Diversely Informed Investors, Strategic Trading, and Loan Illiquidity: Evidence from Collateralized Loan Obligations

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Collateralized loan obligations (CLOs) securitize and actively trade syndicated loans. CLOs make up more than 60% of the investments in syndicated loans in recent years. A syndicated loan is in the portfolios of dozens of CLOs and they often disagree on the value of the loan. I find that such disagreement makes CLOs trade strategically by increasing trading frequency and decreasing trading amount. Dealers cannot differentiate the private signals in the market, which leads to the adverse selection concern and reduces the liquidity of a loan. Information sharing reduces CLO disagreement but worsens the adverse selection problem when dealers are not in the sharing group. Information possessed by rating agencies and dealers reduces the monopolistic power of diversely informed CLOs and attenuates the negative effect of CLO disagreement on loan liquidity.

Keywords: CLO, Disagreement, Information asymmetry, Information diversity, Loan liquidity, Securitization

***JEL* classification**: D82, G12, G14, G23

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Abstract

Collateralized loan obligations (CLOs) securitize and actively trade syndicated loans. CLOs make up more than 60% of the investments in syndicated loans in recent years. A syndicated loan is in the portfolios of dozens of CLOs and they often disagree on the value of the loan. I find that such disagreement makes CLOs trade strategically by increasing trading frequency and decreasing trading amount. Dealers cannot differentiate the private signals in the market, which leads to the adverse selection concern and reduces the liquidity of a loan. Information sharing reduces CLO disagreement but worsens the adverse selection problem when dealers are not in the sharing group. Information possessed by rating agencies and dealers reduces the monopolistic power of diversely informed CLOs and attenuates the negative effect of CLO disagreement on loan liquidity.

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1. Introduction

In the financial markets, information on the value of an asset is diverse in nature. Different investors usually acquire information from different sources, especially when the market of the asset is opaque. When investors possess diverse information, trading becomes strategic because every investor has some advantage over others in that she possesses unique information that is not known by others. While theoretical research on diverse information and transaction characteristics such as trading volume, return volatility, and asset liquidity has received wide attention in the literature (e.g., Admati and Pfeiderer (1988), Holden and Subrahmanyam (1992), He and Wang (1995), Foster and Viswanathan (1996), Back, Cao, and Willard (2000), Goldstein and Yang (2015)), there has been little empirical evidence on how diversely informed investors strategically trade and how the strategic trading affects asset liquidity in the secondary market.

To provide a conceptual framework for the analysis, consider a market where there are some informed investors, some liquidity investors, and a market maker. Informed investors and liquidity investors submit orders to the market maker, and the market maker sets prices to fill the orders and clear the market. Each of the informed investors receives an independent signal about the value of an asset. One part of the signal is also known by other informed investors (common information). The other part of the signal is private (private information). It is private information that results in investor disagreement. Ex ante, neither common nor private information is known by liquidity investors or the market maker.

The common part of the signals leads to competition among the informed investors because everyone wants to trade on the common information before others do. This reveals

the common information to the public very quickly and increases the market depth (Admati and Pfeiderer (1988), Holden and Subrahmanyam (1992), and Back, Cao, and Willard (2000)). I denote this argument as the *competition hypothesis*.

Competition has no impact on revealing the diverse, private information held by informed investors to the public. The diversely informed investors still maintain the monopoly power. To maximize the trading profits, the investors have incentives to make smaller but more frequent transactions so that the private information is revealed to the market slowly. From the perspective of the market maker, because the orders submitted by the diversely informed investors are all small and indistinguishable, the market maker becomes more uncertain about the private signals contained in the order flow, which gives rise to the adverse selection concern (Admati and Pfeiderer (1988) and Back, Cao, and Willard (2000)). I denote this scenario as the *adverse selection hypothesis*.

The *competition* and the *adverse selection* hypotheses have opposite predictions about the impact of investor disagreement on asset liquidity. To distinguish these two hypotheses, I exploit a novel dataset from Creditflux that contains detailed information on syndicated loan holdings and transactions by CLOs. More importantly, the dataset collects CLOs' different estimations about the same loan reported by CLO managers in their monthly reports, which enables me to measure CLO disagreement. I construct a panel sample of 102,527 loan-month observations for 7,378 unique securitized syndicated loans from December 2008 to October 2018.[1] I define the CLO disagreement measure (*CLODIS*) for a loan as the standard deviation of the loan values reported by all the CLOs with

[1] The beginning of the sample is the result of the 2008-09 financial crisis – the crisis shrank the CLO market and many collaterals in CLOs' portfolios prior to the crisis were high-yield bonds and structured products. The sample ends in October 2018 because of data availability.

reported holdings in the loan. I define loan illiquidity (*LOANILLIQ*) as the absolute return divided by the dollar trading amount (Amihud (2002)).

I find that a one standard deviation increase of *CLODIS* leads to an increase of 13% of the standard deviation of *LOANILLIQ*. The impact is not completely driven by trading volume because I also find that a one standard deviation increase of *CLODIS* is associated with a 41 basis points (bp) increase of the absolute value of the loan return.[2] The impact of CLO disagreement on loan liquidity is more pronounced in loans issued by private firms, smaller firms, and firms with greater analyst forecast dispersion on earnings per share (EPS). The impact is also stronger when informed trading is more likely to occur. These findings are consistent with the *adverse selection hypothesis*.

Furthermore, I find that CLO disagreement increases trading frequency and decreases trading amount per transaction. And the impact of CLO disagreement on loan illiquidity decays gradually, with a still economically large and statistically significant effect after twelve months. These results suggest that the diversely informed CLOs trade strategically to reveal their private information slowly to the market.

The private information captured by CLO disagreement in the loan market does not come from the information in the stock market, because I find that neither analyst forecast dispersion, nor the number of analysts has predictive power to the level of *CLODIS* or *LOANILLIQ*. This also suggests that stock analysts pay little attention to loan-specific risks when they estimate a firm's cash flows.

[2] Lou and Shu (2017) find that the impact of the Amihud illiquidity measure on stock return is not attributable to the price impact but driven completely by the trading volume. I follow their paper and examine how CLO disagreement affects the absolute value of the loan return to address this concern.

I then examine how potential information sharing affects both CLO disagreement and loan liquidity. Measuring the likelihood of information sharing by CLOs' common connections to the same trustee bank or bond issuance arranger (call these connected investors), I find that information sharing reduces CLO disagreement and strengthens the impact of *CLODIS* on *LOANILLIQ*.[3] The results are consistent with the notion that information sharing reduces disagreement among the connected investors but worsens the information asymmetry between the connected investors and the non-connected ones, especially the dealers. In other words, even though the total private information in the market remains unchanged, when the information structure changes, the impact of informed trading on liquidity will be different.

CLOs are not the only institutions that produce private information in the loan market. Rating agencies analyze the creditworthiness of a loan to issue credit ratings and are the main information providers to investors such as insurance companies.[4] Dealers/lenders having relationships with a borrower acquire private and mostly soft information such as team culture, management trustworthiness, and managements' opinions on corporate strategies (Liberti and Petersen (2019)). I find that the private information from both rating agencies and potential dealers (loan primary market lenders) can help alleviate the adverse impact of CLO disagreement on loan liquidity. Rating agencies' private information is measured by their different ratings on the same loan, and a potential dealer's private information is measured by its lending relationship with a borrower in the past five years (Zhang, Zhang, and Zhao (2020)). The results corroborate

[3] The arranger of a CLO is the lead underwriter for the CLO's bond issuance and provides bridge funding for the CLO to buy loans during the warehouse period. The trustee of a CLO, usually a large commercial bank, provides custodial services such as distributing the CLO reports to the stakeholders in the CLO.
[4] Please see, e.g., Moody's rating methodologies at https://www.moodys.com/.

the conjecture in Goldstein and Yang (2015) that information diversity improves market efficiency.

To address the potential reverse causality and omitted variable biases, I follow Hale and Santos (2009), Schenone (2010), and Ferreira and Matos (2012) and use firms' initial public offerings (IPOs) of their equities as an instrument for CLO disagreement given that the information released during the IPO period can reduce CLOs' disagreement on loan value. Indeed, the first stage regressions show that CLO disagreement is at the lowest level during the IPO period from six months before to six months after the IPO date. The second stage regression results show that the instrumented CLO disagreement still has a positive and significant impact on the loan illiquidity measure, suggesting that the results are robust after addressing the potential endogeneity issues.

The existing literature on CLOs and the secondary loan market focuses on CLO fund performance (Loumioti and Vasvari (2019)), the probability of defaults and downgrades between securitized and non-securitized loans (Bord and Santos (2011) and Benmelech, Dlugosz, and Ivashina (2012)), and how a dealer's capital affects the quoted bid and ask spreads of the traded loans (Berger, Zhang, and Zhao (2020)). Yet, none of them sheds light on the information structure of the secondary loan market. My paper provides the first empirical evidence on how CLOs' diverse, private information affects their strategic trading and loan liquidity.

The paper is also related to a large literature that attempts to measure investor disagreement. Some papers use the secondary market trading activities such as trading volume around earnings announcements and return volatility as proxies of investor disagreement (e.g., Berkman, Dimitrov, Jain, Koch, and Tice (2009) and Chang, Hsiao,

Ljungqvist, and Tseng (2020)). Another frequently used measure of investor disagreement is the dispersion of analysts' forecasts on earnings per share (EPS) for stocks (e.g., Diether, Malloy, and Scherbina (2002)). The main drawback of these measures is that they do not directly capture the opinions of the investors. In a recent study, Carlin, Longstaff, and Matoba (2014) uses the Bloomberg survey data on dealers' prepayment speed forecasts for a generic mortgage-backed security (MBS) to measure investor disagreement. There is no cross-sectional variations for their disagreement measure, and dealers are also different from investors. Different from all these studies, the CLO disagreement measure in this paper is not only clean and direct but also captures both time-series and cross-sectional variations. The paper by Cici, Gibson, and Merrick (2011) measures investor dispersion by the different fair values marked by different bond mutual fund managers for an identical corporate bond. But their dispersion measure mainly captures managers' return-smoothing behaviors, which is different from the disagreement measure in my paper that captures the private information known by different CLO managers.

A few recent papers have documented that information in the loan market helps investors profit in the stock market (Ivashina and Sun (2011) and Addoum and Murfin (2019)). My paper contributes to this literature by showing that the information possessed by loan investors is different from that possessed by stock investors. Analyst reports of a firm contain little information about the firm's loan-specific risks.

The impact of information sharing on banks' lending decisions has been extensively studied in the literature. It finds that information sharing alleviates the adverse selection in the lending market (e.g., Jappelli and Pagano (1993), Padilla and Pagano (1997)). Colla and Mele (2010) find that information sharing reduces the monopolistic power of the

informed investors and *increases* market liquidity. In contrast to the existing literature, I find that information sharing worsens information asymmetry issues in loan trading and *reduces* loan liquidity because it leaves the dealer of the market in a more disadvantageous information position relative to the connected investors. That is, information sharing exhibits a more complex impact on market efficiency than previous studies have documented. Whether it deteriorates or ameliorates the information asymmetry problems depends on the market information structure.

This paper also complements the theoretical studies on the complementarity or substitutability of investors' information (e.g., Admati and Pfleiderer (1987), Paul (1993), Lee (2010), and Goldstein and Yang (2015)). I find that the information possessed by rating agencies and potential dealers attenuates the adverse impact of CLO disagreement on loan liquidity, suggesting that information held by different institutions is strategically complementary in the loan market.

The reminder of the paper is structured as follows. Section 2 discusses the institutional background. Section 3 introduces the CLO-i database and describes sample selection. Section 4 examines the relation between CLO disagreement and loan liquidity. Section 5 explores the information structure of the loan market and its impact on CLO disagreement and loan liquidity. Section 6 shows robustness and addresses the potential endogeneity issues. Section 7 concludes the paper.

2. Institutional Background

2.1. Information Structure of the Syndicated Loan Market

A syndicated loan is not recognized as a security under the Securities and Exchange Commission (SEC) regulations. As a result, public disclosure requirements are minimal, especially for private firms. Even for public firms, a loan issuer does not need to disclose as much information to the public as it does in stock or bond offerings. A large portion of the information in the loan market remains unknown to the public.

CLOs have dramatically changed the landscape of the corporate loan market. In 2018, CLOs owned more than 65% of the total value of outstanding institutional term loans (ITLs).[5] Different from traditional loan investors that usually buy and hold loans until maturity, CLOs frequently trade loans on the secondary market.[6] The monthly trading volume of securitized loans in the U.S. reported by CLOs increased from $2 billion in December 2008 to $31 billion in October 2018. Loan transactions are typically completed by a dealer in an over-the-counter market.

In addition to active trading, another unique role played by CLOs in the loan market is that CLOs issue securities backed by syndicated loans. By securitizing a loan, a CLO becomes an important bridge of information. On one hand, it invests in a (private) loan and gains access to the publicly unavailable information about the loan. On the other hand, it has an obligation to disclose information such as holdings, loan value, and transactions on

[5] The number is from https://www.spglobal.com/marketintelligence/en/pages/toc-primer/lcd-primer#sec1. A syndicated loan to a firm is typically organized as a package or deal. There can be different loan facilities in a deal, including credit lines, Term Loan A (TLA), and Term Loan B (TLB), C (TLC), and higher. Credit lines and TLAs are mostly financed by banks. TLBs and loan facilities labeled higher are targeted to institutional investors and are often referred to as ITLs. Please see S&P (2016) for more information.

[6] A typical CLO has a four-year reinvestment period during which the CLO manager can trade loans in its portfolio if the CLO meets collateral quality and subordination level requirements. After all the necessary payments to the government and the noteholders, the manager usually receives 20% of the remaining amounts as a management incentive fee. This incentive fee encourages the manager to trade loans to boost the performance.

a regular basis because it issues asset-backed securities such as triple-A rated bonds.[7] It is common that many CLOs invest in the same loan, so CLO disagreement on the loan value is directly observable.[8] The above unique nature of CLOs makes the syndicated loan market arguably the best laboratory to study market information structure and secondary trading.

2.2. Estimations of Loan Value in the Monthly Reports of CLOs

After the month in which a CLO fund closes, the manager of the CLO fund needs to compile a trustee report in every month before the fund matures. In a month when there are cash flow distributions, the manager needs to prepare a payment report which contains information on payments to all the investors in the CLO fund in addition to the information that is included in a trustee report. In these monthly reports, the CLO manager needs to provide price estimations (in percentages over par) for each loan in its portfolio. The purpose for the CLO managers to value loans in their portfolios includes marking portfolios to market, managing risk, and supporting trading decisions.

Because trading in the secondary loan market is sporadic, usually there are no market transaction prices to be used as reference points. Typically, a CLO manager uses the following rules to determine the loan value. 1) The manager obtains the bid price determined by an approved independent pricing service such as the Loan Pricing Corporation, LoanX Inc., or Markit Group Limited. 2) If 1) is not available, the manager

[7] CLO managers are required to compile and distribute monthly reports to the investors. The reports are not publicly known at least by the date they are compiled. In each monthly report, the CLO manager needs to provide a fair value for each loan in the portfolio. At what price a CLO manager values a loan reflects its private information about the loan.

[8] In my sample, the average number of CLO funds (managers) is 33 (11). A CLO manager may own multiple funds at the same time.

uses the arithmetic average of bid-side quotations obtained from three independent dealers. 3) If neither 1) nor 2) is available, the manager determines the loan value by exercising reasonable commercial judgment. 4) If none of the above are available, the value is set at zero until any of the above becomes available. Note that for non-zero evaluations, the CLO manager does not disclose which one it uses.

Different CLO managers often provide different prices for the same loan in the same month. The difference could result from CLO managers' different information sources (indirect information production). For example, some CLO managers may get price estimations from pricing service companies, and some others may seek bids from secondary market dealers. The difference could also result from CLO managers' own analyses on the value of the loan (direct information production). In this study, I will abstract away the reasons behind this difference. After all, a CLO manager's private information can come from both the indirect and direct information productions.[9]

It has been documented that managers of bond mutual funds could manipulate the marked bond prices to inflate their performances (Cici, Gibson, and Merrick (2011)). However, this is not the case for CLO managers. Inflating the price estimations cannot increase the CLO fund returns because the CLO managers will only get paid (except for the fixed senior management fee) if the collateralization tests are passed. Therefore, the managers would manipulate the price estimations only if doing so can improve their collateralization test results. Loumioti and Vasvari (2019) find that for default and CCC-rated loans, CLO managers have incentives to manipulate the price estimations for these

[9] In the literature, investor disagreement can also result from investors' different beliefs. But in this scenario, it is always assumed that the investors have the same information source and "agree to disagree". Given the institutional background, CLO disagreement is not likely to be driven by the belief difference.

loans to pass monthly covenant tests. However, for non-default and non-CCC loans that are the focus of this paper, they are valued at par when computing covenant tests. The managers have little incentive to manipulate the price estimations for these loans.

3. Data and Sample Description

3.1. CLO-i Data, Sample Selection, and Variable Construction

The sample is from Creditflux CLO-i database. Creditflux is a leading media company that provides specialist news, research analyses, and data on global financial markets, with a focus on CLOs in the US and Europe. The CLO-i database contains comprehensive data on loan collaterals, CLO bond tranches, collateralization test results, and equity tranche payments. Creditflux retrieves information from the payment reports and the monthly trustee reports distributed by CLO managers.

Most of the papers in the literature use dispersion of analyst forecasts on EPS – the standard deviation divided by the absolute mean – to measure investor disagreement (e.g., Diether, Malloy, and Scherbina (2002), Johnson (2004), and Sadka and Scherbina (2007)). As suggested by Cen, Wei, and Yang (2017), the numerator in this measure captures the disagreement. And the denominator, which is simply a scalar to make this variable cross-sectionally comparable, might capture investors' underreaction to information. Because loan evaluations are measured as percentages over par, normalization is not needed. Therefore, to focus on the investor disagreement, I measure CLO disagreement on loan value as the standard deviation across the price estimations:

$$CLODIS = \sqrt{\frac{\sum_{j=1}^{n_{i,t}} \left(Price_{i,j,t} - MPrice_{i,t}\right)^2}{n_{i,t}}} * 100$$

Where $n_{i,t}$ is the number of CLO managers in month t in loan i, $Price_{i,j,t}$ is the price reported by CLO manager j in month t for loan i, and $MPrice_{i,t}$ is the average price across CLO managers in month t for loan i.

I start from the 21,804,352 loan-CLO fund-month level observations in the CLO-i database. I exclude bonds, equities, credit default swaps (CDS), loans that are not syndicated in the U.S., loans that are not denominated in USD, and loans with no issuer names, maturity dates, or issue types. This step reduces the number of observations to 16,300,847. I exclude loans with reported values that are missing, negative, or zero, which reduces the sample size to 5,013,406. I also exclude 66,004 defaulted loans and 487,182 loans that are rated below Caa1 (inclusive) because CLO managers may manipulate the prices of these loans to pass the over-collateralization tests (Loumioti and Vasvari (2019)).[10] This step reduces the sample to 4,460,220, which consists of 20,813 unique loans held by 1,555 CLO funds or 160 unique CLO managers. Because CLO funds owned by the same manager typically provide same or very close prices for the same loans in their monthly reports, I aggregate the fund level data into manager level and calculate the weighted average price for these loans. The manager-level sample has 1,485,894 observations. Finally, defining CLO disagreement downgrades the sample from loan-CLO manager-month level to loan-month level, which includes 124,055 observations.

[10] The results are robust if I include these loans. Please see Specification (6) in Table 11.

I estimate the average price impact in a month using the real transaction data in the spirit of Amihud (2002),

$$LOANILLIQ_{i,t} = \frac{1}{N_{i,t}} * \sum_{k=1}^{N_{i,t}} \frac{1}{Q_{i,k}} \frac{\left|P_{i,k} - P_{i,k-1}\right|}{P_{i,k-1}} * 100$$

where $N_{i,t}$ is the number of returns in month t of loan i, $P_{i,k}$ is the average trading price on day k of loan i, and $Q_{i,k}$ is the dollar trading amount in millions on day k of loan i. The illiquidity measure is available for 107,341 observations.[11] I exclude DIP, revolver, letter of credit, TLAs, and other loans and focus on ITLs. This reduces the sample to 102,930 observations. After removing 403 observations with missing values in the regressors, the final sample includes 102,527 observations for 7,378 unique loans.

3.2. Overview of CLO Disagreement and Loan Illiquidity

Figure 1 shows the variations of *CLODIS* and *LOANILLIQ* across time and ratings. Panel A shows the time-series variations for the sample period from December 2008 to October 2018. The high level of *CLODIS* in 2008 and 2009 is due to the profound uncertainty caused by the financial crisis. The spike around August 2011 is likely due to the credit downgrade of U.S. sovereign debt from AAA to AA+ by Standard & Poor's. The peak in the end of 2015 is probably caused by the credit downgrading by Fitch in the third quarter of 2015 in the U.S. energy industry.

LOANILLIQ decreased dramatically after the financial crisis. Except for two slight bumps in January 2010 and August 2011, it kept declining until May 2014. It increased

[11] Following the bond literature (e.g., Bessembinder, Kahle, Maxwell, and Xu (2008) and Bao, O'Hara, and Zhou (2018)), I exclude transactions with amount less than or equal to $100,000 to avoid the noises that these small transactions introduce into prices. Nevertheless, including these small trades yields robust results.

steadily from June 2014 to December 2015. Then it decreased towards the end of the sample period.

In Panel B, I plot *CLODIS* and *LOANILLIQ* together by different rating categories. About 60% of the loans are rated B1 and B2. Almost all the loans are non-investment grade. Both *CLODIS* and *LOANILLIQ* increase monotonically when loan rating decreases.

3.3. Summary Statistics

Table 1 shows the summary statistics. The average value of *CLODIS* is 0.66. To put this number into perspective, consider a loan with two CLO investors. The value 0.66 would correspond to one CLO investor pricing the loan at 99.34 and the other pricing the loan at 100.66. The average value of *PriceDispersion* is 0.67. And the average difference between the highest and the lowest prices is 1.84.

The average *LOANILLIQ* is 1.28 and the median value is 0.34.[12] The average monthly trading amount is $1.18 million. To benchmark the numbers, the average value of *LOANILLIQ* means that a purchase order with an average amount of $1.18 million will increase the price from 100.00 to 101.51 (100+1.28 *1.18). As a comparison to the bond market, in Bao, O'Hara, and Zhou (2018), a $1 million sell order will reduce the price from 100.00 to 98.40. On average, there are approximately 2.86 days ((1-87%) *22) with transactions in a trading month. The mean and median value of the number of transactions in a month is 8.40 and 3.00, respectively. These numbers suggest that loans are traded as sporadically as corporate bonds. As reported by Goldstein and Hotchkiss (2020), for

[12] The distribution of *LOANILLIQ* is skewed right. The baseline regression results are robust if I use *Log (1+LOANILLIQ)* as the dependent variable.

corporate bonds, the average monthly non-zero trading days is 3.40, and the mean and median value of monthly trades is 20.00 and 3.10, respectively.

An average loan has about 59 months to maturity (the difference between the maturity date and the report date). The average CLO holding amount is $68.68 million. 50.60% of the observations are for term loans and 44.40% of the observations are for term loan B.[13] For public firms, the average total assets is $8,569 million. The mean value of leverage and Tobin's Q is 0.63 and 1.89, respectively. On average, about 6 analysts cover a borrower's stock and the standard deviation of analysts' forecasts on EPS is 0.26.

4. CLO Disagreement and Loan Illiquidity

4.1. Baseline Results

I investigate how CLO disagreement affects loan illiquidity by estimating the following model:

$$LOANILLIQ_{ijt} = \alpha + \beta CLODIS_{ijt} + \gamma Controls_{ijt} + Rating\ FEs + YearQuarter\ FEs + Firm\ FEs + \epsilon_{ijt}, \quad (1)$$

where i, j, t indicates loan, loan rating, and CLO report month, respectively. To account for cross-sectional correlations within the same report month, I cluster standard errors at the report month level.[14] The dependent variable, *LOANILLIQ*, is the absolute return

[13] Many loans are classified as term loans in Creditflux. I cannot determine whether these loans are TLBs, TLCs, or second-lien, etc, so I create a dummy variable for term loans to account for the potential different impact of term loans on loan illiquidity.

[14] For example, the Federal Reserve System might announce an interest rate change in a month. The CLO reports issued in that month or the following month will incorporate such market-level variations into the pricing of securitized loans, which increases the cross-sectional correlation on loan values. Results are similar if I cluster the standard errors at firm level.

divided by the trading amount. It is averaged within a month. The independent variable of interest is *CLODIS*, which is the standard deviation of the prices provided by the CLO investors in a loan.

Controls consists of a set of confounding factors that would affect loan liquidity. Investors are more uncertain about the value of a loan with a longer maturity than a similar loan with a shorter maturity, which makes the former loan more difficult to trade. *Log (TotalCLOHoldings)* is correlated with the outstanding amount of a loan and would affect the transaction amount per each deal.[15] To control for CLO investors' specific interests in term loan B (Nadauld and Weisbach (2012)), I include five loan type dummies in the regressions. Loans labeled as term loan D are the base group, so the indicator variable for these loans is omitted in the regressions. Funding conditions affect a dealer's inventory costs and asset liquidity (Brunnermeier and Pedersen (2009)). I use *VIX* (the Volatility Index from the Chicago Board Options Exchange (CBOE)) and *TEDSpread* (the difference between the 3-month London Interbank Offer Rate (LIBOR) and the 3-month Treasury rate) to control for the funding conditions of the financial institutions (Brunnermeier, Nagel, and Pedersen (2008)). Because loans are traded infrequently and information may still flow in days without any transactions for a loan, I include the monthly return of the S&P/LSTA U.S. Leveraged Loan 100 Index. Illiquidity and credit risk are positively correlated (e.g., Ericsson and Renault (2006), Chen, Lesmond, and Wei (2007), and Bao, Pan, and Wang

[15] Another proxy for the outstanding amount of a loan is the loan offering amount, which is not available in the CLO-i dataset. I need to match the CLO-i data with DealScan to get it, which will reduce the sample size substantially. Therefore, I use the total CLO holdings in the main analyses. Nevertheless, the results are robust if I replace CLO holdings with the offering amounts.

(2011)), so I include loan rating fixed effects to account for the potential impact of credit risk on loan illiquidity. I also include borrower and CLO report quarter fixed effects.

The OLS regression results are reported in Table 2. From Specifications (1) to (7), I gradually include more control variables and use different fixed effects to alleviate the concern that the potential correlations between *CLODIS* and other control variables might bias the estimation toward finding favorable results and to understand the main variations that drive the results. In Specification (7), the coefficient estimate on *CLODIS* is 0.26 and is statistically significant at the 1% level. Economically, a one standard deviation increase of *CLODIS* is associated with 0.35 increase in *LOANILLIQ*, which represents 11% of the standard deviation of *LOANILLIQ* and a 35 bp increase of the impact of a $1 million purchase order on loan price.

For the control variables, loans with longer maturities are associated with greater illiquidity, consistent with the findings in the bond market (Amihud and Mendelson (1991), Chen, Lesmond, and Wei (2007), and Bao, Pan, and Wang (2011)). Total CLO holding amount is negatively related with loan illiquidity, suggesting that smaller loans or loans with lower CLO demands are less liquid in the secondary market. Relative to term loan D, second lien and term loan C are more liquid while general term loans and term loan B tend to be less liquid. The coefficient on *VIX* is positive, suggesting that tighter funding constraints increase loan illiquidity (Bao, O'Hara, and Zhou (2018)).

4.2. Alternative Measures of CLO Disagreement and Loan Illiquidity

I also use two alternative illiquidity measures. First, I extract quoted bid and ask prices from Thompson Reuters and the Loan Syndications and Trading Association (LSTA)

and define *QuoteSpread* as the spread between the average bid and ask prices.[16] Second, I calculate an estimated bid and ask spread using daily high and low trading prices as in Corwin and Schultz (2012).[17] Corwin and Schultz (2012) suggest that the ratio of high-to-low prices for a day reflects both the fundamental volatility of the stock and its bid-ask spread given that daily high (low) prices are almost always buyer (seller) - initiated trades. Because the component of the high-to-low price ratio that is due to volatility increases proportionately with the length of the trading interval and the component due to bid-ask spreads does not, a stock's bid-ask spread is a function of the high-to-low price ratio for a single 2-day period and the high-to-low ratios for 2 consecutive single days. Precisely, I calculate *EstSpread* using the following formula:

$$EstSpread = \frac{2(e^{\alpha} - 1)}{1 + e^{\alpha}}$$

where $\alpha = \frac{\sqrt{2\beta} - \sqrt{\beta}}{3 - 2\sqrt{2}} - \sqrt{\frac{\gamma}{3 - 2\sqrt{2}}}$. $\beta = \sum_{j=0}^{1} \left[\ln\left(\frac{H_{t+j}^{O}}{L_{t+j}^{O}}\right)\right]^2$ and $\gamma = \left[\ln\left(\frac{H_{t,t+1}^{O}}{L_{t,t+1}^{O}}\right)\right]^2$. H_{t+j}^{O} (L_{t+j}^{O}) is the observed high (low) price on day $t + j$. $H_{t,t+1}^{O}$ $(L_{t,t+1}^{O})$ is the observed high (low) price over the two-day period. The *EstSpread* could be negative when γ is too high. Following Corwin and Schultz (2012), I set negative value of *EstSpread* to be zero.

In Table 3, the dependent variable in Specifications (1) and (2) is *EstSpread* and *QuoteSpread*, respectively. The coefficient estimates on *CLODIS* are both positive and are

[16] Since 1999, Thompson Reuters Loan Pricing Corporation and the LSTA have jointly formed the first secondary mark-to-market service to provide daily bid and ask quotes for widely traded syndicated loans.
[17] Schestag, Schuster, and Uhrig-Homburg (2016) find that the estimated bid and ask spread proposed by Corwin and Schultz (2012) is one of the best illiquidity measures for low-frequently traded assets.

statistically significant at the 1% level, suggesting that measuring loan illiquidity by the estimated or quoted bid and ask spread does not change the baseline results.

I also define another two CLO disagreement measures, *PriceSTD* and *PriceRange*. The former is the standard deviation divided by the mean of CLO investors' valuations on the same loan and the latter is the highest minus the lowest loan valuations. The results in Specifications (3) and (4) in Table 3 show that both *PriceSTD* and *PriceRange* are positive and are statistically significant at the 1% level, suggesting that the results are robust with alternative disagreement measures.

4.3. Information Asymmetry, CLO Disagreement, and Loan Illiquidity

The positive impact of CLO disagreement on loan illiquidity as documented in Table 2 is consistent with the conjecture that the presence of investors with diverse, private information elevates the transaction costs due to adverse selection. I shed further light on this conjecture by investigating how the impact of CLO disagreement on loan illiquidity varies with a borrower's degree of ex ante asymmetric information. The OLS regression results are reported in Table 5, Specifications (1), (2), and (3).

I construct three different proxies for a borrower's ex ante information asymmetry. *PublicDum* is a dummy variable that equals one if the borrower can be matched with Compustat and zero otherwise. *Log (TotalAssets)* is the natural logarithm value of the total assets of the borrower. *EPSSTD* is the standard deviation of analysts' forecasts on firms' EPS. It is worthwhile noting that *CLODIS* measures the information asymmetry among the privately informed investors, which is different from the above information asymmetry variables that are all public knowledge when CLO investors issue their monthly reports.

The coefficient estimates on *CLODIS*PublicDum* and *CLODIS*Log (TotalAssets)* are both negative and are statistically significant at the 1% level. The coefficient estimate on *CLODIS*EPSSTD* is positive and is statistically significant at the 1% level. The sign on *CLODIS*EPSSTD* is opposite to the other two because *EPSSTD* reflects the degree of ex ante information asymmetry in the opposite way. These findings suggest that the impact of CLO disagreement on loan illiquidity is more pronounced when firms are subject to more severe information asymmetry problems, consistent with the *adverse selection* hypothesis.

4.4. Expected Informative Trading of CLOs

Although many theoretical papers suggest that trading by informed investors impairs market liquidity, empirical studies provide mixed evidence (e.g., Cornell and Sirri (1992), Lee, Mucklow and Ready (1993), Bettis, Cole and Lemmon (2000), and Cao, Field, and Hanka (2004)). In this section, I examine how expected trading by CLO investors affects the impact of CLO disagreement on loan illiquidity.

Trading is more likely to take place if a CLO fails covenant tests or it is near the test threshold. Like covenants in bond and loan contracts, covenant tests in CLOs are used to help CLO bond investors to monitor the quality of the assets. For example, the weighted average spread (WAS) test requires a CLO to keep the WAS to be above a certain level. If the WAS is below the required level in a month, the CLO manager needs to trade in the secondary market to increase the WAS. Other frequently used covenant tests include the

weighted average rating factor (WARF) tests, the tranche A overcollateralization (OC) tests, and the tranche A interest coverage (IC) tests.[18]

Given the scarcity of loan trading, a rational CLO investor aware of the expected transaction costs due to adverse selection would buy or sell the loans that it knows well. I therefore proxy the likelihood of CLOs' informed trading by two variables that are related to the covenant tests. *FailFundRatio* is the number of CLOs that have failed any of the covenant tests divided by the total number of CLOs in a loan. *CovTestDist* is the weighted average distance between the current WAS test result and the failure threshold for a loan.[19] The weight is a CLO's holding divided by the total CLO holding amount in a loan. Specifications (4) and (5) in Table 6 show the OLS regression results.

In Specification (4), the coefficient estimate on the interaction term *CLODIS*FailFundRatio* is 0.25 and is statistically significant at the 1% level, indicating that *CLODIS* has a stronger impact on *LOANILLIQ* when more CLOs in a loan failed covenant tests in the previous month. The coefficient estimate on *CLODIS*CovTestDist* is -0.50 and is statistically significant at 1% level, suggesting that the impact of *CLODIS* on *LOANILLIQ* is more pronounced in loans where CLOs' test results are closer to the failure thresholds. These findings suggest that expected informative trading by CLO investors worsens the asymmetric information between CLOs and the dealers and increases the transaction costs.

4.5. CLO Disagreement and Strategic Trading

[18] Tranche A OC test ratio is the principal balance of tranche A securities divided by the total principal balance of the collaterals. Tranche A IC test ratio is the interest payment of tranche A securities divided by the total interest payments from the collaterals. There are also OC tests for other CLO tranches.
[19] I choose WAS test to calculate the test difference because WAS is the most frequent covenant test in the sample.

4.5.1. CLO Disagreement, Trading Frequency, and Trading Amount

The adverse selection hypothesis also suggests that the diversely informed investors will trade more frequently with a smaller amount in each transaction. In this section, I test this implication by examining how CLO disagreement affects trading frequency and trading amount. The OLS regression results are presented in Table 5.

The results in Columns (1) and (2) show that CLO disagreement increases trading frequency. And the results in Columns (3) and (4) suggest that CLO disagreement reduces the trading amount in each transaction. These results provide further supports to the adverse selection hypothesis. Because the diverse, private information represents CLOs' monopolistic power, they have incentives to trade strategically to reveal their private information to the market slowly.

4.5.2. The Persistence of the Impact of CLO Disagreement on Loan Illiquidity

The strategic trading (i.e., trading more frequently but with a smaller amount each time) of diversely informed CLOs leads to slow revelation of CLOs' private information. In this section, I extend the illiquidity measure to longer periods to investigate how fast the private information possessed by CLO investors is incorporated into loan prices.

Table 6 reports the OLS regression results. The dependent variables in Specifications (1) to (4) ((5) to (8)) are the mean (median) value of *LOANILLIQ* in the next 3, 6, 9, 12 months after the CLO report month, respectively. The coefficient estimates are all positive and are statistically significant at the 1% level. More importantly, the magnitudes reduce gradually as I extend the calculation window of the illiquidity variable. For example, the coefficient estimates on *CLODIS* from Specifications (1) to (4) decline

monotonically from 0.24 to 0.16. The impact of *CLODIS* on *LOANILLIQ* after twelve months still represents 62% (measured at mean) or 31% (measured at median) of the impact in the first month.

These findings suggest that when investors have diverse and private information about the value of an asset, the secondary market incorporates their private information slowly due to investors' strategic trading behaviors. The results also suggest that the disagreement among CLO investors does not result from their irrational believes because uninformative shocks are transitory.

5. Information Structure of the Loan Market, CLO Disagreement, and Loan Illiquidity

5.1. Information Sharing

Does information sharing reduce CLO disagreement? And how does information sharing interact with the impact of CLO disagreement on loan illiquidity? A CLO typically hires an arranger to underwrite its bonds and a trustee company to provide custodial services. Presumably, CLOs that are connected to the same arranger or trustee company are likely to flow information between each other. I construct two variables to measure the likelihood of information sharing among CLOs. *ArrangerRel* is the number of CLOs sharing the same arranger divided by the number of CLOs in a loan. *TrusteeRel* is the number of CLOs sharing the same trustee divided by the number of CLOs in a loan.

The OLS regression results are reported in Table 7 Panels A and B. In Panel A, the dependent variable is *CLODIS*. The coefficient estimates on *ArrangerRel* and *TrusteeRel* are both negative and are statistically significant at the 1% level, suggesting that sharing

the same arranger or trustee indeed reduces CLO disagreement. More importantly, the results in Panel B show that both *ArrangerRel* and *TrusteeRel* consolidate the impact of *CLODIS* on *LOANILLIQ*. These findings suggest that information sharing reduces disagreement among connected CLOs but aggravates the asymmetric information between connected CLOs and the dealers.

5.2. CLO Disagreement on Loan Value and Analyst Disagreement on Stock Value

Different from a bond or a stock, a loan is not a registered security. The information in a loan contract does not need to be released to the public. Moreover, a loan contract has a put option feature. Holding a loan is different from holding a stock and does not gain from the growth opportunities of the borrower. With these fundamental differences, loan investors may acquire materially different information than equity investors (Ivashina and Sun (2011), Goldstein and Yang (2015), and Addoum and Murfin (2019)). In this section, I examine the difference between CLO disagreement in the loan market and analyst disagreement in the stock market.

The OLS regression results are reported in Table 8 Panels A and B. In Panel A, the dependent variable is *CLODIS*. The results in Specification (1) suggest that firms with higher leverage and lower growth opportunities have higher CLO disagreement. Loans with shorter maturity and higher CLO holdings are associated with higher CLO disagreement. CLO disagreement is also higher when the loan index return is higher.

The coefficient estimates on *EPSSTD* and *Log (NumAnalyst)* in Specifications (2) to (5) are positive but are not statistically significant. Moreover, the dependent variable in Panel B is *LOANILLIQ*, and the coefficient estimates show that neither *EPSSTD* nor *Log*

(NumAnalyst) has a statistically significant impact on loan illiquidity. These results are consistent with the conjecture that information production in a loan is different from that in a stock for the same firm. That is, loan investors and stock investors may focus on different types of information due to specialization.

5.3. Other Informed Players in the Loan Market

5.3.1. Information from Rating Agency

In the monthly CLO reports, each loan is rated by at least one of the three biggest rating agencies: Moody's, Standard & Poor's, and Fitch. It is not uncommon that different CLOs in the same loan acquire ratings from different agencies and that the rating agencies assign different ratings to that loan. In this section, I run a horse race between CLO disagreement and disagreement among rating agencies and investigate whether rating agencies hold similar or different information as CLO investors.

The OLS regression results are reported in Table 9. In Specifications (1) and (3), I add *RatingSTD* and *DiffRate* into the regressions, respectively. The former is the standard deviation of the ratings across different CLO reports for a loan. The latter is a dummy variable that equals one if at least two CLO reports have different ratings for the same loan and zero otherwise. In both regressions, the coefficient estimates on *CLODIS* are almost identical to that in the baseline regression, suggesting that controlling for rating disagreement does not change the impact of *CLODIS* on *LOANILLIQ*.[20] Besides, in Specifications (2) and (4), both interaction terms are negative and are statistically

[20] The negative sign on *RatingSTD* is likely due to the positive correlation between *RatingSTD* and *CLODIS*.

significant at the 1% level, suggesting that rating disagreement attenuates the positive impact of *CLODIS* on *LOANILLIQ*.

5.3.2. Dealer's Private Information over the Course of a Lending Relationship

When dealers also know the loan, the adverse selection due to CLO investors' diverse, private information becomes a lesser concern. Therefore, I conjecture that the impact of CLO disagreement on loan illiquidity is weaker if dealers in the secondary loan market also possess private information.

Because most of the primary market lenders reported in DealScan are banks and typically will become dealers in the secondary loan market, I measure dealers' private information by the lending relationship between the syndicate lenders of a loan and the borrower ((Acharya and Johnson (2007) and Zhang, Zhang, and Zhao (2020)).[21] Particularly, I define three different but related variables. *RelationDum* is a dummy variable that equals one if any of the lenders (mostly banks) have lent to the borrower in the past five years before the current loan and zero otherwise. *RelationNum* (*RelationAmt*) is the number (amount) of loans from a lender divided by the total number (amount) of loans issued by the borrower in the past five years. The greatest value is chosen when there are multiple lenders in a loan syndicate.

The OLS regression results are reported in Table 10 Panels A, B, and C. In Panel A, the dependent variable is *LOANILLIQ*. In Specifications (1), (2), and (3), the interaction terms between *CLODIS* and the three relationship variables are all negative and are

[21] Due to tax reasons, CLOs rarely purchase syndicated loans from the primary market. Instead, they get their loan shares via primary assignments in which the lead arranger of the loan will hold the loan on its book for some short period after the loan closes and then sell it to these CLOs at a pre-determined price (S&P (2006)).

statistically significant at the 1% level. In Panels B and C where the dependent variables are trading frequency and turnover, respectively, the coefficient estimates on the interaction terms show that the presence of lending relationship attenuates the impact of CLO disagreement on trading frequency and turnover.

As explained in the Introduction, CLOs, rating agencies, and potential dealers likely possess different and complementary information about the value of a loan. The information known by non-CLO institutions reduces the monopolistic power of diversely informed CLO investors, which reduces the adverse selection problems in the secondary loan market.

6. Robustness Test Results and the Endogeneity Issues

6.1. Robustness Tests

I execute a rich set of tests to diagnose the robustness of the baseline findings. Table 11 reports the OLS regression results. In Specification (1), I cluster the standard errors at firm level rather than CLO report month level. In Specification (2), I exclude 609 observations that are during the financial crisis period (from July 2007 to April 2009). The results are similar as in the baseline regressions. The results are also similar if I add the lead lender fixed effects in Specification (3) to further account for dealers' inventory costs or funding constraints.

Lou and Shu (2017) find that the pricing of the Amihud illiquidity measure is not attributable to the return-to-volume ratio that is constructed to capture price impact but is driven by the trading volume component. I follow Lou and Shu (2017) and construct a

return component of the Amihud illiquidity measure as the monthly average absolute loan returns. The coefficient estimate on *CLODIS* in Specification (4) means that a one standard deviation increase of *CLODIS* increases the absolute loan return by 41 bp. This implies that the impact of *CLODIS* on *LOANILLIQ* is driven by the change of both the volume and return.

In Specifications (5) and (6), I add trades smaller than $100,000 and loans of which the prices are subject to potential CLO manipulations into the sample, respectively. The results are robust.

Another potential concern of the baseline results is the omitted firm characteristics.[22] Although I have included firm fixed effects to account for the impact of time-invariant firm characteristics on loan illiquidity, it is still possible that time-varying firm-level variables may drive the results. In Specification (7), I control for firm-year fixed effects. The coefficient estimate on *CLODIS* is still positive and is statistically significant at the 1% level. Specification (8) adds *Log (TotalAssets)*, *Leverage*, and *TobinQ* in the regression and produces robust results.

6.2. Addressing the Endogeneity Issues and Identifying the Information Channel

The reverse causality may not be a critical concern for the paper. Even if a market is illiquid, it can still be informationally efficient (Kyle (1985)). Also, a CLO manager's access to the pricing services companies does not depend on the illiquidity of a loan. Moreover, the disagreement here is mainly driven by CLOs' private signals. When the market is illiquid, investor monitoring becomes difficult. CLOs' incentive to produce

[22] Approximately 70% of the loans in the sample are borrowed by private firms that do not have financial information in Compustat, so I do not control for firm characteristics in the baseline regressions.

private information is reduced, which leads to a lower CLO disagreement (e.g., Holmstrom and Tirole (1993)). This predicts a negative correlation between illiquidity and CLO disagreement, which is opposite to the findings in this paper.

For the omitted variable bias, recall that the results are robust when the loan fixed effects and year-month fixed effects are controlled for in Table 2 Specification (6). The results are also robust when a two-way firm and year fixed effects and when additional firm characteristics are included in Table 12 Specifications (6) and (7), respectively.

Nevertheless, to address the potential endogeneity issues, I follow the idea of Hale and Santos (2009), Schenone (2010), and Ferreira and Matos (2012) and use a firm's IPO to identify the desired variation driven by information asymmetry.[23] Specifically, I create an instrumental variable (IV), *IPOIV*, that equals one if the CLO reports of a loan are issued between six months before and six months after the IPO date of the borrower and zero otherwise. Bernstein (2015) suggests that a firm's IPO leads to two main changes. One is the reduced information asymmetry due to a significant amount of information released during and after the IPO. The other is the dispersed ownership structure. Although ownership structure does not play an important role in affecting loan illiquidity, illiquidity can be affected by asset credit risk and a dealer's inventory, searching, and order processing costs (e.g., George, Kaul, and Nimalendran (1991), Huang and Stoll (1997), Duffie, Garleanu, and Pedersen (2005), and Collin-Dufresne and Fos (2015)).

[23] Hale and Santos (2009) use a firm's bond IPO as a laboratory to study how bank's information monopoly affects loan interest rates and rely on the implicit assumption that bond IPO is exogenous to loan pricing. Schenone (2010) uses IPO as an identification strategy for information releasing and studies how lending relationship affects information rents charged by the relationship banks. Ferreira and Matos (2012) uses banks' public listings as an instrumental variable for bank-firm governance links.

It is worthwhile to note that an individual firm's public listing is unlikely to directly affect dealers' inventory, order processing, and clearing costs because such costs are mainly determined by dealers' own capital conditions, funding constraints, and trading technologies. Credit risk of a firm can be changed after its IPO due to changes that could be unrelated with information asymmetry, so I control for loan ratings in my identification strategies. I also include variables related to dealer funding constraints and lead lender fixed effects to further account for dealer's inventory and order processing costs.[24]

Also, a dealer's or a trader's searching and bargaining can be directly affected by a firm's public status through the channel of investor attention. After IPO, more investors can become knowing the firm and are willing to hold the firm's loans. This will reduce the searching costs of a dealer when she wants to find a counterparty to complete a transaction. However, this is not the case in the loan market because the validation results in Table 13 Panel A show that neither the number nor the total holding of CLOs changes significantly after a firm's IPO.

The two-stage least square regression results are reported in Table 13 Panel B. Specifications (1) and (2) use the full sample. Specifications (3) and (4) include lead lender fixed effects to better control for dealer heterogeneities. Specifications (5) and (6) use a more restrictive sample that excludes control observations (*IPOIV* = 0) where a firm is private. In all the Specifications, *IPOIV* is negatively and significantly related with *CLODIS*, suggesting that the relevance condition for *IPOIV* to be a valid IV is satisfied. And the instrumented CLO disagreement still has a positive and statistically significant

[24] Lead lender in a loan syndicate is often the main dealer in the secondary market of the loan. The lead lender of a loan also encourages investors to trade with her not other dealers by waiving the assignment fee, which can amount to between 7 bp to 35 bp of a $1 million to $5 million trade (S&P (2016)).

impact on loan illiquidity, suggesting that the results are robust after addressing the potential reverse causality and omitted variable biases.

7. Conclusions

In this paper I exploit a new dataset that contains granular information on CLOs' divergent opinions on loan value and real transaction information for a large sample of securitized loans. I study how CLO disagreement affect loan illiquidity and how the impact varies with the information structure of the secondary loan market.

I find that CLO disagreement increases the uncertainty of dealers about the private signals in the market and gives rise to the adverse selection concern of the dealers. Diversely informed CLOs trade strategically by increasing trading frequency and reducing trading amount per transaction, which increases loan illiquidity and leads to slow revelation of CLOs private information to the market.

Information sharing among CLO investors reduces CLO disagreement but worsens the adverse selection concern of the dealers because the dealers are not in the sharing group. When the dealers also possess information about the traded loan, the adverse selection concern is alleviated.

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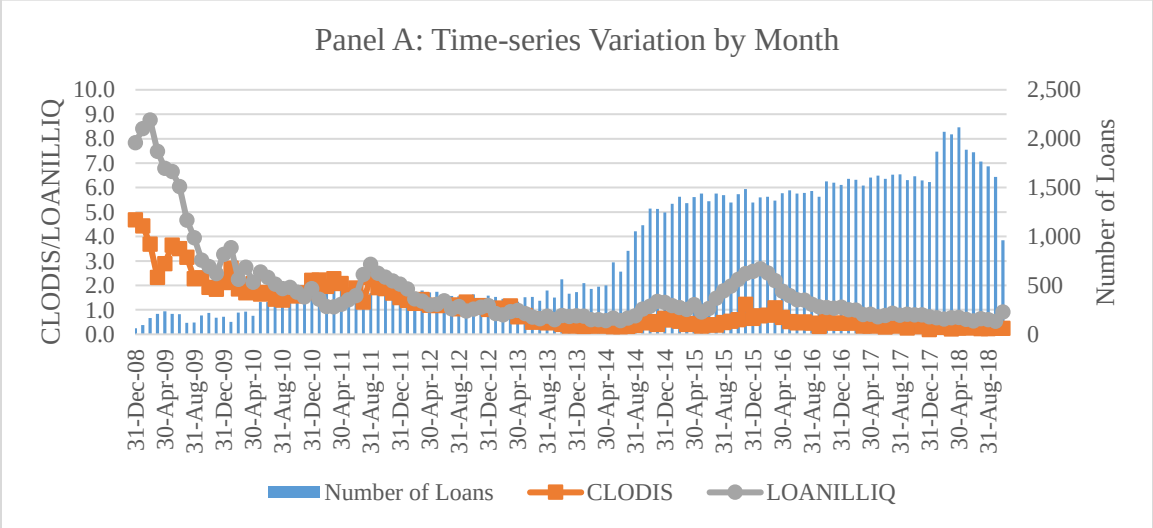
Figure 1. Variations of CLO Disagreement and Loan Illiquidity

This figure shows variations of *CLODIS* and *LOANILLIQ* across time and ratings. The sample is from December 2008 to October 2018. *CLODIS* is the standard deviation of CLO investors' valuations on a loan and multiplied by 100. *LOANILLIQ* equals $\frac{1}{N_t} * \sum_{j=1}^{N_t} \frac{1}{Q_j} \frac{|P_j - P_{j-1}|}{P_{j-1}} * 100$ where N_t is the number of returns in month t, P_j is the average trading price on day j, and Q_j is the dollar trading amount in millions on day j. Panels A and B show the variations by month and ratings, respectively.



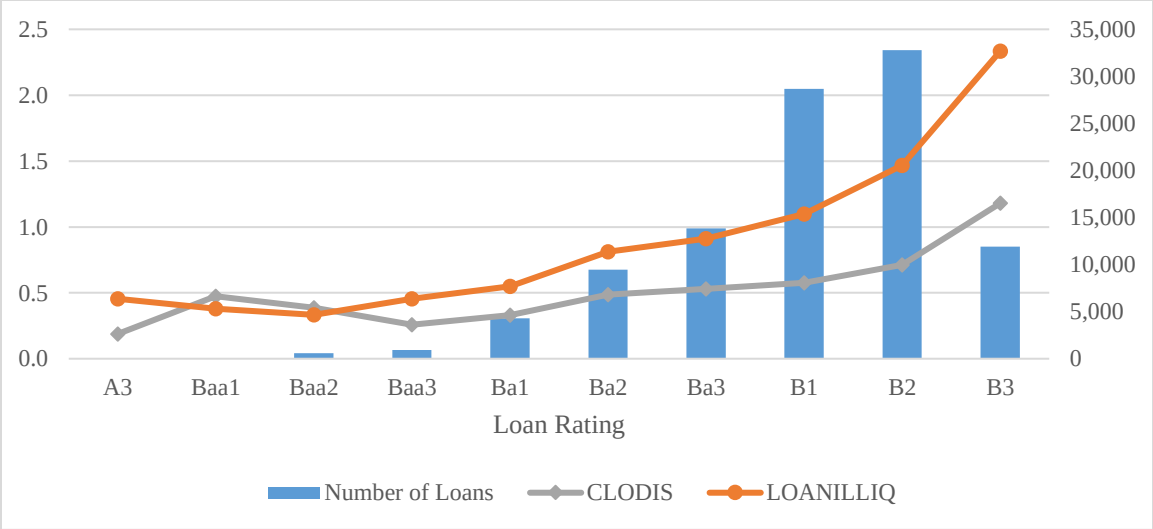


Table 1. Summary Statistics

This table shows the summary statistics for the sample in this paper. All the continuous variables are winsorized at the 1st and 99th percentiles. The number of observations varies due to missing values. Please see Appendix A for variable definitions.

	N	Mean	STD	P25	Median	P75
CLODIS	102,527	0.661	1.333	0.144	0.241	0.507
PriceDispersion	102,527	0.719	1.537	0.144	0.242	0.521
PriceRange (% of Par)	102,527	1.841	3.593	0.417	0.719	1.491
LOANILLIQ	102,527	1.275	3.126	0.129	0.342	0.938
EstSpread	30,698	0.151	0.675	0.000	0.000	0.000
QuoteSpread	60,911	0.785	0.582	0.477	0.602	0.873
Turnover (%)	93,298	25.890	57.860	3.554	8.669	21.770
ZeroTradeDayPortion (%)	102,527	86.820	11.280	81.820	90.910	95.450
NumTrade	102,527	8.394	13.730	1.000	3.000	9.000
Log (NumTrade)	102,527	1.369	1.161	0.000	1.099	2.197
TradeAmt ($Thousand)	102,527	1,175.000	797.600	601.400	1,000.000	1,500.000
Log (TradeAmt)	102,527	6.847	0.692	6.399	6.908	7.313
LargeTradePortion (%)	102,527	45.587	38.259	0.000	41.667	83.333
MonthtoMature	102,527	59.100	18.070	46.630	60.900	74.070
Log (1+MonthtoMature)	102,527	4.038	0.366	3.864	4.126	4.318
TotalCLOHolding ($Million)	102,527	68.630	91.140	14.560	34.650	82.720
Log (TotalCLOHolding)	102,527	3.554	1.191	2.678	3.545	4.415
SecondLienDum	102,527	0.025	0.155	0.000	0.000	0.000
TermLoanDum	102,527	0.506	0.500	0.000	1.000	1.000
TermLoanBDum	102,527	0.444	0.497	0.000	0.000	1.000
TermLoanCDum	102,527	0.020	0.141	0.000	0.000	0.000
TermLoanDDum	102,527	0.004	0.065	0.000	0.000	0.000
VIX	102,527	15.930	5.014	12.550	14.340	18.060
TEDSpread (%)	102,527	0.323	0.115	0.226	0.294	0.398
LoanIndexReturn (%)	102,527	0.396	0.960	-0.057	0.338	0.721
PublicDum	102,527	0.317	0.465	0.000	0.000	1.000
RatingSTD	102,527	0.315	0.357	0.000	0.288	0.516
DiffRate	102,527	0.536	0.499	0.000	1.000	1.000
RelationDum (Decimal)	77,431	0.800	0.400	1.000	1.000	1.000
RelationNum (Decimal)	77,431	0.641	0.388	0.333	0.750	1.000
RelationAmt (Decimal)	77,431	0.672	0.393	0.395	0.868	1.000
TrusteeRel (Decimal)	102,527	0.696	0.191	0.556	0.667	0.833
ArrangerRel (Decimal)	102,527	0.421	0.134	0.333	0.400	0.500
FailFundRatio (Decimal)	102,527	0.548	0.301	0.289	0.500	0.833
CovTestDist (Decimal)	102,527	0.195	0.187	0.046	0.142	0.264
TotalAsset ($Million)	31,466	8,569.000	12,022.000	1,651.000	3,895.000	9,189.000
Log (TotalAsset)	31,466	8.302	1.245	7.409	8.268	9.126
Leverage	30,215	0.629	0.366	0.406	0.563	0.752
TobinQ	24,643	1.891	1.208	1.192	1.561	2.154
EPSSTD	16,269	0.262	0.554	0.039	0.099	0.250
NumAnalyst	20,257	6.280	5.993	2.000	4.000	9.000
Log (NumAnalyst)	20,257	1.403	0.962	0.693	1.386	2.197

Table 2. CLO Disagreement and Loan Illiquidity

This table shows the OLS regression results of the impact of CLO disagreement on loan illiquidity. The dependent variable is *LOANILLIQ*, which equals $\frac{1}{N_t} * \sum_{j=1}^{N_t} \frac{1}{Q_j} \frac{|P_j - P_{j-1}|}{P_{j-1}} * 100$ where N_t is the number of returns in month t, P_j is the average trading price on day j, and Q_j is the dollar trading amount in millions on day j. *CLODIS* is the standard deviation of CLO investors' valuations on a loan and multiplied by 100. The dependent variable is measured in month t. Time-varying independent variables are calculated in month $t-1$. Loan types include second lien, term loan, term loan B, term loan C, and term loan D. Term loan D is the base group and omitted in the regressions. Please see Appendix A for variable definitions. Standard errors are clustered at report month level. T-statistics are reported in the parentheses. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

	LOANILLIQ						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
CLODIS	0.251***	0.263***	0.258***	0.384***	0.257***	0.215***	0.258***
	(8.273)	(8.852)	(8.629)	(9.886)	(8.418)	(6.011)	(8.584)
Log (1+MonthtoMature)		0.190***	0.160***	-0.024	0.159***	1.486***	0.160***
		(5.770)	(4.996)	(-0.710)	(4.907)	(6.884)	(4.970)
Log (TotalCLOHolding)		-0.218***	-0.178***	-0.272***	-0.182***	-0.074***	-0.179***
		(-13.819)	(-13.146)	(-14.944)	(-13.082)	(-4.486)	(-13.178)
SecondLienDum			0.772***	0.416***	0.760***		0.772***
			(5.354)	(3.136)	(5.251)		(5.351)
TermLoanDum			-0.117	-0.080	-0.122		-0.116
			(-0.884)	(-0.803)	(-0.920)		(-0.875)
TermLoanBDum			-0.127	-0.131	-0.130		-0.125
			(-0.971)	(-1.356)	(-0.995)		(-0.961)
TermLoanCDum			0.831***	0.777***	0.826***		0.831***
			(5.351)	(4.808)	(5.326)		(5.350)
VIX				0.018***			0.018***
				(3.331)			(2.834)
TEDSpread				0.331			0.246
				(1.459)			(1.046)
LoanIndexReturn				0.012			0.012
				(0.558)			(0.517)
Constant	6.110***	5.501***	5.715***	4.512***	5.737***	-1.200	4.927***
	(30.596)	(27.171)	(22.168)	(11.328)	(21.628)	(-0.929)	(15.808)
Observations	102,527	102,527	102,527	101,438	102,527	102,527	102,527
Rating FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	No	Yes	No	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	No	No	Yes
Industry FE	No	No	No	Yes	No	No	No
Loan FE	No	No	No	No	No	Yes	No
Year-Month FE	No	No	No	No	Yes	Yes	No
Adjusted R-Squared	0.289	0.292	0.295	0.154	0.296	0.373	0.295

Table 3. Alternative Definitions of CLO Disagreement and Loan Illiquidity

This table shows the OLS regression results of the impact of CLO disagreement on loan illiquidity using alternative measures. In Specifications (1) and (2), the dependent variable is the estimated and quoted bid-ask spread, respectively. I estimate bid-ask spread from daily high and low transaction prices following Corwin and Schultz (2012). Please see Appendix A for detailed definition of this variable. The quoted bid-ask spread comes from Thompson Reuters and the LSTA. In Specifications (3) and (4), the dependent variable is *LOANILLIQ*, which equals $\frac{1}{N_t} * \sum_{j=1}^{N_t} \frac{1}{Q_j} \frac{|P_j - P_{j-1}|}{P_{j-1}} * 100$ where N_t is the number of returns in month t, P_j is the average price on day j, and Q_j is the trading amount in millions on day j. *PriceDispersion* is the standard deviation divided by the mean of CLO investors' valuations on a loan and multiplied by 100. *PriceRange* is the difference between the highest and the lowest loan valuations. *CLODIS* is the standard deviation of CLO investors' valuations on a loan and multiplied by 100. The dependent variables are measured in month t. Time-varying independent variables are calculated in month $t-1$. Loan types include second lien, term loan, term loan B, term loan C, and term loan D. Term loan D is the base group and omitted in the regressions. Please see Appendix A for variable definitions. Standard errors are clustered at report month level. T-statistics are reported in the parentheses. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

	EstSpread	*QuoteSpread*	*LOANILLIQ*	
	(1)	(2)	(3)	(4)
CLODIS	0.020***	0.087***		
	(3.369)	(8.774)		
PriceDispersion			0.269***	
			(9.443)	
PriceRange				0.090***
				(8.196)
Log (1+MonthtoMature)	-0.071***	-0.014	0.173***	0.148***
	(-4.963)	(-1.403)	(5.286)	(4.572)
Log (TotalCLOHolding)	-0.019***	-0.010***	-0.182***	-0.204***
	(-3.897)	(-4.856)	(-13.125)	(-13.870)
SecondLienDum	0.273***	0.357***	0.755***	0.785***
	(3.508)	(12.962)	(5.207)	(5.427)
TermLoanDum	0.361***	0.002	-0.122	-0.108
	(5.471)	(0.109)	(-0.926)	(-0.814)
TermLoanBDum	0.362***	0.005	-0.134	-0.116
	(5.443)	(0.280)	(-1.023)	(-0.886)
TermLoanCDum	0.233***	0.014	0.820***	0.833***
	(3.452)	(0.737)	(5.302)	(5.345)
VIX	0.001	0.004	0.017***	0.019***
	(0.318)	(1.342)	(2.816)	(2.942)
TEDSpread	0.214*	0.020	0.247	0.241
	(1.755)	(0.229)	(1.062)	(1.007)
LoanIndexReturn	0.013*	-0.027***	0.010	0.013
	(1.729)	(-2.764)	(0.443)	(0.561)
Constant	0.374**	2.497***	4.442***	5.259***
	(2.500)	(15.559)	(13.534)	(17.541)
Observations	30,698	60,911	102,527	102,527
Rating FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes
Adjusted R-Squared	0.073	0.614	0.298	0.295

Table 4. Information Asymmetry on Loan Issuers, Expected Informed Trading, and Loan Illiquidity

This table shows the OLS regression results of how ex ante information asymmetry about the issuer of a loan and expected informed trading affect the impact of CLO disagreement on loan illiquidity. The dependent variable is *LOANILLIQ*, which equals $\frac{1}{N_t} * \sum_{j=1}^{N_t} \frac{1}{Q_j} \frac{|P_j - P_{j-1}|}{P_{j-1}} * 100$ where N_t is the number of returns in month t, P_j is the average trading price on day j, and Q_j is the dollar trading amount in millions on day j. *CLODIS* is the standard deviation of CLO investors' valuations on a loan and multiplied by 100. Information asymmetry is represented by *PublicDum*, *Log (TotalAssets)*, and *EPSSTD* in Specifications (1), (2), and (3), respectively. *PublicDum* is a dummy variable that equals one if the issuer can be matched with Compustat and zero otherwise. *Log (TotalAssets)* is the natural logarithm value of the total assets. *EPSSTD* is the standard deviation of analysts' EPS forecasts on issuers' stocks. In Specifications (4) and (5), I use *FailFundRatio* and *CovTestDist* to measure the likelihood of CLOs' informed trading. *FailFundRatio* is the number of CLOs that failed covenant tests divided by the number of CLOs in a loan. *CovTestDist* is the weighted average distance between the test result and the failure threshold. The weight is each CLO's holding amount divided by the total CLO holding amount in a loan. Loan types include second lien, term loan, term loan B, term loan C, and term loan D. Term loan D is the base group and omitted in the regressions. Please see Appendix A for variable definitions. Standard errors are clustered at report month level. T-statistics are reported in the parentheses. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

	LOANILLIQ				
	Information Asymmetry			Informative Trading	
	(1)	(2)	(3)	(4)	(5)
CLODIS	0.330***	0.687***	0.171***	0.084*	0.392***
	(8.996)	(4.996)	(4.294)	(1.741)	(9.391)
PublicDum	-0.040				
	(-0.716)				
*CLODIS*PublicDum*	-0.174***				
	(-5.334)				
Log (TotalAssets)		-0.014			
		(-0.209)			
*CLODIS*Log (TotalAssets)*		-0.057***			
		(-3.648)			
EPSSTD			-0.125		
			(-1.641)		
*CLODIS*EPSSTD*			0.292***		
			(4.618)		
FailFundRatio				-0.189**	
				(-2.240)	
*CLODIS*FailFundRatio*				0.253***	
				(3.092)	
CovTestDist					0.190
					(1.631)
*CLODIS*CovTestDist*					-0.496***
					(-5.579)
Log (1+MonthtoMature)	0.152***	0.266***	0.351***	0.153***	0.139***
	(4.778)	(4.888)	(5.321)	(4.742)	(4.427)
Log (TotalCLOHoldings)	-0.179***	-0.211***	-0.201***	-0.179***	-0.175***
	(-13.095)	(-12.058)	(-9.151)	(-13.412)	(-13.041)
SecondLienDum	0.756***	1.058***	1.346***	0.760***	0.783***
	(5.215)	(3.575)	(3.473)	(5.270)	(5.384)
TermLoanDum	-0.099	0.102	0.263	-0.132	-0.125
	(-0.747)	(0.570)	(1.115)	(-0.996)	(-0.934)
TermLoanBDum	-0.108	0.073	0.139	-0.144	-0.135
	(-0.825)	(0.390)	(0.564)	(-1.096)	(-1.024)
TermLoanCDum	0.848***	0.340*	0.435*	0.816***	0.844***
	(5.428)	(1.799)	(1.847)	(5.252)	(5.380)
VIX	0.018***	0.008	0.007	0.017***	0.020***
	(2.868)	(1.218)	(0.897)	(2.737)	(3.066)
TEDSpread	0.242	0.497	0.558	0.254	0.236
	(1.032)	(1.558)	(1.552)	(1.035)	(1.006)
LoanIndexReturn	0.012	1.091	-0.682	0.012	0.011
	(0.532)	(0.493)	(-0.247)	(0.522)	(0.485)
Constant	5.018***	3.968***	7.268***	5.078***	4.746***
	(16.533)	(3.406)	(6.919)	(17.228)	(14.852)
Observations	102,527	28,147	14,677	102,527	102,527
Rating FE	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes
Adjusted R-Squared	0.296	0.308	0.321	0.296	0.296

Table 5. CLO Disagreement and Strategic Trading

This table shows the OLS regression results of the impact of CLO disagreement on trading frequency and trading amount. The dependent variables are *ZeroTradeDayPortion, Log (NumTrade),* and *Turnover*. *ZeroTradeDayPortion* is the number of zero trading days divided by 22. *Log (NumTrade)* is the natural logarithm value of the number of trades. *Log (TradeAmt)* is the natural logarithm value of the trading amount. *LargeTradePortion* is the number of trades greater or equal to $1 million divided by the total number of trades. *CLODIS* is the standard deviation of CLO investors' valuations on a loan and multiplied by 100. The dependent variables are measured in month t. Time-varying independent variables are calculated in month $t-1$. Loan types include second lien, term loan, term loan B, term loan C, and term loan D. Term loan D is the base group and omitted in the regressions. Please see Appendix A for variable definitions. Standard errors are clustered at report month level. T-statistics are reported in the parentheses. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

	ZeroTradeDayPortion	*Log (NumTrade)*	*Log (TradeAmt)*	*LargeTradePortion*
	(1)	(2)	(3)	(4)
CLODIS	-0.155***	0.013***	-0.017***	-0.802***
	(-4.922)	(3.776)	(-6.818)	(-6.925)
Log (1+MonthtoMature)	0.473**	-0.067***	-0.099***	-3.881***
	(2.446)	(-3.549)	(-9.128)	(-7.968)
Log (TotalCLOHoldings)	-1.703***	0.191***	0.026***	0.035
	(-20.378)	(26.939)	(8.824)	(0.214)
SecondLienDum	-4.197***	0.355***	-0.257***	-12.489***
	(-5.771)	(5.292)	(-5.970)	(-5.107)
TermLoanDum	-9.249***	0.762***	0.044	-3.903*
	(-13.870)	(13.733)	(1.185)	(-1.709)
TermLoanBDum	-8.758***	0.699***	0.056	-2.541
	(-12.923)	(12.612)	(1.510)	(-1.125)
TermLoanCDum	-4.105***	0.237***	-0.254***	-9.650***
	(-6.304)	(4.480)	(-5.577)	(-3.603)
VIX	-0.026	0.000	0.000	-0.103
	(-0.423)	(0.089)	(0.055)	(-0.936)
TEDSpread	-0.243	-0.062	0.011	8.342
	(-0.065)	(-0.182)	(0.099)	(1.415)
LoanIndexReturn	-0.116	0.008	0.001	-0.046
	(-0.919)	(0.798)	(0.241)	(-0.187)
Constant	103.712***	-0.107	7.270***	42.669***
	(28.916)	(-0.387)	(55.303)	(5.989)
Observations	102,527	102,527	102,527	102,527
Rating FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes
Adjusted R-Squared	0.378	0.282	0.178	0.132

Table 6. The Persistence of the Impact of CLO Disagreement on Loan Illiquidity

This table shows the OLS regression results on the persistent impact of CLO disagreements on loan illiquidity. In Specifications (1), (2), (3), and (4) ((5), (6), (7), and (8)), the dependent variable is the mean (median) value of *LOANILLIQ* from month t to month $t+2$, $t+5$, $t+8$, and $t+11$, respectively. *LOANILLIQ* equals $\frac{1}{N_t} * \sum_{j=1}^{N_t} \frac{1}{Q_j} \frac{|P_j - P_{j-1}|}{P_{j-1}} * 100$ where N_t is the number of returns in month t, P_j is the average trading price on day j, and Q_j is the dollar trading amount in millions on day j. *CLODIS* is the standard deviation of CLO investors' valuations on a loan and multiplied by 100. Time-varying independent variables are calculated in month $t-1$. Loan types include second lien, term loan, term loan B, term loan C, and term loan D. Term loan D is the base group and omitted in the regressions. Please see Appendix A for variable definitions. Standard errors are clustered at report month level. T-statistics are reported in the parentheses. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

	LOANILLIQ Mean				*LOANILLIQ* Median			
	3 Month	6 Month	9 Month	12 Month	3 Month	6 Month	9 Month	12 Month
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CLODIS	0.242***	0.220***	0.184***	0.160***	0.213***	0.159***	0.111***	0.083***
	(8.678)	(8.708)	(8.443)	(8.391)	(8.502)	(8.344)	(8.053)	(8.348)
Log (1+MonthtoMature)	0.128***	0.112***	0.098***	0.086***	0.142***	0.117***	0.076***	0.044***
	(4.500)	(4.511)	(4.389)	(4.004)	(4.628)	(5.061)	(5.106)	(4.117)
Log (TotalCLOHolding)	-0.177***	-0.161***	-0.144***	-0.136***	-0.183***	-0.143***	-0.114***	-0.097***
	(-12.309)	(-12.071)	(-12.311)	(-12.996)	(-13.121)	(-13.047)	(-14.763)	(-16.596)
SecondLienDum	0.868***	0.993***	0.992***	1.057***	0.781***	0.768***	0.654***	0.620***
	(6.732)	(10.247)	(10.079)	(11.690)	(6.272)	(8.364)	(8.653)	(9.307)
TermLoanDum	-0.013	0.086	0.096	0.134	-0.130	-0.050	-0.075	-0.086*
	(-0.108)	(0.954)	(1.048)	(1.607)	(-1.115)	(-0.684)	(-1.313)	(-1.693)
TermLoanBDum	-0.044	0.042	0.044	0.069	-0.136	-0.040	-0.057	-0.078
	(-0.364)	(0.460)	(0.471)	(0.815)	(-1.173)	(-0.541)	(-0.989)	(-1.497)
TermLoanCDum	0.818***	0.920***	0.972***	1.052***	0.711***	0.697***	0.545***	0.517***
	(6.145)	(9.534)	(10.188)	(12.509)	(5.658)	(8.188)	(7.996)	(9.149)
VIX	0.019***	0.017**	0.008	0.002	0.017***	0.013**	0.005*	0.002
	(2.691)	(2.290)	(1.573)	(0.385)	(2.619)	(2.367)	(1.841)	(0.763)
TEDSpread	-0.153	-0.054	0.101	0.094	-0.198	-0.131	-0.078	-0.081
	(-0.632)	(-0.273)	(0.608)	(0.629)	(-0.814)	(-0.762)	(-0.557)	(-0.674)
LoanIndexReturn	0.002	-0.000	-0.016	-0.012	0.006	0.001	-0.005	-0.007
	(0.089)	(-0.016)	(-0.849)	(-0.801)	(0.281)	(0.102)	(-0.459)	(-1.008)
Constant	5.084***	4.636***	4.290***	3.878***	4.687***	3.635***	2.842***	2.065***
	(15.106)	(14.611)	(17.370)	(17.643)	(14.438)	(14.316)	(16.741)	(15.647)
Observations	102,527	102,527	102,527	102,527	102,527	102,527	102,527	102,527
Rating FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-Squared	0.330	0.384	0.437	0.488	0.328	0.378	0.429	0.470

Table 7. Information Sharing, CLO Disagreement, and Loan Illiquidity

This table shows the OLS regression results on the impact of potential information sharing among CLOs on CLO disagreement and loan illiquidity. The dependent variable in Panel A is *CLODIS*, the standard deviation of CLOs' valuations on a loan and multiplied by 100. The dependent variable in Panel B is *LOANILLIQ*, which equals $\frac{1}{N_t} * \sum_{j=1}^{N_t} \frac{1}{Q_j} \frac{|P_j - P_{j-1}|}{P_{j-1}} * 100$ where N_t is the number of returns in month t, P_j is the average trading price on day j, and Q_j is the dollar trading amount in millions on day j. *ArrangerRel* is the number of CLOs sharing the same bond issuance arranger divided by the number of CLOs in a loan. *TrusteeRel* is the number of CLOs sharing the same trustee divided by the number of CLOs in a loan. Loan types include second lien, term loan, term loan B, term loan C, and term loan D. Term loan D is the base group and omitted in the regressions. Please see Appendix A for variable definitions. Standard errors are clustered at report month level. T-statistics are reported in the parentheses. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

Panel A: Information Sharing and CLO Disagreement

	CLODIS		
	(1)	(2)	(3)
ArrangerRel	-0.378***		-0.346***
	(-6.392)		(-6.003)
TrusteeRel		-0.180***	-0.141***
		(-4.658)	(-3.776)
Log (1+MonthtoMature)	-0.458***	-0.460***	-0.455***
	(-8.489)	(-8.388)	(-8.369)
Log (TotalCLOHoldings)	0.052***	0.054***	0.049***
	(5.390)	(5.507)	(5.157)
SecondLienDum	0.353***	0.336***	0.340***
	(3.655)	(3.492)	(3.493)
TermLoanDum	0.025	0.021	0.022
	(0.382)	(0.323)	(0.337)
TermLoanBDum	0.060	0.061	0.061
	(0.883)	(0.907)	(0.902)
TermLoanCDum	0.126*	0.125*	0.121*
	(1.794)	(1.785)	(1.732)
VIX	0.007	0.007	0.008
	(1.034)	(0.987)	(1.043)
TEDSpread	-0.313	-0.290	-0.314
	(-1.451)	(-1.366)	(-1.455)
LoanIndexReturn	0.040**	0.040**	0.041**
	(2.307)	(2.295)	(2.347)
Constant	6.453***	6.307***	6.486***
	(17.078)	(17.009)	(17.152)
Observations	102,527	102,527	102,527
Rating FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes
Adjusted R-Squared	0.384	0.383	0.384

Panel B: Information Sharing, CLO Disagreement, and Loan Illiquidity

	LOANILLIQ		
	(1)	(2)	(3)
CLODIS	0.069*	0.088*	-0.010
	(1.911)	(1.708)	(-0.211)
ArrangerRel	0.208***		0.209**
	(2.631)		(2.564)
*CLODIS*ArrangerRel*	0.479***		0.405***
	(5.946)		(4.617)
TrusteeRel		0.060	0.060
		(1.063)	(1.012)
*CLODIS*TrusteeRel*		0.269***	0.172**
		(4.165)	(2.433)
Log (1+MonthtoMature)	0.151***	0.157***	0.149***
	(4.666)	(4.859)	(4.613)
Log (TotalCLOHoldings)	-0.169***	-0.172***	-0.165***
	(-13.314)	(-13.196)	(-13.284)
SecondLienDum	0.761***	0.804***	0.785***
	(5.243)	(5.503)	(5.363)
TermLoanDum	-0.131	-0.109	-0.125
	(-0.988)	(-0.821)	(-0.931)
TermLoanBDum	-0.143	-0.124	-0.139
	(-1.089)	(-0.940)	(-1.055)
TermLoanCDum	0.823***	0.854***	0.841***
	(5.265)	(5.436)	(5.329)
VIX	0.017***	0.018***	0.017***
	(2.699)	(2.794)	(2.683)
TEDSpread	0.273	0.245	0.271
	(1.197)	(1.047)	(1.187)
LoanIndexReturn	0.009	0.010	0.008
	(0.402)	(0.459)	(0.373)
Constant	4.576***	4.952***	4.618***
	(14.051)	(15.674)	(13.879)
Observations	102,527	102,527	102,527
Rating FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes
Adjusted R-Squared	0.296	0.296	0.296

Table 8. Disagreement on Loan Values vs. Disagreement on Earnings

This table shows the OLS regression results that compare CLO disagreement on loan values with analyst disagreement on stock. The dependent variable in Panel A is *CLODIS*, which is the standard deviation of CLO investors' valuations on a loan and multiplied by 100. The dependent variable in Panel B is *LOANILLIQ*, which equals $\frac{1}{N_t} * \sum_{j=1}^{N_t} \frac{1}{Q_j} \frac{|P_j - P_{j-1}|}{P_{j-1}} * 100$ where N_t is the number of returns in month t, P_j is the average trading price on day j, and Q_j is the dollar trading amount in millions on day j. *EPSSTD* is the standard deviation of analysts' forecasts on EPS. *Log (NumAnalyst)* is the natural logarithm value of the number of analysts covering a firm's stock. *Log (TotalAsset)* is the natural logarithm value of the total assets. *Leverage* is the total debt divided by total assets. *TobinQ* is the market value of equity plus total assets minus book value of equity divided by total assets. Loan types include second lien, term loan, term loan B, term loan C, and term loan D. Term loan D is the base group and omitted in the regressions. Please see Appendix A for variable definitions. Standard errors are clustered at report month level. T-statistics are reported in the parentheses. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

Panel A: Disagreement on Stock and Disagreement on Loan

	CLODIS				
	(1)	(2)	(3)	(4)	(5)
EPSSTD		0.030		0.023	
		(1.066)		(0.801)	
Log (NumAnalyst)			0.011		0.014
			(1.259)		(1.506)
Log (TotalAsset)	-0.009			-0.029	-0.011
	(-0.244)			(-0.488)	(-0.186)
Leverage	0.266***			0.435***	0.369***
	(4.762)			(4.861)	(4.808)
TobinQ	-0.114***			-0.152***	-0.135***
	(-7.037)			(-6.294)	(-6.059)
Log (1+MonthtoMature)	-0.429***	-0.377***	-0.368***	-0.370***	-0.363***
	(-6.143)	(-5.474)	(-5.632)	(-5.432)	(-5.576)
Log (TotalCLOHolding)	0.068***	0.072***	0.062***	0.072***	0.061***
	(4.770)	(4.001)	(3.868)	(3.893)	(3.710)
SecondLienDum	-0.139	-0.265*	-0.216	-0.316**	-0.266*
	(-1.239)	(-1.780)	(-1.480)	(-2.108)	(-1.820)
TermLoanDum	0.141**	0.071	0.163*	0.019	0.115
	(2.046)	(0.751)	(1.872)	(0.199)	(1.292)
TermLoanBDum	0.112	0.075	0.167*	0.022	0.118
	(1.506)	(0.754)	(1.822)	(0.223)	(1.292)
TermLoanCDum	0.163**	-0.064	0.060	-0.121	0.006
	(2.141)	(-0.674)	(0.685)	(-1.190)	(0.068)
VIX	0.004	0.003	0.001	0.000	-0.000
	(0.383)	(0.289)	(0.159)	(0.033)	(-0.017)
TEDSpread	-0.501	-0.427	-0.404	-0.395	-0.384
	(-1.462)	(-1.285)	(-1.147)	(-1.198)	(-1.105)
LoanIndexReturn	4.670**	3.539*	3.960**	3.466*	4.071**
	(2.345)	(1.801)	(2.075)	(1.812)	(2.171)
Constant	4.495***	4.053***	4.028***	4.508***	4.331***
	(4.760)	(5.951)	(5.734)	(5.234)	(4.922)
Observations	22,128	14,705	18,306	14,188	17,609
Rating FE	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes
Adjusted R-Squared	0.397	0.419	0.400	0.425	0.407

Panel B: Disagreement on Stock and Loan Illiquidity

	LOANILLIQ	
	(1)	(2)
EPSSTD	0.054	
	(0.693)	
Log (NumAnalyst)		-0.011
		(-0.791)
Log (1+MonthtoMature)	0.273***	0.244***
	(4.197)	(4.276)
Log (TotalCLOHolding)	-0.180***	-0.185***
	(-8.318)	(-9.436)
SecondLienDum	1.270***	1.861***
	(3.249)	(4.696)
TermLoanDum	0.253	0.821***
	(1.060)	(3.270)
TermLoanBDum	0.131	0.721***
	(0.526)	(2.770)
TermLoanCDum	0.423*	1.022***
	(1.764)	(4.091)
VIX	0.009	0.014**
	(1.096)	(2.002)
TEDSpread	0.459	0.223
	(1.242)	(0.719)
LoanIndexReturn	-0.130	2.232
	(-0.051)	(0.950)
Constant	8.012***	7.248***
	(8.312)	(8.457)
Observations	14,677	18,263
Rating FE	Yes	Yes
Firm FE	Yes	Yes
Year-Quarter FE	Yes	Yes
Adjusted R-Squared	0.304	0.296

Table 9. CLO Disagreement and Rating Discrepancy

This table shows the OLS regression results that compare the impact of CLO disagreement with that of rating discrepancy on loan illiquidity. The dependent variable is *LOANILLIQ*, which equals $\frac{1}{N_t} * \sum_{j=1}^{N_t} \frac{1}{Q_j} \frac{|P_j - P_{j-1}|}{P_{j-1}} * 100$ where N_t is the number of returns in month t, P_j is the average trading price on day j, and Q_j is the dollar trading amount in millions on day j. *CLODIS* is the standard deviation divided by the mean of CLO investors' valuations on a loan and multiplied by 100. Rating discrepancy by rating agencies is measured by *RatingSTD*, which is defined as the standard deviation of the loan ratings in the CLO reports. *DiffRate* is a dummy variable that equals one if CLOs report different ratings to a loan and zero otherwise. The dependent variables are measured in month t. Time-varying independent variables are calculated in month $t-1$. Loan types include second lien, term loan, term loan B, term loan C, and term loan D. Term loan D is the base group and omitted in the regressions. Please see Appendix A for variable definitions. Standard errors are clustered at report month level. T-statistics are reported in the parentheses. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

	LOANILLIQ			
	(1)	(2)	(3)	(4)
CLODIS	0.258***	0.303***	0.258***	0.299***
	(8.588)	(9.015)	(8.584)	(8.943)
RatingSTD	-0.036	0.080**		
	(-1.091)	(2.296)		
*CLODIS*RatingSTD*		-0.151***		
		(-4.537)		
DiffRate			0.024	0.087***
			(1.010)	(3.455)
*CLODIS*DiffRate*				-0.086***
				(-3.205)
Log (1+MonthtoMature)	0.158***	0.164***	0.160***	0.164***
	(4.962)	(5.097)	(4.977)	(5.087)
Log (TotalCLOHoldings)	-0.179***	-0.177***	-0.181***	-0.181***
	(-13.195)	(-13.151)	(-13.346)	(-13.346)
SecondLienDum	0.769***	0.782***	0.774***	0.775***
	(5.325)	(5.476)	(5.347)	(5.386)
TermLoanDum	-0.117	-0.120	-0.116	-0.125
	(-0.884)	(-0.915)	(-0.876)	(-0.941)
TermLoanBDum	-0.127	-0.130	-0.125	-0.134
	(-0.972)	(-1.003)	(-0.958)	(-1.024)
TermLoanCDum	0.830***	0.832***	0.831***	0.827***
	(5.343)	(5.399)	(5.350)	(5.355)
VIX	0.018***	0.018***	0.018***	0.018***
	(2.830)	(2.847)	(2.839)	(2.824)
TEDSpread	0.246	0.252	0.246	0.251
	(1.046)	(1.074)	(1.043)	(1.066)
LoanIndexReturn	0.012	0.013	0.012	0.012
	(0.522)	(0.567)	(0.514)	(0.534)
Constant	4.951***	4.803***	4.906***	4.752***
	(15.788)	(14.918)	(15.637)	(14.814)
Observations	102,527	102,527	102,527	102,527
Rating FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes
Adjusted R-Squared	0.295	0.296	0.295	0.295

Table 10. Information from CLOs' Counterparties

This table shows the OLS regression results on how primary market lender's private information affects the impact of CLO disagreement on loan illiquidity. The dependent variable is *LOANILLIQ*, which equals $\frac{1}{N_t} * \sum_{j=1}^{N_t} \frac{1}{Q_j} \frac{|P_j - P_{j-1}|}{P_{j-1}} * 100$ where N_t is the number of returns in month t, P_j is the average trading price on day j, and Q_j is the dollar trading amount in millions on day j. *CLODIS* is the standard deviation of CLO investors' valuations on a loan and multiplied by 100. *RelationDum* is a dummy variable that equals one if any of the primary market lenders have lent to the borrower in the past five years and zero otherwise. *RelationNum* (*RelationAmt*) is the number (amount) of loans from a lender divided by the total number (amount) of loans issued by the borrower in the past five years. The greatest value is chosen when there are multiple lenders in a loan syndicate. The dependent variables are measured in month t. Time-varying independent variables are calculated in month $t-1$. Loan types include second lien, term loan, term loan B, term loan C, and term loan D. Term loan D is the base group and omitted in the regressions. *OtherControls* includes the control variables as in Table 2. Please see Appendix A for variable definitions. Standard errors are clustered at report month level. T-statistics are reported in the parentheses. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

Panel A: Illiquidity

	LOANILLIQ		
	(1)	(2)	(3)
CLODIS	0.347***	0.345***	0.349***
	(7.628)	(8.187)	(7.987)
RelationDum	0.088*		
	(1.679)		
*CLODIS*RelationDum*	-0.082**		
	(-2.220)		
RelationNum		0.128***	
		(2.622)	
*CLODIS*RelationNum*		-0.106***	
		(-2.797)	
RelationAmt			0.095*
			(1.949)
*CLODIS*RelationAmt*			-0.107***
			(-2.896)
Log (1+MonthtoMature)	0.120***	0.122***	0.124***
	(3.332)	(3.354)	(3.416)
Log (TotalCLOHoldings)	-0.190***	-0.191***	-0.190***
	(-14.295)	(-14.324)	(-14.295)
SecondLienDum	0.722***	0.714***	0.715***
	(3.690)	(3.640)	(3.649)
TermLoanDum	-0.114	-0.123	-0.117
	(-0.655)	(-0.708)	(-0.672)
TermLoanBDum	-0.121	-0.131	-0.125
	(-0.704)	(-0.761)	(-0.724)
TermLoanCDum	0.942***	0.940***	0.944***
	(4.935)	(4.866)	(4.899)
VIX	0.018**	0.018**	0.018**
	(2.516)	(2.517)	(2.516)
TEDSpread	0.517*	0.519*	0.520*
	(1.934)	(1.939)	(1.944)
LoanIndexReturn	-0.002	-0.002	-0.002
	(-0.071)	(-0.070)	(-0.068)
Constant	4.836***	4.796***	4.816***
	(8.379)	(8.355)	(8.353)
Observations	77,600	77,600	77,600
Rating FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes
Adjusted R-Squared	0.307	0.307	0.307

Panel B: Trading Frequency

	Log (NumTrade)			*ZeroTradeDayPortion*		
	(1)	(2)	(3)	(4)	(5)	(6)
CLODIS	-0.002	-0.003	-0.005	-0.016	0.009	0.026
	(-0.338)	(-0.539)	(-0.826)	(-0.282)	(0.165)	(0.480)
RelationDum	-0.052**			0.029		
	(-2.206)			(0.161)		
*CLODIS*RelationDum*	0.017**			-0.158**		
	(2.059)			(-2.019)		
RelationNum		-0.061***			0.385**	
		(-2.662)			(2.042)	
*CLODIS*RelationNum*		0.025***			-0.257***	
		(2.776)			(-2.668)	
RelationAmt			-0.074***			0.479**
			(-3.249)			(2.547)
*CLODIS*RelationAmt*			0.027***			-0.269***
			(2.987)			(-2.876)
OtherControls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	77,600	77,600	77,600	77,600	77,600	77,600
Rating FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-Squared	0.281	0.281	0.281	0.376	0.376	0.376

Panel C: Turnover

	Turnover		
	(1)	(2)	(3)
CLODIS	-1.357***	-1.285***	-1.444***
	(-2.859)	(-3.092)	(-3.232)
RelationDum	-2.987**		
	(-2.089)		
*CLODIS*RelationDum*	1.127**		
	(2.127)		
RelationNum		-1.230	
		(-0.834)	
*CLODIS*RelationNum*		1.416**	
		(2.529)	
RelationAmt			-1.875
			(-1.305)
*CLODIS*RelationAmt*			1.580***
			(2.727)
OtherControls	Yes	Yes	Yes
Observations	70,967	70,967	70,967
Rating FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Year-Quarter FE	Yes	Yes	Yes
Adjusted R-Squared	0.187	0.187	0.187

Table 11. Robustness Tests

This table shows the OLS regression results of the robustness checks. The dependent variable is *LOANILLIQ*, which equals $\frac{1}{N_t} * \sum_{j=1}^{N_t} \frac{1}{Q_j} \frac{|P_j - P_{j-1}|}{P_{j-1}} * 100$ where N_t is the number of returns in month t, P_j is the average trading price on day j, and Q_j is the dollar trading amount in millions on day j. *CLODIS* is the standard deviation of CLO investors' valuations on a loan and multiplied by 100. Specification (1) clusters standard errors by firm rather than report month. In Specification (2), I exclude the financial crisis period from July 2007 to April 2009. Specification (3) adds in lead arranger fixed effects. In Specification (4), the dependent variable is the return component in the *LOANILLIQ*. It is the monthly average of daily absolute returns. Specification (5) adds trades smaller than $100,000 to the sample. Specification (6) adds defaulted loans and loans rated at Caa1 and below to the sample. Specification (7) controls for firm-year quarter fixed effects. Firm fixed effects and year quarter fixed effects are all omitted. In Specification (8), I control for additional firm characteristics in the regression. *Log (TotalAsset)* is the natural logarithm value of the total assets. *Leverage* is the total debt divided by total assets. *TobinQ* is the market value of equity plus total assets minus book value of equity divided by total assets. Loan types include second lien, term loan, term loan B, term loan C, and term loan D. Term loan D is the base group and omitted in the regressions. Please see Appendix A for variable definitions. Standard errors are clustered at report month level. T-statistics are reported in the parentheses. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

	LOANILLIQ							
	Cluster Firm	Exclude Crisis	Lead Lender FE	Return Component	Include Samll Trade	Include CCC&Default	Firm-Year FE	Additional Financials
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CLODIS	0.258***	0.264***	0.282***	0.305***	0.332***	0.172***	0.155***	0.219***
	(11.132)	(8.711)	(8.365)	(6.655)	(8.368)	(6.739)	(5.467)	(6.779)
Log (1+MonthtoMature)	0.160***	0.140**	0.104***	-0.102	0.125**	0.053	0.140***	0.407***
	(3.021)	(2.045)	(2.890)	(-1.247)	(2.412)	(0.708)	(3.232)	(6.665)
Log (TotalCLOHoldings)	-0.179***	-0.176***	-0.191***	-0.148***	-0.248***	-0.251***	-0.152***	-0.219***
	(-10.661)	(-8.107)	(-14.439)	(-4.033)	(-10.605)	(-10.002)	(-7.413)	(-11.291)
SecondLienDum	0.772***	0.791**	0.534**	0.444***	0.856***	1.675***	0.896***	1.676***
	(2.741)	(2.230)	(2.453)	(2.763)	(4.740)	(5.446)	(6.877)	(5.236)
TermLoanDum	-0.116	-0.091	-0.311*	0.097	0.182	-0.177	-0.230***	0.725***
	(-0.511)	(-0.350)	(-1.792)	(0.981)	(1.128)	(-0.718)	(-2.823)	(3.412)
TermLoanBDum	-0.125	-0.101	-0.325*	-0.016	0.124	-0.205	-0.278***	0.695***
	(-0.546)	(-0.379)	(-1.908)	(-0.188)	(0.781)	(-0.822)	(-3.420)	(3.146)
TermLoanCDum	0.831***	0.778**	0.808***	0.020	1.234***	0.954***	0.813***	0.945***
	(2.864)	(2.158)	(3.973)	(0.163)	(5.619)	(3.004)	(5.902)	(4.682)
VIX	0.018***	0.018***	0.018**	0.024**	0.009	0.020**	0.072***	0.014**
	(4.304)	(4.310)	(2.486)	(2.162)	(0.944)	(2.257)	(5.446)	(1.981)
TEDSpread	0.246	0.235	0.539**	-0.157	0.219	0.837	0.194	0.294
	(1.456)	(1.327)	(2.012)	(-0.311)	(0.594)	(1.571)	(0.446)	(0.928)
LoanIndexReturn	0.012	0.018	-0.004	-0.017	-0.053	0.030	0.013	2.039
	(0.827)	(1.332)	(-0.163)	(-0.446)	(-1.021)	(1.017)	(0.227)	(0.794)
Log (TotalAssets)								0.065
								(0.762)
Leverage								0.403***
								(3.134)
TobinQ								-0.117***
								(-2.657)
Constant	4.927***	4.107***	5.737***	7.549***	5.669***	9.314***	0.148	4.974***
	(4.908)	(5.952)	(9.100)	(9.863)	(12.644)	(12.546)	(0.473)	(3.930)
Observations	102,527	101,761	77,584	102,527	103,047	117,503	102,527	22,066
Rating FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Lead Arranger FE	No	No	Yes	No	No	No	No	No
Firm-Year FE	No	No	No	No	No	No	Yes	No
Adjusted R-Squared	0.295	0.278	0.310	0.105	0.233	0.345	0.434	0.331

Table 12. Endogeneity Issues and the Information Channel

This table shows the regression results that address the endogeneity issues. Panel A presents the OLS regression results that help validate the IV. The dependent variable in Specifications (1) and (2) is *Log (NumFunds)*, the logarithm value of the number of CLOs in a loan, and *Log (TotalCLOHoldings)*, the logarithm value of the CLO holdings in a loan, respectively. Panel B presents the 2SLS regression results. The dependent variable in Specifications (1), (3), and (5) is *CLODIS*, which is the standard deviation of CLOs' valuations on a loan and multiplied by 100. The dependent variable in Specifications (2), (4), and (6) is *LOANILLIQ*, which equals $\frac{1}{N_t} * \sum_{j=1}^{N_t} \frac{1}{Q_j} \frac{|P_j - P_{j-1}|}{P_{j-1}} * 100$ where N_t is the number of returns in month t, P_j is the average trading price on day j, and Q_j is the dollar trading amount in millions on day j. *IPOIV* is a dummy variable that equals one if a CLO report is between six months before and six months after the IPO date of a borrower and zero otherwise. Loan types include second lien, term loan, term loan B, term loan C, and term loan D. Term loan D is the base group and omitted in the regressions. Please see Appendix A for variable definitions. Standard errors are clustered at report month level. T-statistics are reported in the parentheses. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

Panel A: IV Validation Test

	Log (NumFunds)	*Log (TotalCLOHoldings)*
	(1)	(2)
IPOIV	0.018	0.022
	(0.928)	(0.681)
Log (1+MonthtoMature)	0.108***	0.060***
	(5.369)	(3.219)
SecondLienDum	-0.892***	-1.280***
	(-23.422)	(-23.639)
TermLoanDum	-0.028	0.145***
	(-1.261)	(4.197)
TermLoanBDum	0.064***	0.262***
	(3.190)	(7.923)
TermLoanCDum	0.025	-0.148***
	(1.053)	(-2.985)
VIX	0.008	0.013*
	(0.967)	(1.884)
TEDSpread	-0.379	-0.496
	(-1.147)	(-1.481)
LoanIndexReturn	0.004	0.006
	(0.423)	(0.572)
Constant	0.389	0.658*
	(1.082)	(1.970)
Observations	102,527	102,527
Rating FE	Yes	Yes
Firm FE	Yes	Yes
Year-Quarter FE	Yes	Yes
Adjusted R-Squared	0.595	0.545

Panel B: IV Regressions

	Full Sample		Lead Lender FE		Restrictive Sample	
	First Stage *CLODIS*	Second Stage *LOANILLIQ*	First Stage *CLODIS*	Second Stage *LOANILLIQ*	First Stage *CLODIS*	Second Stage *LOANILLIQ*
	(1)	(2)	(3)	(4)	(5)	(6)
CLODIS		3.272***		3.816**		3.911**
		(2.683)		(2.292)		(2.449)
IPOIV	-0.121***		-0.098**		-0.109**	
	(-2.791)		(-2.377)		(-2.455)	
Log (1+MonthtoMature)	-0.465***	1.559***	-0.405***	1.532**	-0.585***	2.357**
	(-8.542)	(2.707)	(-9.362)	(2.275)	(-7.385)	(2.499)
Log (TotalCLOHoldings)	0.059***	-0.356***	0.055***	-0.385***	0.061***	-0.399***
	(5.804)	(-4.462)	(5.894)	(-3.929)	(4.010)	(-3.618)
SecondLienDum	0.355***	-0.293	0.159	-0.028	0.256*	1.528**
	(3.699)	(-0.534)	(1.533)	(-0.052)	(1.940)	(2.046)
TermLoanDum	0.027	-0.190	-0.092	0.011	0.304***	-1.002
	(0.408)	(-0.821)	(-1.061)	(0.027)	(4.630)	(-1.515)
TermLoanBDum	0.062	-0.306	-0.071	-0.075	0.302***	-1.012
	(0.906)	(-1.232)	(-0.799)	(-0.191)	(4.455)	(-1.534)
TermLoanCDum	0.134*	0.434	-0.140	1.305***	0.197***	-0.255
	(1.907)	(1.448)	(-1.627)	(2.855)	(3.026)	(-0.550)
VIX	0.007	-0.003	0.009	-0.013	0.008	0.000
	(0.972)	(-0.144)	(1.141)	(-0.423)	(0.834)	(0.001)
TEDSpread	-0.287	1.112	-0.308	1.628*	-0.220	1.165
	(-1.351)	(1.572)	(-1.382)	(1.791)	(-0.848)	(1.127)
LoanIndexReturn	0.039**	-0.106	0.044**	-0.160	0.043**	-0.154
	(2.237)	(-1.425)	(2.374)	(-1.495)	(2.370)	(-1.493)
Constant	6.240***	-13.594*	5.193***	-13.466	6.161***	-18.746*
	(16.897)	(-1.881)	(13.191)	(-1.414)	(13.553)	(-1.818)
Observations	102,527	102,527	77,584	77,584	28,258	28,258
Rating FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Lead Lender FE	No	No	Yes	Yes	No	No
Year-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-Squared	0.383		0.391		0.356	

Appendix A. Variable Definitions

Variable	Definition
CLODIS	The standard deviation of the estimated prices given by the CLO investors in a loan.
PriceDispersion	The standard deviation divided by the mean of the estimated prices given by the CLO investors in a loan and multiplied by 100.
PriceRange	The range of the estimated prices given by the CLO investors in a loan.
LOANILLIQ	An illiquidity measure that equals $\frac{1}{N_t} * \sum_{j=1}^{N_t} \frac{1}{Q_j} \frac{\lvert P_j - P_{j-1} \rvert}{P_{j-1}} * 100$ where N_t is the number of returns in month t, P_j is the average trading price on day j, and Q_j is the dollar trading amount in millions on day j.
EstSpread	Estimated bid and ask spread that equals $\frac{2(e^{\alpha}-1)}{1+e^{\alpha}}$ where $\alpha = \frac{\sqrt{2\beta}-\sqrt{\beta}}{3-2\sqrt{2}} - \sqrt{\frac{\gamma}{3-2\sqrt{2}}}$, $\beta = \sum_{j=0}^{1} \left[\ln\left(\frac{H_{t+j}^{O}}{L_{t+j}^{O}}\right)\right]^2$, and $\gamma = \left[\ln\left(\frac{H_{t,t+1}^{O}}{L_{t,t+1}^{O}}\right)\right]^2$. H_{t+j}^{O} (L_{t+j}^{O}) is the observed high (low) price on day $t+j$. $H_{t,t+1}^{O}$ ($L_{t,t+1}^{O}$) is the observed high (low) price over the two-day period.
QuoteSpread	Quoted bid and ask spread from Thompson Reuters and the LSTA.
ZeroTradeDayPort (%)	The number of zero trading days in a month divided by 22.
NumTrades	The monthly total number of trades.
TradeAmt ($Thousand)	Monthly total trading amount.
LargeTradePortion (%)	Number of trades greater or equal to $1 million divided by the total number of trades.
Turnover	The monthly trading volume divided by the monthly total CLO holdings.
MonthtoMature	The number of months from the CLO report month to the maturity month.
TotalCLOHoldings ($Million)	The monthly total CLO holdings.
SecondLienDum	A dummy variable indicating whether a loan is second lien or not.
TermLoanDum	A dummy variable indicating whether a loan is term loan or not.
TermLoanBDum	A dummy variable indicating whether a loan is term loan B or not.
TermLoanCDum	A dummy variable indicating whether a loan is term loan C or not.
TermLoanDDum	A dummy variable indicating whether a loan is term loan D or not.
TEDSpread (%)	The difference between the 3-month LIBOR and the 3-month treasury rate.
VIX	Equity volatility index from the Chicago Board Options Exchange.
LoanIndexReturn (%)	The monthly return of the S&P/LSTA U.S. Leveraged Loan 100 Index.
PublicDum	A dummy variable indicating whether a firm can be matched with Compustat.
RatingSTD	The standard deviation of the loan ratings in the CLO reports.
DiffRate	A dummy variable indicating whether CLOs report different ratings to a loan.
RelationDum	A dummy variable indicating whether the primary lenders have lent to the borrower in the past 5 years.
RelationNum/RelationAmt	The number/amount of loans from a lender divided by the total number/amount of loans issued by the borrower in the past 5 years.
TrusteeRel/ArrangerRel	The number of CLOs sharing the same trustee/arranger divided by the number of CLOs.
FailFundRatio	The number of CLOs that failed covenant tests divided by the number of CLOs.
CovTestDist	The weighted average distance between the test result and the failure threshold.
Leverage	Book value of debt divided by the book value of total assets.
TobinQ	Market value of equity plus total assets minus book value of equity divided by the book value of total assets.
EPSSTD	Standard deviation of analysts' forecasts on earnings per share.
NumAnalyst	Number of analysts covering a firm's stock.