\beta_2 < 0$. ***,**, and * denote significant at the 1%, 5%, and 10% level respectively. The numbers in the parentheses are t-statistics. We include the industry (we use Fama-French 48 industry classification) and quarter fixed effect and clustering standard error by industry and quarter. We winsorize all continuous variables at 1% and 99% levels. For convenience, we show (+) or (-) beside the explanatory variables to indicate the expected signs of the estimated coefficients.

	(1) <median cash |EQ1|	(2) ≥median cash |EQ1|	(3) <median cash |EQ2|	(4) ≥median cash |EQ2|
CDS Trading × I[EQ < 0], β_1 (-)	**-0.0038***** **(-3.22)**	**-0.0049** **(-0.57)**	**-0.0080***** **(-4.62)**	**-0.0102** **(-1.05)**
CDS Trading × I[EQ > 0], β_2 (-)	**-0.0031***** **(-3.76)**	**0.0282** **(0.97)**	**-0.0028***** **(-3.30)**	**0.0258** **(0.98)**
CDS Traded, β_3	-0.0030*** (-8.57)	0.0022** (2.33)	-0.0036*** (-10.69)	0.0017 (1.55)
Total Asset(-)	-0.0001*** (-6.46)	-0.0011*** (-2.91)	-0.0001*** (-4.99)	-0.0009** (-2.56)
Sales Volatility(+)	0.1139*** (11.84)	0.1097*** (14.61)	0.1186*** (11.02)	0.1083*** (12.27)
CashFlowVolatility(+)	0.1400*** (12.13)	0.1331*** (12.37)	0.1336*** (11.04)	0.1285*** (11.16)
Loss(+)	0.0284*** (18.32)	0.0326*** (20.94)	0.0248*** (12.41)	0.0281*** (16.17)
Operation Cycle(+)	0.0008*** (4.00)	0.0015*** (3.75)	0.0008*** (4.30)	0.0014*** (3.44)
Δ Sales Growth(+)	0.0038*** (4.32)	0.0060*** (4.80)	0.0022*** (2.83)	0.0051*** (4.11)
Book Leverage(-)	-0.002 (-1.01)	0.0012 (0.63)	-0.0079*** (-3.22)	-0.0032* (-1.70)
Market-to-Book decile(+)	0.0006*** (5.35)	0.0012*** (5.88)	0.0008*** (5.71)	0.0012*** (6.20)
Intercept	0.0202*** (13.34)	0.0241*** (9.75)	0.0155*** (12.15)	0.0210*** (8.44)
No. of Obs.	263190	266831	263190	266831
R-sq	0.296	0.281	0.123	0.196
adj. R-sq	0.277	0.262	0.1	0.176

Table 9. Predictive regression of one-year ahead corporate liquidity management policy on higher default risk at quarter t. We use regression: $\Delta CP_{i,t+4} = \alpha + \beta_1 * D_{i,t} + \epsilon_{i,t+4}$ where $\Delta CP_{i,t+4}$ is the one-year ahead change of corporate actions. Corporate actions or corporate liquidity practices are separately categorized and captured in three proxy variables as cash holding, operational cash flow (cash flow), and net working capital (working capital). Separate regressions using these categories are shown in columns (1), (2), columns (3), (4), and columns (5), (6). In this specification, we only focus on firms with CDS trading activities. Regressions are based on Eq. (4) where PD, default probability, is the predictive variable using 5-year CDS prices. The default probabilities are bootstrapped via the entire CDS curve following Hull and White (2000)s' reduced-form CDS pricing framework. At each quarter t, we split the sample into half using |EQ| based on its the cross-sectional median. We consider two accruals quantities: (1) $|EQ1_t|$ is Jone's discretionary accruals model and (2) $|EQ2_t|$ is modified Jone's discretionary accruals model. Panel A shows the regression results using the sub-sample of high or low |EQ|1, whereas panel B shows the regression results using the sub-sample of high or low |EQ|2. ***,**, and * denote significant at the 1%, 5%, and 10% level respectively. The numbers in the parentheses are t-statistics. We include the industry (we use Fama-French 48 industry classification) and quarter fixed effect and clustering standard error by industry and quarter. We winsorize all continuous variables at 1% and 99% levels.

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A:	Low |EQ1|	High |EQ1|	Low |EQ1|	High |EQ1|	Low |EQ1|	High |EQ1|
	Cash Holding	Cash Holding	Cash flow	Cash flow	Working Capital	Working Capital
5Y PD	**0.020****	**0.054*****	**0.001**	**0.014***	**0.028*****	**0.046*****
	(2.45)	**(6.34)**	**(0.11)**	**(1.98)**	**(2.68)**	**(4.77)**
Intercept	-0.000	-0.010***	0.001	-0.003*	-0.003	-0.008***
	(-0.17)	(-5.49)	(0.63)	(-1.91)	(-1.17)	(-3.40)
No. of Obs.	6046	6054	6046	6054	6046	6054
R-sq	0.245	0.221	0.171	0.139	0.246	0.211
adj. R-sq	0.172	0.143	0.089	0.053	0.172	0.132
Panel B:	Low |EQ2|	High |EQ2|	Low |EQ2|	High |EQ2|	Low |EQ2|	High |EQ2|
	Cash Holding	Cash Holding	Cash flow	Cash flow	Working Capital	Working Capital
5Y PD	**0.012**	**0.051*****	**0.002**	**0.012***	**0.018**	**0.047*****
	(1.36)	**(6.16)**	**(0.31)**	**(1.91)**	**(1.60)**	**(5.59)**
Intercept	0.002	-0.009***	0.001	-0.002	0.000	-0.008***
	(0.93)	(-5.54)	(0.44)	(-1.55)	(0.05)	(-4.26)
No. of Obs	6046	6054	6046	6054	6046	6054
R-sq	0.259	0.220	0.214	0.124	0.257	0.209
adj. R-sq	0.171	0.154	0.120	0.050	0.168	0.143

Table 10. The value implication. The dependent variable is EPS growth from quarter t to quarter t+1 that proxies for value. High $|EQj|$ is a dummy variable that is equal to 1 if, for each t, the value of $|EQ_{i,t}\ j|$ is greater than the cross-sectional median. $|EQ1|$ is Jone's discretionary accruals model and $|EQ2|$ is modified Jone's discretionary accruals model. Panel A shows the results involving High $|EQ1|$ and panel B shows the results involving High $|EQ2|$. Control variables as reported in other tables are used but due to space are not reported here. Their coefficient estimates are similar as in other tables. Column (1) reports the full-sample estimation results of Equation (5) without including the CDS trading dummy and the interaction term between CDS trading dummy and high abnormal discretionary earnings accruals. Column (2) reports the sub-sample estimation results of Equation (5) by considering firms without CDS trading. Column (3) reports the sub-sample estimation results of Equation (5) by solely considering firms with CDS trading. Column (4) reports the full-sample estimation results of Equation (5) by considering CDS trading dummy and the interaction term between CDS trading dummy and high accruals estimation errors. The numbers in the parentheses are t-statistics. We include the industry (we use Fama-French 48 industry classification) and quarter fixed effect and clustering standard error by industry and quarter. We winsorize all continuous variables at 1% and 99% levels.

Panel A:	(1)	(2)	(3)	(4)
	All firms	CDS Traded = 0	CDS Traded =1	All firms
	ΔEPS_{t+1}	ΔEPS_{t+1}	ΔEPS_{t+1}	ΔEPS_{t+1}
High $|EQ1| \times$ CDS Trading				0.090**
				(2.17)
CDS Trading				0.011
				(0.69)
High $|EQ1|$	-0.022***	-0.022***	0.006	-0.027***
	(-2.71)	(-2.72)	(0.14)	(-3.30)
No. of Obs.	168727	154165	14562	168727
R-sq	0.074	0.077	0.214	0.074
adj. R-sq	0.073	0.076	0.206	0.073
Controls	Yes	Yes	Yes	Yes
Panel B:	(1)	(2)	(3)	(4)
	All firms	CDS Traded = 0	CDS Traded =1	All firms
	ΔEPS_{t+1}	ΔEPS_{t+1}	ΔEPS_{t+1}	ΔEPS_{t+1}
High $|EQ2| \times$ CDS Trading				0.070***
				(2.79)
CDS Trading				0.006
				(0.06)
High $|EQ2|$	-0.024***	-0.020**	-0.050	-0.026***
	(-2.96)	(-2.54)	(-1.06)	(-3.18)
No. of Obs.	168,727	154,165	14,562	168,727
R-sq	0.180	0.180	0.240	0.180
adj. R-sq	0.179	0.179	0.233	0.179
Controls	Yes	Yes	Yes	Yes

References

Aboody, D., Hughes, J. and Liu, J., 2005. Earnings quality, insider trading, and cost of capital. Journal of Accounting Research, 43(5), pp.651-673.

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

Acharya, V.V. and Pedersen, L.H., 2005. Asset pricing with liquidity risk. Journal of financial Economics, 77(2), pp.375-410.

Arora, Navneet and Richardson, Scott Anthony and Tuna, Ayse Irem, Asset Measurement Uncertainty and Credit Term Structure (April 5, 2011). Available at SSRN: https://ssrn.com/abstract=1803184 or http://dx.doi.org/10.2139/ssrn.1803184

Ashcraft, A.B. and Santos, J.A., 2009. Has the CDS market lowered the cost of corporate debt?. Journal of Monetary Economics, 56(4), pp.514-523.

Ayers, Benjamin C., John Jiang, and P. Eric Yeung, 2006. Discretionary Accruals and Earnings Management: An Analysis of Pseudo Earnings Targets. The Accounting Review, 81 (3), 617-652.

Bai, J. and Wu, L., 2016. Anchoring credit default swap spreads to firm fundamentals. Journal of Financial and Quantitative Analysis, 51(5), pp.1521-1543.

Berndt, A. and Ostrovnaya, A., 2014. Do Equity Markets Favor Credit Market News Over Options Market News?. The Quarterly Journal of Finance, 4(02), p.1450006.

Boehmer, E., Chava, S. and Tookes, H.E., 2015. Related Securities and Equity Market Quality: The Case of CDS. Journal of Financial & Quantitative Analysis, 50(3).

Bhat, G., Callen, J.L. and Segal, D., 2016. Testing the transparency implications of mandatory IFRS adoption: The spread/maturity relation of credit default swaps. Management Science, 62(12), pp.3472-3493.

Brealey, R., Leland, H.E. and Pyle, D.H., 1977. Informational asymmetries, financial structure, and financial intermediation. The journal of Finance, 32(2), pp.371-387.

Bolton, P. and Oehmke, M., 2011. Credit default swaps and the empty creditor problem. The Review of Financial Studies, 24(8), pp.2617-2655.

Bergstresser, D. and Philippon, T., 2006. CEO incentives and earnings management. Journal of financial economics, 80(3), pp.511-529.

Batta, G.E., Qiu, J. and Yu, F., 2016. Credit derivatives and analyst behavior. The Accounting Review, 91(5), pp.1315-1343.

Bhattacharya, N., Desai, H. and Venkataraman, K., 2013. Does earnings quality affect information asymmetry? Evidence from trading costs. Contemporary Accounting Research, 30(2), pp.482-516.

Chakraborty, I., Chava, S. and Ganduri, R., 2015. Credit default swaps and moral hazard in bank lending. Unpublished working paper. University of Miami and Georgia Institute of Technology, Coral Gables, FL, and Atlanta, GA.

Colonnello, S., Efing, M. and Zucchi, F., 2016. Empty creditors and strong shareholders: The real effects of credit risk trading.

Collins, D.W. and Hribar, P., 2000. Earnings-based and accrual-based market anomalies: one effect or two?. Journal of Accounting and Economics, 29(1), pp.101-123.

Chung, H. and Kallapur, S., 2003. Client importance, nonaudit services, and abnormal accruals. The Accounting Review, 78(4), pp.931-955.

Dechow, P.M. and Dichev, I.D., 2002. The quality of accruals and earnings: The role of accrual estimation errors. The accounting review, 77(s-1), pp.35-59.

Duffie, D. and Lando, D., 2001. Term structures of credit spreads with incomplete accounting information. Econometrica, 69(3), pp.633-664.

Dechow, P.M., Sloan, R.G. and Sweeney, A.P., 1995. Detecting earnings management. The Accounting review,70 (2), pp.193-225.

Dechow, P.M., Sloan, R.G. and Sweeney, A.P., 1996. Causes and consequences of earnings manipulation: An analysis of firms subject to enforcement actions by the SEC. Contemporary accounting research, 13(1), pp.1-36.

Demerjian, P.R., Lev, B., Lewis, M.F. and McVay, S.E., 2012. Managerial ability and earnings quality. The Accounting Review, 88(2), pp.463-498.

Dechow, P., Ge, W. and Schrand, C., 2010. Understanding earnings quality: A review of the proxies, their determinants and their consequences. Journal of accounting and economics, 50(2), pp.344-401.

Easley, D. and O'hara, M., 2004. Information and the cost of capital. The journal of finance, 59(4), pp.1553-1583.

Frankel, R.M., Johnson, M.F. and Nelson, K.K., 2002. The relation between auditors' fees for nonaudit services and earnings management. The accounting review, 77(s-1), pp.71-105.

Francis, J., LaFond, R., Olsson, P. and Schipper, K., 2005. The market pricing of accruals quality. Journal of accounting and economics, 39(2), pp.295-327.

Francis, J., Nanda, D., and P. Olsson, 2008. Voluntary disclosure, earnings quality, and cost of capital. Journal of accounting research, 46(1), pp.53-99.

Fama, E.F. and MacBeth, J.D., 1973. Risk, return, and equilibrium: Empirical tests. Journal of political economy, 81(3), pp.607-636.

Hu, Henry T.C. and Bernard Black, 2008. Equity and debt decoupling and empty voting II: Importance and Extensions, The University of Pennsylvania Law Review, 156 (3), 625-739.

Hribar, P. and Craig Nichols, D., 2007. The use of unsigned earnings quality measures in tests of earnings management. Journal of Accounting Research, 45(5), pp.1017-1053.

Hull, J.C. and White, A.D., 2000. Valuing credit default swaps I: No counterparty default risk. The Journal of Derivatives, 8(1), pp.29-40.

Healy, P.M. and Wahlen, J.M., 1999. A review of the earnings management literature and its implications for standard setting. Accounting horizons, 13(4), pp.365-383.

Jensen, Morten, 2019. Can we trust the financial reporting of distressed firms? Conference proceedings, 2019 International Accounting Section Midyear Meeting, Miami U.S.

Jones, J.J., 1991. Earnings management during import relief investigations. Journal of Accounting Research, 29 (2), pp.193-228.

Jiang, G.J., Xu, D. and Yao, T., 2009. The information content of idiosyncratic volatility. Journal of Financial and Quantitative Analysis, 44(1), pp.1-28.

Kim, J.B., Shroff, P.K., Vyas, D. and Wittenberg Moerman, R., 2017. Credit Default Swaps and Managers Voluntary Disclosure, Journal of Accounting Research, 56(3), 953-988.

Klein, A., 2002. Audit committee, board of director characteristics, and earnings management. Journal of accounting and economics, 33(3), pp.375-400.

Kothari, S.P., Andrew J. Leone, and Charles E. Wasley, 2005. Performance matched discretionary accrual measures. Journal of Accounting and Economics, 39, 163-197.

Kraft, P., 2014. Rating agency adjustments to GAAP financial statements and their effect on ratings and credit spreads. The Accounting Review, 90(2), pp.641-674.

Kryzanowski, L., Perrakis, S. and Zhong, R., 2017. Price discovery in equity and CDS markets. Journal of Financial Markets, 35, pp.21-46.

Lambert, R., Leuz, C. and Verrecchia, R.E., 2007. Accounting information, disclosure, and the cost of capital. Journal of accounting research, 45(2), pp.385-420.

Lee, J., Naranjo, A. and Velioglu, G., 2017. When Do CDS Spreads Lead? Rating Events, Private Entities, and Firm-Specific Information Flows, Journal of Financial Economics, 130 (3), 556-578.

Leuz, C., Nanda, D. and Wysocki, P.D., 2003. Earnings management and investor protection: an international comparison. Journal of financial economics, 69(3), pp.505-527.

Li, J.Y. and Tang, D.Y., 2016. The leverage externalities of credit default swaps. Journal of Financial Economics, 120(3), pp.491-513.

Lubben, S.J., 2007. Credit derivatives and the future of Chapter 11. Am. Bankr. LJ, 81, p.405.

Myers, J.N., Myers, L.A. and Omer, T.C., 2003. Exploring the term of the auditor-client relationship and the quality of earnings: A case for mandatory auditor rotation?. The Accounting Review, 78(3), pp.779-799.

Martin, X. and Roychowdhury, S., 2015. Do financial market developments influence accounting practices? Credit default swaps and borrowers reporting conservatism. Journal of Accounting and Economics, 59(1), pp.80-104.

Narayanan, R.P. and Uzmanoglu, C., 2014. CDS, Strategic Behavior, and Credit Spreads, inSSRN Electronic Journal, January 2014. DOI: 10.2139/ssrn.2528107

Ni, Sophie Xiaoyan and Pan, Jun, Trading Puts and CDS on Stocks with Short Sale Ban (July 1, 2015). Available at SSRN: https://ssrn.com/abstract=1572462.

Petersen, M.A., 2009. Estimating standard errors in finance panel data sets: Comparing approaches. Review of financial studies, 22(1), pp.435-480.

Qiu, J. and Yu, F., 2012. Endogenous liquidity in credit derivatives. Journal of Financial Economics, 103(3), pp.611-631.

Rajgopal, S. and Venkatachalam, M., 2011. Financial reporting quality and idiosyncratic return volatility. Journal of Accounting and Economics, 51(1), pp.1-20.

O'Hara, M., 2003. Presidential address: Liquidity and price discovery. The Journal of Finance, 58(4), pp.1335-1354.

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

Reynolds, J.K. and Francis, J.R., 2000. Does size matter? The influence of large clients on office-level auditor reporting decisions. Journal of accounting and economics, 30(3), pp.375-400.

Roychowdhury, Sugata, and Xiumin Martin, 2013. Understanding discretion in conservatism: An alternative viewpoint. Journal of Accounting and Economics, 56, 134-146.

Sloan, A., 1996. Create an account or Log In. Accounting review, 71(3), pp.289-315.

Stulz, R.M., 2010. Create an account or Log In. Journal of Economic Perspectives, 24(1), pp.73-92.

Subrahmanyam, M.G., Tang, D.Y. and Wang, S.Q., 2014. Does the tail wag the dog?: The effect of credit default swaps on credit risk. The Review of Financial Studies, 27(10), pp.2927-2960.

Subrahmanyam, M.G., Tang, D.Y. and Wang, S.Q., 2017. Credit default swaps, exacting creditors and corporate liquidity management. Journal of Financial Economics, 124(2), pp.395-414.

Tang, T.T., 2009. Information asymmetry and firms credit market access: Evidence from Moody's credit rating format refinement. Journal of Financial Economics, 93(2), pp.325-351.

Wittenberg-Moerman, R., 2008. The role of information asymmetry and financial reporting quality in debt trading: Evidence from the secondary loan market. Journal of Accounting and Economics, 46(2), pp.240-260.

Warfield, T.D., Wild, J.J. and Wild, K.L., 1995. Managerial ownership, accounting choices, and informativeness of earnings. Journal of accounting and economics, 20(1), pp.61-91.

Yavorsky, A., 2009. OTC derivatives market structure and the credit profiles of wholesale investment banks. Moodys Investors Service.

Velury, U. and Jenkins, D.S., 2006. Institutional ownership and the quality of earnings. Journal of Business Research, 59(9), pp.1043-1051.

Yu, F., 2005. Accounting transparency and the term structure of credit spreads. Journal of Financial Economics, 75(1), pp.53-84.