Interdealer Price Dispersion*

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Abstract

Intermediation capacity varies across dealers and, as a result, misallocation of credit risk reduces the risk-bearing capacity of the dealer sector and increases effective market-level risk aversion. When the efficient reallocation of credit risk within the dealer sector is impaired, interdealer price dispersion increases. Empirically, interdealer price dispersion is a strong determinant of yield spread changes. When interdealer price dispersion is high, bond prices are low. Interdealer price dispersion explains a substantial portion of bond yield spread changes, the cross-section of bond returns, and the basis between yield spread changes and changes in fair-value spreads. We conclude that frictions *within* the dealer sector reduce the risk-bearing capacity of intermediaries and are thus crucial for intermediary bond pricing.

Keywords: OTC markets, intermediaries, dealers, corporate bonds, interdealer price dispersion

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1 Introduction

Interdealer price dispersion explains a substantial amount of the variation in changes in corporate bond yields and is a priced risk factor in the cross section of bond returns. We argue that this is because interdealer price dispersion arises due to frictions within the dealer sector that lead to a misallocation of credit risk among intermediaries. Risk misallocation reduces dealer-sector risk-bearing capacity and increases effective market-level risk aversion due to worse risk sharing.

We measure interdealer price dispersion as the cross-sectional dispersion in bond yields of interdealer trades of the same bond at a given moment in time. Without frictions, bond dealers should optimally reallocate risk, and interdealer price dispersion should be zero in a competitive market. However, we observe in the data that interdealer price dispersion is significant and varies over time. It is high when dealers with additional credit-risk capacity only partially exploit the gains from trading with other dealers who wish to reduce their credit exposure. When it is more costly to reallocate credit risk efficiently, the risk-bearing capacity of the dealer sector is impaired. Bond prices are lower, and credit spreads are higher.

In addition to explaining changes in bond yields and being a priced risk factor in the cross section of bond returns, changes in interdealer price dispersion also explain changes in the basis between credit spreads from OTC market data and credit spreads constructed using exchange-traded equity data and leverage ratios. This finding supports the idea that the explanatory power of interdealer price dispersion reflects frictions within the dealer sector in an over-the-counter (OTC) market.

When interdealer price dispersion increases, bond yield spreads increase as well. Interdealer price dispersion explains a substantial portion of the common component in the residuals from a regression of yield spread changes on fundamental credit risk variables (Collin-Dufresne et al., 2001). Shocks to interdealer price dispersion are a priced risk factor in corporate bond markets, and bonds with higher exposure to increases in interdealer price dispersion earn a positive risk premium.

The risk-bearing capacity of the dealer sector has been the focus of a large and growing empirical literature in asset pricing (Adrian, Etula, and Muir, 2014; He, Kelly, and Manela, 2017; Haddad and Muir, 2021). The theoretical motivation for these models typically employs a representative intermediary (see He and Krishnamurthy, 2013; Brunnermeier and Sannikov, 2014) and suggests using equity-weighted intermediary-sector leverage as the intermediary asset pricing factor. However, not all intermediaries are created equal for asset pricing, and straight equity weighting may not be best.

Several new studies point to the importance of individual dealers in determining asset prices (Siriwardane, 2019; Siriwardane, Sunderam, and Wallen, 2021; Lewis, Longstaff, and Petrasek, 2017; Munyan and Watugala, 2018). In particular, Munyan and Watugala (2018) show that dealers' search costs, risk appetite, and skill are important determinants of the distribution of their market-making returns. Consistent with these findings, Eisfeldt, Herskovic, Rajan, and Siriwardane (2023) document large heterogeneity across dealers in their net credit default swap positions and build a model to illustrate the resulting systemic risk in credit markets. Other recent studies point to an increase in interdealer frictions since the Global Financial Crisis (Copeland, Duffie, and Yang, 2021; Correa, Du, and Liao, 2020), indicating that the impact of dealer heterogeneity may have increased since 2008.

The reason why the risk-bearing capacity of the dealer sector in the presence of interdealer frictions depends on dealer heterogeneity can be understood in the context of an efficiency argument. The more efficient the allocation of credit risk among dealers—that is, the greater the ability of the dealer sector to equate participants' marginal costs of risk-bearing—the larger the risk-bearing capacity of the dealer sector is. The intuition is the same as why output is higher among producers with different productivities when capital is allocated to equate marginal products than when there is misallocation (Hsieh and Klenow, 2009). In asset pricing, the fact that misallocation leads to lower prices and higher risk premia is the core concept behind intermediary asset pricing. However, standard models feature only two types of agents, intermediaries and households, with frictionless interdealer markets and a representative-agent dealer sector.[1]

Consider the corporate bond dealer sector. Each dealer has exposure to credit risk at any given point in time, which results from prior trade in bonds, loans, or derivatives. In a Walrasian market, these dealers would trade at a single market-clearing price to equalize credit exposures, and the risk-bearing capacity of the dealer sector would be independent of the initial allocation of risk.[2] In practice, the most intermediated markets are over-the-counter (OTC) markets (see Haddad and Muir, 2021). There is no one market-clearing price for OTC assets, even for bilateral trades within the dealer sector. If trading frictions prevent dealers from equalizing their exposures, the resulting dispersion in their marginal cost of risk-bearing will result in bilateral price dispersion.

For example, in the OTC network model of Eisfeldt et al. (2023), prices are a weighted

[1]See Kargar (2021) for a model with two types of intermediaries and households, and Eisfeldt, Lustig, and Zhang (2021) for a model in which the joint distribution of wealth and expertise determines aggregate risk-bearing capacity. See also Bretscher, Schmid, Sen, and Sharma (2020), which emphasizes the role of heterogeneous institutional bondholders in a demand-system asset pricing model.

[2]For an important early paper modeling a Walrasian interdealer market with an emphasis on frictions in customer trading, see (Duffie et al., 2005).

average of bilateral counterparties' marginal costs of risk-bearing.[3] If two dealers with large pre-trade risk exposures transact, bond prices will be lower than in a trade between two less exposed dealers, with lower marginal costs of bearing additional credit risk. Thus, price dispersion within the dealer sector reflects the inability of dealers to efficiently reallocate credit risk and maximize the potential capacity of the dealer sector to absorb credit risk. Related to this mechanism, Chang and Zhang (2022) develop a theoretical model to study the relation between price dispersion and heterogeneity in risk-bearing capacity, and consistent with our empirical findings, their model also generates a strong comovement between dispersion in transaction prices and banks' risk-bearing capacity heterogeneity.

We provide substantial evidence that interdealer price dispersion in the corporate bond market reflects impairment to the risk-bearing capacity of the dealer sector. We construct a dataset containing all interdealer corporate bond trades using TRACE data and dealer-level proxies for corporate bond positions from past transactions. We merge this data with data on corporate bond yields and fair-value spreads constructed using equity-market data and a structural model.

We document four main results. First, in a panel regression setting, we show that changes in interdealer price dispersion are positively related to changes in yield spreads. A one percentage point increase in interdealer price dispersion is associated with around 78 basis point increase in yield spreads. Our finding is robust to various controls, including fundamental-based variables from Collin-Dufresne, Goldstein, and Martin (2001), the default factor from Bessembinder, Kahle, Maxwell, and Xu (2008), risk factors from He, Kelly, and Manela (2017), risk factors from He, Khorrami, and Song (2019), and OTC-based frictions variables from Friedwald and Nagler (2019).

Second, we find interdealer price dispersion to explain a substantial fraction of the basis between bond spreads from the OTC market and fair-value spreads, where we construct fair-value spreads via a structural model using exchange-traded equity volatility and leverage data. A one percentage point increase in interdealer price dispersion is associated with around 60 basis point increase in the bond basis—that is, the difference between yield spreads and fair-value spreads. Hence, interdealer price dispersion widens the gap between yield spreads and fair-value spreads, consistent with the idea that part of the bond basis between OTC market bond trades and bond spreads from a structural model and equity-market data is due to interdealer frictions. Again, our findings are robust to the same set of controls listed above.

Third, interdealer price dispersion explains a substantial fraction of the common component in residuals from a regression of yield spread changes on fundamental credit-risk

[3] See Atkeson et al. (2015) for a related result in a search model.

variables. Collin-Dufresne, Goldstein, and Martin (2001) documented that these residuals feature a strong factor structure, in which the first principal component explains about 20-25% of the total variation. Explaining the first principal component is crucial for our understanding of bond prices. Our measure of interdealer price dispersion helps to explain variation in this first principal component, adding about 10 to 15 percentage points to the coefficient of determination of various specifications from the literature (Bessembinder, Kahle, Maxwell, and Xu, 2008; He, Kelly, and Manela, 2017; He, Khorrami, and Song, 2019; Friedwald and Nagler, 2019).

Finally, we document that interdealer price dispersion carries a negative price of risk in the cross-section of duration-times-spreads sorted portfolios of bonds as well as in the cross-section of bonds double-sorted on maturity and size. Bond yields tend to increase when interdealer price dispersion goes up—in terms of returns, bond returns decrease, and bonds typically have a negative beta with respect to interdealer price dispersion. We find that bonds more exposed to interdealer price dispersion have higher average returns. Exposure to shocks to interdealer price dispersion earns a positive risk premium. Interdealer price dispersion has a negative price of risk, consistent with the idea that higher dispersion indicates a less efficient allocation of risk and lower risk-bearing capacity (i.e. higher effective dealer-sector risk aversion).

Given the infrequent trading of bonds, calculating interdealer price dispersion on a daily basis is not feasible, and, as part of our methodology, we rely on the bond-level standard deviation of yield in all interdealer trades occurring each month. As a first set of robustness exercises, we show that within-month volatility does not drive our results.

We conduct two robustness exercises that control bond-level within-month volatility. The first involves calculating interdealer price dispersion on a weekly basis, thereby increasing data frequency and partially addressing the issue of within-month volatility. In our second exercise, we refine our approach by constructing our interdealer price dispersion measure based on bond basis instead of spreads. This adjustment more effectively accounts for any fundamental-based variations in bond spreads at a daily level. Our results remain unchanged, and our findings are not driven by within-month volatility.

Furthermore, we conduct comprehensive robustness analyses to validate our empirical findings further. We develop alternative metrics for measuring interdealer price dispersion, which include: (i) volume-weighted yield dispersion, (ii) price dispersion among the top 50 dealers, (iii) high versus low bond-level interdealer price dispersion, and (iv) price dispersion amongst more liquid bonds. Our first two methods, (i) and (ii), aim to adjust for variations in monthly yields and the influence of less liquid bonds, and we find similar results. The purpose of method (iii) is to demonstrate that it is the interdealer price dispersion itself, rather than other bond characteristics like fundamentals or liquidity, that primarily influences our regression findings. This is a placebo-like exercise, where we contrast the significance of regression outcomes using two distinct types of interdealer price dispersion, both derived from bonds with comparable fundamentals and liquidity but different in their individual price dispersions. Consistent with our intuition and framework, we find significant results when interdealer price dispersion is based on bonds with larger interdealer yield dispersion. Finally, our fourth method (iv) utilizes more liquid bonds to mitigate the potential role of price impact and our findings remain largely unchanged.

In a final battery of robustness exercises, we show that our results are robust to different subsamples and controls. We find that our results remain roughly unchanged even after excluding the Global Financial Crisis period from our sample, which is a time characterized by heightened bond spreads and interdealer price dispersion. In an analogous exercise, we find that our results remain unchanged during COVID. We also show that our findings are robust to controlling for bond turnover. Furthermore, we account for nonlinear effects by incorporating the square term of interdealer price dispersion in our analysis, which does not alter our findings. We also investigate the role of market power and control for the Herfindahl–Hirschman Index (HHI) of dealers' market share in each bond market. We confirm that our results are not a reflection of dealers' market power. Finally, we include controls for bond-specific interdealer price dispersion and changes in dealer-sector inventory and still find similar results.

The remainder of the paper proceeds as follows. Section 2 provides a simple theoretical framework to motivate the relation between interdealer price dispersion and credit spreads. Sections 3 and 4 describe our data and the construction of interdealer price dispersion, respectively. Section 5 describes our main empirical estimations and results. Section 6 presents robustness practices which construct alternative interdealer price dispersion by controlling for within-month volatility of bond yields. Section 7 presents several other robustness exercises and Section 8 concludes.

2 Motivating Model

In this section, we develop our theoretical framework of risk misallocation. Specifically, we present a simple, intuitive and tractable model in the main text, and in Internet Appendix A, we discuss its micro-founded version along with formal results.[4] Our tractable framework highlights the key economic channel leading to risk misallocation and how risk misallocation

[4]Specifically, Internet Appendix A.4 discusses the precise mapping between the micro-founded version of the model and the one discussed in the main text.

relates to interdealer price dispersion and average credit spreads.

Suppose there is a continuum of heterogeneous dealers indexed by $i \in [0, 1]$, who differ in their risk aversion and pre-trade credit risk exposures. For simplicity, there is one asset representing aggregate credit risk (e.g., corporate bonds) with expected payoff and variance given by μ and σ^2, respectively. Dealer i is initially endowed with ω_i units of credit risk exposure and trade with other dealers in the interdealer market. For instance, we interpret pre-trade exposure as the corporate bonds which dealers hold, including those obtained across all its customer-dealer relationships. Endogenous to the model is the total amount of each dealer's net credit risk exposure acquired across all interdealer transactions, which is given by z_i. We can write dealer i's post-trade credit risk exposure as follows:

$$\underbrace{\begin{array}{c}\text{Post-trade}\\ \text{credit exposure}\end{array}}_{\omega_i + z_i} = \underbrace{\begin{array}{c}\text{Optimal Exposure w/}\\ \text{Perfect Risk Sharing}\end{array}}_{OptExp_i} + \underbrace{\text{Risk Misallocation}}_{\sigma_\varepsilon \varepsilon_i}. \tag{1}$$

Equation (1) is a general decomposition of credit risk exposure and can be applied to different models. It states that post-trade credit risk exposure, endogenous to dealers' trading activity in the interdealer market, is the combination of two terms: the optimal exposure under perfect risk sharing plus a risk misallocation term. The misallocation term has cross-sectional variance given by σ_ε, as we normalize $\text{Var}(\varepsilon_i) = 1$.

Without imposing any modeling assumptions, we highlight a useful property of risk misallocation. Note that bond market clearing conditions imply $\int z_i di = 0$ as bonds are in fixed supply. Also, by construction, the optimal exposure under perfect risk sharing clears the market, which means that the optimal exposure across all dealers adds to the aggregate risk exposure, $\int OptExp_i di = \int \omega_i di$. Thus, by aggregating Equations (1) across all dealers, we have that risk misallocation has zero mean:[5]

$$\int \varepsilon_i di = 0. \tag{2}$$

The source of misallocation and the optimal risk exposure under perfect risk sharing depend on specific modeling choices, though. We develop our framework based on the network model of Eisfeldt, Herskovic, Rajan, and Siriwardane (2023). The interdealer market of corporate bonds is modeled as an over-the-counter market in which dealers trade with one another but face convex bilateral trading costs. These trading costs have significant

[5]Using these two market clearing conditions, $\int OptExp_i di = \int \omega_i di$ and $\int z_i di = 0$, we have from Equation (1) that $\int \omega_i di + \int z_i di = \int OptExp_i di + \sigma_\varepsilon \int \varepsilon_i di \implies \int \varepsilon_i di = \frac{1}{\sigma_\varepsilon}\left[\int \omega_i di + \int z_i di - \int OptExp_i di\right] = \frac{1}{\sigma_\varepsilon}\left[\int \omega_i di + 0 - \int \omega_i di\right] = 0$. See Proposition IA.3 in Internet Appendix A.4.

implications for risk sharing as dealers end up reducing trade, stopping short of perfect risk sharing. Specifically, buyers would like to buy more bonds, while sellers would like to sell more bonds in equilibrium; however, bilateral trading costs increase the marginal cost of buying and selling, curbing trading activity and risk sharing. Hence, in our framework, bilateral trading costs are the source of risk misallocation.

Additionally, we model dealers as risk-averse investors with mean-variance preferences akin to dealers having risk-management constraints (e.g., Brunnermeier and Pedersen, 2009). Thus, the optimal credit risk exposure under perfect risk sharing is inversely proportional to dealers' risk aversion. In other words, higher risk-averse dealers hedge the credit risk of lower risk-averse dealers under perfect risk sharing. Let α_i be dealer i's risk aversion, we can write Equation (1) as follows:

$$\omega_i + z_i = \frac{C}{\alpha_i} + \sigma_\varepsilon \varepsilon_i, \tag{3}$$

where C is a constant term that depends on the distribution of risk aversion (α's) and pre-trade exposures (ω's).[6]

When agents have mean-variance preferences, their marginal shadow cost of risk-bearing is equal to their risk exposure multiplied by their respective risk aversion and the asset's variance. Thus, for agent i, it is given by $\sigma^2\ \alpha_i\,(\omega_i + z_i)$. Risk aversion effectively drives the agent-specific price of risk by converting the quantity of risk into a marginal cost of risk-bearing. Using Equation (3), for dealer i, the shadow cost of risk-bearing is given by:

$$\sigma^2 \alpha_i\,(\omega_i + z_i) = \sigma^2 C + \sigma^2 \sigma_\varepsilon \alpha_i \varepsilon_i, \tag{4}$$

where the constant term is the marginal cost of risk-bearing when there is perfect risk sharing and the second term measures the additional cost due to misallocation. The last term would be zero for all agents with perfect risk sharing.

Equation (4) is intuitive because misallocation measures credit risk exposure in excess of perfect risk-sharing. When $\varepsilon_i > 0$, dealer i has more credit risk exposure than it would under perfect risk-sharing and, therefore, faces a higher marginal cost of risk-bearing. In other words, agent i requires a higher credit spread in order to hold additional credit risk exposure. Alternatively, when $\varepsilon_i < 0$, dealer i has lower credit risk exposure compared to perfect risk sharing, and its shadow cost of risk-bearing is lower. In this case, agent i requires a lower credit spread to hold additional credit risk exposure.[7]

[6] Formally, $C = \frac{\int \omega_i di}{\int 1/\alpha_i di}$. See Equation IA.15 in the Internet Appendix.

[7] In related work, Chang and Zhang (2022) highlights a similar mechanism. They study interbank risk allocation through the lens of a dynamic model with ex-ante homogeneous risk-averse banks with diminishing

In our framework, the average credit spread at which dealers trade with one another is equal to the average shadow cost of risk-bearing. Formally, in the Internet Appendix, we define $\mu - P_{ij}$ as the expected bond payout minus the price at which dealers i and j trade. As an equilibrium outcome of the model, when dealers i and j trade, they do so at the price given by the midpoint between their marginal cost of risk-bearing, $\mu - P_{ij} = \frac{\sigma^2}{2}\left[\alpha_i\left(\omega_i + z_i\right) + \alpha_j\left(\omega_j + z_j\right)\right]$. The term $\mu - P_{ij}$ is our measure of credit spread, and the average credit spread is given by:[8]

$$\mathbb{E}\left(\textit{Credit Spread}\right) = \mathbb{E}\left(\mu - P_{ij}\right) = \sigma^2 \int \alpha_i\left(\omega_i + z_i\right) di = \sigma^2 C + \sigma^2 \sigma_\varepsilon \mathrm{Cov}\left(\alpha_i, \varepsilon_i\right), \tag{5}$$

where $\mathrm{Cov}\left(\alpha_i, \varepsilon_i\right) \equiv \int \alpha_i \varepsilon_i di - \int \alpha_i di \int \varepsilon_i di = \int \alpha_i \varepsilon_i di$ is the cross-sectional covariance between risk misallocation and risk aversion. As an endogenous response to trading frictions, in our framework, we have:

$$\mathrm{Cov}\left(\alpha_i, \varepsilon_i\right) > 0. \tag{6}$$

This result is Proposition IA.4 in Internet Appendix A.4. As discussed earlier, trading frictions curb trading and risk sharing, but on average, low-risk-averse dealers still buy bonds from high-risk-averse dealers in equilibrium. As net sellers of credit risk, high-risk-averse dealers would like to further reduce their credit risk exposure by selling even more bonds, but they cannot due to trading fractions. This results in risk misallocation, with high-risk-averse dealers holding more credit risk exposure than they would under a perfect risk-sharing scenario. Hence, misallocation covaries positively with risk aversion in the cross-section of the dealers, that is, $\mathrm{Cov}\left(\alpha_i, \varepsilon_i\right) > 0$. Intuitively, dealers who dislike risk the most (i.e., high-risk-averse dealers) are more exposed to credit risk as a result of risk misallocation. A key implication of the Equations (5) and (6) is that credit spreads are higher compared to perfect risk sharing. Risk misallocation inhibits the dealer sector from reallocating risk, leading to higher credit spreads.

To understand how risk misallocation relates to interdealer price dispersion, notice that the cross-sectional dispersion in spreads is proportional to the cross-sectional dispersion in

cost of risk-bearing. In their model, agents become heterogeneous when the initial asset position is realized, and they start trading sequentially with one another. Their framework feature price dispersion precisely because agents become heterogeneous in term of their risk exposure and value the asset differently because of their risk aversion and the diminishing marginal cost of risk-bearing.

[8] $\mathbb{E}\left(\mu - P_{ij}\right) = \int\int \mu - P_{ij} di dj = \frac{1}{2}\sigma^2 \int\int \left[\alpha_i\left(\omega_i + z_i\right) + \alpha_j\left(\omega_j + z_j\right)\right] di dj = \sigma^2 \int \alpha_i\left(\omega_i + z_i\right) di = \sigma^2 C + \sigma_\varepsilon \int \alpha_i \varepsilon_i di = \sigma^2 C + \sigma_\varepsilon \mathrm{Cov}\left(\alpha_i, \varepsilon_i\right)$, where the last equality holds because $\int \varepsilon_i di = 0$ and $\mathrm{Cov}\left(\alpha_i, \varepsilon_i\right) \equiv \int \alpha_i \varepsilon_i di - \int \alpha_i di \int \varepsilon_i di = \int \alpha_i \varepsilon_i di$. See details in the Internet Appendix.

the marginal cost of risk-bearing and can be written as:[9]

$$\text{Std}\left(Credit\ Spreads\right) = \frac{\sigma^2 \sigma_\varepsilon}{\sqrt{2}} \text{Std}\left(\alpha_i \varepsilon_i\right), \tag{7}$$

where $\text{Std}\left(\alpha_i \varepsilon_i\right)$ is the cross-sectional standard deviation of the distortions in the marginal cost of risk-bearing, which is the misallocation scaled by risk aversion. Thus, risk misallocation is directly related to the cross-sectional dispersion in credit spreads. Combining Equations (5) and (7), we can write average credit spread as a function of interdealer price dispersion:

$$\mathbb{E}\left(Credit\ Spreads\right) = a + b \times \text{Std}\left(Credit\ Spreads\right) \tag{8}$$

where $a = \sigma^2 C$ is the credit spread under perfect risk sharing and $b = \sqrt{2}\frac{\text{Cov}(\alpha_i, \varepsilon_i)}{\text{Std}(\alpha_i \varepsilon_i)} > 0$ is the sensitivity of credit spread with respect to interdealer price dispersion. Equation (8) shows a positive relation between credit spreads and interdealer price dispersion, which we empirically document in the next few sections.

In Figure 1, we depict the model-implied relation between risk misallocation, interdealer price dispersion and average spreads through a simulation exercise. We assume that the average spread under perfect risk sharing is 100 basis points (i.e., $C = 0.01$), and risk aversion follows a log-normal distribution with a mean of 2 and a standard deviation of 4. We set $\sigma_\varepsilon = 1$ for normalization purposes. The model considers excess credit risk exposure (ε) and log risk aversion to be jointly normal. We vary the correlation between risk aversion (α) and excess risk exposure (ε), namely $\rho_{\varepsilon,\alpha}$, from zero to one. This variation represents different levels of risk misallocation and allows us to assess implications for interdealer price dispersion and average spreads.

For each level of $\rho_{\varepsilon,\alpha}$, we simulate 1 million economies, each with 25 dealers, and compute dealer's post-trade credit risk exposure (Equation 1), the average spread in the interdealer market (Equation 5) and the interdealer price dispersion (Equation 7).

Our simulation findings are presented in two panels of Figure 1. Panel (a) visualizes a heatmap, showing the relation between dealers' risk aversion and total risk exposure. In the x-axis, we vary the correlation between risk exposure and risk aversion. When the correlation between risk exposure and risk aversion is low, we see credit risk being roughly equally distributed among dealers, with high-risk-averse dealers having slightly lower credit risk exposure. When the correlation between risk exposure and risk aversion is higher, we

[9] $\text{Std}\left[Credit\ Spreads\right] = \text{Std}\left[\mu - P_{ij}\right] = \text{Std}\left[\frac{\sigma^2}{2}\left(\alpha_i\left(\omega_i + z_i\right) + \alpha_j\left(\omega_j + z_j\right)\right)\right] = \text{Std}\left[\frac{\sigma^2}{2}\left(2C + \sigma_\varepsilon \alpha_i \varepsilon_i + \sigma_\varepsilon \alpha_j \varepsilon_j\right)\right] = \frac{\sigma^2 \sigma_\varepsilon}{2}\text{Std}\left[\alpha_i \varepsilon_i + \alpha_j \varepsilon_j\right] = \frac{\sigma^2 \sigma_\varepsilon}{\sqrt{2}}\text{Std}\left[\alpha_i \varepsilon_i\right]$

see more credit risk misallocation, with credit risk exposure being more concentrated in the hands of high-risk-averse dealers. Panel (b) plots the average spread in the interdealer market as well as the interdealer price dispersion. We also vary the correlation between risk exposure and risk aversion in the x-axis. When misallocation increases, both interdealer price dispersion and average spreads increase.

[Figure 1 about here.]

3 Data Description

We use the enhanced Trade Reporting and Compliance Engine (TRACE) data set from January 2004 to December 2019 as the main data set for interdealer price dispersion and bond credit spreads. This data set provides counterparty information. In particular, it allows us to identify interdealer trades vs. trades involving customers as counterparties. The financial institutions registered as member firms of the Financial Industry Regulatory Authority (FINRA) are labeled dealers in TRACE.[10] We filter the data following the standard procedure in Dick-Nielsen (2014). Then we merge the filtered data set with the Mergent Fixed Income Securities Database (FISD) to obtain bond fundamental characteristics. We exclude variable-coupon, convertible, exchangeable, puttable and newly issued bonds. We also exclude asset-backed securities, privately placed instruments, and bonds denominated in foreign currencies or issued by foreign companies.

We use the academic version of the TRACE data to compute dealers' cumulative inventory of bonds, and we use the data on bond-level fair value spreads from Chang, d'Avernas, and Eisfeldt (2021) to calculate the OTC bond basis, which measures the non-default component of the credit spread. For data describing all other bond- and market-level controls, we next merge our data with CRSP, Compustat, OptionMetrics, Chicago Board Options Exchange (CBOE) and the economic data from the Federal Reserve Bank of St. Louis to obtain issuers' and primary dealers' equity prices and accounting information, the Standard & Poor's (S&P) 500 index, the volatility index (VIX), the 10-year Treasury constant maturity rate, the slope of the yield curve, implied volatilities of options on S&P 500 futures, and the effective yields of U.S. investment-grade (IG) and high-yield (HY) corporate bond portfolios.

[10] Member firms of the FINRA mainly include broker-dealers, exchanges and crowdfunding portals. Member firms must submit reports to FINRA after completing corporate bond transactions. The reports include detailed information on realized transactions, including bond ID, counterparty ID, price, volume, execution time, etc. Each report must be submitted within 15 minutes since the corresponding transaction happens.

The merged data sample consists of monthly observations at the bond level. Following the standard practice in the academic literature, we only consider bonds for which we have at least 25 observations of monthly credit spread/basis changes. Our final data sample includes 10,537 bonds issued by 5,869 firms. The total outstanding amount of all the bonds is 19.6 billion dollars, with 73% rated BBB and above. The average age is 3.2 years, the average time-to-maturity is 7.2 years, and the average trade size is $880,000 across all transactions.

4 Interdealer Price Dispersion

We construct a measure of the interdealer price dispersion as the cross-sectional standard deviation of yields of interdealer transactions. First, for each bond i in month t, we compute interdealer price dispersion as:

$$\sigma^{D2D}_{i,t} = \sqrt{\frac{\sum_{j=1}^{N_{i,t}} (yd_{j,i,t} - \overline{yd}_{i,t})^2}{N_{i,t} - 1}}, \tag{9}$$

where $N_{i,t}$ is the total number of interdealer transactions of bond i at month t, and $yd_{j,i,t}$ is the yield of interdealer transaction j. Second, we compute the average dispersion across all bonds in a given month as our main measure of interdealer price dispersion (D2D Dispersion):

$$\sigma^{D2D}_{t} = \frac{1}{M_t} \sum_i \sigma^{D2D}_{i,t}, \tag{10}$$

where M_t is the number of bonds traded in month t.

4.1 Risk Bearing Capacity Heterogeneity

To verify this intuition, we construct a measure of dealers' risk-bearing capacity heterogeneity as their heterogeneity in their bond inventories. The basic idea is that dealers will be willing to accumulate larger inventories when they are less averse to bearing credit risk (e.g., due to a higher credit rating, looser regulation, or a "risk-on" view). First, we compute total exposure to credit risk from dealers' bond inventory:

$$RC_{d,t} = \sum_{i \in I_d} Inv_{d,i,t} \times DTS_{i,t}, \tag{11}$$

where $RC_{d,t}$ is the risk-bearing capacity of dealer d in month t, I_d is the set of bond traded by dealer d, $Inv_{d,i,t}$ is dealer-d's cumulative inventory of bond-i, $DTS_{i,t}$ is bond-i's duration-time-spread. We follow Ben Dor et al. (2007), and use duration-times-spread (DTS) as a proxy for bond-level exposure (β) to bond-market risk. The DTS-weighted cumulative inventory is our measure of dealers' risk-bearing capacity and it includes exposure to aggregate credit risk from all bonds traded by dealer d. The cumulative inventory of bond i held by dealer d in month t is calculated according to the following inventory model:

$$Inv_{d,i,t} = Inv_{d,i,0} + \sum_{s=1}^{t} q_{d,i,s}, \tag{12}$$

where $q_{d,i,s}$ is the signed net trading volume of bond i traded by dealer d in month s, and $Inv_{d,i,0}$ is the initial inventory. The signed net trading volume ($q_{d,i,s}$) is positive if dealer i is a net buyer of bond i in month s, and negative if the dealer is a net seller. We set the initial level of inventory, $Inv_{d,i,0}$, to zero for all dealers and bonds.

4.2 Stylized Facts

In this section, we establish four stylized facts, namely, that (1) interdealer price dispersion exists, (2) it varies substantially over time, (3) higher price dispersion is associated with higher dispersion in dealer-level inventories, and (4) higher price dispersion is associated with higher bond yields.

[Figure 2 about here.]

Figure 2 plots our measure of interdealer price dispersion over time (red solid line). On average interdealer price dispersion is 40.5 basis points, but there is significant time variation. For example, in September 2008, dealers' corporate bond trades displayed price dispersion of over 400 basis points at the height of the Global Financial Crisis. Figure 2 plots the cross-sectional dispersion of dealers' risk-bearing capacity. The black dashed line is the cross-sectional inter-quartile range of dealers' risk-bearing capacity, which comoves strongly with interdealer price dispersion. The two series share a correlation of 55.8%. Consistent with our previous intuition, when dealers are more heterogeneous (i.e., higher dispersion in risk-bearing capacity), there is more price dispersion in the interdealer market for the same bond in a given month. Thus, this Figure shows that interdealer price dispersion exists and varies systematically with dispersion in dealer inventories and with known episodes of interdealer market disruptions.

These facts can be understood in the context of models in which frictions in interdealer markets prevent dealers from exploiting gains from trade and from efficiently reallocating risk within the dealer sector (Eisfeldt et al., 2023; Atkeson et al., 2015). Essentially, any trading friction in the interdealer market will prevent dealers from fully taking advantage of price dispersion by buying low and selling high. In the models developed in Eisfeldt et al. (2023); Atkeson et al. (2015), prices reflect the weighted average of counterparties' risk-bearing capacities. When trade is inhibited by transaction costs, information asymmetries, or search frictions, the dealer sector fails to execute trades that would reallocate risk more efficiently. As a result, at any point in time, we observe trades amongst sets of dealers who have not equated their marginal costs of risk-bearing (or, equivalently, their marginal valuations of the asset absent trading costs). Across pairs of counterparties, we observe trades at higher and lower prices. Higher price trades occur between less well-positioned counterparties while lower prices reflect trades among intermediaries with more capacity on average. Higher price dispersion then reflects a combination of more heterogeneity in dealers' risk-bearing capacity, more frictions in the interdealer market, or both.

[Figure 3 about here.]

Figure 3 displays the risk-bearing capacity of individual dealers as measured by the time series average of each dealer's accumulated inventory for four subperiods based on the Global Financial Crisis (GFC) of 2007-2008: (i) before June 2007 (pre-GFC), (ii) from July 2007 to August 2009 (CFG), (iii) from September 2009 to February 2014 (post-CFG), and (iv) after March 2014 (Volcker). In Panel (a), we plot the risk-bearing capacity of each dealer of the top 50 dealers. The picture shows that dealers are heterogeneous in their risk-bearing capacity and that this heterogeneity varies significantly over time. Panel (a) highlights that the tail of the distribution varies over time as well. In Panels (b) and (c), we plot the respective histogram and density kernels of the cross-sectional distribution of the risk-bearing capacity. These panels show the risk-bearing capacity being concentrated around zero, however its distribution became fat-tailed during the Global Financial Crisis. As in Eisfeldt et al. (2023), many dealers act mainly as intermediaries as they cluster around zero accumulated inventories. Others dealers are decumulating inventories by relatively large amounts and thereby reducing intermediary risk-bearing capacity, while a third set of dealers provides intermediary risk-bearing capacity by accumulating credit risk. Based on the intuition described above, we expect that trades by counterparties with different positions to occur at different prices.

[Figure 4 about here.]

Interdealer price dispersion also relates to the market-wide average bond yields. In Figure 4, we plot the interdealer price dispersion along with the yield spreads for investment grade and high-yield bonds.[11] There is a clear pattern from the data, which is that when interdealer

[11] ICE BofA US High Yield Index Effective Yield and ICE BofA US BBB Index Effective Yield, both retrieved from FRED, Federal Reserve Bank of St. Louis.

price dispersion is high, both investment grade and high-yield bonds trade at higher yields (lower prices). This figure shows that higher price dispersion in the dealer market coincides with periods of higher bond premia.

As discussed earlier, when dealers are more heterogeneous in their ability to take on additional credit risk, they trade the same asset at different prices. In addition, dealers being more heterogeneous and trading at dispersed prices worsen dealers' ability to reallocate risk and intermediate trades between different non-dealer financial institutions, which may result in bonds being traded at a higher premium. Consistent with this intuition, Figure 4 shows that yield spreads indeed increase when interdealer price dispersion is higher.

[Figure 5 about here.]

In addition to heterogeneity in dealers' risk-bearing capacity, belief heterogeneity is another potential source for interdealer price dispersion. If beliefs are heterogeneous, one would expect dealers to bilaterally trade at different prices too. However, belief and risk-bearing capacity heterogeneity have opposite implications for the trading volume. Belief heterogeneity increases not only price dispersion but also trading volume, and trading intensifies as investors disagree more about the value of an asset. Heterogeneity in risk-bearing capacity combined with trading frictions leads to higher price dispersion and lower trading volume, which is precisely what we observe in the data. Figure 5 shows that interdealer price dispersion and interdealer trading volume are negatively related.

5 Empirical Analysis

We conduct four empirical exercises to evaluate whether interdealer price dispersion relates to bond prices. First, in Section 5.1, we estimate the relation between changes in credit spreads and changes in interdealer price dispersion by following the methodology from Collin-Dufresne, Goldstein, and Martin (2001) (henceforth CDGM). Additionally, we run a series of panel regressions following the existing specifications from the literature. In Section 5.2, we verify that changes in bond basis—that is, credit spreads in excess of fair-value spreads—vary with interdealer price dispersion. Third, in Section 5.3, we follow the CDGM methodology and show that changes in interdealer price dispersion help to explain the first principal component of credit spread residuals. Finally, Section 5.4 shows that change in interdealer price dispersion is priced in the cross-section of duration-times-spread and maturity-times-spread sorted portfolios of bonds. These empirical exercises combined are comprehensive evidence that interdealer price dispersion is a key factor for bond prices.

5.1 Credit Spread Changes and Interdealer Price Dispersion

In this section, we evaluate how changes in credit spread can be explained by changes in interdealer price dispersion. We start by implementing the methodology used by CDGM, which is to run a time-series regression of bond of changes in yield spreads ($\Delta YieldSpread_{i,t}$) on various explanatory variables. In all our specifications, we control for the variables used by CDGM: (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (vii) slope of Volatility Smirk. These are a comprehensive set of fundamental-based variables. Specifically, for each bond, we estimate the following:

$$\Delta YieldSpread_{i,t} = \beta_0^i + \beta_1^i \Delta\sigma_t^{D2D} + \beta_3^{i\prime} Controls_{i,t} + \varepsilon_{i,t}, \tag{13}$$

where $Controls_{i,t}$ is a vector of controls, and $\Delta\sigma_t^{D2D}$ is the change in our measure of interdealer price dispersion (Equation 10 in Section 4). Then, we report average coefficients across all estimates. The specification in Equation 13 is nearly identical to the one implemented by Collin-Dufresne, Goldstein, and Martin (2001), except for including changes in interdealer price dispersion.

Our estimation results following the CDGM methodology (Equation 13) are in Table 1.[12] In the first column, we mirror the benchmark specification in CDGM and do not include changes in interdealer price dispersion. In line with their findings, the average adjusted R^2 is 20.5%. All signs, significance, and magnitude of CDGM control coefficients are consistent with those reported in their original work. In the second column, we add changes in interdealer price dispersion. The coefficient is statistically significant and economically large—a one-basis-point increase in interdealer price dispersion is associated with yield spreads 1.36 basis points higher after controlling for the CDGM fundamental-based variables. We find that the average adjusted R^2 increases to 23.7%.

[Table 1 about here.]

In the remaining columns of Table 1, we add different variables that have been documented to explain changes in credit spreads. In Columns (3) and (4), we follow Bessembinder, Kahle, Maxwell, and Xu (2008) and include a default factor defined as the spread between long-term investment grade and treasuries yields. Consistent with Bessembinder, Kahle, Maxwell, and Xu (2008), we find the default positively relates to credit spread changes. We also find that the interdealer price dispersion coefficient remains almost unchanged after

[12] To improve readability, Table 1 omits the coefficients estimates for the control variables, but in the Internet Appendix, Table IA.60 is the full table reporting all estimated coefficients.

controlling for the default factor. This suggests that changes in interdealer price dispersion are not related to changes in default probabilities.

Our findings are also largely unchanged if we include different variables measuring OTC market-wide frictions. Specifically, in Columns (5) and (6), we add the capital ratio growth rate of the whole sector of primary dealers from He, Kelly, and Manela (2017). We include two risk factors from He, Khorrami, and Song (2019) in Columns (7) and (8): the dealer inventory factor and the intermediary distress factor. The significance and economic magnitude of the interdealer price dispersion coefficient are similar in Columns (2), (4), (6), and (8), which shows that interdealer price dispersion is not capturing market-wide frictions in the OTC markets, but rather the reallocation efficiency of the OTC markets as dealer becomes more heterogeneous.

Finally, in Columns (9)-(12), we verify whether interdealer price dispersion remains significant after controlling for the various measures of OTC frictions studied by Friedwald and Nagler (2019). They analyze 11 variables split into three broad groups: inventory frictions, search frictions, and bargaining frictions. For data availability and comparison purposes, we follow their filtering approach. One of their variables is the length of the intermediation chain, which is not available for our full sample. For this reason, the sample in the last four columns is significantly reduced from 10,537 to 2,803 bonds from January 2003 to December 2013. Given the sample restriction, we first verify the previous findings in this subsample. In Columns (9) and (10), we replicate the exercises in columns (1) and (2) but using the restricted sample. We find a positive and significant coefficient for changes in interdealer price dispersion, and we also estimate a higher average adjusted R^2. In Columns (11) and (12), we control for all the variables from Friedwald and Nagler (2019). We find that interdealer price dispersion remains positive and statistically significant. Our results indicate that interdealer price dispersion captures market features above and beyond frictions inherent to over-the-counter markets.

In Table 1, we also consistently find a sizeable increase in average adjusted R^2 after including changes in interdealer price dispersion. Under the CDGM benchmark specification, the average adjusted R^2 increases by 15.6%, from 20.5% to 23.7%. In Columns (3)-(8), the average adjusted R^2 increases vary from 13.2% to 15.6%. After controlling for the OTC variables from Friedwald and Nagler (2019), we find that the average adjusted R^2 increases by 6.3%, from 38.3% to 40.7%.

One challenge faced by the methodology used by Collin-Dufresne, Goldstein, and Martin (2001) is that the betas estimated in the time-series estimates are noisy and can potentially affect the standard errors of the average coefficient reported in the table. Although the literature has used this methodology (e.g., Friedwald and Nagler, 2019), we additionally estimate these coefficients in a panel regression setting, which allows us to compute standard errors clustered at bond and month levels.

Next, we repeat the specifications in Table 1, but in a panel regression specification with bond fixed effect. Specifically, we estimate the following panel regression:

$$\Delta YieldSpread_{i,t} = \eta_i + \beta_1 \Delta\sigma_t^{D2D} + \beta_2' Controls_{i,t} + \varepsilon_{i,t}, \tag{14}$$

where η_i is a bond fixed effect, $Controls_{i,t}$ is a vector of controls, and $\Delta\sigma_t^{D2D}$ is the change in our measure of interdealer price dispersion (Equation 10 in Section 4).

Table 2 reports the regression estimates based on Equation (14).[13] In Column (1), we report estimates for the CDGM baseline, which does not include our variable of changes in interdealer price dispersion. A critical difference between the two empirical approaches is that our panel specification does not feature bond-specific slopes (e.g., β_1^i in Equation 13). Instead, we directly estimate coefficients common to all bonds (e.g., β_1 in Equation 14). Hence, the CDGM model has a more flexible structure and therefore has a better overall fit to the data with an average R^2 of 20.5% (see Column 1 in Table 1). Using the same control variables, the panel regression has an R^2 of 7.1% (see Column 1 in Table 2).

[Table 2 about here.]

In Column (2), we include changes in interdealer price dispersion ($\Delta\sigma_t^{D2D}$), and we find a positive and statistically significant coefficient of 0.777 with a t-statistic of 5.12, where standard errors are double clustered at month and bond levels. The estimated coefficient is economically meaningful. One basis-point increase in interdealer price dispersion is associated with credit spread increasing by 0.777 basis point on average after controlling for various fundamental-based variables.

In Columns (3) and (4) of Table 2, we add the controls for default factor (DEF) from Bessembinder, Kahle, Maxwell, and Xu (2008), which is measured as the yield difference between long-term investment-grade corporate bonds and long-term treasuries. In Columns (5) and (6), we control for the capital ratio growth rate of the whole sector of primary dealers from He, Kelly, and Manela (2017), and in Columns (7) and (8), we control for the inventory and distress factors from He, Khorrami, and Song (2019). The interdealer price dispersion coefficient remains largely unchanged and significant. The last four columns include controls for the variables used by Friedwald and Nagler (2019). In all specifications, the coefficient on changes in interdealer price dispersion remains significant and economically important.

[13] To improve readability, Table 2 omits the coefficients estimates for the control variables, but in the Internet Appendix, Table IA.61 is the full table reporting all estimated coefficients.

5.2 Changes in Bond Basis and Interdealer Price Dispersion

This section investigates how bond basis relates to interdealer price dispersion. The bond basis is the difference between bond spread and fair-value spread. We follow Chang, d'Avernas, and Eisfeldt (2021) to build fair value spreads (FVS) from Moody's (Peter Liu, 2020; Nazeran and Dwyer, 2015). The construction of fair-value spreads does not rely on bond market data; the primary inputs are data on leverage and equity volatility. Since fair-value spreads are based on equity market data, they measure a non-default component of credit spreads unrelated to OTC frictions since equities are not traded in over-the-counter markets. Hence, the difference between a bond spread and its fair-value spread, which is the bond basis, measures how much bond yields are dislocated from its non-default component, likely due to OTC frictions.

We follow the same approach as in Section 5.1 and regress bond basis on interdealer price dispersion and various controls.[14] We run the following panel regression:

$$\Delta YieldSpread_{i,t} - \Delta FVS_{i,t} = \eta_i + \beta_1 \Delta\sigma_t^{D2D} + \beta_2' Controls_{i,t} + \varepsilon_{i,t}, \tag{15}$$

where η_i is a bond fixed effect, $\Delta FVS_{i,t}$ is the change in fair value spread of bond i from month $t-1$ to t, and $\Delta\sigma_t^{D2D}$ is the change in our measure of interdealer price dispersion.

[Table 3 about here.]

Table 3 reports the regression estimates.[15] In Column (1), we control for CDGM variables only, and in Column (2), we include changes in interdealer price dispersion ($\Delta\sigma_t^{D2D}$). The coefficient on interdealer price dispersion is positive and equal to 0.6. It is statistically significant and economically meaningful. One basis point increase in interdealer price dispersion is associated with a 0.6 basis point hike in bond basis.

In the remaining columns, we repeat this exercise but control for different factors. In Columns (3) and (4), we control for the default factor (DEF) from Bessembinder, Kahle, Maxwell, and Xu (2008), which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries. In Columns (5) and (6), we control for the capital ratio growth rate of the whole sector of primary dealers from He, Kelly, and Manela (2017). Finally, in Columns (7) and (8), we control for both inventory and distress factors from He, Khorrami, and Song (2019). Across these specifications, the interdealer

[14] In this section, we report results for panel regression specifications. However, in Internet Appendix Table IA.50, we apply the same methodology as in CDGM but with bond basis on the left-hand side and find similar findings.

[15] To improve readability, Table 3 omits the coefficients estimates for the control variables, but in the Internet Appendix, Table IA.62 is the full table reporting all estimated coefficients.

price dispersion coefficient remains largely unchanged and significant. The coefficients on all other variables (DEF, HKM, and HKS) are insignificant. This means that neither changes in default nor changes in market-wide OTC frictions (HKM, HKS) help explaining changes in the bond basis. Hence, interdealer price dispersion captures frictions and heterogeneity in the dealer market beyond OTC frictions previously documented in the literature.

In the last four columns of Table 3, we control for OTC variables from Friedwald and Nagler (2019), akin to Columns (9)-(12) in Tables 1 and 2. After controlling for their variables, we find that interdealer price dispersion remains positive and significant. The coefficient decreases by nearly 40%, from 0.26 to 0.16, but it is still economically meaningful. After controlling for various fundamental-based measures from CDGM and 11 OTC-based variables, we find a positive and significant relation between interdealer price dispersion and bond basis.

5.3 Principal Component Analysis of CDGM residuals

Collin-Dufresne, Goldstein, and Martin (2001) find that their fundamental-based variables explain 20% to 25% of the changes in credit spreads observed in the data. We replicate this finding in Column (1) of Table 1, where the CDGM controls feature an average adjusted R^2 of 20.5%. A key result of their work is that the residuals from these regressions are highly cross-correlated, with the first principal component of these residuals explaining 75% of the total variation. Following the same methodology, our replication in Column (1) of Table 4 depicts a similar figure in which the first principal component of the residual explains 57.2% of the variation in residuals. Panel A of Table 4 contains the principal component analysis for the same set of controls used in Table 1. This first panel reports the fraction of the variance of the residuals that the first and second principal components explain, as well as the remaining unexplained variance.

[Table 4 about here.]

The strong factor structure in credit spread residuals is interesting. Explaining their first principal component is crucial to understanding credit spreads' dynamics. Following Friedwald and Nagler (2019), we take the first principal component of the residuals from the benchmark CDMG specification (Column (1) in Panel A) and regress it on various factors. These results are in Panel B of Table 4, where we report R^2, adjusted R^2, and F-statistics for different specifications. The explanatory variables used mirror those in Panel A. In Column (2) Panel B, we find that interdealer price dispersion explains 16% of the first principal component of CDGM residuals. Columns (3), (5), and (7) show that the default, HKM, and

HKS factors have low explanatory power with R^2 of about 1%. Once we add interdealer price dispersion to these specifications, the explanatory power increases significantly, with R^2 at about 17%, as reported in Columns (4), (6), and (8).

[Table 5 about here.]

In Friedwald and Nagler's (2019) (henceforth FN) original work, they document that their 11 OTC variables on inventory, search, and bargaining explain 23.4% of the first principal component of the CDGM residuals. Their finding suggests that OTC frictions are essential in explaining these residuals. Table 5 conducts the same exercise as Table 4. However, we restrict to a subsample in which FN variables are available. We limit the sample to verify how their 11 OTC variables interplay with interdealer price dispersion in explaining the CDGM residuals. Our replication differs slightly from FN's original work. Although we followed the same procedure, our sample has 2803 bonds, and theirs has 925 bonds. These differences might be due to data availability. In Columns (1)-(3) of Table 5, we conduct our analysis following our replication, including all 2803 different bonds. As a robustness exercise, Columns (4)-(6) report the same results, but we restrict the sample to the same universe of bonds used in FN's original work.

Our replication of FN findings in Column (1) of Table 5 shows that FN 11 variables explain 11% of the first principal component of bond residuals. In Column (2), we find that interdealer price dispersion along with FN 11 OTC variables explain 23% over the same data sample. Finally, in Column (3), we report the results with interdealer price dispersion as the only independent variable. We find that interdealer price dispersion alone explains 12% of the first principal component of bond residuals. The results reported in Columns (4)-(6) are similar to those reported in the first three columns. Our analysis is robust to restricting the universe of bonds to those used in FN's original work. Overall, our results indicate that interdealer price dispersion explains the first principal component of bond residuals beyond a wide range of measures of OTC frictions. Furthermore, we find that dealer heterogeneity is a crucial driver of changes in credit spreads. Dealer heterogeneity also helps to explain the first principal component of credit spread changes unexplained by CDGM factors.

5.4 Price of Risk

To estimate the price of risk of interdealer price dispersion, we follow a two-step estimation procedure, which is a particular case of the method developed by Fama and MacBeth (1973).

First, we run the following time-series regression for each portfolio i:

$$R_{i,t} = \beta_i^{D2D} \Delta\sigma_t^{D2D} + \beta_i^{DEF} DEF_t + \beta_i^{HKM} HKM_t + \beta_i^{HKS\prime} HKS_t + \gamma_i X_t + \epsilon_{i,t} \tag{16}$$

where $R_{i,t}$ is the excess return on portfolio i in month t, β_i^{D2D} is portfolio's exposure to interdealer price dispersion, β_i^{DEF} is portfolio's exposure to default risk, β_i^{HKM} is portfolio's exposure to capital ratio growth rate of primary dealers by He, Kelly, and Manela (2017), β_i^{HKS} are portfolio's exposures to the two risk factors in He, Khorrami, and Song (2019), X_t include market-level characteristics. Market-level characteristics include yield-curve slope, VIX, and S&P500 index return. We expect the sign of β_i^{D2D} to be negative because when interdealer price dispersion increases, bonds' excess returns *in the same month* decrease as yields increase.

Second, we run monthly cross-sectional regressions for $t = 1, 2, ..., T$ as follows:

$$R_{i,t} = \lambda_t^{D2D}\beta_i^{D2D} + \lambda_t^{DEF}\beta_i^{DEF} + \lambda_t^{HKM}\beta_i^{HKM} + \lambda_t^{HKS\prime}\beta_i^{HKS} + \delta_t\gamma_i + \epsilon_{i,t} \quad (17)$$

where γ_i's are portfolio exposures as above and β's are the estimated coefficients from Equation 16. In this second step, we estimate the coefficient λ_t's, and their time-series average are our estimates for the price of risk of each risk factor. We estimate the first and second steps in a single generalized method moments (GMM) estimation so that our standard errors take into account that the second stage uses the coefficient estimated in the first step.

We expect interdealer price dispersion to carry a negative price of risk—that is, $\lambda^{D2D} < 0$. Intuitively, interdealer price dispersion measures not only interdealer heterogeneity and frictions but also dealers' ability to reallocate risk. For this reason, when interdealer price dispersion increases, it becomes more costly for the dealer sector to reallocate risk leading to higher yields and lower realized returns for bonds. This positive relation between interdealer price dispersion and bond yields was documented earlier in Section 5.1. It is important to emphasize that interdealer price dispersion increases in bad states of the world. For example, in Figure 2, we see a significant spike in interdealer price dispersion around the Global Financial Crisis of 2007–2008.

Hence, a bond with a more negative exposure to interdealer price dispersion—that is, a more negative beta with respect to interdealer price dispersion—pays lower returns in bad states of the world and is riskier. For this reason, such a bond should carry a higher risk premium. Alternatively, bonds whose returns covary positively with changes in interdealer price dispersion, i.e., $\beta_i^{D2D} > 0$, are hedges against these states of the world and should carry a lower risk premium. This implies a negative price of risk for interdealer price dispersion.

[Table 6 about here.]

We estimate the prices of risk for different test assets (Equations 16 and 17), and Table 6 reports our estimation results under different specifications. In Panel A, we use 10 portfolios of bonds sorted by duration times spreads, and in each row, we estimate prices of risk under different specifications. In the first row, we control for VIX and the slope of the yield curve, and in the second row, we control for the default factor (DEF) from Bessembinder, Kahle, Maxwell, and Xu (2008). In the third row, we control for the capital ratio growth rate of the whole sector of primary dealers (He, Kelly, and Manela, 2017), and, in the fourth row, we control for inventory and distress factors (He, Khorrami, and Song, 2019). In all four specifications, we find that interdealer price dispersion carries a statistically significant negative price of risk.

In Panel B of Table 6, we use 25 portfolios of bonds double sorted by maturity and size.[16] Again, in all four specifications, we find that interdealer price dispersion carries a statistically significant negative price of risk, which is consistent with our intuition and previous results.

6 Controlling for within-month volatility

Our measure of interdealer price dispersion consists of the cross-sectional standard deviation of all interdealer transactions' yield spreads. Within each calendar month, we first compute, for each bond, the standard deviation of yield spreads of all interdealer transactions (Equation 9). As a second step, we average across all bonds to get the monthly time series of interdealer price dispersion (Equation 10). One challenge to this approach is that interdealer price dispersion captures some of the within-month volatility of bond spreads because the standard deviation computed in the first step uses all interdealer trades each month. Bonds are not traded frequently, and unfortunately, we cannot compute interdealer price dispersion at a daily frequency.

We conduct two robustness exercises to control for within-month volatility. First, we construct interdealer price dispersion at a weekly frequency, which increases the frequency of our data and mitigates concerns regarding within-month volatility. However, there is still within-week volatility that is not being controlled for. In our second exercise, we control for all within-month volatility by constructing interdealer price dispersion from bond basis instead of bond spreads, which effectively controls for every fundamental-base variation in bond spreads. Next, we discuss these two exercises in detail.

[16] Figures IA.1 and IA.2 in the Internet Appendix plot average bond risk premium against the predicted risk premium implied Equation 17 at estimated parameters for all four specifications.

6.1 Interdealer price dispersion at weekly frequency

We construct an alternative measure of monthly interdealer price dispersion using bonds' cross-sectional standard deviation of yields of interdealer transactions within each *week*. This alternative measure helps control the within-month bond price volatility. In addition, we compute the volume-weighted average of week-bond dispersion, which helps to filter out weeks in which a particular bond had low trading volume.

First, for each bond i traded in week w, we compute interdealer price dispersion as:

$$\sigma_{i,w}^{D2D} = \sqrt{\frac{\sum_{j=1}^{N_{i,w}} (yd_{j,i,w} - \overline{yd}_{i,w})^2}{N_{i,w} - 1}}, \tag{18}$$

where $N_{i,w}$ is the total number of interdealer transactions of bond i in week w, and $yd_{j,i,w}$ is the yield of interdealer transaction j.

Second, we compute the average dispersion across all bonds in a given month as our alternative measure of interdealer price dispersion:

$$\tilde{\sigma}_t^{D2D} = \frac{1}{M_t} \sum_i \overline{\sigma}_{i,t}^{D2D} = \frac{1}{M_t} \sum_i \frac{\sum_{w \in W_t} \sigma_{i,w}^{D2D} * Q_{i,w}}{\sum_{w \in W_t} Q_{i,w}}, \tag{19}$$

where $\overline{\sigma}_{i,t}^{D2D}$ is volume-weighted average weekly interdealer price dispersion in month t, $\{Q_{i,w}\}_{w \in W_t}$ are bond's total trading volume in all weeks W_t within each month t, and M_t is the number of bonds traded in month t.

Then we apply this new measure of interdealer price dispersion to re-do the empirical analysis from Sections 5.1, 5.2, and 5.3. Tables IA.1, IA.2, IA.3, IA.4, and IA.5 in the Internet Appendix replicate Tables 1, 2, 3, 4, and 5 but using the interdealer price dispersion measure controlling for weekly variation instead. We obtain results similar to those in Sections 5.1, 5.2 and 5.3.

6.2 Interdealer price dispersion from bond basis

Another way to control for within-month variation in spreads is to match the yield spread of each transaction with its respective daily fair value spread. Fair-value spreads are a fundamental-based measure of spreads that depend on the issuers' leverage and volatility but do not rely on data from bond markets. The difference between yield spreads and fair-value spreads, the bond basis, captures the non-fundamental component of bond spreads and is not affected by variation in fundamentals. Hence, to control for within-month volatility in fundamentals, we construct an alternative measure of interdealer price dispersion based on bond basis instead of yield spreads.

Daily Fair Value Spreads We follow Chang, d'Avernas, and Eisfeldt (2021) and literature therein to build fair value spreads (FVS) *but at a daily frequency.*[17] The construction of these spreads uses no bond market data. The main inputs are data on issuers' leverage and data on daily equity price.

We apply the Vasicek-Kealhofer (VK) model to calculate, for each issuer and day, asset volatility, the market value of assets, and the issuer's distance to default (DD). We map daily DD to obtain daily Expected Default Frequency (EDF) credit risk measure,[18] which is an estimate for the probability of default projected on next year. Then using the generated EDF credit risk measure, we construct a cumulative EDF (CEDF) over T years by assuming a flat term structure—that is, $CEDF_T = 1 - (1 - EDF)^T$. Then we convert our physical measure of default probabilities (CEDF) to risk-neutral default probabilities (CQDF) using the following equation:

$$CQDF_T = N\left[N^{-1}\left(CEDF_T\right) + \lambda\rho\sqrt{T}\right],$$

where N is the cumulative distribution function for the standard normal distribution, λ is the market Sharpe ratio, and ρ is the correlation between the underlying asset returns and market returns. Given this risk-neutral default probability measure, the fair value spread of a zero-coupon bond with duration T can be computed as

$$FVS = -\frac{1}{T}\log(1 - CQDF_T \cdot LGD),$$

where LGD stands for the risk-neutral expected loss given default. We set T equals bond's remaining time to maturity date, and follow Chang, d'Avernas, and Eisfeldt (2021) to set $LGD = 60\%$, $\lambda = 0.546$, and $\rho = \sqrt{0.3}$. We obtain series of FVS for each issuer and day.

Interdealer price dispersion based on bond basis. Interdealer price dispersion based on the bond basis is then computed monthly. We construct a monthly time series for bond basis dispersion by following the same methodology used in constructing interdealer price dispersion.

[17] See Peter Liu (2020) and Nazeran and Dwyer (2015).

[18] Our Matlab codes also refer to the following public webpage: https://fintechprofessor.com/portfolio-items/kmv-merton-distance-to-default-model-through-iterative-process-in-stata/.

First, we compute the dispersion in basis for each bond in each month:

$$\sigma_{i,t}^{basis} = \sqrt{\frac{\sum_{j=1}^{N_{i,t}} (basis_{j,i,t} - \overline{basis}_{i,t})^2}{N_{i,t} - 1}}, \tag{20}$$

where $basis_{j,i,t} = ys_{j,i,t} - FVS_{j,i,t}$, $ys_{j,i,t}$ is the yield spread of interdealer transaction j, $FVS_{j,i,t}$ is the corresponding daily fair-value spread of transaction j, and $N_{i,t}$ is the total number of interdealer transactions of bond i at month t. Dispersion in basis of bond i at month t, i.e. $\sigma_{i,t}^{basis}$, excludes the specific component of variation in yield spreads due to the fact that transactions in that particular bond may occur on different days within a given month.

Second, we compute the average dispersion across all bonds in a given month to obtain dispersion in bond basis over time:

$$\sigma_{t}^{basis} = \frac{1}{M_t} \sum_{i} \sigma_{i,t}^{basis}, \tag{21}$$

where M_t is the number of bonds traded in month t.

Tables 7, 8, 9, 10, 11 replicate Tables 1, 2, 3, 4, 5 but using interdealer price dispersion measure constructed from bond basis. We obtain results similar to those in Sections 5.1, 5.2 and 5.3.

[Table 7 about here.]

[Table 8 about here.]

[Table 9 about here.]

[Table 10 about here.]

[Table 11 about here.]

7 Robustness

In this section, we conduct various robustness exercises. Table 12 lists all robustness exercises and the related tables in the Internet Appendix. In Section 7.1, we consider another two alternative measures for interdealer price dispersion to control for within-month bond volatility. Finally, Section 7.2 shows that the relation between credit spread changes and changes in interdealer price dispersion holds under different controls and subsamples.

[Table 12 about here.]

7.1 Alternative Measures of Interdealer Price Dispersion

We construct alternative measures of interdealer price dispersion based on: (i) volume-weighted dispersion of yields, (ii) interdealer price dispersion among top 50 largest dealers, (iii) high v.s. low *bond-level* interdealer price dispersion, and (iv) interdealer price dispersion using only more liquid bonds. The first two versions (i) and (ii) are designed to control for within-month variation of yields and less liquid bonds' effects. The goal of exercise (iii) is to show that interdealer price dispersion itself and not other bond characteristics (e.g. fundamentals and liquidity) determines the main regression results. Specifically, we compare the significance of regression results using two different interdealer price dispersions, which are built upon bonds with similar fundamentals and liquidity but *only* differing in their bond-level price dispersions. Robustness exercise (iv) relies on more liquid bonds to eliminate the effects of price impact due to dealers' adjustment of their credit exposures.

Volume-weighted interdealer price dispersion. As another robustness exercise, we construct a volume-weighted measure of interdealer price dispersion:

$$\sigma_{t,vw}^{D2D} = \frac{\sum_i Volume_{i,t} * \sigma_{i,t}^{D2D}}{\sum_i Volume_{i,t}}, \tag{22}$$

where $\sigma_{i,t}^{D2D}$ is the interdealer yield dispersion of bond i in month t defined by Equation (9), and $Volume_{i,t}$ is the transaction volume of bond i in month t. Tables IA.6, IA.7, IA.8, IA.9, IA.10 in the Internet Appendix replicate Tables 1, 2, 3, 4, 5 but using volume-weighted interdealer price dispersion measure instead. We obtain results similar to those in Sections 5.1, 5.2 and 5.3.

Interdealer price dispersion from largest dealers only. TRACE data identify many financial institutions as dealers. Some dealers are small, while others are large. Smaller dealers are more likely to have transactions that are outliers. To verify if this is an issue for our measure, we compute interdealer price dispersion based only on transactions between the largest 50 dealers. Tables IA.11, IA.12, IA.13, IA.14, IA.15 in the Internet Appendix replicate Tables 1, 2, 3, 4, 5 but using interdealer price dispersion measure constructed from transaction between the largest 50 dealers. We obtain results similar to those in Sections 5.1, 5.2 and 5.3.

Interdealer price dispersion based on high v.s. low bond-level price dispersion. We apply propensity score matching (PSM) approach to select two groups of bonds separately with high and low bond-level interdealer price dispersion, which are denoted as "high-D2D" and "low-D2D" bonds. Specifically, for each month, we sort all bonds by their bond-level interdealer price dispersion. We choose the top 30% bonds as the candidate high-D2D bonds, and the bottom 30% ones as the candidate low-D2D bonds. We drop the intermediate ones for each month. Then for each month, we apply the PSM approach to select equal number of bonds from the high-D2D and the low-D2D groups with similar characteristics, including: liquidity, credit rating, duration, dealer participation and proportion of block trades. Finally, we use the selected high-D2D and low-D2D bonds to separately construct market-level interdealer price dispersion for each month, and separately use the two versions of interdealer price dispersion as independent variable in our fixed effect models. We obtain the significant regression results using the high-D2D version interdealer price dispersion, see Tables IA.56 and IA.58. However, the results become insignificant when using low-D2D version interdealer price dispersion, see Tables IA.57 and IA.59.

Interdealer price dispersion based on more liquid bonds. We identify those bonds with their average monthly Amihud ratio (throughout the whole sample period) among the top 30% of all bonds as "more liquid" bonds. Then we use the interdealer transactions of these identified "more liquid" bonds to construct a new version of market-level interdealer price dispersion and use it as new independent variable in our fixed effect models. We obtain more significant effect of interdealer price dispersion both in statistical and economic sense, see Tables IA.54 and IA.55.

7.2 Additional controls and subsamples

In this section, we conduct a few additional robustness exercises. (i) We show that our findings hold even after excluding the Global Financial Crisis period from our sample. Bond spreads and interdealer price dispersion spiked during that period (See Figure 3), but this unusual period is not a driver of our results.[19] (ii) One could be concerned that interdealer price dispersion captures bond turnover—turnover could lead to changes in interdealer price dispersion. Our results hold if we control for bond turnover.[20] (iii) To rule out nonlinear effects, we show that our results are robust to controlling for the square term of interdealer price dispersion.[21] (iv) The market power of dealers could be a concern and a potential driver of interdealer price dispersion. As a robustness exercise, we control for dealers' market power, measured by the Herfindahl–Hirschman index (HHI) of dealers' market share in

[19] See Tables IA.16, IA.17, IA.18, IA.19, IA.20

[20] See Tables IA.21, IA.22, IA.23 in the Internet Appendix.

[21] See Tables IA.24, IA.25, IA.26 in the Internet Appendix.

each bond market. Our findings still hold, and interdealer price dispersion is not capturing the dealers' market power.[22] (v) Our results are robust to including bond-specific interdealer price dispersion and bond-specific changes in dealer-sector inventory as controls. This controls for the potential cross-sectional relations between yield spread change and bond-specific dealer-sector risk-bearing capacity and OTC frictions.[23]

We repeat these five exercises above but replace interdealer price dispersion $\Delta\sigma_t^{D2D}$ with that from bond basis $\Delta\sigma_t^{D2D,bondbasis}$ as well. Our results still hold: See Tables IA.33–IA.49 in the Internet Appendix. Table 12 has a summary of all robustness exercises.

Table IA.50 in the Internet Appendix reports estimates of the CDGM methodology but applied to changes in bond basis instead of yield spread changes. The results are consistent with those reported in Tables 1 and 3. We find that even under this estimation methodology, changes in interdealer price dispersion are significantly related to changes in bond basis.

Our results are robust across bonds sorted by credit rating, maturity, and leverage. We estimate (13) with all CDGM controls with and without interdealer price dispersion for different groups of bonds, as in Collin-Dufresne, Goldstein, and Martin (2001). Specifically, we consider bonds grouped by issuer's leverage, credit rating, and different maturities. Tables IA.51 and IA.52 in the Internet Appendix show that interdealer price dispersion remains consistently significant across different groups and also significantly improves the mean of adjusted R^2 relative to the CDGM specification. Finally, in Table IA.53, we extend the sample until September 2022, and control for a dummy variable during the COVD period (March 2020 to April 2020). The results are nearly identical.

8 Conclusion

We document the explanatory power of interdealer price dispersion for corporate bond yields. When interdealer price dispersion is higher, bond yield changes are more positive. Interdealer price dispersion explains a substantial fraction of the first principal component of the residuals from a bond-level regression of yield spread changes on fundamental credit-risk variables. We argue that interdealer price dispersion is a proxy for frictions in the OTC bond market. Consistent with this, we show that interdealer price dispersion explains the basis between bond spreads from the OTC bond market and bond spreads constructed using a structural model and exchange-traded equity market data on volatility and leverage. Finally, we show that interdealer price dispersion is a priced risk factor. This is consistent with the idea that systematic credit risk capacity is lower when interdealer price dispersion is greater. We argue

[22] See Tables IA.27, IA.28, IA.29 in the Internet Appendix.

[23] See Tables IA.30, IA.31, IA.32 in the Internet Appendix.

that this is because prices in the interdealer market become more dispersed when credit risk misallocation is more severe. Credit risk misallocation reduces risk-bearing capacity and increases effective risk aversion, leading to lower prices and higher expected returns.

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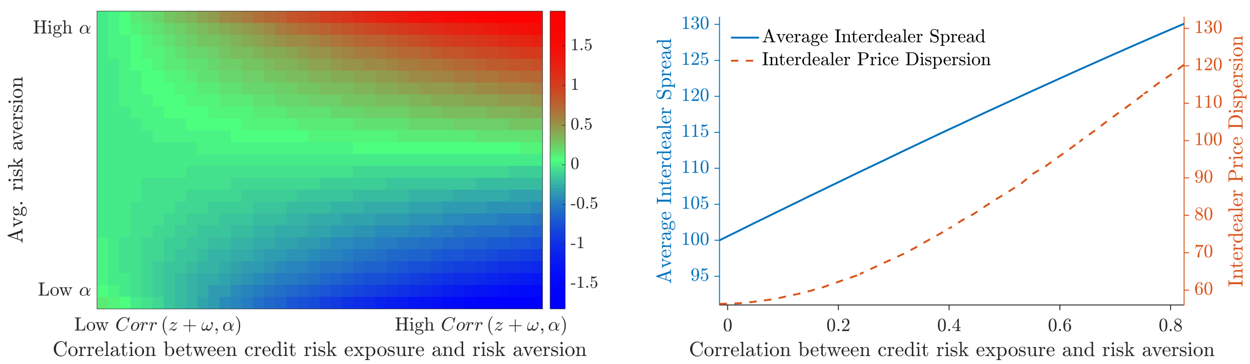
Figures

Figure 1: Interdealer price dispersion and risk misallocation

In our model's numerical simulation, we start with an assumed average spread of 100 basis points under ideal risk sharing ($C = 0.01$). Risk aversion is modeled as log-normal with a mean of 2 and a standard deviation of 4. We normalize the model with $\sigma_\varepsilon = 1$. Building on Eisfeldt et al. (2023), the probability of default is set at $p = 0.0065$ and loss given default at $L = 0.6060$, resulting in a bond payout variance of $\sigma^2 = (1-p)pL^2 = 0.0024$. Our simulation involves 1 million economies, each with 25 dealers. Dealers are sorted by their risk aversion (α) to compute: (i) average risk aversion, (ii) average cross-sectional correlation between credit risk exposure ($z+\omega$) and risk aversion (α), (iii) average interdealer price dispersion, and (iv) average credit spread in the interdealer market. We repeat these step by varying $\rho_{\varepsilon,\alpha}$ from 0 to 1 in 41 steps (incremental steps of 0.025). Panel (a) shows a heatmap of the average risk aversion across dealers plotted against the correlation between credit risk exposure ($z + \omega$) and risk aversion (α). Panel (b) illustrates the average interdealer price dispersion (right axis) and the average credit spread in the interdealer market (left axis), both plotted against the correlation between credit risk exposure ($z + \omega$) and risk aversion (α).



(a) Risk allocation

(b) Avg. spread and interdealer price dispersion

Figure 2: Interdealer price dispersion and primary dealers' risk bearing capacity

This figure plots interdealer price dispersion (red solid line) and the dispersion of dealers' risk-bearing capacity (black dashed line). To compute the interdealer price dispersion, we first compute the cross-sectional standard deviation of yield spreads for each bond within each month. Then, we average across all bond trades that month (see Equation 10). Risk-bearing capacity is the duration-times-spread (DTS)-weighted average of cumulative bond inventory positions, and the dispersion of risk-bearing capacities is its cross-sectional interquartile range. See Section 4 for details on the construction of these variables.

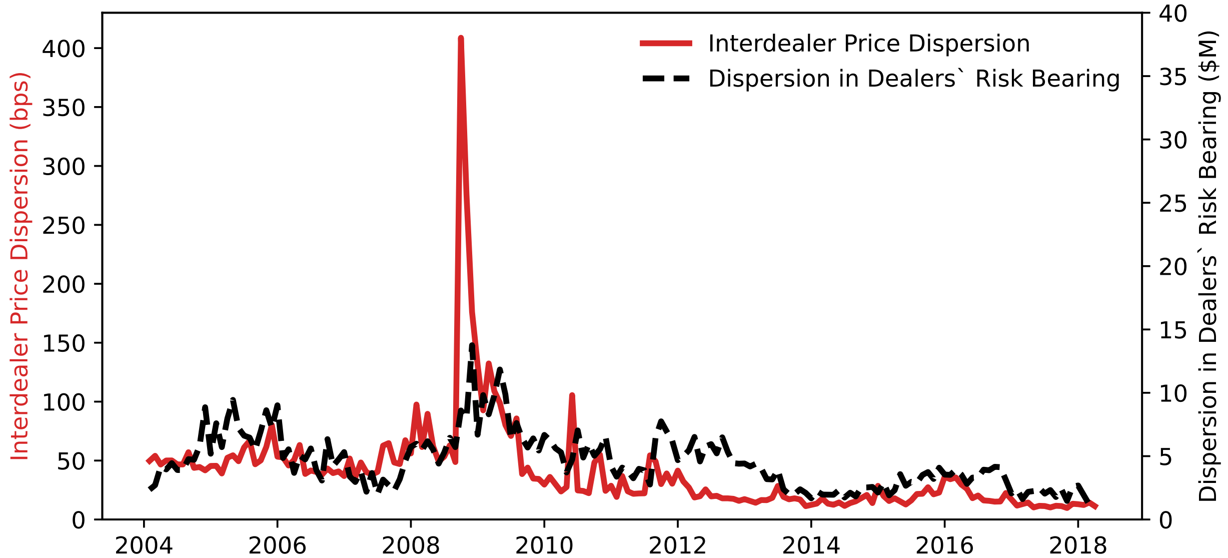
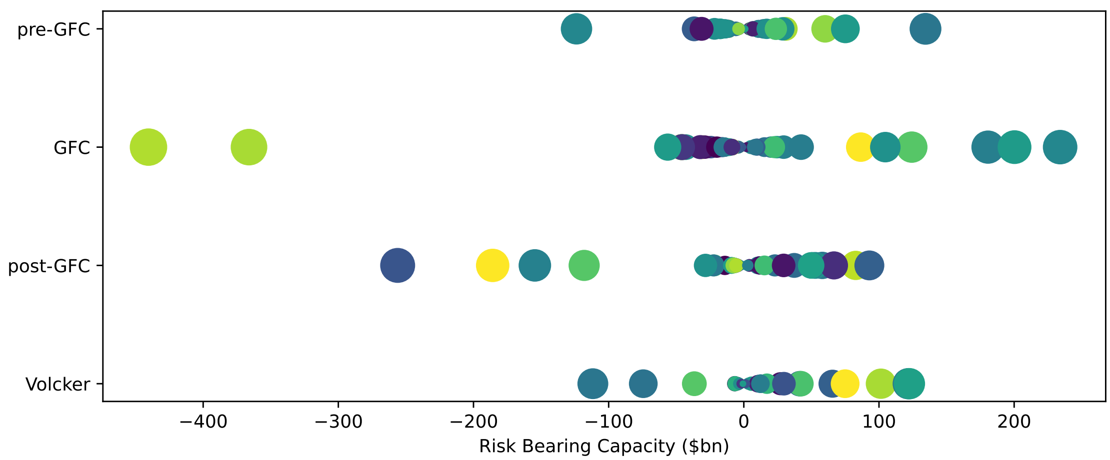
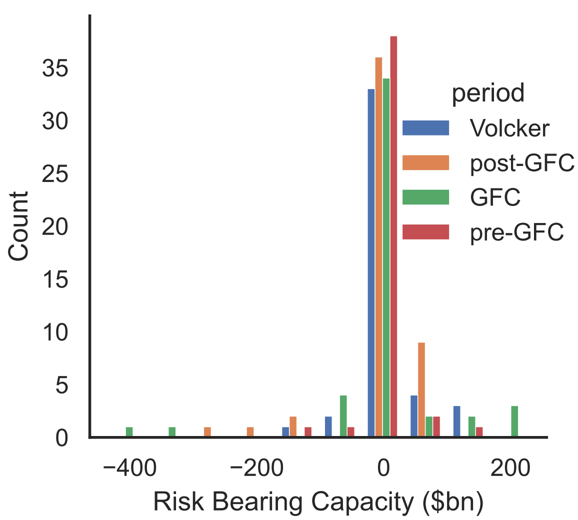


Figure 3: Risk Bearing Capacity of Dealers

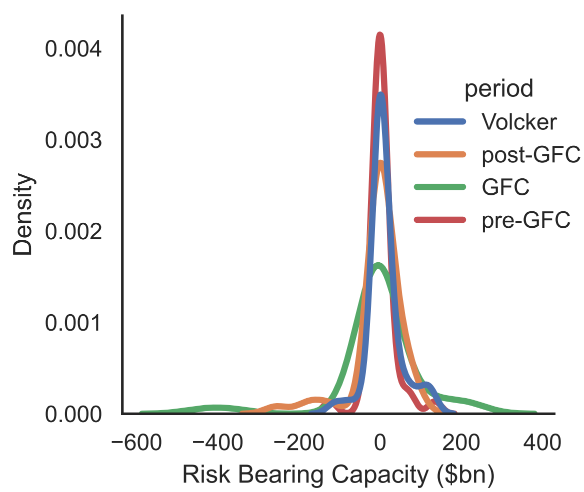
In Panel (a), we plot the average risk-bearing capacity for the largest 50 dealers over four different sub-periods relative to the Global Financial Crisis (GFC) of 2007-2008: (i) before June 2007 (pre-GFC), (ii) from July 2007 to August 2009 (CFG), (iii) from September 2009 to February 2014 (post-CFG), and (iv) after March 2014 (Volcker). Risk-bearing capacity is the duration-times-spread (DTS)-weighted average of cumulative bond inventory positions. Each circle in the plot represents a different dealer. Circle size increases with the absolute value of risk-bearing capacity. Circles colors were randomly chosen to differentiate dealers. In Panel (b), we plot the histogram if the average risk-bearing capacity for the largest 50 dealers for the same four periods, and, in Panel (c), we plot the density kernel. See Section 4 for details on the construction of these variables.



(a) Risk-bearing capacity



(b) Histogram



(c) Density Kernel

Figure 4: Interdealer price dispersion and level of yield spreads

This figure plots interdealer price dispersion (red solid line), effective yield of BBB (blue dashed line) and high yield (green dashed line) bonds. To compute the interdealer price dispersion, we first compute the cross-sectional standard deviation of yield spreads for each bond within each month. Then, we average across all trades that month (see Equation 10). The effective yield data are the ICE BofA US High Yield Index Effective Yield and ICE BofA US BBB Index Effective Yield, both retrieved from FRED, Federal Reserve Bank of St. Louis. See Section 4 for details on the construction of these variables.

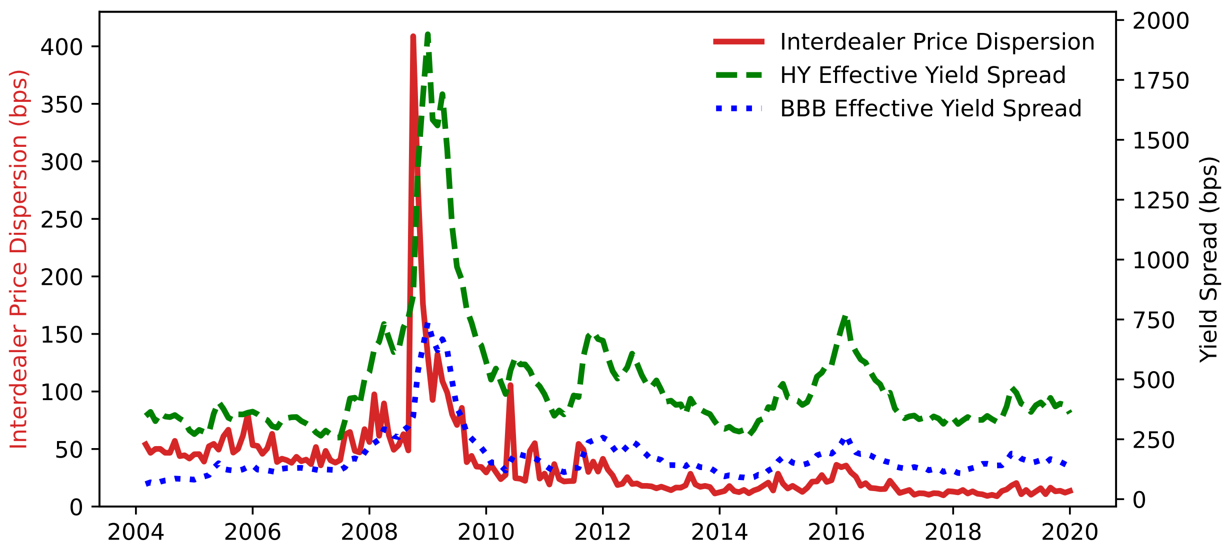
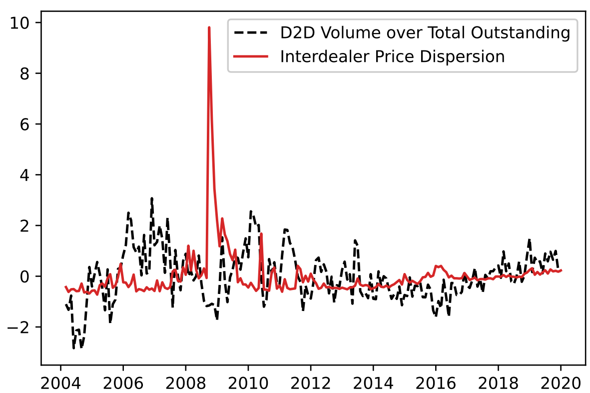
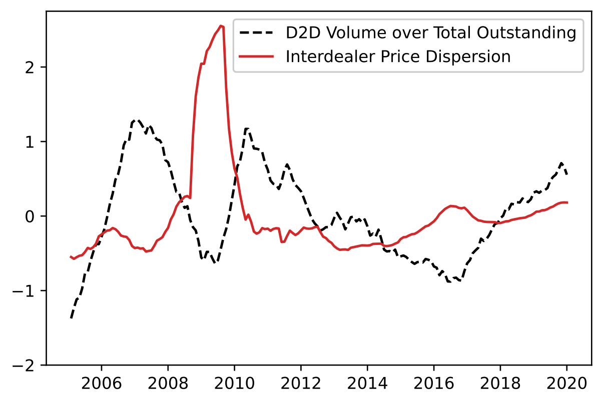


Figure 5: Interdealer price dispersion and interdealer trading volume

In Panel (a), we plot interdealer price dispersion (red solid line) and volume in the interdealer markets as a fraction of total amount outstanding (black dashed lined). We linearly detrend and standardized both series to have mean zero and variance one. In Panel (b), we plot 12-month moving average of the series in Panel (a). See Section 4 for details on the construction of these variables.



(a) Standardized and detrended



(b) 12-month moving averages

Tables

Table 1: Credit Spread Changes (CDGM)

This table reports the regression estimations from Equation (14):

$$\Delta YieldSpread_t^i = \beta_0^i + \beta_1^i \Delta\sigma_t^{D2D} + \beta_2^{i\prime} Controls_t^i + \varepsilon_t^i$$

where $\Delta\sigma_t^{D2D}$ is the simple average change in dealer market price dispersion across all bonds from month $t-1$ to month t, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor; (5) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. To compare with regression results in Friedwald and Nagler (2019), we follow their filtering approach to construct a new data sample from January 2003 to December 2013, and use the new sample to do regression only for model specification with FN controls. For all other model specifications (Columns 1-8), we use the sample of January 2004 to December 2019. See Section 5.1 for details.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D}$ (bps)		1.365***		1.291***		1.398***		1.412***		0.339***		0.603***
		(27.66)		(25.99)		(27.6)		(27.33)		(5.23)		(4.30)
DEF			0.039***	0.033***								
			(7.61)	(6.41)								
HKM					−14.417***	−10.887***						
					(−8.44)	(−6.13)						
HKS-1: $\Delta Inventory$ ($M)							−10.491***	−11.534***				
							(−3.79)	(−4.06)				
HKS-2: dealer distress							0.638***	0.397***				
							(8.31)	(5.06)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Mean adj R^2	0.205	0.237	0.206	0.237	0.205	0.237	0.227	0.257	0.284	0.318	0.383	0.407
Median adj R^2	0.181	0.217	0.183	0.216	0.182	0.217	0.215	0.247	0.292	0.338	0.413	0.444
num obs	542,798	542,798	542,798	542,798	542,798	542,798	542,798	542,798	117,023	117,023	117,023	117,023
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table 2: Credit Spread Changes

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_{i,t} = \eta_i + \beta_1 \Delta\sigma_t^{D2D} + \beta_2' Controls_{i,t} + \varepsilon_{i,t}$$

where $\Delta\sigma_t^{D2D}$ is the simple average change in dealer market price dispersion across all bonds from month $t-1$ to month t, η^i is bond fixed effect, $Controls_{i,t}$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor; (5) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. To compare with regression results in Friedwald and Nagler (2019), we follow their filtering approach to construct a new data sample from January 2003 to December 2013, and use the new sample to do regression only for model specification with FN controls. For all other model specifications (Columns 1-8), we use the sample of January 2004 to December 2019. See Section 5.1 for details. In this table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D}$ (bps)		0.777***		0.775***		0.777***		0.777***		0.693*		0.838**
		(5.12)		(4.83)		(5.09)		(5.10)		(2.00)		(2.68)
DEF			0.049	0.048								
			(1.23)	(1.29)								
HKM					−4.21	−4.23						
					(−0.47)	(−0.53)						
HKS-1: $\Delta Inventory$ ($M)							−9.58	−13.87				
							(−0.56)	(−0.89)				
HKS-2: dealer distress							0.46	0.35				
							(0.67)	(0.53)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.071	0.076	0.072	0.077	0.071	0.076	0.072	0.077	0.123	0.139	0.133	0.150
Adj R^2 (full)	0.053	0.058	0.054	0.059	0.053	0.058	0.053	0.058	0.102	0.117	0.112	0.128
R^2 (proj)	0.056	0.061	0.056	0.061	0.056	0.061	0.056	0.061	0.114	0.130	0.124	0.141
Adj R^2 (proj)	0.037	0.042	0.038	0.043	0.037	0.042	0.037	0.042	0.093	0.107	0.103	0.119
num obs	542,798	542,798	542,798	542,798	542,798	542,798	542,798	542,798	117,023	117,023	117,023	117,023
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table 3: Bond Basis Changes

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_{i,t} - \Delta FVS_{i,t} = \eta_i + \beta_1 \Delta\sigma_t^{D2D} + \beta_2' Controls_{i,t} + \varepsilon_{i,t}$$

where $\Delta FVS_{i,t}$ is the change in fair value spread of bond i from month $t-1$ to t, $\Delta\sigma_t^{D2D}$ is the simple average change in dealer market price dispersion across all bonds from month $t-1$ to month t, η^i is bond fixed effect, $Controls_{i,t}$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor. The sample is monthly from January 2004 to December 2019. See Section 5.2 for details. In the table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D}$ (bps)		0.596***		0.596***		0.596***		0.60***		0.261***		0.158*
		(4.22)		(4.04)		(4.36)		(4.18)		(3.81)		(2.15)
DEF			0.024	0.023								
			(0.88)	(0.96)								
HKM					−2.42	−2.42						
					(−0.319)	(−0.349)						
HKS-1: $\Delta Inventory$ ($M)							−11.93	−16.44				
							(−0.85)	(−1.28)				
HKS-2: dealer distress							0.243	0.166				
							(0.40)	(0.28)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.047	0.051	0.047	0.052	0.047	0.051	0.047	0.052	0.115	0.128	0.151	0.154
Adj R^2 (full)	0.024	0.029	0.024	0.029	0.024	0.029	0.024	0.029	0.088	0.101	0.125	0.128
R^2 (proj)	0.026	0.03	0.026	0.030	0.026	0.030	0.026	0.030	0.084	0.097	0.121	0.124
Adj R^2 (proj)	0.002	0.007	0.002	0.007	0.002	0.002	0.037	0.007	0.056	0.069	0.094	0.097
num obs	344,782	344,782	344,782	344,782	344,782	344,782	344,782	344,782	75,369	75,369	75,369	75,369
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table 4: Principal Components of Residuals

This table reports principal component analysis of the residuals from Equation (14) regression estimations::

$$\Delta YieldSpread_t^i = \beta_0^i + \beta_1^i \Delta\sigma_t^{D2D} + \beta_2^{i\prime} Controls_t^i + \varepsilon_t^i$$

where $\Delta\sigma_t^{D2D}$ is the simple average change in dealer market price dispersion across all bonds from month $t-1$ to month t, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor. Panel A reports the friction of variance of residuals explained by the first and second principal component, and level ot the remaining unexplained variance. Panel B reports R^2, adjusted R^2, and F-statistics of the regression of the first principal component of CDGM residual (Column 1 specification) on the various controls considered in Panel B. For all model specifications (Columns 1-8), we use the sample of January 2004 to December 2019. See Section 5.1 for details.

	CDGM		DEF		HKM		HKS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Principal Component Analysis								
PC1 (% explained)	57.2	56.9	57.1	57.2	57.7	57.1	58.3	57.7
PC2 (% explained)	13.3	9.2	12.2	8.9	13.3	9.2	13.1	9.4
Unexplained Variance	0.222	0.18	0.21	0.17	0.214	0.18	0.204	0.164
$\Delta\sigma_t^{D2D}$ (bps)	NO	YES	NO	YES	NO	YES	NO	YES
CDGM	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO
num obs	542,798	542,798	542,798	542,798	542,798	542,798	542,798	542,798
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537
Panel B: Explaining PC1 of the CDGM Model residual with Different Risk Factors								
Adj. R^2	N/A	0.15	0.01	0.16	0.00	0.15	-0.00	0.15
R^2	N/A	0.16	0.01	0.17	0.01	0.17	0.01	0.17
F-statistic	N/A	18.1	2.64	12.95	1.26	12.36	0.82	9.43
p-value	N/A	0.00	0.11	0.00	0.26	0.00	0.44	0.00
$\Delta\sigma_t^{D2D}$ (bps)	NO	YES	NO	YES	NO	YES	NO	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO
num obs	191	191	191	191	191	191	191	191

Table 5: Principal Components of Residuals (FN sample)

This table reports principal component analysis of the residuals from Equation (14) regression estimations::

$$\Delta YieldSpread_t^i = \beta_0^i + \beta_1^i \Delta\sigma_t^{D2D} + \beta_2^{i\prime} Controls_t^i + \varepsilon_t^i$$

where $\Delta\sigma_t^{D2D}$ is the simple average change in dealer market price dispersion across all bonds from month $t-1$ to month t, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. Panel A reports the friction of variance of residuals explained by the first and second principal component, and level of the remaining unexplained variance. Panel B reports R^2, adjusted R^2, and F-statistics of the regression of the first principal component of CDGM residual (Column 1 specification) on the various controls considered in Panel B. To compare with regression results in Friedwald and Nagler (2019),for Columns 1-3, we follow their filtering approach to construct a new data sample from January 2003 to December 2013, and use the new sample to do regression only for model specification with FN controls. For Columns 4-6, we use the sample in Friedwald and Nagler (2019). See Section 5.1 for details.

	sample by FN filtering			FN sample		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Principal Component Analysis						
PC1 (% explained)	53.8	42.2	77.1	71.7	63.8	64.7
PC2 (% explained)	23.3	31.2	6.1	6.9	11.6	10.9
Unexplained Variance	0.135	0.246	0.09	0.17	0.46	0.32
$\Delta\sigma_t^{D2D}$ (bps)	NO	YES	YES	NO	YES	YES
CDGM	YES	YES	YES	YES	YES	YES
FN OTC frictions	YES	YES	NO	YES	YES	NO
num obs	117,023	117,023	117,023	68,168	68,168	68,168
num bonds	2,803	2,803	2,803	925	925	925
Panel B: Explaining PC1 of the CDGM Model residual						
Adj. R^2	0.02	0.13	0.11	-0.01	0.13	0.09
R^2	0.11	0.23	0.12	0.04	0.23	0.11
F-statistic	1.25	2.2	8.1	0.84	2.14	6.73
p-value	0.26	0.01	0.00	0.54	0.02	0.00
$\Delta\sigma_t^{D2D}$ (bps)	NO	YES	YES	NO	YES	YES
FN OTC frictions	YES	YES	NO	YES	YES	NO
num obs	129	129	129	129	129	129

Table 6: Prices of Risk: DTS and MTS Portfolios

This table reports GMM estimates of the prices of the risk for interdealer price dispersion. Exposures and prices of risk are estimated accoring to Equations (16) and (17). In Panel A, we use 10 portfolios of bonds sorted by duration times spread (DTS) as test assets. For each bond and month, we calculate bonds' average duration multiplied by its realized yield spread in that month. Then, in each month, we sort bonds based on their DTS and form 10 DTS-sorted portfolios. In Panel B, we use 25 portfolios of bond double-sorted by maturity and size (MTS) as in Bai, Bali, and Wen (2019). These 25 value-weighted test portfolios are formed by independently sorting corporate bonds into 5×5 quintiles portfolios based on size (amount outstanding) and maturity. See Section 5.4 for details.

	$\Delta\sigma_t^{D2D}$	DEF	HKM	HKS *inventory*	HKS *distress*	VIX	YC slope	$R_{S\&P500}$	Adj.R^2	p-value
Panel A: 10 duration times spread (DTS) sorted portfolios										
(1)	-4.983*					-0.960	-0.651		0.284	0.00
	(-1.70)					(-0.59)	(-1.57)			
(2)	-4.869*	155.736				-1.044	-0.616		0.168	0.00
	(-1.73)	(0.35)				(-0.70)	(-1.34)			
(3)	-8.075**		-0.101						0.194	0.00
	(-2.01)		(-0.85)							
(4)	-9.535**			2.422	-0.027		-0.577		0.301	0.00
	(-2.15)			(1.22)	(-0.39)		(-1.38)			
Panel B: 25 maturity by size (MTS) double-sorted portfolio										
(5)	-5.115**					0.196	0.178	-1.672	0.150	0.01
	(-2.16)					(0.14)	(0.76)	(-0.04)		
(6)	-5.200**	-529.270				0.351	-0.057	-1.852	0.184	0.09
	(-2.04)	(-1.51)				(0.23)	(-0.23)	(-0.04)		
(7)	-4.365*		-0.072			-0.428	0.072	23.883	0.187	0.02
	(-1.81)		(-1.53)			(-0.29)	(0.30)	(0.51)		
(8)	-4.125*			0.695	-0.019	-0.334	0.088		0.176	0.01
	(-1.71)			(1.18)	(0.97)	(-0.24)	(0.36)			

Table 7: Credit Spread Changes (CDGM)

This table reports the regression estimations from Equation (14):

$$\Delta YieldSpread_t^i = \beta_0^i + \beta_1^i \Delta\sigma_t^{D2D,bondbasis} + \beta_2^{i\prime} Controls_t^i + \varepsilon_t^i$$

where $\Delta\sigma_t^{D2D,bondbasis}$ is the *alternative* measure of monthly change in dealer market price dispersion controlling for daily fair value spread (fvs), $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor; (5) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. To compare with regression results in Friedwald and Nagler (2019), we follow their filtering approach to construct a new data sample from January 2003 to December 2013, and use the new sample to do regression only for model specification with FN controls. For all other model specifications (Columns 1-8), we use the sample of January 2004 to December 2019. See Section 5.1 for details.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D,bondbasis}$ (bps)		1.11***		1.08***		1.13***		1.15***		0.545***		0.654***
		(26.89)		(26.17)		(26.25)		(25.46)		(12.74)		(6.96)
DEF			0.039***	0.035***								
			(7.61)	(6.74)								
HKM					−14.417***	−7.997***						
					(−8.44)	(−4.59)						
HKS-1: $\Delta Inventory$ ($M)							−10.491***	−14.326***				
							(−3.79)	(−4.85)				
HKS-2: dealer distress							0.638***	0.291***				
							(8.31)	(3.68)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Mean adj R^2	0.205	0.237	0.206	0.237	0.205	0.238	0.227	0.262	0.284	0.311	0.383	0.407
Median adj R^2	0.181	0.222	0.183	0.221	0.182	0.224	0.215	0.259	0.292	0.329	0.413	0.443
num obs	542,798	542,798	542,798	542,798	542,798	542,798	542,798	542,798	117,023	117,023	117,023	117,023
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table 8: Credit Spread Changes

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_t^i = \beta_1 \Delta\sigma_t^{D2D,bondbasis} + \beta_2' Controls_t^i + \eta^i + \varepsilon_t^i$$

where $\Delta\sigma_t^{D2D,bondbasis}$ is the *alternative* measure of monthly change in dealer market price dispersion controlling for daily fair value spread (fvs), η^i is bond fixed effect, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor; (5) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. To compare with regression results in Friedwald and Nagler (2019), we follow their filtering approach to construct a new data sample from January 2003 to December 2013, and use the new sample to do regression only for model specification with FN controls. For all other model specifications (Columns 1-8), we use the sample of January 2004 to December 2019. See Section 5.1 for details. In this table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D,bondbasis}$ (bps)		1.02***		1.09***		1.02***		1.03***		0.95***		0.68***
		(3.32)		(4.14)		(3.31)		(3.30)		(6.19)		(3.79)
DEF			0.049	0.067*								
			(1.23)	(1.81)								
HKM					−4.21	−5.39						
					(−0.47)	(−0.66)						
HKS-1: $\Delta Inventory$ ($M)							−9.58	−13.00				
							(−0.56)	(−0.80)				
HKS-2: dealer distress							0.46	0.52				
							(0.67)	(0.79)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.071	0.075	0.072	0.076	0.071	0.075	0.072	0.075	0.133	0.149	0.151	0.159
Adj R^2 (full)	0.053	0.057	0.054	0.058	0.053	0.057	0.053	0.057	0.112	0.127	0.130	0.138
R^2 (proj)	0.056	0.059	0.056	0.060	0.056	0.059	0.056	0.060	0.117	0.132	0.135	0.143
Adj R^2 (proj)	0.037	0.041	0.038	0.042	0.037	0.041	0.037	0.041	0.095	0.11	0.114	0.121
num obs	542,798	542,798	542,798	542,798	542,798	542,798	542,798	542,798	112,839	112,839	112,839	112,839
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table 9: Bond Basis Changes

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_t^i - \Delta FVS_t^i = \beta_1 \Delta\sigma_t^{D2D,bondbasis} + \beta_2' Controls_t^i + \eta^i + \varepsilon_t^i$$

where ΔFVS_t^i is the change in fair value spread of bond i from month $t-1$ to t, $\Delta\sigma_t^{D2D,bondbasis}$ is the *alternative* measure of monthly change in dealer market price dispersion controlling for daily fair value spread (fvs), η^i is bond fixed effect, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor. The sample is monthly from January 2004 to December 2019. See Section 5.2 for details. In the table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D,bondbasis}$ (bps)		0.862***		0.898***		0.864***		0.874***		0.292**		0.276**
		(3.85)		(4.39)		(3.84)		(3.80)		(2.47)		(2.44)
DEF			0.024	0.018								
			(0.88)	(0.65)								
HKM					−2.42	−5.68						
					(−0.32)	(−0.77)						
HKS-1: $\Delta Inventory$ ($M)							−11.93	−14.81				
							(−0.85)	(−1.08)				
HKS-2: dealer distress							0.243	0.403				
							(0.40)	(0.65)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.047	0.051	0.047	0.051	0.047	0.051	0.047	0.051	0.115	0.125	0.133	0.142
Adj R^2 (full)	0.024	0.028	0.024	0.029	0.024	0.028	0.024	0.028	0.088	0.098	0.107	0.115
R^2 (proj)	0.026	0.029	0.026	0.030	0.026	0.030	0.026	0.030	0.084	0.094	0.103	0.111
Adj R^2 (proj)	0.002	0.006	0.002	0.007	0.002	0.006	0.002	0.006	0.056	0.066	0.075	0.084
num obs	344,782	344,782	344,782	344,782	344,782	344,782	344,782	344,782	75,369	75,369	75,369	75,369
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table 10: Principal Components of Residuals with Alternative Measure of Interdealer Price Dispersion (control for daily fair value spread)

This table reports principal component analysis of the residuals from Equation (14) regression estimations::

$$\Delta YieldSpread_t^i = \beta_0^i + \beta_1^i \Delta\sigma_t^{D2D,bondbasis} + \beta_2^{i\prime} Controls_t^i + \varepsilon_t^i$$

where $\Delta\sigma_t^{D2D,bondbasis}$ is the *alternative* measure of monthly change in dealer market price dispersion controlling for daily fair value spread (fvs), $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor. Panel A reports the friction of variance of residuals explained by the first and second principal component, and level ot the remaining unexplained variance. Panel B reports R^2, adjusted R^2, and F-statistics of the regression of the first principal component of CDGM residual (Column 1 specification) on the various controls considered in Panel B. For all model specifications (Columns 1-8), we use the sample of January 2004 to December 2019. See Section 5.1 for details.

	CDGM		DEF		HKM		HKS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Principal Component Analysis								
PC1 (% explained)	56.3	55.9	56.9	56.4	56.3	56.2	56.9	56.8
PC2 (% explained)	12.5	10.3	12.1	9.5	12.6	10.3	12.5	10.5
Unexplained Variance	0.23	0.19	0.21	0.18	0.23	0.18	0.22	0.17
$\Delta\sigma_t^{D2D,bondbasis}$ (bps)	NO	YES	NO	YES	NO	YES	NO	YES
CDGM	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO
num obs	542,798	542,798	542,798	542,798	542,798	542,798	542,798	542,798
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537
Panel B: Explaining PC1 of the CDGM Model residual with Different Risk Factors								
Adj. R^2	N/A	0.11	0.01	0.13	0.002	0.11	-0.00	0.11
R^2	N/A	0.12	0.02	0.14	0.01	0.12	0.01	0.13
F-statistic	N/A	25.19	3.13	15.06	1.40	13.24	0.93	8.95
p-value	N/A	0.00	0.08	0.00	0.24	0.00	0.39	0.00
$\Delta\sigma_t^{D2D,bondbasis}$ (bps)	NO	YES	NO	YES	NO	YES	NO	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO
num obs	191	191	191	191	191	191	191	191

Table 11: Principal Components of Residuals (FN sample) with Alternative Measure of Interdealer Price Dispersion (control for daily fair value spread)

This table reports principal component analysis of the residuals from Equation (14) regression estimations::

$$\Delta YieldSpread_t^i = \beta_0^i + \beta_1^i \Delta\sigma_t^{D2D,bondbasis} + \beta_2^{i\prime} Controls_t^i + \varepsilon_t^i$$

where $\Delta\sigma_t^{D2D,bondbasis}$ is the *alternative* measure of monthly change in dealer market price dispersion controlling for daily fair value spread (fvs), $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. Panel A reports the friction of variance of residuals explained by the first and second principal component, and level of the remaining unexplained variance. Panel B reports R^2, adjusted R^2, and F-statistics of the regression of the first principal component of CDGM residual (Column 1 specification) on the various controls considered in Panel B. To compare with regression results in Friedwald and Nagler (2019),for Columns 1-3, we follow their filtering approach to construct a new data sample from January 2003 to December 2013, and use the new sample to do regression only for model specification with FN controls. For Columns 4-6, we use the sample in Friedwald and Nagler (2019). See Section 5.1 for details.

	sample by FN filtering			FN sample		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Principal Component Analysis						
PC1 (% explained)	69.6	66.5	71.3	71.9	66.5	71.3
PC2 (% explained)	8.5	10.4	9.7	7.2	10.1	7.7
Unexplained Variance	0.11	0.15	0.16	0.16	0.22	0.20
$\Delta\sigma_t^{D2D,bondbasis}$ (bps)	NO	YES	YES	NO	YES	YES
CDGM	YES	YES	YES	YES	YES	YES
FN OTC frictions	YES	YES	NO	YES	YES	NO
num obs	117,023	117,023	117,023	68,168	68,168	68,168
num bonds	2,803	2,803	2,803	925	925	925
Panel B: Explaining PC1 of the CDGM Model residual						
Adj. R^2	0.065	0.065	0.028	0.053	0.057	0.021
R^2	0.160	0.168	0.035	0.138	0.149	0.028
F-statistic	1.68	1.63	4.30	1.63	1.64	3.89
p-value	0.08	0.09	0.04	0.09	0.08	0.05
$\Delta\sigma_t^{D2D,bondbasis}$ (bps)	NO	YES	YES	NO	YES	YES
FN OTC frictions	YES	YES	NO	YES	YES	NO
num obs	129	129	129	129	129	129

Table 12: Summary of Robustness Exercises

This table lists our robustness exercises along with the related tables in the Appendix.

	Robustness Exercise	Related Appendix Tables
	(a) Alternative interdealer price dispersion	
(a-1)	Alternative interdealer price dispersion controlling weekly variation	IA.1, IA.2, IA.3, IA.4, IA.5
(a-2)	Alternative interdealer price dispersion weighted by bond-month trade volume	IA.6, IA.7, IA.8, IA.9, IA.10
(a-3)	Alternative interdealer price dispersion among top 50 dealers by size	IA.11, IA.12, IA.13, IA.14, IA.15
	(b) Subsample and additional controls (interdealer price dispersion $\Delta\sigma_t^{D2D}$)	
(b-1)	Results for the subsample excluding the Global Financial Crisis	IA.16, IA.17, IA.18, IA.19, IA.20
(b-2)	Results controlling for monthly bond turnover	IA.21, IA.22, IA.23
(b-3)	Results controlling for interdealer price dispersion squared	IA.24, IA.25, IA.26
(b-4)	Results controlling for dealer market power measured by HHI	IA.27, IA.28, IA.29
(b-5)	Results controlling for changes in bond-month price dispersion and changes in bond-month inventory	IA.30, IA.31, IA.32
	(c) Subsample and additional controls (interdealer basis dispersion $\Delta\sigma_t^{D2D,bondbasis}$)	
(c-1)	Results for the subsample excluding the Global Financial Crisis	IA.33, IA.34, IA.35, IA.36, IA.37
(c-2)	Results controlling for monthly bond turnover	IA.38, IA.39, IA.40
(c-3)	Results controlling for interdealer price dispersion squared	IA.41, IA.42, IA.43
(c-4)	Results controlling for dealer market power measured by HHI	IA.44, IA.45, IA.46
(c-5)	Results controlling for changes in bond-month price dispersion and changes in bond-month inventory	IA.47, IA.48, IA.49
	(d) Other exercise (interdealer price dispersion $\Delta\sigma_t^{D2D}$)	
(d-1)	CDGM approach applied to bond basis	IA.50
(d-2)	CDGM approach controlling for sorted by rating, maturity and leverage groups	IA.51, IA.52
(d-3)	Fixed-effect model with credit spread change as dependant variable incorporating COVID period	IA.53
	(e) Alternative interdealer price dispersion by more liquid bonds (identified by low Amihud-ratio)	IA.54,IA.55
	(f) Placebo test by PSM approach (build interdealer price dispersion $\Delta\sigma_t^{D2D}$ using high-D2D-disp v.s. low-D2D-disp bonds)	
(f-1)	$\Delta\sigma_t^{D2D}$ by high-D2D-disp bonds	IA.56,IA.58
(f-2)	$\Delta\sigma_t^{D2D}$ by low-D2D-disp bonds	IA.57,IA.59

Internet Appendix

A Risk misallocation model

In this section, we develop a tractable theoretical framework to highlight how misallocation frictions relate to interdealer price dispersion and average credit spreads. Our model builds on the OTC network model of Eisfeldt et al. (2023), but the two frameworks differ in important aspects. Ours features risk-aversion heterogeneity and a continuum of agents. Also, we explicitly model the interdealer corporate bond market instead of all credit-default swaps contracts' transactions. Given that all dealers actively trade with one another, we assume a complete trading network in which all bilateral trades are allowed.

There is a continuum of agents indexed by $i \in [0,1]$, one asset representing credit risk exposure (e.g., a corporate bond) with an average payoff of μ and variance of σ^2. Agents are heterogeneous regarding their initial endowment of credit risk exposure (ω_i) and risk aversion (α_i). Agent i's optimization problem is given by:

$$\max_{z_i,\{\gamma_{ij}\}_{j=1}^{n}} \omega_i\mu + \int_0^1 \gamma_{ij}(\mu - P_{ij})dj - \frac{\alpha_i}{2}\left(\omega_i + z_i\right)^2\sigma^2 - \frac{1}{2}\int_0^1 \phi\gamma_{ij}^2 dj$$
$$s.t. \qquad z_i - \int_0^1 \gamma_{ij}dj = 0,$$

where γ_{ij} is the number of bonds agent i buying from agents j, α_i is the risk aversion of agent i, ϕ is the bilateral trading cost as in Eisfeldt et al. (2023). We interpret ϕ as a misallocation parameter, as it curbs trade and makes it harder for agents to share risk with one another.

From the first-order conditions, we can solve agent i's optimization problem for agents' bilateral and net positions:

$$\gamma_{ij} = \frac{1}{\phi}\left[\mu - P_{ij} - \alpha_i(\omega_i + z_i)\sigma^2\right], \tag{IA.1}$$

where

$$z_i = \int_0^1 \gamma_{ij}dj = \frac{\int_0^1(\mu - P_{ij})dj - \alpha_i\omega_i\sigma^2}{\phi + \alpha_i\sigma^2}. \tag{IA.2}$$

As in Eisfeldt et al. (2023), the market clearing conditions are given by:

$$\gamma_{ij} + \gamma_{ji} = 0 \qquad \forall i, j \in [0,1], \tag{IA.3}$$

and we also assume no transaction costs between any two counterparties:

$$P_{ij} = P_{ji}.$$

We can combine Equations (IA.1) and (IA.3), and find that, in equilibrium, agents i and j trade at a price given by:

$$\mu - P_{ij} = \left[\frac{\alpha_i(\omega_i + z_i) + \alpha_j(\omega_j + z_j)}{2}\right]\sigma^2, \tag{IA.4}$$

and if we substitute the contract premium (Equation IA.4) into the agents' first-order condition (Equation IA.1), then:

$$\gamma_{ij} = \frac{1}{\phi}\left[\mu - P_{ij} - \alpha_i(\omega_i + z_i)\sigma^2\right] = \frac{1}{2\phi}\left[\alpha_j(\omega_j + z_j) - \alpha_i(\omega_i + z_i)\right]\sigma^2.$$

which means that i buys credit risk from j (i.e., $\gamma_{ij} > 0$) if, and only if, agent j is more exposed to credit risk than agent i after trading and correcting for differences in risk aversion, that is, $\alpha_j(\omega_j + z_j) > \alpha_i(\omega_i + z_i)$. The trade volume between two counterparties depends on the difference of their post-trade exposures scaled by risk aversion and by the misallocation parameter, ϕ.

The net positions, $\{z_i\}_i$, are determined in equilibrium. We can use Equations (IA.2) and (IA.4), and solve for equilibrium net positions. From Equation (IA.4), we have:

$$\mu - P_{ij} = \sigma^2\left[\frac{\alpha_i}{2}(\omega_i + z_i) + \frac{\alpha_j}{2}(\omega_j + z_j)\right]$$

and

$$\begin{aligned}\int_0^1(\mu - P_{ij})dj &= \sigma^2\int_0^1\left[\frac{\alpha_i}{2}(\omega_i + z_i) + \frac{\alpha_j}{2}(\omega_j + z_j)\right]dj \\ &= \frac{1}{2}\sigma^2\alpha_i(z_i + \omega_i) + \frac{1}{2}\sigma^2\int_0^1\alpha_j(z_j + \omega_j)dj\end{aligned}$$

We can rewrite Equation (IA.2) as follows:

$$\begin{aligned} z_i &= \frac{\int_0^1(\mu - P_{ij})dj - \alpha_i\omega_i\sigma^2}{\phi + \alpha_i\sigma^2} \\ \int_0^1(\mu - P_{ij})dj &= z_i\left(\phi + \alpha_i\sigma^2\right) + \alpha_i\sigma^2\omega_i\end{aligned}$$

and have:

$$\begin{aligned} z_i\left(\phi + \alpha_i\sigma^2\right) + \alpha_i\sigma^2\omega_i &= \frac{1}{2}\sigma^2\alpha_i(z_i + \omega_i) + \frac{1}{2}\sigma^2\int_0^1\alpha_j(z_j + \omega_j)dj \\ z_i\left(1 + \frac{\phi}{\alpha_i\sigma^2}\right) + \omega_i &= \frac{1}{2}(z_i + \omega_i) + \frac{1}{2}\int_0^1\frac{\alpha_j}{\alpha_i}(z_j + \omega_j)dj \\ \alpha_i z_i\left(1 + \frac{2\phi}{\alpha_i\sigma^2}\right) &= -\alpha_i\omega_i + \int_0^1(\alpha_j z_j + \alpha_j\omega_j)dj \qquad \forall i \in [0,1].\end{aligned}$$

The system above then becomes:

$$\alpha_i z_i + \alpha_i\omega_i = (1 - \lambda_i)\,\alpha_i\omega_i + \lambda_i\int_0^1\alpha_j(z_j + \omega_j)dj \qquad \forall i \in [0,1] \tag{IA.5}$$

$$\alpha_i z_i = -\lambda_i\alpha_i\omega_i + \lambda_i\int_0^1\alpha_j(z_j + \omega_j)dj \qquad \forall i \in [0,1]. \tag{IA.6}$$

where

$$\lambda_i = \frac{1}{1 + \frac{2\phi}{\alpha_i\sigma^2}} \tag{IA.7}$$

The system of equations in (IA.6) holds in equilibrium, and it pins down the equilibrium net positions scaled by risk aversion.

Equation (IA.5) is intuitive. It states that the post-trade credit risk exposure of agent i scaled by her risk averse (i.e., $\alpha_i z_i + \alpha_i \omega_i$) is an convex combination of her risk-aversion-scaled pre-trade exposure (i.e., $\alpha_i \omega_i$) and the average risk-aversion-scaled post-trade exposure of her trading partners (i.e., $\int_0^1 \alpha_j (z_j + \omega_j) dj$). The weight used in this convex combination is $\lambda_i \in (0, 1)$, misallocation (ϕ), risk aversion (α_i), and credit risk (σ^2). When trading costs are higher or risk aversion is lower, there is less risk sharing, and post-trade credit exposure is closer to agents' pre-trade credit risk exposure.

A.1 No-Misallocation Benchmark

$$\int_0^1 \int_0^1 \mu - P_{ij} di dj = \mu - \overline{P} = \sigma^2 \overline{\omega} \frac{1}{\overline{\overline{1/\alpha}}}, \tag{IA.8}$$

where $\frac{1}{\overline{\overline{1/\alpha}}} \equiv \frac{1}{\int_0^1 1/\alpha_i di}$ is the harmonic average of agents' risk aversion.

As a frictionless benchmark, let us consider the case in which there is no misallocation, that is, $\phi = 0$. In this case, we have $\lambda_i = \frac{1}{1+\frac{2\phi}{\alpha_i \sigma^2}} = 1$, and Equation (IA.6) becomes:

$$\alpha_i z_i + \alpha_i \omega_i = \int_0^1 \alpha_j (z_j + \omega_j) dj \tag{IA.9}$$

Solving for $\int_0^1 \alpha_j (z_j + \omega_j) dj = \overline{\alpha z} + \overline{\alpha \omega}$:

$$z_i + \omega_i = \frac{1}{\alpha_i} \int_0^1 \alpha_j (z_j + \omega_j) dj \tag{IA.10}$$

integrating over i from 0 to 1

$$\overline{\omega} = \overline{1/\alpha} (\overline{\alpha z} + \overline{\alpha \omega}) \tag{IA.11}$$

$$\overline{\alpha z} + \overline{\alpha \omega} = \frac{\overline{\omega}}{\overline{\overline{1/\alpha}}}, \tag{IA.12}$$

which is the average pre-trade exposure divided by the harmonic average of risk aversion.

Hence, in the no-misallocation benchmark optimal post-trade exposure is given by

$$z_i + \omega_i = \frac{1}{\alpha_i} \int_0^1 \alpha_j (z_j + \omega_j) dj = \frac{1}{\alpha_i} \times \frac{\overline{\omega}}{\overline{\overline{1/\alpha}}} = \frac{1}{\alpha_i} \times \frac{\int \omega_j dj}{\int 1/\alpha_j dj} \tag{IA.13}$$

The average premium in the Walrasian Benchmark:

$$\mu - P_{ij} = \sigma^2 \frac{\overline{\omega}}{\overline{\overline{1/\alpha}}} \tag{IA.14}$$

In the no-misallocation benchmark, the average credit premium is the average pre-trade exposure multiplied by the harmonic average of risk aversion. The constant term used in the main text is therefore

$$C = \frac{\overline{\omega}}{\overline{\overline{1/\alpha}}} = \frac{\int_0^1 \omega_i di}{\int_0^1 \frac{1}{\alpha_i} di} \tag{IA.15}$$

A.2 Misallocation Benchmark

Let us introduce misallocation by assuming $\phi > 0$. In this case, we have $\lambda_i = \frac{1}{1+\frac{2\phi}{\alpha_i \sigma^2}} \in (0,1)$, and Equation (IA.6) becomes:

$$\alpha_i z_i + \alpha_i \omega_i = (1-\lambda_i)\,\alpha_i \omega_i + \lambda_i \int_0^1 \alpha_j (z_j + \omega_j) dj \tag{IA.16}$$

Solving for $\int_0^1 \alpha_j (z_j + \omega_j) dj = \overline{\alpha z} + \overline{\alpha \omega}$:

$$\alpha_i z_i = -\lambda_i \alpha_i \omega_i + \lambda_i \left(\overline{\alpha z} + \overline{\alpha \omega}\right) \tag{IA.17}$$

$$z_i + \lambda_i \omega_i = \frac{\lambda_i}{\alpha_i}\left(\overline{\alpha z} + \overline{\alpha \omega}\right) \tag{IA.18}$$

integrating over i from 0 to 1

$$\overline{\lambda \omega} = \overline{\lambda/\alpha}\left(\overline{\alpha z} + \overline{\alpha \omega}\right) \tag{IA.19}$$

$$\overline{\alpha z} + \overline{\alpha \omega} = \frac{\overline{\lambda \omega}}{\overline{\lambda/\alpha}}. \tag{IA.20}$$

Hence, substituting into Equation IA.16, the misallocation benchmark optimal post-trade exposure is given by

$$z_i + \omega_i = (1-\lambda_i)\,\omega_i + \lambda_i \frac{\int \alpha_j (z_j + \omega_j) dj}{\alpha_i} = (1-\lambda_i)\,\omega_i + \lambda_i \frac{\frac{\int \lambda_j \omega_j dj}{\int \lambda_j/\alpha_j dj}}{\alpha_i} \tag{IA.21}$$

The average premium in the Complete Network Benchmark:

$$\int_0^1 \int_0^1 \mu - P_{ij} di dj = \mu - \overline{P} = \sigma^2 \frac{\overline{\lambda \omega}}{\overline{\lambda/\alpha}} \tag{IA.22}$$

A.3 Comparative statistics

Let us assume that $\alpha_i \sim U[\alpha_l, \alpha_h]$, and $\omega_i \sim U[\omega_l, \omega_h]$ where $\omega_i \perp \alpha_i$. Under these assumptions along with $\phi > 0$, the average credit premium is:

$$\mu - \overline{P} = \sigma^2 \frac{\overline{\lambda \omega}}{\overline{\lambda/\alpha}} \tag{IA.23}$$

$$= \sigma^2 \frac{\int_0^1 \lambda_i \omega_i di}{\int_0^1 \lambda_i/\alpha_i di} \tag{IA.24}$$

$$= \sigma^2 \frac{\frac{1}{\alpha_h - \alpha_l} \int_{-0.5}^{0.5} \int_{\alpha_l}^{\alpha_h} \frac{1}{1+\frac{2\phi}{\alpha \sigma^2}} \left(\overline{\omega} + A\varepsilon\right) d\alpha d\varepsilon}{\frac{1}{\alpha_h - \alpha_l} \int_{\alpha_l}^{\alpha_h} \frac{1}{\alpha + \frac{2\phi}{\sigma^2}} d\alpha} \tag{IA.25}$$

$$= \sigma^2 \frac{\overline{\omega} \int_{\alpha_l}^{\alpha_h} \frac{1}{1+\frac{2\phi}{\alpha \sigma^2}} d\alpha}{\int_{\alpha_l}^{\alpha_h} \frac{1}{\alpha + \frac{2\phi}{\sigma^2}} d\alpha} \tag{IA.26}$$

$$= \sigma^2 \overline{\omega} \frac{\int_{\alpha_l}^{\alpha_h} \frac{\alpha}{\alpha + \frac{2\phi}{\sigma^2}} d\alpha}{\int_{\alpha_l}^{\alpha_h} \frac{1}{\alpha + \frac{2\phi}{\sigma^2}} d\alpha} \tag{IA.27}$$

$$= \sigma^2 \overline{\omega} \frac{\alpha_h - \alpha_l - \frac{2\phi}{\sigma^2} \log\left(\alpha_h + \frac{2\phi}{\sigma^2}\right) + \frac{2\phi}{\sigma^2} \log\left(\alpha_l + \frac{2\phi}{\sigma^2}\right)}{\log\left(\alpha_h + \frac{2\phi}{\sigma^2}\right) - \log\left(\alpha_l + \frac{2\phi}{\sigma^2}\right)} \tag{IA.28}$$

and the following proposition shows how the average credit spread depends on the misallocation parameter.

Proposition IA.1. *Trading frictions increase average bond spreads whenever $\phi > 0$, that is,*

$$\frac{d}{d\phi}\left(\mu - \overline{P}\right) > 0. \tag{IA.29}$$

Proof. The proof consists of showing that

$$\frac{d}{d\phi}\left(\sigma^2 \overline{\omega} \frac{\alpha_h - \alpha_l - \frac{2\phi}{\sigma^2} \log\left(\alpha_h + \frac{2\phi}{\sigma^2}\right) + \frac{2\phi}{\sigma^2} \log\left(\alpha_l + \frac{2\phi}{\sigma^2}\right)}{\log\left(\alpha_h + \frac{2\phi}{\sigma^2}\right) - \log\left(\alpha_l + \frac{2\phi}{\sigma^2}\right)}\right) > 0$$

Step 1: For $\alpha_h > \alpha_l$:

$$\frac{\partial}{\partial \alpha_h}\left[-\left(\alpha_h - \alpha_l\right) + \frac{\alpha_h + \alpha_l}{2} \log\left(\frac{\alpha_h}{\alpha_l}\right)\right] = -1 + \frac{1}{2}\log\left(\frac{\alpha_h}{\alpha_l}\right) + \frac{1}{\alpha_h}\left(\frac{\alpha_h + \alpha_l}{2}\right) \tag{IA.30}$$

$$> -1 + \frac{1}{2}\log\left(\frac{\alpha_l}{\alpha_l}\right) + \frac{1}{\alpha_l}\left(\frac{\alpha_l + \alpha_l}{2}\right) = 0 \tag{IA.31}$$

Step 2: Let $\varphi = \frac{2\phi}{\sigma^2} > 0$. We have that:

$$\frac{\partial}{\partial \varphi}\left[\log\left(\frac{\alpha_h + \varphi}{\alpha_l + \varphi}\right)\frac{\alpha_h + \alpha_l}{2} + \varphi \log\left(\frac{\alpha_h + \varphi}{\alpha_l + \varphi}\right)\right] < 0$$

Step 3:

$$\frac{\partial}{\partial \varphi}\left[\log\left(\frac{\alpha_h + \varphi}{\alpha_l + \varphi}\right)^2 \left(\alpha_h + \varphi\right)\left(\alpha_l + \varphi\right)\right] \tag{IA.32}$$

$$= 2\log\left(\frac{\alpha_h + \varphi}{\alpha_l + \varphi}\right)\left(\frac{1}{\alpha_h + \varphi} - \frac{1}{\alpha_l + \varphi}\right)\left(\alpha_h + \varphi\right)\left(\alpha_l + \varphi\right) + \log\left(\frac{\alpha_h + \varphi}{\alpha_l + \varphi}\right)^2 \left(\alpha_h + \alpha_l + 2\varphi\right) \tag{IA.33}$$

$$= 2\log\left(\frac{\alpha_h + \varphi}{\alpha_l + \varphi}\right)\left[-\left(\alpha_h - \alpha_l\right) + \log\left(\frac{\alpha_h + \varphi}{\alpha_l + \varphi}\right)\frac{\alpha_h + \alpha_l}{2} + \varphi \log\left(\frac{\alpha_h + \varphi}{\alpha_l + \varphi}\right)\right], \tag{IA.34}$$

using Step 2 and evaluating the last two terms at $\varphi \to 0$, we get the following inequality:

$$> 2\log\left(\frac{\alpha_h + \varphi}{\alpha_l + \varphi}\right)\left[-\left(\alpha_h - \alpha_l\right) + \frac{\alpha_h + \alpha_l}{2}\log\left(\frac{\alpha_h}{\alpha_l}\right)\right], \tag{IA.35}$$

using Step 1, we get the following inequality:

$$> 2\log\left(\frac{\alpha_h + \varphi}{\alpha_l + \varphi}\right)\left[-\left(\alpha_l - \alpha_l\right) + \frac{\alpha_l + \alpha_l}{2}\log\left(\frac{\alpha_l}{\alpha_l}\right)\right] = 0 \tag{IA.36}$$

Step 4:

$$\lim_{\varphi\to\infty}\log\left(\frac{\alpha_h+\varphi}{\alpha_l+\varphi}\right)^2(\alpha_h+\varphi)(\alpha_l+\varphi)=\lim_{\varphi\to\infty}\frac{\log\left(\frac{\alpha_h+\varphi}{\alpha_l+\varphi}\right)^2}{(\alpha_h+\varphi)^{-1}(\alpha_l+\varphi)^{-1}} \tag{IA.37}$$

$$=\lim_{\varphi\to\infty}\frac{-2\log\left(\frac{\alpha_h+\varphi}{\alpha_l+\varphi}\right)\frac{\alpha_h-\alpha_l}{(\alpha_h+\varphi)(\alpha_l+\varphi)}}{-\frac{1}{(\alpha_h+\varphi)^2(\alpha_l+\varphi)^1}-\frac{1}{(\alpha_h+\varphi)^1(\alpha_l+\varphi)^2}} \tag{IA.38}$$

$$=\lim_{\varphi\to\infty}\frac{2\log\left(\frac{\alpha_h+\varphi}{\alpha_l+\varphi}\right)(\alpha_h-\alpha_l)}{\frac{1}{(\alpha_h+\varphi)}+\frac{1}{(\alpha_l+\varphi)}} \tag{IA.39}$$

$$=\lim_{\varphi\to\infty}\frac{-2\frac{\alpha_h-\alpha_l}{(\alpha_h+\varphi)(\alpha_l+\varphi)}(\alpha_h-\alpha_l)}{-\frac{1}{(\alpha_h+\varphi)^2}-\frac{1}{(\alpha_l+\varphi)^2}} \tag{IA.40}$$

$$=\lim_{\varphi\to\infty}\frac{2(\alpha_h+\varphi)(\alpha_l+\varphi)(\alpha_h-\alpha_l)^2}{(\alpha_h+\varphi)^2+(\alpha_l+\varphi)^2} \tag{IA.41}$$

$$=\lim_{\varphi\to\infty}\frac{2\left(\frac{\alpha_h}{\varphi}+1\right)\left(\frac{\alpha_l}{\varphi}+1\right)(\alpha_h-\alpha_l)^2}{\left(\frac{\alpha_h}{\varphi}+1\right)^2+\left(\frac{\alpha_l}{\varphi}+1\right)^2} \tag{IA.42}$$

$$=\frac{2(\alpha_h-\alpha_l)^2}{1+1}=(\alpha_h-\alpha_l)^2 \tag{IA.43}$$

Step 5: We can write the average bond spreads as follows

$$\mu-\overline{P}=\frac{\alpha_h-\alpha_l-\varphi\log\left(\frac{\alpha_h+\varphi}{\alpha_l+\varphi}\right)}{\log\left(\frac{\alpha_h+\varphi}{\alpha_l+\varphi}\right)} \tag{IA.44}$$

and its derivative with respect to φ is given by:

$$\frac{d}{d\varphi}\left(\mu-\overline{P}\right)=-1-\frac{\alpha_h-\alpha_l}{\log\left(\frac{\alpha_h+\varphi}{\alpha_l+\varphi}\right)^2}\left(\frac{1}{\alpha_h+\varphi}-\frac{1}{\alpha_l+\varphi}\right) \tag{IA.45}$$

$$=-1+\frac{(\alpha_h-\alpha_l)^2}{\log\left(\frac{\alpha_h+\varphi}{\alpha_l+\varphi}\right)^2(\alpha_h+\varphi)(\alpha_l+\varphi)}, \tag{IA.46}$$

using Step 4 and taking the limit as $\varphi\to\infty$, we get the following inequality:

$$>-1+\frac{(\alpha_h-\alpha_l)^2}{\lim_{\varphi\to\infty}\log\left(\frac{\alpha_h+\varphi}{\alpha_l+\varphi}\right)^2(\alpha_h+\varphi)(\alpha_l+\varphi)}, \tag{IA.47}$$

using Step 5, we get the following equality:

$$=-1+1=0. \tag{IA.48}$$

□

Why do trading frictions increase credit spreads? When ϕ increases, bilateral trading costs are higher, and overall trading is reduced. We can see this from Equation (IA.2):

$$z_i = \frac{\mu - \overline{P} - \alpha_i \omega_i \sigma^2}{\phi + \alpha_i \sigma^2}.$$

The equation above shows that if we hold the average prices fixed—that is, keep $\overline{P}$ unchanged—then z_i shrinks towards zero for both net buyers and net sellers of credit risk as ϕ increases. Moreover, when ϕ increases, less risk-averse agents, who are net credit risk buyers on average, reduce their overall risk exposure by buying fewer bonds. At the same time, more risk-averse agents, who are net sellers of credit risk on average, optimally choose to sell fewer bonds. Hence, both sellers and buyers of credit risk reduce their positions when ϕ increases; however, the magnitude of the reduction in net position across agents depends nonlinearly on risk aversion. In fact, less risk-averse agents respond more aggressively to changes in bilateral trading costs. Less risk-average agents are typically willing to take extreme positions and are more responsive to trading conditions. As a result, the aggregate reduction in demand for credit risk by less risk-averse agents is not offset by the fact that higher risk-averse agents sell fewer bonds. If bond prices do not adjust, there will be an excess surplus of bonds in the market. Hence, in order to clear the bond market, bond prices must fall and credit spreads increase.

To see how the aggregate demand for credit risk depends on ϕ in the model equations, we can start from the following equilibrium condition: $\int_0^1 z_i di = 0$. Then, take the total derivative with respect to ϕ: $\frac{d}{d\phi} \int_0^1 z_i di = 0$. To evaluate this object, notice that the total derivative of z_i with respect to ϕ is given by:

$$\frac{d}{d\phi} z_i = \frac{\partial z_i}{\partial \phi} + \frac{\partial z_i}{\partial(\mu - \overline{P})} \frac{\partial(\mu - \overline{P})}{\partial \phi},$$

which implies:

$$\frac{d}{d\phi} \int_0^1 z_i di = 0 \implies \frac{\partial}{\partial \phi} \int_0^1 z_i di = -\int_0^1 \underbrace{\frac{\partial z_i}{\partial(\mu - \overline{P})}}_{>0} \underbrace{\frac{\partial(\mu - \overline{P})}{\partial \phi}}_{>0} di < 0. \tag{IA.49}$$

When ϕ increases but bond spreads are held fixed, the aggregate demand for credit risk decreases, leading to a corporate bond surplus if prices do not adjust. That is, ϕ curbs overall trade across all agents: buyers of credit risk buy fewer bonds, and sellers sell fewer bonds. However, net buyers of credit risk— low-risk aversion agents—are more sensitive to changes in ϕ. As a result, the aggregate effect is a surplus of credit risk, with the supply of bonds for net sellers being greater than the demand from net buyers. In equilibrium, bond spreads have to increase to incentive more purchases of credit risk and clear the corporate bond market.

Proposition IA.1 formalizes the intuition behind the relationship between the misallocation parameter and average credit spreads. Moreover, ϕ reduces trading volume and increases the cross-sectional dispersion of spreads. Next, we map our misallocation risk model to the simplied version discussed in the main text.

A.4 Simplified misallocation model

From Equation 1, we have that misallocation is defined as:

$$\varepsilon_i = \frac{1}{\sigma_\varepsilon}\left[\omega_i + z_i - OptExp_i\right]. \tag{IA.50}$$

The term $OptExp_i$ is dealer i's optimal exposure under perfect risk sharing (i.e., $\phi = 0$) discussed in Section A.1. From Equation IA.13, we have:

$$OptExp_i = \frac{1}{\alpha_i} \times \underbrace{\frac{\int \omega_j dj}{\int 1/\alpha_j dj}}_{\equiv C} = \frac{C}{\alpha_i}. \tag{IA.51}$$

The term $\omega_i + z_i$ in Equation IA.50 is given by the optimal post-trade exposure when there is misallocation (i.e., $\phi = 0$), which was discussed earlier in Equation IA.21:

$$z_i + \omega_i = (1-\lambda_i)\,\omega_i + \lambda_i \frac{\frac{\int \lambda_j \omega_j dj}{\int \lambda_j/\alpha_j dj}}{\alpha_i},$$

where $\lambda_i = \frac{1}{1+\frac{2\phi}{\alpha_i \sigma^2}} \in (0,1)$.

The variance of misallocation, namely σ_ε^2, is the cross sectional variace of $\omega_i + z_i - OptExp_i$:

$$\sigma_\varepsilon^2 = \int \left[(1-\lambda_i)\,\omega_i + \lambda_i \frac{\frac{\int \lambda_j \omega_j dj}{\int \lambda_j/\alpha_j dj}}{\alpha_i} - \frac{C}{\alpha_i}\right]^2 di. \tag{IA.52}$$

In the following proposition, we confirm that there is no misallocation when $\phi = 0$.

Proposition IA.2. *If $\phi = 0$, we have no misallocation*

$$\varepsilon_i = 0 \textit{ for every } i.$$

Proof. When $\phi = 0$, we have $\lambda_i = 1$ for every dealer, and therefore,

$$z_i + \omega_i = (1-\lambda_i)\,\omega_i + \lambda_i \frac{\frac{\int \lambda_j \omega_j dj}{\int \lambda_j/\alpha_j dj}}{\alpha_i} = \frac{\frac{\int \omega_j dj}{\int 1/\alpha_j dj}}{\alpha_i} = OptExp_i$$

Hence,

$$\varepsilon_i = \frac{1}{\sigma_\varepsilon}\left[\omega_i + z_i - OptExp_i\right] = \frac{1}{\sigma_\varepsilon}\left[OptExp_i - OptExp_i\right] = 0, \text{ for every } i. \tag{IA.53}$$

□

Next, in Propositions IA.3 and IA.4, we show two important properties of misallocation.

Proposition IA.3. *Misallocation is mean zero,*

$$\int \varepsilon_i di = 0.$$

Proof. From Equation IA.3, which states that $\gamma_{ij} = -\gamma_{ji}$ for every i and j, and that fact that $z_i = \int \gamma_{ij} dj$, we have that $\int z_i di = 0$. Thus,

$$\int \varepsilon_i di = \frac{1}{\sigma_\varepsilon} \int \left[\omega_i + z_i - OptExp_i\right] di \tag{IA.54}$$

$$= \frac{1}{\sigma_\varepsilon} \left[\int \omega_i di - \int OptExp_i di\right] \tag{IA.55}$$

$$= \frac{1}{\sigma_\varepsilon} \left[\int \omega_i di - \int \omega_i di\right] = 0. \tag{IA.56}$$

$$\tag{IA.57}$$

The last step used Equation IA.51, which implies $\int OptExp_i di = \int \omega_i di$. □

Proposition IA.4. *If $\phi > 0$, then misallocation covaries positively with risk aversion,*

$$Cov\left(\alpha_i, \varepsilon_i\right) > 0.$$

Proof. Note that $\text{Cov}\left(\alpha_i, \varepsilon_i\right) = \int \alpha_i \varepsilon_i di$, because from Proposition IA.3, we have $\int \varepsilon_i di = 0$.

Also, note that the equilibrium credit spread in a transaction between dealers i and j is given by:

$$\mu - P_{ij} = \frac{\sigma^2}{2} \left[\alpha_i \left(\omega_i + z_i\right) + \alpha_j \left(\omega_j + z_j\right)\right], \tag{IA.58}$$

and therefore, the average spread across all transactions is given by

$$\mathbb{E}\left(\mu - P_{ij}\right) = \mu - \overline{P} = \int \int \mu - P_{ij} di dj \tag{IA.59}$$

$$= \frac{1}{2}\sigma^2 \int \int \left[\alpha_i \left(\omega_i + z_i\right) + \alpha_j \left(\omega_j + z_j\right)\right] di dj \tag{IA.60}$$

$$= \sigma^2 \int \alpha_i \left(\omega_i + z_i\right) di \tag{IA.61}$$

$$= \sigma^2 C + \sigma_\varepsilon \int \alpha_i \varepsilon_i di \tag{IA.62}$$

$$= \sigma^2 C + \sigma_\varepsilon \text{Cov}\left(\alpha_i, \varepsilon_i\right) \tag{IA.63}$$

From Proposition IA.1, we know that the average spread increases with the misallocation parameters ϕ, that is, $\frac{d}{d\phi}\left(\mu - \overline{P}\right) > 0$. When $\phi = 0$, we have that $\text{Cov}\left(\alpha_i, \varepsilon_i\right) = 0$ as a direct implication of Proposition IA.4. Since, nomisallocation benchmark spreads do not depend on ϕ, that is, $\frac{d}{d\phi}\left(\sigma^2 C\right) = 0$, we have that

$$\frac{d}{d\phi}\left[\sigma_\varepsilon \text{Cov}\left(\alpha_i, \varepsilon_i\right)\right] > 0,$$

which implies, for $\phi > 0$, that

$$\text{Cov}\left(\alpha_i, \varepsilon_i\right) > 0,$$

because $\sigma_\varepsilon > 0$ whenever $\phi > 0$ and $\sigma_\varepsilon \text{Cov}\left(\alpha_i, \varepsilon_i\right) = 0$ when $\phi = 0$. The term $\sigma_\varepsilon \text{Cov}\left(\alpha_i, \varepsilon_i\right)$ is an increasing function of ϕ starting at zero, thus when $\phi > 0$, we have $\sigma_\varepsilon \text{Cov}\left(\alpha_i, \varepsilon_i\right) > 0$. □

B Robustness Tables

B.1 Interdealer price dispersion controlling for Weekly variation

[Table IA.1 about here.]

[Table IA.2 about here.]

[Table IA.3 about here.]

[Table IA.4 about here.]

[Table IA.5 about here.]

B.2 Volume-weighted interdealer price dispersion

[Table IA.6 about here.]

[Table IA.7 about here.]

[Table IA.8 about here.]

[Table IA.9 about here.]

[Table IA.10 about here.]

B.3 Interdealer price dispersion among top 50 dealers by size

[Table IA.11 about here.]

[Table IA.12 about here.]

[Table IA.13 about here.]

[Table IA.14 about here.]

[Table IA.15 about here.]

B.4 Interdealer price dispersion results excluding the Global Financial Crisis

[Table IA.16 about here.]

[Table IA.17 about here.]

[Table IA.18 about here.]

[Table IA.19 about here.]

[Table IA.20 about here.]

B.5 Interdealer price dispersion results controlling for bond turnover

[Table IA.21 about here.]

[Table IA.22 about here.]

[Table IA.23 about here.]

B.6 Interdealer price dispersion results controlling square term

[Table IA.24 about here.]

[Table IA.25 about here.]

[Table IA.26 about here.]

B.7 Interdealer price dispersion results controlling dealer market power measured by HHI

[Table IA.27 about here.]

[Table IA.28 about here.]

[Table IA.29 about here.]

B.8 Interdealer price dispersion results controlling bond-specific price dispersion and inventory

[Table IA.30 about here.]

[Table IA.31 about here.]

[Table IA.32 about here.]

B.9 Interdealer bond basis dispersion results excluding the Global Financial Crisis

[Table IA.33 about here.]

[Table IA.34 about here.]

[Table IA.35 about here.]

[Table IA.36 about here.]

[Table IA.37 about here.]

B.10 Interdealer bond basis dispersion results controlling for bond turnover

[Table IA.38 about here.]

[Table IA.39 about here.]

[Table IA.40 about here.]

B.11 Interdealer bond basis dispersion results controlling square term

[Table IA.41 about here.]

[Table IA.42 about here.]

[Table IA.43 about here.]

B.12 Interdealer bond basis dispersion results controlling dealer market power measured by HHI

[Table IA.44 about here.]

[Table IA.45 about here.]

[Table IA.46 about here.]

B.13 Interdealer bond basis dispersion results controlling bond-specific price dispersion and inventory

[Table IA.47 about here.]

[Table IA.48 about here.]

[Table IA.49 about here.]

B.14 CDGM Estimates with dependent variable as bond basis change

[Table IA.50 about here.]

B.15 CDGM Estimates controlling rating, maturity and leverage groups

[Table IA.51 about here.]

[Table IA.52 about here.]

C Price of Risk

[Figure IA.1 about here.]

[Figure IA.2 about here.]

D Main Regressions including COVID Period (Jan 2003 to Sep 2022

[Table IA.53 about here.]

E Alternative interdealer price dispersion by more liquid bonds (which are identified by low Amihud ratio)

[Table IA.54 about here.]

[Table IA.55 about here.]

F Placebo test by PSM approach (build interdealer price dispersion $\Delta\sigma_t^{D2D}$ using high-D2D-disp v.s. low-D2D-disp bonds)

[Table IA.56 about here.]

[Table IA.57 about here.]

[Table IA.58 about here.]

[Table IA.59 about here.]

G Full table for main regressions with CDGM approach and Fixed-effect approach (yield spread change and bond basis change)

[Table IA.60 about here.]

[Table IA.61 about here.]

[Table IA.62 about here.]

Figures

Figure IA.1: Real v.s. fitted 10 DTS-portfolio average excess return across all months

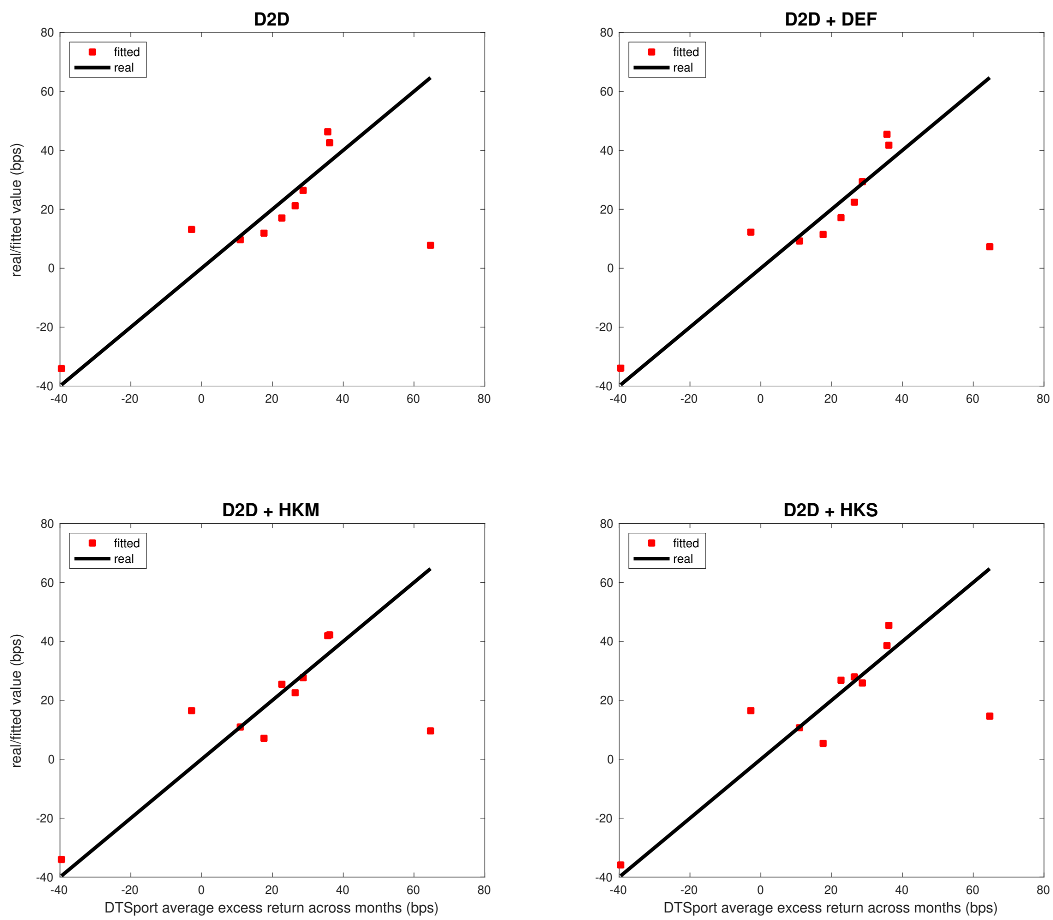
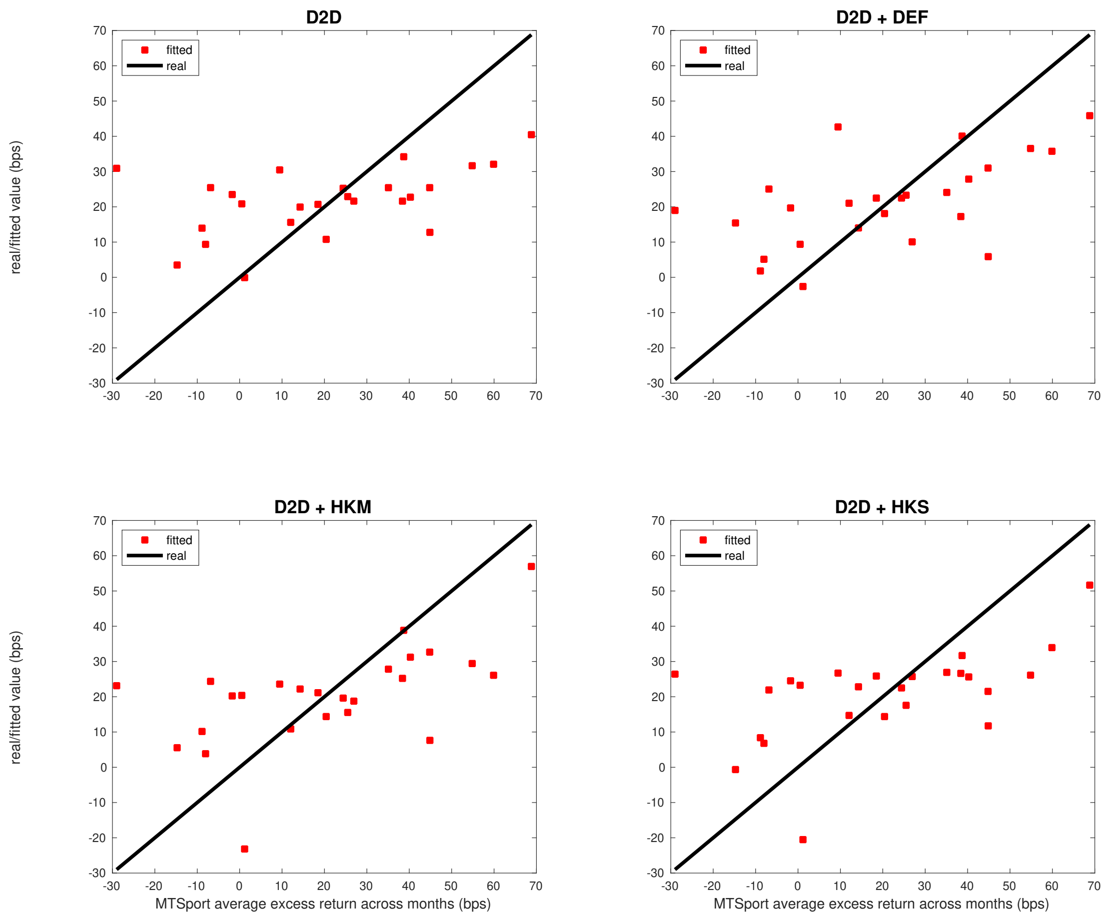


Figure IA.2: Real v.s. fitted 25 MTS-portfolio average excess return across all months



Tables

Table IA.1: Credit Spread Changes (CDGM)

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_t^i = \beta_0^i + \beta_1^i \Delta\tilde{\sigma}_t^{D2D,week} + \beta_2^{i\prime} Controls_t^i + \varepsilon_t^i$$

where $\Delta\tilde{\sigma}_t^{D2D,week}$ is the *alternative* measure of monthly change in dealer market price dispersion controlling for weekly variation within each bond, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor; (5) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. To compare with regression results in Friedwald and Nagler (2019), we follow their filtering approach to construct a new data sample from January 2003 to December 2013, and use the new sample to do regression only for model specification with FN controls. For all other model specifications (Columns 1-8), we use the sample of January 2004 to December 2019. See Section 5.1 for details.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\tilde{\sigma}_t^{D2D,week}$ (bps)		2.176***		2.105***		2.209***		2.17***		0.689***		0.710***
		(18.44)		(17.27)		(17.91)		(15.93)		(9.71)		(4.85)
DEF			0.091***	0.005								
			(14.02)	(0.56)								
HKM					-15.078***	-13.394***						
					(-5.08)	(-4.23)						
HKS-1: $\Delta Inventory$ ($M)							-20.695***	-14.318**				
							(-3.03)	(-2.01)				
HKS-2: dealer distress							0.689***	0.68***				
							(5.64)	(5.35)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Mean adj R^2	0.205	0.234	0.206	0.235	0.205	0.236	0.227	0.257	0.284	0.336	0.383	0.417
Median adj R^2	0.181	0.217	0.185	0.218	0.182	0.221	0.215	0.252	0.292	0.355	0.413	0.464
num obs	542,798	542,798	542,798	542,798	542,798	542,798	542,798	542,798	117,023	117,023	117,023	117,023
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table IA.2: Credit Spread Changes

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_t^i = \beta_1 \Delta\tilde{\sigma}_t^{D2D,week} + \beta_2' Controls_t^i + \eta^i + \varepsilon_t^i,$$

where $\Delta\tilde{\sigma}_t^{D2D,week}$ is the *alternative* measure of monthly change in dealer market price dispersion controlling for weekly variation within each bond, η^i is bond fixed effect, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor; (5) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. To compare with regression results in Friedwald and Nagler (2019), we follow their filtering approach to construct a new data sample from January 2003 to December 2013, and use the new sample to do regression only for model specification with FN controls. For all other model specifications (Columns 1-8), we use the sample of January 2004 to December 2019. See Section 5.1 for details. In this table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\tilde{\sigma}_t^{D2D,week}$ (bps)		1.06***		1.04***		1.06***		1.06***		0.090**		0.030
		(4.76)		(4.49)		(4.73)		(4.71)		(2.68)		(0.86)
DEF			0.049	0.011								
			(1.23)	(0.34)								
HKM					-4.21	-6.01						
					(-0.47)	(-0.78)						
HKS-1: $\Delta Inventory$ (\$M)							-9.58	-10.75				
							(-0.56)	(-0.72)				
HKS-2: dealer distress							0.46	0.47				
							(0.67)	(0.74)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.071	0.079	0.072	0.079	0.071	0.079	0.072	0.079	0.145	0.154	0.185	0.202
Adj R^2 (full)	0.053	0.06	0.054	0.061	0.053	0.061	0.053	0.061	0.121	0.130	0.162	0.179
R^2 (proj)	0.056	0.063	0.056	0.063	0.056	0.063	0.056	0.063	0.114	0.124	0.155	0.174
Adj R^2 (proj)	0.037	0.045	0.038	0.045	0.037	0.045	0.037	0.045	0.090	0.099	0.132	0.15
num obs	542,798	542,798	542,798	542,798	542,798	542,798	542,798	542,798	117,023	117,023	117,023	117,023
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table IA.3: Bond Basis Changes

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_t^i - \Delta FVS_t^i = \beta_1 \Delta\tilde{\sigma}_t^{D2D,week} + \beta_2' Controls_t^i + \eta^i + \varepsilon_t^i$$

where ΔFVS_t^i is the change in fair value spread of bond i from month $t-1$ to t, $\Delta\tilde{\sigma}_t^{D2D,week}$ is the *alternative* measure of monthly change in dealer market price dispersion controlling for weekly variation within each bond, η^i is bond fixed effect, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor. The sample is monthly from January 2004 to December 2019. See Section 5.2 for details. In the table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\tilde{\sigma}_t^{D2D,week}$ (bps)		0.38***		0.39***		0.38***		0.38**		0.074**		0.020
		(2.62)		(2.68)		(2.62)		(2.60)		(2.04)		(0.56)
DEF			0.002	−0.011								
			(0.10)	(−0.78)								
HKM					−6.34	−6.93						
					(−1.09)	(−1.29)						
HKS-1: $\Delta Inventory$ ($M)							−18.56*	−16.78*				
							(−1.96)	(−1.83)				
HKS-2: dealer distress							0.42	0.39				
							(1.03)	(1.00)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.072	0.080	0.072	0.080	0.072	0.080	0.073	0.081	0.115	0.120	0.151	0.151
Adj R^2 (full)	0.051	0.059	0.051	0.059	0.051	0.059	0.053	0.060	0.088	0.093	0.125	0.125
R^2 (proj)	0.053	0.061	0.053	0.061	0.054	0.062	0.055	0.063	0.084	0.089	0.121	0.121
Adj R^2 (proj)	0.032	0.040	0.032	0.041	0.033	0.041	0.034	0.042	0.056	0.061	0.094	0.094
num obs	318,410	318,410	318,410	318,410	318,410	318,410	318,410	318,410	83,745	83,745	83,745	83,745
num bonds	8,081	8,081	8,081	8,081	8,081	8,081	8,081	8,081	2,803	2,803	2,803	2,803

Table IA.4: Principal Components of Residuals

This table reports principal component analysis of the residuals from Equation (14) regression estimations:

$$\Delta YieldSpread_t^i = \beta_0^i + \beta_1^i \Delta\tilde{\sigma}_t^{D2D,week} + \beta_2^{i\prime} Controls_t^i + \varepsilon_t^i$$

where $\Delta\tilde{\sigma}_t^{D2D,week}$ is the *alternative* measure of monthly change in dealer market price dispersion controlling for weekly variation within each bond, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor. Panel A reports the friction of variance of residuals explained by the first and second principal component, and level ot the remaining unexplained variance. Panel B reports R^2, adjusted R^2, and F-statistics of the regression of the first principal component of CDGM residual (Column 1 specification) on the various controls considered in Panel B. For all model specifications (Columns 1-8), we use the sample of January 2004 to December 2019. See Section 5.1 for details.

	CDGM		DEF		HKM		HKS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Principal Component Analysis								
PC1 (% explained)	57.2	54.9	57.1	54.8	57.7	55.5	58.3	58.1
PC2 (% explained)	13.3	12.7	12.2	12.3	13.3	12.9	13.1	12.8
Unexplained Variance	0.222	0.20	0.21	0.19	0.214	0.19	0.204	0.179
$\Delta\tilde{\sigma}_t^{D2D,week}$ (bps)	NO	YES	NO	YES	NO	YES	NO	YES
CDGM	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO
num obs	542,798	542,798	542,798	542,798	542,798	542,798	542,798	542,798
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537
Panel B: Explaining PC1 of the CDGM Model residual with Different Risk Factors								
Adj. R^2	N/A	0.08	0.01	0.08	0.00	0.08	-0.00	0.07
R^2	N/A	0.08	0.01	0.09	0.01	0.09	0.01	0.09
F-statistic	N/A	17.05	2.64	9.65	1.26	8.94	0.82	5.97
p-value	N/A	0.00	0.11	0.00	0.26	0.00	0.44	0.00
$\Delta\tilde{\sigma}_t^{D2D,week}$ (bps)	NO	YES	NO	YES	NO	YES	NO	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO
num obs	191	191	191	191	191	191	191	191

Table IA.5: Principal Components of Residuals (FN sample)

This table reports principal component analysis of the residuals from Equation (14) regression estimations:

$$\Delta YieldSpread_t^i = \beta_0^i + \beta_1^i \Delta\tilde{\sigma}_t^{D2D,week} + \beta_2^{i\prime} Controls_t^i + \varepsilon_t^i$$

where $\Delta\tilde{\sigma}_t^{D2D,week}$ is the *alternative* measure of monthly change in dealer market price dispersion controlling for weekly variation within each bond, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. Panel A reports the friction of variance of residuals explained by the first and second principal component, and level of the remaining unexplained variance. Panel B reports R^2, adjusted R^2, and F-statistics of the regression of the first principal component of CDGM residual (Column 1 specification) on the various controls considered in Panel B. To compare with regression results in Friedwald and Nagler (2019),for Columns 1-3, we follow their filtering approach to construct a new data sample from January 2003 to December 2013, and use the new sample to do regression only for model specification with FN controls. For Columns 4-6, we use the sample in Friedwald and Nagler (2019). See Section 5.1 for details.

	sample by FN filtering			FN sample		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Principal Component Analysis						
PC1 (% explained)	56.2	45.8	71.9	71.7	62.9	68.1
PC2 (% explained)	23.3	30.0	6.4	6.9	10.7	7.2
Unexplained Variance	0.136	0.132	0.12	0.17	0.24	0.24
$\Delta\tilde{\sigma}_t^{D2D,week}$ (bps)	NO	YES	YES	NO	YES	YES
CDGM	YES	YES	YES	YES	YES	YES
FN OTC frictions	YES	YES	NO	YES	YES	NO
num obs	112,839	112,839	112,839	68,168	68,168	68,168
num bonds	2,803	2,803	2,803	925	925	925
Panel B: Explaining PC1 of the CDGM Model residual						
Adj. R^2	0.02	0.15	0.13	-0.01	0.10	0.10
R^2	0.11	0.23	0.14	0.04	0.15	0.11
F-statistic	1.25	2.82	20.8	0.84	3.13	16.37
p-value	0.26	0.00	0.00	0.54	0.00	0.00
$\Delta\tilde{\sigma}_t^{D2D,week}$ (bps)	NO	YES	YES	NO	YES	YES
FN OTC frictions	YES	YES	NO	YES	YES	NO
num obs	129	129	129	129	129	129

Table IA.6: Credit Spread Changes (CDGM)

This table reports the regression estimations from Equation (14):

$$\Delta YieldSpread_t^i = \beta_0^i + \beta_1^i \Delta\sigma_t^{D2D,vol-w} + \beta_2^i{}' Controls_t^i + \varepsilon_t^i$$

where $\Delta\sigma_t^{D2D,vol-w}$ is the volume-weighted average change in dealer market price dispersion across all bonds from month $t-1$ to month t, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor; (5) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. To compare with regression results in Friedwald and Nagler (2019), we follow their filtering approach to construct a new data sample from January 2003 to December 2013, and use the new sample to do regression only for model specification with FN controls. For all other model specifications (Columns 1-8), we use the sample of January 2004 to December 2019. See Section 5.1 for details.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D,vol-w}$ (bps)		0.67***		0.629***		0.674***		0.702***		0.350***		0.183**
		(14.35)		(12.85)		(13.85)		(14.26)		(10.79)		(2.48)
DEF			0.091***	0.026***								
			(14.02)	(2.66)								
HKM					-15.078***	-7.617**						
					(-5.08)	(-2.54)						
HKS-1: $\Delta Inventory$ ($M)							-20.695***	-22.116***				
							(-3.03)	(-3.28)				
HKS-2: dealer distress							0.689***	0.29**				
							(5.64)	(2.36)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Mean adj R^2	0.205	0.223	0.206	0.223	0.205	0.224	0.227	0.245	0.284	0.311	0.383	0.398
Median adj R^2	0.181	0.200	0.183	0.200	0.182	0.202	0.215	0.234	0.292	0.328	0.413	0.433
num obs	542,798	542,798	542,798	542,798	542,798	542,798	542,798	542,798	117,023	117,023	117,023	117,023
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table IA.7: Credit Spread Changes

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_t^i = \beta_1 \Delta\sigma_t^{D2D,vol-w} + \beta_2' Controls_t^i + \eta^i + \varepsilon_t^i$$

where $\Delta\sigma_t^{D2D,vol-w}$ is the volume-weighted average change in dealer market price dispersion across all bonds from month $t-1$ to month t, η^i is bond fixed effect, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor; (5) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. To compare with regression results in Friedwald and Nagler (2019), we follow their filtering approach to construct a new data sample from January 2003 to December 2013, and use the new sample to do regression only for model specification with FN controls. For all other model specifications (Columns 1-8), we use the sample of January 2004 to December 2019. See Section 5.1 for details. In this table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D,vol-w}$ (bps)		0.20*		0.20**		0.20*		0.20*		0.040**		0.001
		(1.92)		(2.37)		(1.91)		(1.91)		(2.90)		(0.48)
DEF			0.049	0.053								
			(1.23)	(1.31)								
HKM					-4.21	-3.77						
					(-0.47)	(-0.44)						
HKS-1: $\Delta Inventory$ ($M)							-9.58	-11.25				
							(-0.56)	(-0.67)				
HKS-2: dealer distress							0.46	0.44				
							(0.67)	(0.65)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.071	0.073	0.072	0.073	0.071	0.073	0.072	0.073	0.145	0.148	0.185	0.201
Adj R^2 (full)	0.053	0.05	0.054	0.055	0.053	0.054	0.053	0.054	0.121	0.124	0.162	0.179
R^2 (proj)	0.056	0.057	0.056	0.058	0.056	0.057	0.056	0.057	0.114	0.118	0.155	0.173
Adj R^2 (proj)	0.037	0.038	0.038	0.039	0.037	0.038	0.037	0.038	0.090	0.093	0.132	0.149
num obs	542,798	542,798	542,798	542,798	542,798	542,798	542,798	542,798	117,023	117,023	117,023	117,023
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table IA.8: Bond Basis Changes

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_t^i - \Delta FVS_t^i = \beta_1 \Delta\sigma_t^{D2D,vol-w} + \beta_2' Controls_t^i + \eta^i + \varepsilon_t^i$$

where ΔFVS_t^i is the change in fair value spread of bond i from month $t-1$ to t, $\Delta\sigma_t^{D2D,vol-w}$ is the volume-weighted average change in dealer market price dispersion across all bonds from month $t-1$ to month t, η^i is bond fixed effect, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor. The sample is monthly from January 2004 to December 2019. See Section 5.2 for details. In the table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D,vol-w}$ (bps)		0.17***		0.17***		0.17***		0.18***		0.022		−0.004
		(7.86)		(7.89)		(7.73)		(7.71)		(1.57)		(−0.217)
DEF			0.002	0.002								
			(0.103)	(0.118)								
HKM					−6.34	−5.94						
					(−1.09)	(−1.14)						
HKS-1: $\Delta Inventory$ ($M)							−18.56*	−17.68*				
							(−1.96)	(−1.87)				
HKS-2: dealer distress							0.42	0.35				
							(1.03)	(0.98)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.072	0.080	0.072	0.080	0.072	0.080	0.073	0.081	0.115	0.116	0.151	0.151
Adj R^2 (full)	0.051	0.060	0.051	0.060	0.051	0.060	0.053	0.061	0.088	0.089	0.125	0.125
R^2 (proj)	0.053	0.062	0.053	0.062	0.054	0.062	0.055	0.063	0.084	0.085	0.121	0.121
Adj R^2 (proj)	0.032	0.041	0.032	0.041	0.033	0.041	0.034	0.042	0.056	0.056	0.094	0.094
num obs	318,410	318,410	318,410	318,410	318,410	318,410	318,410	318,410	83,745	83,745	83,745	83,745
num bonds	8,081	8,081	8,081	8,081	8,081	8,081	8,081	8,081	2,803	2,803	2,803	2,803

Table IA.9: Principal Components of Residuals

This table reports principal component analysis of the residuals from Equation (14) regression estimations::

$$\Delta YieldSpread_t^i = \beta_0^i + \beta_1^i \Delta\sigma_t^{D2D,vol-w} + \beta_2^i{}' Controls_t^i + \varepsilon_t^i$$

where $\Delta\sigma_t^{D2D,vol-w}$ is the volume-weighted average change in dealer market price dispersion across all bonds from month $t-1$ to month t, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor. Panel A reports the friction of variance of residuals explained by the first and second principal component, and level ot the remaining unexplained variance. Panel B reports R^2, adjusted R^2, and F-statistics of the regression of the first principal component of CDGM residual (Column 1 specification) on the various controls considered in Panel B. For all model specifications (Columns 1-8), we use the sample of January 2004 to December 2019. See Section 5.1 for details.

	CDGM		DEF		HKM		HKS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Principal Component Analysis								
PC1 (% explained)	55.9	60.1	56.4	60.3	55.8	60.2	56.5	60.8
PC2 (% explained)	12.3	8.7	11.9	8.3	12.4	8.7	12.3	8.8
Unexplained Variance	0.25	0.19	0.22	0.18	0.24	0.19	0.23	0.18
$\Delta\sigma_t^{D2D,vol-w}$ (bps)	NO	YES	NO	YES	NO	YES	NO	YES
CDGM	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO
num obs	542,798	542,798	542,798	542,798	542,798	542,798	542,798	542,798
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537
Panel B: Explaining PC1 of the CDGM Model residual with Different Risk Factors								
Adj. R^2	N/A	0.08	0.01	0.09	0.00	0.08	-0.00	0.08
R^2	N/A	0.08	0.02	0.10	0.01	0.09	0.01	0.09
F-statistic	N/A	17.19	3.16	9.88	1.17	9.07	0.97	6.32
p-value	N/A	0.00	0.08	0.00	0.28	0.00	0.38	0.00
$\Delta\sigma_t^{D2D,vol-w}$ (bps)	NO	YES	NO	YES	NO	YES	NO	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO
num obs	191	191	191	191	191	191	191	191

Table IA.10: Principal Components of Residuals (FN sample)

This table reports principal component analysis of the residuals from Equation (14) regression estimations::

$$\Delta YieldSpread_t^i = \beta_0^i + \beta_1^i \Delta\sigma_t^{D2D,vol-w} + \beta_2^{i\prime} Controls_t^i + \varepsilon_t^i$$

where $\Delta\sigma_t^{D2D,vol-w}$ is the volume-weighted average change in dealer market price dispersion across all bonds from month $t-1$ to month t, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. Panel A reports the friction of variance of residuals explained by the first and second principal component, and level of the remaining unexplained variance. Panel B reports R^2, adjusted R^2, and F-statistics of the regression of the first principal component of CDGM residual (Column 1 specification) on the various controls considered in Panel B. To compare with regression results in Friedwald and Nagler (2019),for Columns 1-3, we follow their filtering approach to construct a new data sample from January 2003 to December 2013, and use the new sample to do regression only for model specification with FN controls. For Columns 4-6, we use the sample in Friedwald and Nagler (2019). See Section 5.1 for details.

	sample by FN filtering			FN sample		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Principal Component Analysis						
PC1 (% explained)	66.5	60.0	67.2	71.7	67.3	72.3
PC2 (% explained)	8.9	10.2	9.1	6.9	9.3	7.3
Unexplained Variance	0.12	0.21	0.22	0.17	0.23	0.22
$\Delta\sigma_t^{D2D,vol-w}$ (bps)	NO	YES	YES	NO	YES	YES
CDGM	YES	YES	YES	YES	YES	YES
FN OTC frictions	YES	YES	NO	YES	YES	NO
num obs	112,839	112,839	112,839	68,168	68,168	68,168
num bonds	2,803	2,803	2,803	925	925	925
Panel B: Explaining PC1 of the CDGM Model residual						
Adj. R^2	-0.02	-0.02	-0.01	-0.01	-0.02	-0.01
R^2	0.03	0.04	0.00	0.04	0.03	0.00
F-statistic	0.68	0.65	0.25	0.84	0.64	0.01
p-value	0.67	0.71	0.62	0.54	0.72	0.91
$\Delta\sigma_t^{D2D,vol-w}$ (bps)	NO	YES	YES	NO	YES	YES
FN OTC frictions	YES	YES	NO	YES	YES	NO
num obs	129	129	129	129	129	129

Table IA.11: Credit Spread Changes (CDGM)

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_t^i = \beta_0^i + \beta_1^i \Delta\sigma_t^{D2D,top50} + \beta_2^{i\prime} Controls_t^i + \varepsilon_t^i$$

where $\Delta\sigma_t^{D2D,top50}$ is the *alternative* measure of monthly change in dealer market price dispersion constructed using transactions completed by the top 50 dealers, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor; (5) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. To compare with regression results in Friedwald and Nagler (2019), we follow their filtering approach to construct a new data sample from January 2003 to December 2013, and use the new sample to do regression only for model specification with FN controls. For all other model specifications (Columns 1-8), we use the sample of January 2004 to December 2019. See Section 5.1 for details.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D,top50}$ (bps)		2.217***		2.162***		1.792***		1.923***		1.128***		1.017***
		(29.01)		(27.28)		(19.43)		(23.21)		(6.17)		(7.69)
DEF			0.053***	0.038***								
			(8.12)	(5.69)								
HKM					-28.85***	-19.44***						
					(-14.26)	(-8.58)						
HKS-1: $\Delta Inventory$ (\$M)							-3.99	-6.21*				
							(-1.14)	(-1.86)				
HKS-2: dealer distress							1.05***	0.75***				
							(11.3)	(8.18)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Mean adj R^2	0.193	0.229	0.192	0.227	0.201	0.234	0.225	0.255	0.284	0.383	0.383	0.4
Median adj R^2	0.182	0.225	0.183	0.224	0.195	0.23	0.211	0.247	0.292	0.413	0.413	0.443
num obs	542,798	542,798	542,798	542,798	542,798	542,798	542,798	542,798	117,023	117,023	117,023	117,023
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table IA.12: Credit Spread Changes

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_t^i = \beta_1 \Delta\sigma_t^{D2D,top50} + \beta_2' Controls_t^i + \eta^i + \varepsilon_t^i$$

where $\Delta\sigma_t^{D2D,top50}$ is the *alternative* measure of monthly change in dealer market price dispersion constructed using transactions completed by the top 50 dealers (we calculate series $\{\Delta\sigma_t^{D2D,top50}\}$ using academic version of TRACE data which is available until March 2018), η^i is bond fixed effect, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor; (5) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. To compare with regression results in Friedwald and Nagler (2019), we follow their filtering approach to construct a new data sample from January 2003 to December 2013, and use the new sample to do regression only for model specification with FN controls. For all other model specifications (Columns 1-8), we use the sample of January 2004 to December 2019. See Section 5.1 for details. In this table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D,top50}$ (bps)		2.09***		2.06***		2.10***		2.11***		1.20*		1.14*
		(6.65)		(6.29)		(6.66)		(6.69)		(1.80)		(1.76)
DEF			0.02	0.011								
			(0.58)	(0.34)								
HKM					-5.70	-7.10						
					(-0.63)	(-0.91)						
HKS-1: $\Delta Inventory$ ($M)							2.91	-0.18				
							(0.16)	(-0.01)				
HKS-2: dealer distress							0.47	0.63				
							(0.69)	(0.95)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.074	0.081	0.074	0.081	0.074	0.081	0.074	0.081	0.123	0.133	0.133	0.140
Adj R^2 (full)	0.053	0.06	0.054	0.060	0.053	0.060	0.053	0.060	0.102	0.111	0.1112	0.119
R^2 (proj)	0.058	0.065	0.059	0.065	0.058	0.065	0.058	0.065	0.114	0.124	0.124	0.131
Adj R^2 (proj)	0.037	0.044	0.037	0.044	0.037	0.044	0.037	0.044	0.093	0.102	0.103	0.110
num obs	462,125	462,125	462,125	462,125	462,125	462,125	462,125	462,125	117,023	117,023	117,023	117,023
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table IA.13: Bond Basis Changes

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_t^i - \Delta FVS_t^i = \beta_1 \Delta\sigma_t^{D2D,top50} + \beta_2' Controls_t^i + \eta^i + \varepsilon_t^i$$

where ΔFVS_t^i is the change in fair value spread of bond i from month $t-1$ to t, $\Delta\sigma_t^{D2D,top50}$ is the *alternative* measure of monthly change in dealer market price dispersion constructed using transactions completed by the top 50 dealers, η^i is bond fixed effect, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor. The sample is monthly from January 2004 to December 2019. See Section 5.2 for details. In the table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D,top50}$ (bps)		1.59***		1.58***		1.59***		1.60***		0.996*		0.927*
		(6.17)		(5.71)		(6.14)		(6.13)		(1.72)		(1.79)
DEF			0.027	0.006								
			(0.94)	(0.24)								
HKM					-4.06	-5.46						
					(-0.533)	(-0.748)						
HKS-1: $\Delta Inventory$ (\$M)							-4.27	-6.31				
							(-0.29)	(-0.46)				
HKS-2: dealer distress							0.31	0.41				
							(0.49)	(0.68)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.048	0.053	0.048	0.053	0.048	0.054	0.048	0.054	0.081	0.088	0.091	0.095
Adj R^2 (full)	0.024	0.030	0.024	0.030	0.024	0.030	0.024	0.030	0.056	0.063	0.065	0.070
R^2 (proj)	0.026	0.032	0.026	0.032	0.026	0.032	0.026	0.032	0.070	0.076	0.079	0.084
Adj R^2 (proj)	0.002	0.007	0.002	0.007	0.002	0.008	0.002	0.008	0.044	0.051	0.053	0.058
num obs	318,410	318,410	318,410	318,410	318,410	318,410	318,410	318,410	83,745	83,745	83,745	83,745
num bonds	8,081	8,081	8,081	8,081	8,081	8,081	8,081	8,081	2,803	2,803	2,803	2,803

Table IA.14: Principal Components of Residuals

This table reports principal component analysis of the residuals from Equation (14) regression estimations::

$$\Delta YieldSpread_t^i = \beta_0^i + \beta_1^i \Delta\sigma_t^{D2D,top50} + \beta_2^{i\prime} Controls_t^i + \varepsilon_t^i$$

where $\Delta\sigma_t^{D2D,top50}$ is the *alternative* measure of monthly change in dealer market price dispersion constructed using transactions completed by the top 50 dealers, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor. Panel A reports the friction of variance of residuals explained by the first and second principal component, and level ot the remaining unexplained variance. Panel B reports R^2, adjusted R^2, and F-statistics of the regression of the first principal component of CDGM residual (Column 1 specification) on the various controls considered in Panel B. For all model specifications (Columns 1-8), we use the sample of January 2004 to December 2019. See Section 5.1 for details.

	CDGM		DEF		HKM		HKS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Principal Component Analysis								
PC1 (% explained)	56.0	55.3	56.5	55.5	55.9	55.6	56.6	56.4
PC2 (% explained)	12.7	9.3	12.4	9.4	12.8	9.2	12.7	9.1
Unexplained Variance	0.25	0.22	0.23	0.20	0.25	0.21	0.24	0.20
$\Delta\sigma_t^{D2D,top50}$ (bps)	NO	YES	NO	YES	NO	YES	NO	YES
CDGM	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO
num obs	462,125	462,125	462,125	462,125	462,125	462,125	462,125	462,125
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537
Panel B: Explaining PC1 of the CDGM Model residual with Different Risk Factors								
Adj. R^2	N/A	0.124	0.011	0.128	0.003	0.124	-0.002	0.118
R^2	N/A	0.129	0.017	0.138	0.009	0.134	0.010	0.134
F-statistic	N/A	24.85	2.915	13.41	1.497	12.91	0.831	8.57
p-value	N/A	0.00	0.090	0.00	0.223	0.00	0.44	0.00
$\Delta\sigma_t^{D2D,top50}$ (bps)	NO	YES	NO	YES	NO	YES	NO	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO
num obs	170	170	170	170	170	170	170	170

Table IA.15: Principal Components of Residuals (FN sample)

This table reports principal component analysis of the residuals from Equation (14) regression estimations::

$$\Delta YieldSpread_t^i = \beta_0^i + \beta_1^i \Delta\sigma_t^{D2D,top50} + \beta_2^i{}' Controls_t^i + \varepsilon_t^i$$

where $\Delta\sigma_t^{D2D,top50}$ is the *alternative* measure of monthly change in dealer market price dispersion constructed using transactions completed by the top 50 dealers, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. Panel A reports the friction of variance of residuals explained by the first and second principal component, and level of the remaining unexplained variance. Panel B reports R^2, adjusted R^2, and F-statistics of the regression of the first principal component of CDGM residual (Column 1 specification) on the various controls considered in Panel B. To compare with regression results in Friedwald and Nagler (2019),for Columns 1-3, we follow their filtering approach to construct a new data sample from January 2003 to December 2013, and use the new sample to do regression only for model specification with FN controls. For Columns 4-6, we use the sample in Friedwald and Nagler (2019). See Section 5.1 for details.

	sample by FN filtering			FN sample		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Principal Component Analysis						
PC1 (% explained)	61.6	49.2	72.4	48.6	47.4	65.3
PC2 (% explained)	13.9	30.0	6.7	33.6	33.1	9.9
Unexplained Variance	0.13	0.15	0.12	0.56	0.63	0.32
$\Delta\sigma_t^{D2D,top50}$ (bps)	NO	YES	YES	NO	YES	YES
CDGM	YES	YES	YES	YES	YES	YES
FN OTC frictions	YES	YES	NO	YES	YES	NO
num obs	112,839	112,839	112,839	68,168	68,168	68,168
num bonds	2,803	2,803	2,803	925	925	925
Panel B: Explaining PC1 of the CDGM Model residual						
Adj. R^2	0.03	0.08	0.09	0.03	0.07	0.03
R^2	0.12	0.17	0.10	0.14	0.17	0.04
F-statistic	1.29	1.85	13.69	1.35	1.65	4.24
p-value	0.23	0.04	0.00	0.20	0.08	0.04
$\Delta\sigma_t^{D2D,top50}$ (bps)	NO	YES	YES	NO	YES	YES
FN OTC frictions	YES	YES	NO	YES	YES	NO
num obs	129	129	129	129	129	129

Table IA.16: Credit Spread Changes (CDGM)

This table reports the regression estimations from the following equation **by using the sample data excluding GFC period**:

$$\Delta YieldSpread_t^i = \beta_0^i + \beta_1^i \Delta\sigma_t^{D2D} + \beta_2^{i\prime} Controls_t^i + \varepsilon_t^i$$

where $\Delta\sigma_t^{D2D}$ is the simple average change in dealer market price dispersion across all bonds from month $t-1$ to month t, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor; (5) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. To compare with regression results in Friedwald and Nagler (2019), we follow their filtering approach to construct a new data sample from January 2003 to December 2013 but excluding GFC period, and use the new sample to do regression only for model specification with FN controls. For all other model specifications (Columns 1-8), we use the sample of January 2004 to December 2019 but excluding GFC period. See Section 5.1 for details.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D}$ (bps)		1.689***		1.58***		1.749***		1.826***		1.470***		1.316***
		(31.01)		(28.39)		(30.68)		(30.27)		(12.59)		(6.54)
DEF			-0.019**	0								
			(-2.76)	(-0.06)								
HKM					-11.472***	-5.524***						
					(-6.19)	(-2.74)						
HKS-1: $\Delta Inventory$ ($M)							-10.897***	-6.449**				
							(-3.72)	(-2.00)				
HKS-2: dealer distress							0.43***	0.257***				
							(5.32)	(3.00)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Mean adj R^2	0.167	0.198	0.168	0.196	0.166	0.199	0.189	0.22	0.2	0.251	0.328	0.35
Median adj R^2	0.146	0.183	0.145	0.181	0.146	0.185	0.175	0.211	0.202	0.262	0.361	0.397
num obs	501,362	501,362	501,362	501,362	501,362	501,362	501,362	501,362	96,735	96,735	96,735	96,735
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table IA.17: Credit Spread Changes

This table reports the regression estimations from the following equation **by using the sample data excluding GFC period**:

$$\Delta YieldSpread_t^i = \beta_1 \Delta\sigma_t^{D2D} + \beta_2' Controls_t^i + \eta^i + \varepsilon_t^i,$$

where $\Delta\sigma_t^{D2D}$ is the simple average change in dealer market price dispersion across all bonds from month $t-1$ to month t, η^i is bond fixed effect, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor; (5) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. To compare with regression results in Friedwald and Nagler (2019), we follow their filtering approach to construct a new data sample from January 2003 to December 2013 but excluding GFC period, and use the new sample to do regression only for model specification with FN controls. For all other model specifications (Columns 1-8), we use the sample of January 2004 to December 2019 but excluding GFC period. See Section 5.1 for details. In this table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D}$ (bps)		2.12***		2.12***		2.17***		2.15***		1.93**		1.55**
		(4.82)		(4.84)		(4.98)		(4.97)		(3.04)		(3.18)
DEF			-0.01	0.004								
			(-0.28)	(0.10)								
HKM					-3.07	-10.44						
					(-0.44)	(-1.51)						
HKS-1: $\Delta Inventory$ (\$M)							-20.3	-14.3				
							(-1.03)	(-0.72)				
HKS-2: dealer distress							0.44	0.73				
							(0.70)	(1.12)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.06	0.065	0.060	0.065	0.060	0.065	0.060	0.065	0.093	0.108	0.116	0.124
Adj R^2 (full)	0.040	0.044	0.040	0.045	0.040	0.045	0.040	0.045	0.066	0.081	0.089	0.097
R^2 (proj)	0.035	0.040	0.035	0.040	0.035	0.040	0.036	0.041	0.067	0.083	0.091	0.098
Adj R^2 (proj)	0.014	0.020	0.015	0.020	0.015	0.020	0.015	0.020	0.039	0.055	0.063	0.071
num obs	501,362	501,362	501,362	501,362	501,362	501,362	501,362	501,362	96,735	96,735	96,735	96,735
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table IA.18: Bond Basis Changes

This table reports the regression estimations from the following equation **by using the sample data excluding GFC period**:

$$\Delta YieldSpread_t^i - \Delta FVS_t^i = \beta_1 \Delta\sigma_t^{D2D} + \beta_2' Controls_t^i + \eta^i + \varepsilon_t^i$$

where ΔFVS_t^i is the change in fair value spread of bond i from month $t-1$ to t, $\Delta\sigma_t^{D2D}$ is the simple average change in dealer market price dispersion across all bonds from month $t-1$ to month t, η^i is bond fixed effect, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor. The sample is monthly from January 2004 to December 2019 but excluding GFC period. See Section 5.2 for details. In the table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D}$ (bps)		1.51***		1.52***		1.57***		1.52***		1.65***		1.39***
		(5.17)		(5.15)		(5.41)		(5.26)		(4.05)		(4.50)
DEF			0.003	0.009								
			(0.135)	(0.475)								
HKM					−7.49	−1.18**						
					(−1.21)	(−2.47)						
HKS-1: $\Delta Inventory$ ($M)							0.70*	0.77**				
							(1.73)	(2.36)				
HKS-2: dealer distress							−23.29**	−16.41*				
							(−2.56)	(−1.82)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.058	0.071	0.058	0.071	0.059	0.072	0.061	0.074	0.076	0.095	0.092	0.103
Adj R^2 (full)	0.036	0.049	0.036	0.049	0.036	0.050	0.039	0.052	0.046	0.066	0.063	0.074
R^2 (proj)	0.037	0.050	0.037	0.050	0.037	0.051	0.040	0.053	0.043	0.063	0.060	0.071
Adj R^2 (proj)	0.014	0.028	0.014	0.028	0.015	0.029	0.017	0.030	0.012	0.033	0.029	0.041
num obs	360,286	360,286	360,286	360,286	360,286	360,286	360,286	360,286	67,739	67,739	67,739	67,739
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table IA.19: Principal Components of Residuals

This table reports principal component analysis of the residuals from Equation (14) regression estimations **by using the sample data excluding GFC period**:

$$\Delta YieldSpread_t^i = \beta_0^i + \beta_1^i \Delta\sigma_t^{D2D} + \beta_2^{i\prime} Controls_t^i + \varepsilon_t^i$$

where $\Delta\sigma_t^{D2D}$ is the simple average change in dealer market price dispersion across all bonds from month $t-1$ to month t, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor. Panel A reports the friction of variance of residuals explained by the first and second principal component, and level ot the remaining unexplained variance. Panel B reports R^2, adjusted R^2, and F-statistics of the regression of the first principal component of CDGM residual (Column 1 specification) on the various controls considered in Panel B. For all model specifications (Columns 1-8), we use the sample of January 2004 to December 2019 but excluding GFC period. See Section 5.1 for details.

	CDGM		DEF		HKM		HKS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Principal Component Analysis								
PC1 (% explained)	65.6	60.0	64.8	60.1	65.8	60.3	66.7	61.0
PC2 (% explained)	8.8	9.9	9.2	10.1	8.7	9.9	8.5	9.6
Unexplained Variance	0.10	0.10	0.10	0.10	0.10	0.10	0.09	0.09
$\Delta\sigma_t^{D2D}$ (bps)	NO	YES	NO	YES	NO	YES	NO	YES
CDGM	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO
num obs	501,362	501,362	501,362	501,362	501,362	501,362	501,362	501,362
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537
Panel B: Explaining PC1 of the CDGM Model residual with Different Risk Factors								
Adj. R^2	N/A	0.14	-0.00	0.14	-0.00	0.14	-0.00	0.14
R^2	N/A	0.15	0.00	0.16	0.00	0.15	0.01	0.16
F-statistic	N/A	28.82	0.46	15.22	0.44	15.2	0.88	10.18
p-value	N/A	0.00	0.50	0.00	0.51	0.00	0.42	0.00
$\Delta\sigma_t^{D2D}$ (bps)	NO	YES	NO	YES	NO	YES	NO	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO
num obs	169	169	169	169	169	169	169	169

Table IA.20: Principal Components of Residuals (FN sample)

This table reports principal component analysis of the residuals from Equation (14) regression estimations **by using the sample data excluding GFC period**:

$$\Delta YieldSpread_t^i = \beta_0^i + \beta_1^i \Delta\sigma_t^{D2D} + \beta_2^{i\prime} Controls_t^i + \varepsilon_t^i$$

where $\Delta\sigma_t^{D2D}$ is the simple average change in dealer market price dispersion across all bonds from month $t-1$ to month t, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. Panel A reports the friction of variance of residuals explained by the first and second principal component, and level of the remaining unexplained variance. Panel B reports R^2, adjusted R^2, and F-statistics of the regression of the first principal component of CDGM residual (Column 1 specification) on the various controls considered in Panel B. To compare with regression results in Friedwald and Nagler (2019),for Columns 1-3, we follow their filtering approach to construct a new data sample from January 2003 to December 2013 but excluding GFC period, and use the new sample to do regression only for model specification with FN controls. For Columns 4-6, we use the sample in Friedwald and Nagler (2019) but excluding GFC period. See Section 5.1 for details.

	sample by FN filtering			FN sample		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Principal Component Analysis						
PC1 (% explained)	44.8	58.0	72.2	50.4	48.9	50.0
PC2 (% explained)	23.3	7.4	5.4	26.6	24.8	20.3
Unexplained Variance	0.10	0.05	0.05	0.15	0.18	0.29
$\Delta\sigma_t^{D2D}$ (bps)	NO	YES	YES	NO	YES	YES
CDGM	YES	YES	YES	YES	YES	YES
FN OTC frictions	YES	YES	NO	YES	YES	NO
num obs	96,735	96,735	96,735	37,863	37,863	37,863
num bonds	2,803	2,803	2,803	925	925	925
Panel B: Explaining PC1 of the CDGM Model residual						
Adj. R^2	0.20	0.25	0.13	-0.01	-0.01	0.01
R^2	0.30	0.35	0.13	0.13	0.13	0.02
F-statistic	2.98	3.43	14.8	0.95	0.93	1.71
p-value	0.00	0.00	0.00	0.50	0.52	0.19
$\Delta\sigma_t^{D2D}$ (bps)	NO	YES	YES	NO	YES	YES
FN OTC frictions	YES	YES	NO	YES	YES	NO
num obs	97	97	97	97	97	97

Table IA.21: Credit Spread Changes (CDGM)

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_t^i = \beta_0^i + \beta_1^i \Delta\sigma_t^{D2D} + \beta_2^i \Delta\overline{turnover}_t + \beta_3^{i\prime} Controls_t^i + \varepsilon_t^i$$

where $\underline{\Delta\sigma_t^{D2D}}$ is the simple average change in dealer market price dispersion across all bonds from month $t-1$ to month t, $\Delta\overline{turnover}_t$ is the change in the average level (in cross section of bonds) of bond's monthly turnover rate (monthly trading amounts divided by outstanding amount), $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor; (5) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. To compare with regression results in Friedwald and Nagler (2019), we follow their filtering approach to construct a new data sample from January 2003 to December 2013, and use the new sample to do regression only for model specification with FN controls. For all other model specifications (Columns 1-8), we use the sample of January 2004 to December 2019. See Section 5.1 for details.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D}$ (bps)		1.382***		1.325***		1.412***		1.419***		0.584***		0.717***
		(27.8)		(25.88)		(27.25)		(26.76)		(5.81)		(4.26)
$\Delta\overline{turnover}_t$ (bps)		-0.088***		-0.002		-0.09***		-0.092***		-62.956***		-54.83***
		(-2.69)		(-0.06)		(-2.68)		(-2.61)		(-10.96)		(-4.16)
DEF			0.091***	0.024***								
			(14.02)	(4.14)								
HKM					-15.078***	-11.481***						
					(-5.08)	(-6.24)						
HKS-1: $\Delta Inventory$ (\$M)							-20.695***	-13.096***				
							(-3.03)	(-4.38)				
HKS-2: dealer distress							0.689***	0.409***				
							(5.64)	(4.98)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Mean adj R^2	0.205	0.237	0.206	0.236	0.205	0.237	0.227	0.257	0.289	0.343	0.393	0.413
Median adj R^2	0.181	0.216	0.185	0.216	0.182	0.217	0.215	0.25	0.3	0.365	0.424	0.473
num obs	542,798	542,798	542,798	542,798	542,798	542,798	542,798	542,798	112,839	112,839	112,839	112,839
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table IA.22: Credit Spread Changes

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_t^i = \beta_1 \Delta\sigma_t^{D2D} + \beta_2 \Delta\overline{turnover}_t + \beta_3' Controls_t^i + \eta^i + \varepsilon_t^i$$

where $\Delta\sigma_t^{D2D}$ is the simple average change in dealer market price dispersion across all bonds from month $t-1$ to month t, $\Delta\overline{turnover}_t$ is the change in the average level (in cross section of bonds) of bond's monthly turnover rate (monthly trading amounts divided by outstanding amount), η^i is bond fixed effect, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor; (5) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. To compare with regression results in Friedwald and Nagler (2019), we follow their filtering approach to construct a new data sample from January 2003 to December 2013, and use the new sample to do regression only for model specification with FN controls. For all other model specifications (Columns 1-8), we use the sample of January 2004 to December 2019. See Section 5.1 for details. In this table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D}$ (bps)		0.77***		0.77***		0.77***		0.77***		0.659*		0.796**
		(5.08)		(4.81)		(5.06)		(5.07)		(1.95)		(2.70)
$\Delta\overline{turnover}_t$ (bps)		-0.31		-0.27		-0.30		-0.30		-68.85**		-77.95**
		(-1.20)		(-1.05)		(-1.16)		(-1.15)		(-2.07)		(-2.49)
DEF			0.049	0.045								
			(1.23)	(1.24)								
HKM					-4.21	-3.26						
					(-0.47)	(-0.39)						
HKS-1: $\Delta Inventory$ ($M)							-9.58	-13.68				
							(-0.56)	(-0.86)				
HKS-2: dealer distress							0.46	0.32				
							(0.67)	(0.48)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.071	0.077	0.072	0.077	0.071	0.077	0.072	0.077	0.125	0.141	0.138	0.153
Adj R^2 (full)	0.053	0.058	0.054	0.059	0.053	0.058	0.053	0.058	0.103	0.119	0.116	0.131
R^2 (proj)	0.056	0.061	0.056	0.061	0.056	0.061	0.056	0.061	0.116	0.132	0.129	0.144
Adj R^2 (proj)	0.037	0.042	0.038	0.043	0.037	0.042	0.037	0.042	0.093	0.110	0.107	0.122
num obs	542,798	542,798	542,798	542,798	542,798	542,798	542,798	542,798	112,839	112,839	112,839	112,839
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table IA.23: Bond Basis Changes

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_t^i - \Delta FVS_t^i = \beta_1 \Delta\sigma_t^{D2D} + \beta_2 \Delta\overline{turnover}_t + \beta_3' Controls_t^i + \eta^i + \varepsilon_t^i$$

where ΔFVS_t^i is the change in fair value spread of bond i from month $t-1$ to t, $\Delta\sigma_t^{D2D}$ is the simple average change in dealer market price dispersion across all bonds from month $t-1$ to month t, $\Delta\overline{turnover}_t$ is the change in the average level (in cross section of bonds) of bond's monthly turnover rate (monthly trading amounts divided by outstanding amount), η^i is bond fixed effect, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor. The sample is monthly from January 2004 to December 2019. See Section 5.2 for details. In the table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D}$ (bps)		0.43***		0.43***		0.43***		0.43***		0.453***		0.351**
		(6.34)		(6.42)		(6.20)		(6.23)		(3.27)		(2.68)
$\Delta\overline{turnover}_t$ (bps)		−2.52		−2.64		−1.46		−1.58		−24.03		−29.61
		(−0.21)		(−0.22)		(−1.12)		(−0.13)		(−1.23)		(-1.51)
DEF			0.024	−0.002								
			(0.88)	(−0.14)								
HKM					−3.67	−6.33						
					(−0.54)	(−1.19)						
HKS-1: $\Delta Inventory$ (\$M)							−11.93	−18.46**				
							(−0.85)	(−2.05)				
HKS-2: dealer distress							0.243	0.33				
							(0.40)	(0.81)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.072	0.084	0.072	0.084	0.072	0.084	0.073	0.085	0.103	0.119	0.120	0.127
Adj R^2 (full)	0.051	0.063	0.051	0.063	0.051	0.063	0.053	0.064	0.078	0.095	0.095	0.103
R^2 (proj)	0.053	0.065	0.053	0.065	0.054	0.066	0.055	0.067	0.079	0.095	0.096	0.103
Adj R^2 (proj)	0.032	0.044	0.032	0.044	0.033	0.045	0.034	0.046	0.053	0.070	0.071	0.078
num obs	385,200	385,200	385,200	385,200	385,200	385,200	385,200	385,200	78,370	78,370	78,370	78,370
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table IA.24: Credit Spread Changes (CDGM)

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_t^i = \beta_0^i + \beta_1^i \Delta\sigma_t^{D2D} + \beta_2^i (\Delta\sigma_t^{D2D})^2 + \beta_3^{i\prime} Controls_t^i + \varepsilon_t^i$$

where $\Delta\sigma_t^{D2D}$ is the simple average change in dealer market price dispersion across all bonds from month $t-1$ to month t, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor; (5) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. To compare with regression results in Friedwald and Nagler (2019), we follow their filtering approach to construct a new data sample from January 2003 to December 2013, and use the new sample to do regression only for model specification with FN controls. For all other model specifications (Columns 1-8), we use the sample of January 2004 to December 2019. See Section 5.1 for details.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D}$ (bps)		1.157***		1.147***		1.195***		1.223***		1.045***		0.693*
		(18.73)		(18.19)		(18.43)		(18.31)		(5.42)		(2.00)
$(\Delta\sigma_t^{D2D})^2$ (bps^2)		0.028***		0.018***		0.033**		0.024***		−0.053**		−0.019
		(4.45)		(2.61)		(5.17)		(3.67)		(−2.50)		(−0.34)
DEF			0.039***	0.040***								
			(7.61)	(6.92)								
HKM					−14.42***	−10.576***						
					(−8.44)	(−5.81)						
HKS-1: $\Delta Inventory$ (\$M)							−10.49***	−12.119***				
							(−3.79)	(−4.19)				
HKS-2: dealer distress							0.638***	0.378***				
							(8.31)	(4.7)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Mean adj R^2	0.205	0.243	0.206	0.243	0.205	0.244	0.227	0.265	0.284	0.363	0.383	0.428
Median adj R^2	0.181	0.221	0.183	0.22	0.182	0.223	0.215	0.255	0.292	0.391	0.413	0.488
num obs	542,798	542,798	542,798	542,798	542,798	542,798	542,798	542,798	112,839	112,839	112,839	112,839
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table IA.25: Credit Spread Changes

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_t^i = \beta_1 \Delta\sigma_t^{D2D} + beta_2(\Delta\sigma_t^{D2D})^2 + \beta_3' Controls_t^i + \eta^i + \varepsilon_t^i,$$

where $\Delta\sigma_t^{D2D}$ is the simple average change in dealer market price dispersion across all bonds from month $t-1$ to month t, η^i is bond fixed effect, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor; (5) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. To compare with regression results in Friedwald and Nagler (2019), we follow their filtering approach to construct a new data sample from January 2003 to December 2013, and use the new sample to do regression only for model specification with FN controls. For all other model specifications (Columns 1-8), we use the sample of January 2004 to December 2019. See Section 5.1 for details. In this table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D}$ (bps)		0.911***		0.980***		0.914***		0.915***		0.773*		0.888**
		(3.38)		(3.57)		(3.36)		(3.36)		(2.21)		(2.93)
$(\Delta\sigma_t^{D2D})^2$ (bps^2)		$-1.26e^{-3}$		$-1.92e^{-3}$		$-1.28e^{-3}$		$-1.29e^{-3}$		$-1.71e^{-3}$		$-1.31e^{-3}$
		(-0.88)		(-1.24)		(-0.87)		(-0.87)		(-1.70)		(-1.26)
DEF			0.049	0.057								
			(1.23)	(1.44)								
HKM					-4.21	-4.69						
					(-0.47)	(-0.57)						
HKS-1: $\Delta Inventory$ (\$M)							-9.58	-14.37				
							(-0.56)	(-0.92)				
HKS-2: dealer distress							0.46	0.36				
							(0.67)	(0.53)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.071	0.077	0.072	0.077	0.071	0.077	0.072	0.077	0.125	0.139	0.138	0.15
Adj R^2 (full)	0.053	0.058	0.054	0.059	0.053	0.058	0.053	0.058	0.103	0.117	0.116	0.128
R^2 (proj)	0.056	0.061	0.056	0.062	0.056	0.061	0.056	0.061	0.116	0.13	0.129	0.141
Adj R^2 (proj)	0.037	0.042	0.038	0.043	0.037	0.042	0.037	0.042	0.093	0.108	0.107	0.119
num obs	542,798	542,798	542,798	542,798	542,798	542,798	542,798	542,798	112,839	112,839	112,839	112,839
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table IA.26: Bond Basis Changes

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_t^i - \Delta FVS_t^i = \beta_1 \Delta\sigma_t^{D2D} + \beta_2(\Delta\sigma_t^{D2D})^2 + \beta_3' Controls_t^i + \eta^i + \varepsilon_t^i$$

where ΔFVS_t^i is the change in fair value spread of bond i from month $t-1$ to t, $\Delta\sigma_t^{D2D}$ is the simple average change in dealer market price dispersion across all bonds from month $t-1$ to month t, η^i is bond fixed effect, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor. The sample is monthly from January 2004 to December 2019. See Section 5.2 for details. In the table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D}$ (bps)		0.510***		0.512***		0.514***		0.517***		0.597***		0.499***
		(3.80)		(3.54)		(3.72)		(3.66)		(3.84)		(3.85)
$(\Delta\sigma_t^{D2D})^2$ (bps^2)		$-5.78e^{-4}$		$-6.05e^{-4}$		$-6.17e^{-4}$		$-6.36e^{-4}$		$-2.75e^{-3}$*		$-3.33e^{-3}$**
		(−0.83)		(−0.76)		(−0.86)		(−0.86)		(−2.17)		(−3.25)
DEF			0.002	0.003								
			(0.10)	(0.143)								
HKM					−6.34	−6.78						
					(−1.09)	(−1.18)						
HKS-1: $\Delta Inventory$ ($M)							−18.56*	−20.60**				
							(−1.96)	(−2.30)				
HKS-2: dealer distress							0.42	0.38				
							(1.03)	(0.84)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.072	0.082	0.072	0.082	0.072	0.083	0.073	0.084	0.103	0.121	0.120	0.129
Adj R^2 (full)	0.051	0.062	0.051	0.062	0.051	0.062	0.053	0.063	0.078	0.097	0.095	0.105
R^2 (proj)	0.053	0.064	0.053	0.064	0.054	0.064	0.055	0.066	0.079	0.097	0.096	0.106
Adj R^2 (proj)	0.032	0.043	0.032	0.043	0.033	0.043	0.034	0.045	0.053	0.072	0.071	0.081
num obs	385,200	385,200	385,200	385,200	385,200	385,200	385,200	385,200	78,370	78,370	78,370	78,370
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table IA.27: Credit Spread Changes (CDGM)

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_t^i = \beta_0^i + \beta_1^i \Delta\sigma_t^{D2D} + \beta_2^i HHI_t + \beta_3^{i\prime} Controls_t^i + \varepsilon_t^i$$

where $\Delta\sigma_t^{D2D}$ is the simple average change in dealer market price dispersion across all bonds from month $t-1$ to month t, HHI_t is the simple average of bond-specific market share concentration (measured by Herfindahl–Hirschman Index of dealers' market shares) across all bonds in month t, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor; (5) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. To compare with regression results in Friedwald and Nagler (2019), we follow their filtering approach to construct a new data sample from January 2003 to December 2013, and use the new sample to do regression only for model specification with FN controls. For all other model specifications (Columns 1-8), we use the sample of January 2004 to December 2019. See Section 5.1 for details.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D}$ (bps)		1.216***		1.434***		1.008***		1.373***		0.724***		1.093***
		(16.91)		(23.1)		(13.62)		(14.62)		(7.78)		(6.68)
HHI_t		0.024		0.013***		0.019***		0.020***		−0.000		−0.010*
		(13.15)		(5.99)		(10.25)		(10.29)		(−0.07)		(−1.64)
DEF			0.039***	0.092***								
			(7.61)	(11.12)								
HKM					−14.42***	−22.264***						
					(−8.44)	(−10.24)						
HKS-1: $\Delta Inventory$ ($M)							−10.49***	−12.03***				
							(−3.79)	(−3.33)				
HKS-2: dealer distress							0.638***	0.730***				
							(8.31)	(6.80)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Mean adj R^2	0.205	0.23	0.206	0.231	0.205	0.242	0.227	0.257	0.284	0.345	0.383	0.425
Median adj R^2	0.181	0.226	0.183	0.228	0.182	0.235	0.215	0.25	0.292	0.367	0.413	0.474
num obs	542,798	542,798	542,798	542,798	542,798	542,798	542,798	542,798	112,839	112,839	112,839	112,839
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table IA.28: Credit Spread Changes

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_t^i = \beta_1 \Delta\sigma_t^{D2D} + \beta_2 HHI_t + \beta_3' Controls_t^i + \eta^i + \varepsilon_t^i,$$

where $\Delta\sigma_t^{D2D}$ is the simple average change in dealer market price dispersion across all bonds from month $t-1$ to month t, $\Delta\sigma_t^{FVS}$ is the simple average change in fair-value-spread (FVS) dispersion across all bonds from month $t-1$ to month t, HHI_t is the simple average of bond-specific market share concentration (measured by Herfindahl–Hirschman Index of dealers' market shares) across all bonds in month t, η^i is bond fixed effect, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor; (5) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. To compare with regression results in Friedwald and Nagler (2019), we follow their filtering approach to construct a new data sample from January 2003 to December 2013, and use the new sample to do regression only for model specification with FN controls. For all other model specifications (Columns 1-8), we use the sample of January 2004 to December 2019. See Section 5.1 for details. In this table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D}$ (bps)		0.720***		0.719***		0.720***		0.720***		0.649*		0.827**
		(4.94)		(4.62)		(4.90)		(4.89)		(1.95)		(2.72)
HHI_t		0.008*		0.008		0.008		0.008		0.025***		0.019**
		(1.78)		(1.24)		(1.23)		(1.24)		(4.92)		(2.42)
DEF			0.049	0.046								
			(1.23)	(1.24)								
HKM					-4.21	-5.70						
					(-0.47)	(-0.70)						
HKS-1:							-9.58	-6.41				
							(-0.56)	(-0.37)				
HKS-2: dealer distress							0.46	0.37				
							(0.67)	(0.56)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.071	0.079	0.072	0.079	0.071	0.079	0.072	0.079	0.125	0.143	0.138	0.152
Adj R^2 (full)	0.053	0.058	0.054	0.058	0.053	0.058	0.053	0.058	0.103	0.121	0.116	0.131
R^2 (proj)	0.056	0.063	0.056	0.063	0.056	0.063	0.056	0.063	0.116	0.134	0.129	0.144
Adj R^2 (proj)	0.037	0.042	0.038	0.042	0.037	0.042	0.037	0.042	0.093	0.112	0.107	0.122
num obs	542,798	542,798	542,798	542,798	542,798	542,798	542,798	542,798	112,839	112,839	112,839	112,839
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table IA.29: Bond Basis Changes

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_t^i - \Delta FVS_t^i = \beta_1 \Delta\sigma_t^{D2D} + \beta_2 HHI_t + \beta_3' Controls_t^i + \eta^i + \varepsilon_t^i$$

where ΔFVS_t^i is the change in fair value spread of bond i from month $t-1$ to t, $\Delta\sigma_t^{D2D}$ is the simple average change in dealer market price dispersion across all bonds from month $t-1$ to month t, HHI_t is the simple average of bond-specific market share concentration (measured by Herfindahl–Hirschman Index of dealers' market shares) across all bonds in month t, η^i is bond fixed effect, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor. The sample is monthly from January 2004 to December 2019. See Section 5.2 for details. In the table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D}$ (bps)		0.415***		0.415***		0.415***		0.417***		0.436***		0.359**
		(6.18)		(6.27)		(5.92)		(5.92)		(3.24)		(2.78)
HHI_t		0.007***		0.007*		0.007*		0.007*		0.015***		0.011**
		(3.41)		(1.92)		(1.95)		(1.91)		(3.18)		(2.32)
DEF			0.002	−0.002								
			(0.10)	(−0.145)								
HKM					−6.34	−9.51						
					(−1.09)	(−1.62)						
HKS-1: $\Delta Inventory$ ($M)							−18.56*	−11.70*				
							(−1.96)	(−1.19)				
HKS-2: dealer distress							0.42	0.50				
							(1.03)	(1.13)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.072	0.093	0.072	0.093	0.072	0.094	0.073	0.094	0.103	0.123	0.120	0.128
Adj R^2 (full)	0.051	0.069	0.051	0.069	0.051	0.070	0.053	0.071	0.078	0.099	0.095	0.104
R^2 (proj)	0.053	0.072	0.053	0.072	0.054	0.073	0.055	0.074	0.079	0.099	0.096	0.104
Adj R^2 (proj)	0.032	0.048	0.032	0.048	0.033	0.049	0.034	0.049	0.053	0.075	0.071	0.080
num obs	385,200	385,200	385,200	385,200	385,200	385,200	385,200	385,200	78,370	78,370	78,370	78,370
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table IA.30: Credit Spread Changes (CDGM)

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_t^i = \beta_0^i + \beta_1^i \Delta\sigma_t^{D2D} + \beta_2^i \sigma_{i,t}^{D2D} + \beta_3^i Inventory_{i,t} + \beta_4^{i\prime} Controls_t^i + \varepsilon_t^i$$

where $\Delta\sigma_t^{D2D}$ is the simple average change in dealer market price dispersion across all bonds from month $t-1$ to month t, $\sigma_{i,t}^{D2D}$ is bond-specific dealer market price dispersion in month t, $Inventory_{i,t}$ is bond-specific dealer inventory in month t, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor; (5) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. To compare with regression results in Friedwald and Nagler (2019), we follow their filtering approach to construct a new data sample from January 2003 to December 2013, and use the new sample to do regression only for model specification with FN controls. For all other model specifications (Columns 1-8), we use the sample of January 2004 to December 2019. See Section 5.1 for details.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D}$ (bps)		1.383***		1.402***		1.450***		1.452***		0.942***		0.831***
		(22.21)		(20.5)		(22.18)		(20.64)		(8.38)		(4.54)
$\sigma_{i,t}^{D2D}$ (bps)		−0.401		−1.619		−0.641		−1.624		−7.341		2.335
		(−0.43)		(−1.52)		(−0.65)		(−1.54)		(−0.27)		(0.59)
$Inventory_{i,t}$ ($M)		2.484***		2.158***		2.443***		2.665***		0.220*		1.029***
		(10.96)		(10.03)		(11.48)		(11.48)		(1.72)		(3.47)
DEF			0.039***	0.035***								
			(7.61)	(4.06)								
HKM					−14.42***	−17.25***						
					(−8.44)	(−5.61)						
HKS-1:							−10.49***	−8.13*				
							(−3.79)	(−1.71)				
HKS-2: dealer distress							0.638***	0.474***				
							(8.31)	(3.51)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Mean adj R^2	0.205	0.29	0.206	0.29	0.205	0.289	0.227	0.311	0.284	0.371	0.383	0.445
Median adj R^2	0.181	0.276	0.183	0.277	0.182	0.278	0.215	0.306	0.292	0.403	0.413	0.5
num obs	517,880	517,880	517,880	517,880	517,880	517,880	517,880	517,880	112,539	112,539	112,539	112,539
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,802	2,802	2,802	2,802

Table IA.31: Credit Spread Changes

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_t^i = \beta_1 \Delta\sigma_t^{D2D} + \beta_2 \sigma_{i,t}^{D2D} + \beta_3 Inventory_{i,t} + \beta_4' Controls_t^i + \eta^i + \varepsilon_t^i,$$

where $\Delta\sigma_t^{D2D}$ is the simple average change in dealer market price dispersion across all bonds from month $t-1$ to month t, η^i is bond fixed effect, $\sigma_{i,t}^{D2D}$ is bond-specific dealer market price dispersion in month t, $Inventory_{i,t}$ is bond-specific dealer inventory in month t, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor; (5) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. To compare with regression results in Friedwald and Nagler (2019), we follow their filtering approach to construct a new data sample from January 2003 to December 2013, and use the new sample to do regression only for model specification with FN controls. For all other model specifications (Columns 1-8), we use the sample of January 2004 to December 2019. See Section 5.1 for details. In this table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D}$ (bps)		0.745***		0.744***		0.745***		0.745***		0.679*		0.798**
		(4.64)		(4.46)		(4.62)		(4.46)		(2.02)		(2.66)
$\sigma_{i,t}^{D2D}$ (bps)		7.76***		7.65***		7.76***		7.75***		13.54**		13.60***
		(3.36)		(3.43)		(3.36)		(3.36)		(3.08)		(3.52)
$Inventory_{i,t}$ (\$B)		0.51		0.50		0.51		0.53		−0.792		−0.914
		(0.39)		(0.33)		(0.34)		(0.04)		(−0.60)		(−0.69)
DEF			0.049	0.029								
			(1.23)	(0.88)								
HKM					-4.21	-4.21						
					(−0.47)	(−0.52)						
HKS-1: $\Delta Inventory$ (\$M)							−9.58	−12.70				
							(−0.56)	(−0.82)				
HKS-2: dealer distress							0.46	0.35				
							(0.67)	(0.52)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.071	0.085	0.072	0.085	0.071	0.085	0.072	0.085	0.125	0.144	0.138	0.155
Adj R^2 (full)	0.053	0.066	0.054	0.066	0.053	0.066	0.053	0.066	0.103	0.122	0.116	0.134
R^2 (proj)	0.056	0.068	0.056	0.068	0.056	0.068	0.053	0.068	0.116	0.135	0.129	0.147
Adj R^2 (proj)	0.037	0.048	0.038	0.049	0.037	0.048	0.037	0.048	0.093	0.113	0.107	0.125
num obs	517,880	517,880	517,880	517,880	517,880	517,880	517,880	517,880	112,539	112,539	112,539	112,539
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,802	2,802	2,802	2,802

Table IA.32: Bond Basis Changes

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_t^i - \Delta FVS_t^i = \beta_1 \Delta\sigma_t^{D2D} + \beta_2 \sigma_{i,t}^{D2D} + \beta_3 Inventory_{i,t} + \beta_4' Controls_t^i + \eta^i + \varepsilon_t^i$$

where ΔFVS_t^i is the change in fair value spread of bond i from month $t-1$ to t, $\Delta\sigma_t^{D2D}$ is the simple average change in dealer market price dispersion across all bonds from month $t-1$ to month t, η^i is bond fixed effect, $\sigma_{i,t}^{D2D}$ is bond-specific dealer market price dispersion in month t, $Inventory_{i,t}$ is bond-specific dealer inventory in month t, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor. The sample is monthly from January 2004 to December 2019. See Section 5.2 for details. In the table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D}$ (bps)		0.446***		0.446***		0.446***		0.43***		0.465***		0.364**
		(6.74)		(6.84)		(6.55)		(6.20)		(3.36)		(2.75)
$\sigma_{i,t}^{D2D}$ (bps)		0.712***		0.719***		0.707***		0.69***		1.57		1.96*
		(4.03)		(4.03)		(4.00)		(3.94)		(1.40)		(1.70)
$Inventory_{i,t}$ (\$B)		0.623		0.626		0.628		0.65		−0.950		−0.954
		(1.30)		(1.30)		(1.31)		(0.30)		(−0.89)		(−1.04)
DEF			0.002	−0.004								
			(0.10)	(−0.26)								
HKM					-6.34	-6.61						
					(−1.09)	(−1.17)						
HKS-1: $\Delta Inventory$ (\$M)							−18.56*	−20.37**				
							(−1.96)	(−2.28)				
HKS-2: dealer distress							0.42	0.38				
							(1.03)	(0.87)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.072	0.083	0.072	0.083	0.072	0.083	0.073	0.084	0.103	0.119	0.120	0.126
Adj R^2 (full)	0.051	0.062	0.051	0.062	0.051	0.062	0.053	0.064	0.078	0.094	0.095	0.102
R^2 (proj)	0.053	0.064	0.053	0.064	0.054	0.065	0.055	0.066	0.079	0.094	0.096	0.102
Adj R^2 (proj)	0.032	0.043	0.032	0.043	0.033	0.043	0.034	0.045	0.053	0.070	0.071	0.077
num obs	385,200	385,200	385,200	385,200	385,200	385,200	385,200	385,200	78,370	78,370	78,370	78,370
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table IA.33: Credit Spread Changes (CDGM)

This table reports the regression estimations from the following equation **by using the sample data excluding GFC period**:

$$\Delta YieldSpread_t^i = \beta_0^i + \beta_1^i \Delta\sigma_t^{D2D,bondbasis} + \beta_2^{i\prime} Controls_t^i + \varepsilon_t^i$$

where $\Delta\sigma_t^{D2D,bondbasis}$ is the simple average change in dealer market bond basis dispersion across all bonds from month $t-1$ to month t, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor; (5) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. To compare with regression results in Friedwald and Nagler (2019), we follow their filtering approach to construct a new data sample from January 2003 to December 2013 but excluding GFC period, and use the new sample to do regression only for model specification with FN controls. For all other model specifications (Columns 1-8), we use the sample of January 2004 to December 2019 but excluding GFC period. See Section 5.1 for details.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D,bondbasis}$ (bps)		1.208***		1.131***		1.222***		1.24***		0.998***		0.968***
		(27.82)		(25.87)		(26.4)		(25.25)		(14.38)		(8.01)
DEF			−0.019**	−0.01								
			(−2.76)	(−1.31)								
HKM					−11.472***	−3.91**						
					(−6.19)	(−2.00)						
HKS-1: $\Delta Inventory$ ($M)							−10.897***	−10.496***				
							(−3.72)	(−3.15)				
HKS-2: dealer distress							0.43***	0.105				
							(5.32)	(1.22)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Mean adj R^2	0.167	0.198	0.168	0.195	0.166	0.198	0.189	0.22	0.2	0.235	0.328	0.347
Median adj R^2	0.146	0.184	0.145	0.18	0.146	0.185	0.175	0.218	0.202	0.247	0.361	0.387
num obs	501,362	501,362	501,362	501,362	501,362	501,362	501,362	501,362	96,735	96,735	96,735	96,735
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table IA.34: Credit Spread Changes

This table reports the regression estimations from the following equation **by using the sample data excluding GFC period**:

$$\Delta YieldSpread_t^i = \beta_1 \Delta\sigma_t^{D2D,bondbasis} + \beta_2' Controls_t^i + \eta^i + \varepsilon_t^i,$$

where $\Delta\sigma_t^{D2D,bondbasis}$ is the simple average change in dealer market bond basis dispersion across all bonds from month $t-1$ to month t, η^i is bond fixed effect, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor; (5) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. To compare with regression results in Friedwald and Nagler (2019), we follow their filtering approach to construct a new data sample from January 2003 to December 2013 but excluding GFC period, and use the new sample to do regression only for model specification with FN controls. For all other model specifications (Columns 1-8), we use the sample of January 2004 to December 2019 but excluding GFC period. See Section 5.1 for details. In this table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D,bondbasis}$ (bps)		1.228***		1.226***		1.242***		1.248***		1.21***		0.913***
		(3.19)		(3.23)		(3.22)		(3.25)		(3.69)		(3.72)
DEF			-0.01	−0.002								
			(-0.28)	(−0.075)								
HKM					−3.07	−6.44						
					(−0.44)	(−0.98)						
HKS-1: $\Delta Inventory$ ($M)							−20.3	−19.8				
							(−1.03)	(−1.39)				
HKS-2: dealer distress							0.44	0.59				
							(0.70)	(0.94)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.06	0.063	0.060	0.063	0.060	0.063	0.060	0.064	0.093	0.106	0.116	0.123
Adj R^2 (full)	0.040	0.043	0.040	0.043	0.040	0.043	0.040	0.044	0.066	0.080	0.089	0.096
R^2 (proj)	0.035	0.039	0.035	0.039	0.035	0.039	0.036	0.036	0.039	0.081	0.072	0.097
Adj R^2 (proj)	0.014	0.018	0.015	0.018	0.015	0.018	0.015	0.018	0.039	0.053	0.063	0.070
num obs	501,362	501,362	501,362	501,362	501,362	501,362	501,362	501,362	96,735	96,735	96,735	96,735
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table IA.35: Bond Basis Changes

This table reports the regression estimations from the following equation **by using the sample data excluding GFC period**:

$$\Delta YieldSpread_t^i - \Delta FVS_t^i = \beta_1 \Delta\sigma_t^{D2D,bondbasis} + \beta_2' Controls_t^i + \eta^i + \varepsilon_t^i$$

where ΔFVS_t^i is the change in fair value spread of bond i from month $t-1$ to t, $\Delta\sigma_t^{D2D,bondbasis}$ is the simple average change in dealer market bond basis dispersion across all bonds from month $t-1$ to month t, η^i is bond fixed effect, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor. The sample is monthly from January 2004 to December 2019 but excluding GFC period. See Section 5.2 for details. In the table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D,bondbasis}$ (bps)		0.513***		0.516***		0.527***		0.536**		0.525***		0.409***
		(2.98)		(2.99)		(3.01)		(3.08)		(3.44)		(3.36)
DEF			0.004	0.007								
			(0.224)	(0.393)								
HKM					−5.03	−6.33						
					(−1.12)	(−1.49)						
HKS-1: $\Delta Inventory$ ($M)							−23.05**	−24.03**				
							(−2.69)	(−2.72)				
HKS-2: dealer distress							0.299	0.355				
							(0.85)	(1.00)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.071	0.08	0.071	0.08	0.072	0.081	0.076	0.087	0.113	0.128	0.145	0.153
Adj R^2 (full)	0.044	0.054	0.044	0.054	0.045	0.055	0.050	0.061	0.082	0.097	0.115	0.124
R^2 (proj)	0.044	0.053	0.044	0.054	0.045	0.055	0.050	0.06	0.075	0.091	0.109	0.117
Adj R^2 (proj)	0.016	0.026	0.016	0.026	0.017	0.028	0.022	0.033	0.043	0.059	0.078	0.086
num obs	289,893	289,893	289,893	289,893	289,893	289,893	289,893	289,893	66,283	66,283	66,283	66,283
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table IA.36: Principal Components of Residuals

This table reports principal component analysis of the residuals from Equation (14) regression estimations **by using the sample data excluding GFC period**:

$$\Delta YieldSpread_t^i = \beta_0^i + \beta_1^i \Delta\sigma_t^{D2D,bondbasis} + \beta_2^{i\prime} Controls_t^i + \varepsilon_t^i$$

where $\Delta\sigma_t^{D2D,bondbasis}$ is the simple average change in dealer market bond basis dispersion across all bonds from month $t-1$ to month t, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor. Panel A reports the friction of variance of residuals explained by the first and second principal component, and level ot the remaining unexplained variance. Panel B reports R^2, adjusted R^2, and F-statistics of the regression of the first principal component of CDGM residual (Column 1 specification) on the various controls considered in Panel B. For all model specifications (Columns 1-8), we use the sample of January 2004 to December 2019 but excluding GFC period. See Section 5.1 for details.

	CDGM		DEF		HKM		HKS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Principal Component Analysis								
PC1 (% explained)	65.6	60.6	64.8	60.8	65.8	60.9	66.7	61.6
PC2 (% explained)	8.8	9.7	9.2	9.8	8.7	9.6	8.5	9.4
Unexplained Variance	0.10	0.10	0.10	0.10	0.10	0.10	0.09	0.09
$\Delta\sigma_t^{D2D,bondbasis}$ (bps)	NO	YES	NO	YES	NO	YES	NO	YES
CDGM	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO
num obs	501,362	501,362	501,362	501,362	501,362	501,362	501,362	501,362
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537
Panel B: Explaining PC1 of the CDGM Model residual with Different Risk Factors								
Adj. R^2	N/A	0.106	-0.003	0.109	-0.003	0.106	-0.001	0.107
R^2	N/A	0.112	0.003	0.119	0.003	0.117	0.010	0.122
F-statistic	N/A	21.0	0.46	11.22	0.44	10.95	0.88	7.69
p-value	N/A	0.00	0.50	0.00	0.51	0.00	0.42	0.00
$\Delta\sigma_t^{D2D,bondbasis}$ (bps)	NO	YES	NO	YES	NO	YES	NO	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO
num obs	169	169	169	169	169	169	169	169

Table IA.37: Principal Components of Residuals (FN sample)

This table reports principal component analysis of the residuals from Equation (14) regression estimations **by using the sample data excluding GFC period**:

$$\Delta YieldSpread_t^i = \beta_0^i + \beta_1^i \Delta\sigma_t^{D2D,bondbasis} + \beta_2^{i\prime} Controls_t^i + \varepsilon_t^i$$

where $\Delta\sigma_t^{D2D,bondbasis}$ is the simple average change in dealer market bond basis dispersion across all bonds from month $t-1$ to month t, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. Panel A reports the friction of variance of residuals explained by the first and second principal component, and level of the remaining unexplained variance. Panel B reports R^2, adjusted R^2, and F-statistics of the regression of the first principal component of CDGM residual (Column 1 specification) on the various controls considered in Panel B. To compare with regression results in Friedwald and Nagler (2019),for Columns 1-3, we follow their filtering approach to construct a new data sample from January 2003 to December 2013 but excluding GFC period, and use the new sample to do regression only for model specification with FN controls. For Columns 4-6, we use the sample in Friedwald and Nagler (2019) but excluding GFC period. See Section 5.1 for details.

	sample by FN filtering			FN sample		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Principal Component Analysis						
PC1 (% explained)	65.4	63.3	73.3	59.5	55.8	59.4
PC2 (% explained)	7.5	6.6	4.9	9.3	9.9	13.4
Unexplained Variance	0.04	0.04	0.05	0.08	0.08	0.11
$\Delta\sigma_t^{D2D,bondbasis}$ (bps)	NO	YES	YES	NO	YES	YES
CDGM	YES	YES	YES	YES	YES	YES
FN OTC frictions	YES	YES	NO	YES	YES	NO
num obs	96,735	96,735	96,735	37,863	37,863	37,863
num bonds	2,803	2,803	2,803	925	925	925
Panel B: Explaining PC1 of the CDGM Model residual						
Adj. R^2	0.19	0.22	0.10	0.07	0.10	0.10
R^2	0.29	0.33	0.11	0.17	0.20	0.10
F-statistic	2.86	3.09	11.3	1.74	1.95	12.56
p-value	0.00	0.00	0.00	0.07	0.03	0.00
$\Delta\sigma_t^{D2D,bondbasis}$ (bps)	NO	YES	YES	NO	YES	YES
FN OTC frictions	YES	YES	NO	YES	YES	NO
num obs	97	97	97	97	97	97

Table IA.38: Credit Spread Changes (CDGM)

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_t^i = \beta_0^i + \beta_1^i \Delta\sigma_t^{D2D,bondbasis} + \beta_2^i \Delta\overline{turnover}_t + \beta_3^{i\prime} Controls_t^i + \varepsilon_t^i$$

where $\Delta\sigma_t^{D2D,bondbasis}$ is the simple average change in dealer market bond basis dispersion across all bonds from month $t-1$ to month t, $\Delta\overline{turnover}_t$ is the change in the average level (in cross section of bonds) of bond's monthly turnover rate (monthly trading amounts divided by outstanding amount), $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor; (5) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. To compare with regression results in Friedwald and Nagler (2019), we follow their filtering approach to construct a new data sample from January 2003 to December 2013, and use the new sample to do regression only for model specification with FN controls. For all other model specifications (Columns 1-8), we use the sample of January 2004 to December 2019. See Section 5.1 for details.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D,bondbasis}$ (bps)		1.131***		1.113***		1.127***		1.157***		0.557***		0.503***
		(26.08)		(25.58)		(25.35)		(24.25)		(9.69)		(4.90)
$\Delta\overline{turnover}_t$ (bps)		−0.078**		0.02		−0.089**		−0.099***		−0.746***		−0.562***
		(−2.33)		(0.56)		(−2.62)		(−2.70)		(−12.26)		(−5.06)
DEF			0.026***	0.032***								
			(14.02)	(4.42)								
HKM					−15.078***	−7.712***						
					(−5.08)	(−4.28)						
HKS-1: $\Delta Inventory$ (\$M)							−20.695**	−14.46***				
							(−3.03)	(−4.49)				
HKS-2: dealer distress							0.689***	0.308***				
							(5.64)	(3.71)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Mean adj R^2	0.205	0.237	0.206	0.236	0.205	0.237	0.227	0.262	0.284	0.317	0.383	0.407
Median adj R^2	0.181	0.223	0.183	0.223	0.182	0.225	0.215	0.264	0.292	0.338	0.413	0.451
num obs	542,798	542,798	542,798	542,798	542,798	542,798	542,798	542,798	112,839	112,839	112,839	112,839
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table IA.39: Credit Spread Changes

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_t^i = \beta_1 \Delta\sigma_t^{D2D,bondbasis} + \beta_2 \Delta\overline{turnover}_t + \beta_3' Controls_t^i + \eta^i + \varepsilon_t^i$$

where $\Delta\sigma_t^{D2D,bondbasis}$ is the simple average change in dealer market bond basis dispersion across all bonds from month $t-1$ to month t, $\Delta\overline{turnover}_t$ is the change in the average level (in cross section of bonds) of bond's monthly turnover rate (monthly trading amounts divided by outstanding amount), η^i is bond fixed effect, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor; (5) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. To compare with regression results in Friedwald and Nagler (2019), we follow their filtering approach to construct a new data sample from January 2003 to December 2013, and use the new sample to do regression only for model specification with FN controls. For all other model specifications (Columns 1-8), we use the sample of January 2004 to December 2019. See Section 5.1 for details. In this table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D,bondbasis}$ (bps)		1.019***		1.084***		1.020***		1.027***		0.489**		0.483**
		(3.34)		(4.14)		(3.33)		(3.32)		(2.34)		(2.49)
$\Delta\overline{turnover}_t$ (bps)		−0.315		−0.257		−0.308		−0.305		−0.689*		−0.78**
		(−1.23)		(−1.03)		(−1.18)		(−1.17)		(−2.07)		(−2.50)
DEF			0.049	0.064*								
			(1.23)	(1.78)								
HKM					−4.21	−4.40						
					(−0.47)	(−0.51)						
HKS-1: $\Delta Inventory$ ($M)							−9.58	−12.80				
							(−0.56)	(−0.778)				
HKS-2: dealer distress							0.46	0.49				
							(0.67)	(0.73)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.071	0.075	0.072	0.075	0.071	0.075	0.072	0.076	0.180	0.195	0.196	0.212
Adj R^2 (full)	0.053	0.057	0.054	0.057	0.053	0.057	0.053	0.057	0.159	0.174	0.175	0.191
R^2 (proj)	0.056	0.060	0.056	0.060	0.056	0.060	0.056	0.060	0.162	0.177	0.178	0.193
Adj R^2 (proj)	0.037	0.041	0.038	0.041	0.037	0.041	0.037	0.041	0.140	0.155	0.156	0.172
num obs	542,798	542,798	542,798	542,798	542,798	542,798	542,798	542,798	110,526	110,526	110,526	110,526
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table IA.40: Bond Basis Changes

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_t^i - \Delta FVS_t^i = \beta_1 \Delta\sigma_t^{D2D,bondbasis} + \beta_2 \Delta\overline{turnover}_t + \beta_3' Controls_t^i + \eta^i + \varepsilon_t^i$$

where ΔFVS_t^i is the change in fair value spread of bond i from month $t-1$ to t, $\Delta\sigma_t^{D2D,bondbasis}$ is the simple average change in dealer market bond basis dispersion across all bonds from month $t-1$ to month t, $\Delta\overline{turnover}_t$ is the change in the average level (in cross section of bonds) of bond's monthly turnover rate (monthly trading amounts divided by outstanding amount), η^i is bond fixed effect, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor. The sample is monthly from January 2004 to December 2019. See Section 5.2 for details. In the table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D,bondbasis}$ (bps)		0.540**		0.633***		0.231**		0.555**		0.286**		0.270**
		(2.34)		(3.79)		(2.34)		(2.34)		(2.39)		(2.39)
$\Delta\overline{turnover}_t$ (bps)		−0.461**		−0.456**		−0.59**		−0.454**		−0.231*		−0.267**
		(−2.63)		(−2.15)		(−2.56)		(−2.53)		(−1.85)		(−2.39)
DEF			0.101***	0.106***								
			(4.28)	(4.90)								
HKM					−3.98	−3.10						
					(−0.87)	(−0.43)						
HKS-1: $\Delta Inventory$ ($M)							−21.57*	−24.45*				
							(−1.76)	(−1.96)				
HKS-2: dealer distress							0.315	0.305				
							(0.54)	(0.50)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.093	0.096	0.098	0.101	0.093	0.096	0.094	0.097	0.115	0.128	0.133	0.145
Adj R^2 (full)	0.071	0.074	0.076	0.079	0.071	0.074	0.072	0.075	0.088	0.101	0.107	0.119
R^2 (proj)	0.029	0.032	0.034	0.037	0.029	0.032	0.030	0.033	0.084	0.097	0.103	0.115
Adj R^2 (proj)	0.006	0.009	0.010	0.014	0.006	0.009	0.006	0.009	0.056	0.069	0.075	0.088
num obs	341,334	341,334	341,334	341,334	341,334	341,334	341,334	341,334	75,369	75,369	75,369	75,369
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table IA.41: Credit Spread Changes (CDGM)

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_t^i = \beta_0^i + \beta_1^i \Delta\sigma_t^{D2D,bondbasis} + \beta_2^i(\Delta\sigma_t^{D2D,bondbasis})^2 + \beta_3^{i\prime} Controls_t^i + \varepsilon_t^i$$

where $\Delta\sigma_t^{D2D,bondbasis}$ is the simple average change in dealer market bond basis dispersion across all bonds from month $t-1$ to month t, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor; (5) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. To compare with regression results in Friedwald and Nagler (2019), we follow their filtering approach to construct a new data sample from January 2003 to December 2013, and use the new sample to do regression only for model specification with FN controls. For all other model specifications (Columns 1-8), we use the sample of January 2004 to December 2019. See Section 5.1 for details.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D,bondbasis}$ (bps)		1.236***		1.296***		1.232***		1.285***		0.706***		0.776
		(22.93)		(23.12)		(22.0)		(22.25)		(7.12)		(0.2)
$(\Delta\sigma_t^{D2D,bondbasis})^2$ (bps^2)		−0.053***		−0.072***		−0.055***		−0.068***		−0.005		−0.004
		(−11.57)		(−14.0)		(−11.83)		(−13.49)		(−0.83)		(−0.29)
DEF			0.039***	0.044***								
			(7.61)	(7.54)								
HKM					−14.42***	−8.99***						
					(−8.44)	(−4.86)						
HKS-1: $\Delta Inventory$ ($M)							−10.49***	−16.82***				
							(−3.79)	(−5.57)				
HKS-2: dealer distress							0.638***	0.387***				
							(8.31)	(4.65)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Mean adj R^2	0.205	0.247	0.206	0.249	0.205	0.249	0.227	0.276	0.284	0.327	0.383	0.411
Median adj R^2	0.181	0.234	0.183	0.237	0.182	0.238	0.215	0.276	0.292	0.354	0.413	0.449
num obs	542,798	542,798	542,798	542,798	542,798	542,798	542,798	542,798	112,839	112,839	112,839	112,839
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table IA.42: Credit Spread Changes

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_t^i = \beta_1 \Delta\sigma_t^{D2D,bondbasis} + \beta_2(\Delta\sigma_t^{D2D,bondbasis})^2 + \beta_3' Controls_t^i + \eta^i + \varepsilon_t^i,$$

where $\Delta\sigma_t^{D2D,bondbasis}$ is the simple average change in dealer market bond basis dispersion across all bonds from month $t-1$ to month t, η^i is bond fixed effect, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor; (5) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. To compare with regression results in Friedwald and Nagler (2019), we follow their filtering approach to construct a new data sample from January 2003 to December 2013, and use the new sample to do regression only for model specification with FN controls. For all other model specifications (Columns 1-8), we use the sample of January 2004 to December 2019. See Section 5.1 for details. In this table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D,bondbasis}$ (bps)		0.91**		1.06**		0.91**		0.92**		0.588**		0.570**
		(2.30)		(2.83)		(2.29)		(2.28)		(1.96)		(2.07)
$(\Delta\sigma_t^{D2D,bondbasis})^2$ (bps^2)		$4.4e^{-3}$		$1.19e^{-3}$		$4.34e^{-3}$		$4.27e^{-3}$		$-3.41e^{-3}$		$-2.99e^{-3}$
		(0.86)		(0.22)		(0.81)		(0.79)		(−0.84)		(−0.68)
DEF			0.049	0.064*								
			(1.23)	(1.67)								
HKM					−4.21	−5.06						
					(−0.47)	(−0.61)						
HKS-1: $\Delta Inventory$ ($M)							−9.58	−12.7				
							(−0.56)	(−0.78)				
HKS-2: dealer distress							0.46	0.5				
							(0.67)	(0.77)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.071	0.075	0.072	0.076	0.071	0.075	0.072	0.075	0.180	0.193	0.196	0.208
Adj R^2 (full)	0.053	0.057	0.054	0.058	0.053	0.057	0.053	0.057	0.159	0.172	0.175	0.187
R^2 (proj)	0.056	0.06	0.056	0.06	0.056	0.06	0.056	0.06	0.162	0.174	0.178	0.189
Adj R^2 (proj)	0.037	0.041	0.038	0.042	0.037	0.04	0.037	0.041	0.140	0.153	0.156	0.168
num obs	542,798	542,798	542,798	542,798	542,798	542,798	542,798	542,798	110,526	110,526	110,526	110,526
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table IA.43: Bond Basis Changes

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_t^i - \Delta FVS_t^i = \beta_1 \Delta\sigma_t^{D2D,bondbasis} + \beta_2 (\Delta\sigma_t^{D2D,bondbasis})^2 + \beta_3' Controls_t^i + \eta^i + \varepsilon_t^i$$

where ΔFVS_t^i is the change in fair value spread of bond i from month $t-1$ to t, $\Delta\sigma_t^{D2D,bondbasis}$ is the simple average change in dealer market bond basis dispersion across all bonds from month $t-1$ to month t, η^i is bond fixed effect, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor. The sample is monthly from January 2004 to December 2019. See Section 5.2 for details. In the table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D,bondbasis}$ (bps)		0.437***		0.452***		0.442***		0.45***		0.378**		0.357**
		(3.75)		(3.77)		(3.73)		(3.73)		(2.36)		(2.38)
$(\Delta\sigma_t^{D2D,bondbasis})^2$ (bps^2)		$-1.46e^{-3}$		$-1.88e^{-3}$		$-1.53e^{-3}$		$-1.49e^{-3}$		$-2.78e^{-3}$		$-2.66e^{-3}$
		(−1.03)		(−1.23)		(−1.06)		(−1.0)		(−1.27)		(−1.40)
DEF			$3.23e^{-4}$	$8.25e^{-3}$								
			(0.03)	(0.66)								
HKM					−4.71	−5.36						
					(−1.12)	(−1.32)						
HKS-1: $\Delta Inventory$ ($M)							−19.85*	−21.49**				
							(−2.35)	(−2.48)				
HKS-2: dealer distress							0.183	0.21				
							(0.57)	(0.64)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.074	0.085	0.074	0.085	0.074	0.085	0.077	0.089	0.115	0.127	0.133	0.143
Adj R^2 (full)	0.049	0.06	0.049	0.06	0.050	0.06	0.053	0.064	0.088	0.10	0.107	0.117
R^2 (proj)	0.049	0.06	0.049	0.06	0.050	0.06	0.053	0.064	0.084	0.096	0.103	0.113
Adj R^2 (proj)	0.024	0.035	0.024	0.035	0.024	0.036	0.027	0.039	0.056	0.068	0.075	0.085
num obs	385,200	385,200	385,200	385,200	385,200	385,200	385,200	385,200	75,369	75,369	75,369	75,369
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table IA.44: Credit Spread Changes (CDGM)

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_t^i = \beta_0^i + \beta_1^i \Delta\sigma_t^{D2D,bondbasis} + \beta_2^i HHI_t + \beta_3^{i\prime} Controls_t^i + \varepsilon_t^i$$

where $\Delta\sigma_t^{D2D,bondbasis}$ is the simple average change in dealer market bond basis dispersion across all bonds from month $t-1$ to month t, HHI_t is the simple average of bond-specific market share concentration (measured by Herfindahl–Hirschman Index of dealers' market shares) across all bonds in month t, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor; (5) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. To compare with regression results in Friedwald and Nagler (2019), we follow their filtering approach to construct a new data sample from January 2003 to December 2013, and use the new sample to do regression only for model specification with FN controls. For all other model specifications (Columns 1-8), we use the sample of January 2004 to December 2019. See Section 5.1 for details.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D,bondbasis}$ (bps)		0.881***		1.119***		0.601***		1.197***		0.511***		0.578***
		(12.69)		(18.51)		(8.94)		(17.29)		(8.55)		(4.98)
HHI_t		0.015		0.004*		0.01***		0.017***		0.001		0.001
		(8.44)		(1.84)		(5.62)		(8.56)		(0.25)		(0.16)
DEF			0.039***	0.109***								
			(7.61)	(12.45)								
HKM					−14.42***	−21.24***						
					(−8.44)	(−9.82)						
HKS-1: $\Delta Inventory$ ($M)							−10.49***	−14.93***				
							(−3.79)	(−3.94)				
HKS-2: dealer distress							0.638***	0.650***				
							(8.31)	(6.73)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Mean adj R^2	0.205	0.231	0.206	0.236	0.205	0.244	0.227	0.259	0.284	0.315	0.383	0.41
Median adj R^2	0.181	0.234	0.183	0.238	0.182	0.245	0.215	0.262	0.292	0.335	0.413	0.446
num obs	542,798	542,798	542,798	542,798	542,798	542,798	542,798	542,798	112,839	112,839	112,839	112,839
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table IA.45: Credit Spread Changes

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_t^i = \beta_1 \Delta\sigma_t^{D2D,bondbasis} + \beta_2 HHI_t + \beta_3' Controls_t^i + \eta^i + \varepsilon_t^i,$$

where $\Delta\sigma_t^{D2D,bondbasis}$ is the simple average change in dealer market bond basis dispersion across all bonds from month $t-1$ to month t, $\Delta\sigma_t^{FVS}$ is the simple average change in fair-value-spread (FVS) dispersion across all bonds from month $t-1$ to month t, HHI_t is the simple average of bond-specific market share concentration (measured by Herfindahl–Hirschman Index of dealers' market shares) across all bonds in month t, η^i is bond fixed effect, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor; (5) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. To compare with regression results in Friedwald and Nagler (2019), we follow their filtering approach to construct a new data sample from January 2003 to December 2013, and use the new sample to do regression only for model specification with FN controls. For all other model specifications (Columns 1-8), we use the sample of January 2004 to December 2019. See Section 5.1 for details. In this table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D,bondbasis}$ (bps)		1.017***		1.081***		1.019***		1.025***		0.314***		0.304***
		(3.56)		(4.25)		(3.55)		(3.52)		(2.76)		(2.81)
HHI_t		0.008**		0.009		0.008		0.008		0.01***		0.008**
		(2.00)		(1.41)		(1.32)		(1.33)		(3.08)		(2.55)
DEF			0.049	0.065*								
			(1.23)	(1.79)								
HKM					−4.21	−6.80						
					(−0.47)	(−0.83)						
HKS-1: $\Delta Inventory$ ($M)							−9.58	−5.70				
							(−0.56)	(−0.32)				
HKS-2: dealer distress							0.46	0.53				
							(0.67)	(0.80)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.071	0.078	0.072	0.079	0.071	0.078	0.072	0.078	0.146	0.169	0.171	0.189
Adj R^2 (full)	0.053	0.057	0.054	0.058	0.053	0.057	0.053	0.057	0.122	0.145	0.148	0.166
R^2 (proj)	0.056	0.062	0.056	0.063	0.056	0.062	0.056	0.063	0.116	0.139	0.142	0.160
Adj R^2 (proj)	0.037	0.041	0.038	0.042	0.037	0.041	0.037	0.041	0.090	0.115	0.117	0.136
num obs	542,798	542,798	542,798	542,798	542,798	542,798	542,798	542,798	112,839	112,839	112,839	112,839
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table IA.46: Bond Basis Changes

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_t^i - \Delta FVS_t^i = \beta_1 \Delta\sigma_t^{D2D,bondbasis} + \beta_2 HHI_t + \beta_3' Controls_t^i + \eta^i + \varepsilon_t^i$$

where ΔFVS_t^i is the change in fair value spread of bond i from month $t-1$ to t, $\Delta\sigma_t^{D2D,bondbasis}$ is the simple average change in dealer market bond basis dispersion across all bonds from month $t-1$ to month t, HHI_t is the simple average of bond-specific market share concentration (measured by Herfindahl–Hirschman Index of dealers' market shares) across all bonds in month t, η^i is bond fixed effect, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor. The sample is monthly from January 2004 to December 2019. See Section 5.2 for details. In the table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D,bondbasis}$ (bps)		0.395***		0.399***		0.398***		0.408***		0.275**		0.263**
		(4.07)		(4.07)		(4.03)		(4.10)		(2.30)		(2.29)
HHI_t		0.004		0.004		0.004		0.004		0.007**		0.005*
		(1.37)		(1.37)		(1.37)		(1.42)		(2.42)		(1.87)
DEF			0.0003	0.006								
			(0.03)	(0.50)								
HKM					−6.34	−6.70						
					(−1.09)	(−1.65)						
HKS-1: $\Delta Inventory$ ($M)							−19.85*	−17.47*				
							(−2.35)	(−1.96)				
HKS-2: dealer distress							0.18	0.27				
							(0.57)	(0.82)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.074	0.087	0.074	0.087	0.072	0.088	0.077	0.089	0.115	0.129	0.133	0.143
Adj R^2 (full)	0.049	0.061	0.049	0.061	0.051	0.062	0.053	0.064	0.088	0.102	0.107	0.117
R^2 (proj)	0.049	0.062	0.049	0.062	0.054	0.063	0.053	0.065	0.084	0.098	0.103	0.113
Adj R^2 (proj)	0.024	0.035	0.024	0.035	0.033	0.037	0.027	0.039	0.056	0.070	0.075	0.086
num obs	385,200	385,200	385,200	385,200	385,200	385,200	385,200	385,200	75,369	75,369	75,369	75,369
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table IA.47: Credit Spread Changes (CDGM)

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_t^i = \beta_0^i + \beta_1^i \Delta\sigma_t^{D2D,bondbasis} + \beta_2^i \sigma_{i,t}^{D2D,basis} + \beta_3^i Inventory_{i,t} + \beta_4^{i\prime} Controls_t^i + \varepsilon_t^i$$

where $\Delta\sigma_t^{D2D,bondbasis}$ is the simple average change in dealer market bond basis dispersion across all bonds from month $t-1$ to month t, $\sigma_{i,t}^{D2D,basis}$ is bond-specific dealer market bond basis dispersion in month t, $Inventory_{i,t}$ is bond-specific dealer inventory in month t, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor; (5) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. To compare with regression results in Friedwald and Nagler (2019), we follow their filtering approach to construct a new data sample from January 2003 to December 2013, and use the new sample to do regression only for model specification with FN controls. For all other model specifications (Columns 1-8), we use the sample of January 2004 to December 2019. See Section 5.1 for details.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D,bondbasis}$ (bps)		1.147***		1.106***		1.179***		1.192***		0.264***		0.24*
		(27.25)		(25.45)		(26.22)		(25.54)		(2.81)		(1.87)
$\sigma_{i,t}^{D2D,basis}$ (bps)		0.09***		0.092***		0.089***		0.088***		0.16		0.11**
		(12.24)		(11.42)		(11.66)		(11.47)		(1.18)		(2.78)
$Inventory_{i,t}$ (\$M)		1.23***		1.23***		1.23***		1.27***		−0.23**		−0.80***
		(12.55)		(12.03)		(11.89)		(12.14)		(−2.52)		(−3.78)
DEF			0.039***	0.024***								
			(7.61)	(4.27)								
HKM					−14.42***	−1.64***						
					(−8.44)	(−0.92)						
HKS-1: $\Delta Inventory$ (\$M)							−10.49***	−9.47***				
							(−3.79)	(−3.04)				
HKS-2: dealer distress							0.638***	0.03				
							(8.31)	(0.37)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Mean adj R^2	0.205	0.287	0.206	0.288	0.205	0.288	0.227	0.312	0.284	0.346	0.383	0.44
Median adj R^2	0.181	0.275	0.183	0.28	0.182	0.277	0.215	0.31	0.292	0.38	0.413	0.486
num obs	485,716	485,716	485,716	485,716	485,716	485,716	485,716	485,716	104,064	104,064	104,064	104,064
num bonds	9,379	9,379	9,379	9,379	9,379	9,379	9,379	9,379	2,654	2,654	2,654	2,654

Table IA.48: Credit Spread Changes

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_t^i = \beta_1 \Delta\sigma_t^{D2D,bondbasis} + \beta_2 \sigma_{i,t}^{D2D,basis} + \beta_3 Inventory_{i,t} + \beta_4' Controls_t^i + \eta^i + \varepsilon_t^i,$$

where $\Delta\sigma_t^{D2D,bondbasis}$ is the simple average change in dealer market bond basis dispersion across all bonds from month $t-1$ to month t, η^i is bond fixed effect, $\sigma_{i,t}^{D2D,basis}$ is bond-specific dealer market bond basis dispersion in month t, $Inventory_{i,t}$ is bond-specific dealer inventory in month t, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor; (5) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. To compare with regression results in Friedwald and Nagler (2019), we follow their filtering approach to construct a new data sample from January 2003 to December 2013, and use the new sample to do regression only for model specification with FN controls. For all other model specifications (Columns 1-8), we use the sample of January 2004 to December 2019. See Section 5.1 for details. In this table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D,bondbasis}$ (bps)		1.04***		1.09***		1.05***		1.05***		0.36***		0.19*
		(3.45)		(4.02)		(3.44)		(3.42)		(3.14)		(1.76)
$\sigma_{i,t}^{D2D,basis}$ (bps)		0.08***		0.08**		0.09**		0.09**		0.005		0.007
		(2.93)		(2.67)		(2.55)		(2.62)		(1.30)		(1.37)
$Inventory_{i,t}$ (\$B)		0.27		0.24		0.27		0.33		−0.16		−0.14
		(0.23)		(0.21)		(0.12)		(0.09)		(−0.11)		(−0.27)
DEF			0.049	0.043								
			(1.23)	(1.11)								
HKM					−4.21	−4.60						
					(−0.47)	(−0.55)						
HKS-1: $\Delta Inventory$ (\$M)							−9.58	−11.8				
							(−0.56)	(−0.73)				
HKS-2: dealer distress							0.46	0.46				
							(0.67)	(0.69)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.071	0.091	0.072	0.092	0.071	0.091	0.072	0.092	0.150	0.168	0.201	0.212
Adj R^2 (full)	0.053	0.072	0.054	0.073	0.053	0.073	0.053	0.073	0.126	0.143	0.179	0.189
R^2 (proj)	0.056	0.074	0.056	0.075	0.056	0.074	0.056	0.075	0.120	0.137	0.173	0.182
Adj R^2 (proj)	0.037	0.055	0.038	0.056	0.037	0.055	0.037	0.055	0.095	0.111	0.149	0.158
num obs	485,716	485,716	485,716	485,716	485,716	485,716	485,716	485,716	104,064	104,064	104,064	104,064
num bonds	9,379	9,379	9,379	9,379	9,379	9,379	9,379	9,379	2,654	2,654	2,654	2,654

Table IA.49: Bond Basis Changes

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_t^i - \Delta FVS_t^i = \beta_1 \Delta\sigma_t^{D2D,bondbasis} + \beta_2 \sigma_{i,t}^{D2D,basis} + \beta_3 Inventory_{i,t} + \beta_4' Controls_t^i + \eta^i + \varepsilon_t^i$$

where ΔFVS_t^i is the change in fair value spread of bond i from month $t-1$ to t, $\Delta\sigma_t^{D2D,bondbasis}$ is the simple average change in dealer market bond basis dispersion across all bonds from month $t-1$ to month t, η^i is bond fixed effect, $\sigma_{i,t}^{D2D,basis}$ is bond-specific dealer market bond basis dispersion in month t, $Inventory_{i,t}$ is bond-specific dealer inventory in month t, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor. The sample is monthly from January 2004 to December 2019. See Section 5.2 for details. In the table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D,bondbasis}$ (bps)		0.42***		0.42***		0.42***		0.43***		0.294**		0.279**
		(4.34)		(4.32)		(4.30)		(4.36)		(2.48)		(2.46)
$\sigma_{i,t}^{D2D,basis}$ (bps)		0.002**		0.002***		0.002**		0.002**		0.007		0.006
		(2.62)		(9.52)		(2.36)		(2.49)		(1.13)		(0.92)
$Inventory_{i,t}$ ($B)		0.56		0.56**		0.56		0.60		−1.39***		−1.37
		(1.07)		(2.21)		(0.26)		(1.14)		(−4.62)		(−0.99)
DEF			0.002	0.004								
			(0.10)	(0.38)								
HKM					-6.34	-5.38						
					(−1.09)	(−1.31)						
HKS-1: $\Delta Inventory$ ($M)							−18.56*	−21.91**				
							(−1.96)	(−2.52)				
HKS-2: dealer distress							0.42	0.21				
							(1.03)	(0.66)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.074	0.087	0.074	0.087	0.074	0.087	0.077	0.091	0.115	0.126	0.133	0.143
Adj R^2 (full)	0.049	0.062	0.049	0.062	0.050	0.062	0.053	0.066	0.088	0.099	0.107	0.116
R^2 (proj)	0.049	0.062	0.049	0.062	0.050	0.062	0.053	0.066	0.084	0.096	0.103	0.113
Adj R^2 (proj)	0.024	0.036	0.024	0.036	0.024	0.037	0.027	0.04	0.056	0.068	0.075	0.086
num obs	385,200	385,200	385,200	385,200	385,200	385,200	385,200	385,200	75,369	75,369	75,369	75,369
num bonds	9,379	9,379	9,379	9,379	9,379	9,379	9,379	9,379	2,654	2,654	2,654	2,654

Table IA.50: Bond Basis Changes (CDGM)

This table reports the regression estimations from Equation (15):

$$\Delta YieldSpread_t^i - \Delta FVS_t^i = \beta_0^i + \beta_1^i \Delta\sigma_t^{D2D} + \beta_2^{i\prime} Controls_t^i + \varepsilon_t^i$$

where ΔFVS_t^i is the change in fair value spread of bond i from month $t-1$ to t, $\Delta\sigma_t^{D2D}$ is the simple average change in dealer market price dispersion across all bonds from month $t-1$ to month t, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor. The sample is monthly from January 2004 to December 2019. See Section 5.2 for details.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D}$ (bps)		1.07***		1.14***		1.30***		1.04***		0.554***		0.389***
		(4.00)		(4.07)		(4.67)		(3.53)		(11.61)		(4.67)
DEF			−0.002	0.022								
			(−0.1)	(1.14)								
HKM					−43.71***	−17.45**						
					(−5.59)	(−2.06)						
HKS-1: $\Delta Inventory$ ($M)							−110.95***	−94.84***				
							(−9.91)	(−8.16)				
HKS-2: dealer distress							1.21***	0.85**				
							(3.29)	(2.16)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Mean adj R^2	0.127	0.2	0.124	0.195	0.134	0.204	0.158	0.226	0.257	0.289	0.366	0.386
Median adj R^2	0.099	0.175	0.094	0.174	0.104	0.18	0.13	0.21	0.27	0.309	0.402	0.425
num obs	428,002	428,002	428,002	428,002	428,002	428,002	428,002	428,002	83,745	83,745	83,745	83,745
num bonds	8,399	8,399	8,399	8,399	8,399	8,399	8,399	8,399	2,244	2,244	2,244	2,244

Table IA.51: Credit Spread Changes (CDGM) by Leverage and Maturity

Panel A: Leverage Groups and All maturities

Leverage	<15%	15-25%	25-35%	35-45%	45-55%	>55%	All
$\Delta\sigma_t^{D2D}$ (bps)	0.807***	1.124***	1.579***	1.592***	1.023***	2.666***	1.403***
	(8.2)	(7.13)	(8.03)	(9.32)	(4.45)	(30.76)	(19.06)
Mean R^2_{adj}	0.154	0.176	0.174	0.182	0.208	0.291	0.237
Mean R^2_{adj} (model without$\Delta\sigma_t^{D2D}$)	0.146	0.144	0.152	0.155	0.188	0.255	0.205
num obs	98880	57541	60173	57886	55684	212634	542798
num bonds	3843	4410	4854	5060	4945	6409	10537

Panel B: Leverage Groups and Short Maturities (<= 9 years)

Leverage	<15%	15-25%	25-35%	35-45%	45-55%	>55%	All
$\Delta\sigma_t^{D2D}$ (bps)	0.839***	1.093***	1.295***	2.00***	0.989***	3.077***	1.845***
	(6.25)	(5.13)	(4.95)	(8.74)	(3.03)	(26.72)	(45.12)
Mean R^2_{adj}	0.169	0.182	0.161	0.181	0.206	0.284	0.233
Mean R^2_{adj} (model without$\Delta\sigma_t^{D2D}$)	0.158	0.144	0.144	0.161	0.186	0.248	0.206
num obs	68530	39692	41735	38789	37033	155940	381720
num bonds	2910	3282	3589	3786	3709	5184	8637

Panel C: Leverage Groups and Long Maturities (>= 12 years)

Leverage	<15%	15-25%	25-35%	35-45%	45-55%	>55%	All
$\Delta\sigma_t^{D2D}$ (bps)	0.389**	0.891***	1.947***	1.266***	1.129***	1.487***	1.123***
	(2.17)	(2.69)	(5.69)	(4.22)	(3.21)	(10.95)	(28.72)
Mean R^2_{adj}	0.112	0.163	0.214	0.171	0.208	0.295	0.223
Mean R^2_{adj} (model without$\Delta\sigma_t^{D2D}$)	0.115	0.128	0.17	0.143	0.184	0.267	0.192
num obs	22967	13717	14193	14901	14513	42690	122981
num bonds	898	1039	1168	1168	1137	1313	2213

Table IA.52: Credit Spread Changes (CDGM) by Leverage and Credit Rating

Panel A: Credit Rating Groups and All maturities

Credit Rating	AAA	AA	A	BBB	BB	B	IG	HY
$\Delta\sigma_t^{D2D}$ (bps)	0.264***	0.627***	0.914***	1.669***	2.695***	4.336***	0.961***	2.85***
	(3.8)	(16.61)	(37.22)	(38.06)	(22.06)	(14.61)	(49.91)	(34.11)
Mean R^2_{adj}	0.123	0.178	0.191	0.243	0.309	0.296	0.195	0.29
Mean R^2_{adj} (model without$\Delta\sigma_t^{D2D}$)	0.116	0.151	0.159	0.207	0.291	0.271	0.164	0.265
num obs	10807	51544	183850	163956	85218	47423	332960	209838
num bonds	228	990	3366	3027	1727	1199	6187	4350

Panel B: Credit Rating Groups and Short Maturities (<= 9 years)

Credit Rating	AAA	AA	A	BBB	BB	B	IG	HY
$\Delta\sigma_t^{D2D}$ (bps)	0.185*	0.692***	0.944***	1.899***	2.991***	5.321***	1.022***	3.303***
	(1.88)	(14.22)	(26.36)	(29.05)	(20.17)	(14.62)	(36.77)	(30.44)
Mean R^2_{adj}	0.121	0.183	0.177	0.237	0.317	0.295	0.185	0.295
Mean R^2_{adj} (model without$\Delta\sigma_t^{D2D}$)	0.116	0.16	0.148	0.201	0.299	0.272	0.156	0.271
num obs	7081	37619	119743	111074	67361	38842	222158	159562
num bonds	172	833	2586	2456	1567	1023	4870	3767

Panel C: Credit Rating Groups and Long Maturities (>= 12 years)

Credit Rating	AAA	AA	A	BBB	BB	B	IG	HY
$\Delta\sigma_t^{D2D}$ (bps)	0.009	0.551***	1.001***	1.422***	1.555***	0.67	1.01***	1.447***
	(0.03)	(6.88)	(21.58)	(19.01)	(6.77)	(1.45)	(27.01)	(11.67)
Mean R^2_{adj}	0.113	0.138	0.203	0.256	0.261	0.288	0.205	0.263
Mean R^2_{adj} (model without$\Delta\sigma_t^{D2D}$)	0.108	0.115	0.166	0.225	0.235	0.252	0.171	0.237
num obs	3073	10674	51254	39699	11359	6922	87236	35745
num bonds	58	194	907	655	206	193	1523	690

Table IA.53: Credit Spread Changes

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_{i,t} = \eta_i + \beta_1 \Delta\sigma_t^{D2D} + \beta_2 \Delta\sigma_t^{D2D} \times Dum_{Covid} + \beta_3' Controls_{i,t} + \varepsilon_{i,t}$$

where $\Delta\sigma_t^{D2D}$ is the simple average change in dealer market price dispersion across all bonds from month $t-1$ to month t, Dum_{Covid} is the dummy variable for COVID period (Mar 2020 - Apr 2020), η^i is bond fixed effect, $Controls_{i,t}$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor; (5) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. To compare with regression results in Friedwald and Nagler (2019), we follow their filtering approach to construct a new data sample from January 2003 to December 2013, and use the new sample to do regression only for model specification with FN controls. For all other model specifications (Columns 1-8), we use the sample of January 2004 to September 2022. See Section 5.1 for details. In this table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\Delta\sigma_t^{D2D}$ (bps)		0.899***		0.884***		0.902***		0.920***
		(3.09)		(3.23)		(3.08)		(3.13)
$\Delta\sigma_t^{D2D}$ (bps) $\times Dum_{Covid}$		−0.081		−0.072		−0.086		−0.106
		(−0.26)		(−0.24)		(−0.27)		(−0.34)
DEF			0.053	0.047				
			(1.50)	(1.40)				
HKM					−5.09	−4.88		
					(−0.58)	(−0.62)		
HKS-1: $\Delta Inventory$ (\$M)							−4.57	−9.21
							(−0.32)	(−0.75)
HKS-2: dealer distress							0.39	0.46
							(0.55)	(0.70)
CDGM	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.092	0.098	0.093	0.099	0.092	0.098	0.092	0.098
Adj R^2 (full)	0.076	0.082	0.076	0.083	0.076	0.082	0.076	0.082
R^2 (proj)	0.078	0.084	0.078	0.085	0.078	0.084	0.078	0.084
Adj R^2 (proj)	0.061	0.068	0.062	0.068	0.061	0.068	0.061	0.068
num obs	603,950	603,950	603,950	603,950	603,950	603,950	603,950	603,950
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537

Table IA.54: Credit Spread Changes

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_{i,t} = \eta_i + \beta_1 \Delta\sigma_t^{D2D,Low-Amihud} + \beta_2' Controls_{i,t} + \varepsilon_{i,t}$$

where $\Delta\sigma_t^{D2D,Low-Amihud}$ is the simple average change in dealer market price dispersion across all bonds from month $t-1$ to month t using bonds with higher liquidity identified by low Amihud ratio, η^i is bond fixed effect, $Controls_{i,t}$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor; (5) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. To compare with regression results in Friedwald and Nagler (2019), we follow their filtering approach to construct a new data sample from January 2003 to December 2013, and use the new sample to do regression only for model specification with FN controls. For all other model specifications (Columns 1-8), we use the sample of January 2004 to December 2019. See Section 5.1 for details. In this table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D,Low-Amihud}$ (bps)		1.280***		1.257***		1.279***		1.279***		0.712**		0.689**
		(6.21)		(6.15)		(6.20)		(6.23)		(2.19)		(2.21)
DEF			0.049	0.023								
			(1.23)	(0.72)								
HKM					-4.208	-0.670						
					(-0.47)	(-0.08)						
HKS-1: $\Delta Inventory$ ($M)							-9.584	-11.629				
							(-0.56)	(-0.76)				
HKS-2: dealer distress							0.459	0.045				
							(0.67)	(0.07)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.071	0.079	0.072	0.079	0.071	0.079	0.072	0.079	0.123	0.133	0.133	0.141
Adj R^2 (full)	0.053	0.061	0.054	0.061	0.053	0.061	0.053	0.061	0.102	0.112	0.112	0.119
R^2 (proj)	0.056	0.063	0.056	0.064	0.056	0.063	0.056	0.063	0.114	0.124	0.124	0.132
Adj R^2 (proj)	0.037	0.045	0.038	0.045	0.037	0.045	0.037	0.045	0.093	0.103	0.103	0.110
num obs	542,798	542,798	542,798	542,798	542,798	542,798	542,798	542,798	117,299	117,299	117,023	117,023
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table IA.55: Bond Basis Changes

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_{i,t} - \Delta FVS_{i,t} = \eta_i + \beta_1 \Delta\sigma_t^{D2D,Low-Amihud} + \beta_2' Controls_{i,t} + \varepsilon_{i,t}$$

where $\Delta FVS_{i,t}$ is the change in fair value spread of bond i from month $t-1$ to t, $\Delta\sigma_t^{D2D,Low-Amihud}$ is the simple average change in dealer market price dispersion across all bonds from month $t-1$ to month t using bonds with higher liquidity identified by low Amihud ratio, η^i is bond fixed effect, $Controls_{i,t}$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor. The sample is monthly from January 2004 to December 2019. See Section 5.2 for details. In the table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D,Low-Amihud}$ (bps)		0.866***		0.859***		0.866***		0.871***		0.242***		0.158*
		(5.11)		(4.92)		(5.11)		(5.16)		(2.85)		(1.90)
DEF			0.024	0.007								
			(0.88)	(0.30)								
HKM					-2.417	0.110						
					(-0.32)	(0.01)						
HKS-1: $\Delta Inventory$ ($M)							-11.928	-15.402				
							(-0.85)	(-1.19)				
HKS-2: dealer distress							0.243	-0.034				
							(0.4)	(-0.05)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.047	0.052	0.047	0.052	0.047	0.052	0.047	0.052	0.115	0.124	0.151	0.154
Adj R^2 (full)	0.024	0.029	0.024	0.029	0.024	0.029	0.024	0.030	0.088	0.097	0.125	0.128
R^2 (proj)	0.026	0.031	0.026	0.031	0.026	0.031	0.026	0.031	0.084	0.093	0.121	0.124
Adj R^2 (proj)	0.002	0.007	0.002	0.007	0.002	0.007	0.002	0.008	0.056	0.065	0.094	0.097
num obs	344,782	344,782	344,782	344,782	344,782	344,782	344,782	344,782	75,369	75,369	75,369	75,369
num bonds	8,081	8,081	8,081	8,081	8,081	8,081	8,081	8,081	2,244	2,244	2,244	2,244

Table IA.56: Credit Spread Changes

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_{i,t} = \eta_i + \beta_1 \Delta\sigma_t^{D2D,High-D2D} + \beta_2' Controls_{i,t} + \varepsilon_{i,t}$$

where $\Delta\sigma_t^{D2D,High-D2D}$ is the simple average change in dealer market price dispersion across all bonds from month $t-1$ to month t using bonds with high bond-level interdealer price dispersion controlling for bond-level liquidity, credit rating, duration, proportion of dealer participation and proportion of block trades, η^i is bond fixed effect, $Controls_{i,t}$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor; (5) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. To compare with regression results in Friedwald and Nagler (2019), we follow their filtering approach to construct a new data sample from January 2003 to December 2013, and use the new sample to do regression only for model specification with FN controls. For all other model specifications (Columns 1-8), we use the sample of January 2004 to December 2019. See Section 5.1 for details. In this table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D,High-D2D}$ (bps)		0.254***		0.247***		0.251***		0.281***		0.018		0.088**
		(2.87)		(2.86)		(2.84)		(3.34)		(0.97)		(2.46)
DEF			0.036	0.032								
			(1.29)	(1.17)								
HKM					-16.330	-15.592						
					(-1.26)	(-1.15)						
HKS-1: $\Delta Inventory$ (\$M)							-24.867**	-29.995***				
							(-2.31)	(-2.76)				
HKS-2: dealer distress							0.743	0.689				
							(1.35)	(1.17)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.112	0.116	0.113	0.117	0.113	0.117	0.116	0.120	0.123	0.115	0.133	0.135
Adj R^2 (full)	0.089	0.092	0.090	0.093	0.090	0.093	0.092	0.096	0.102	0.073	0.112	0.094
R^2 (proj)	0.085	0.088	0.086	0.089	0.086	0.089	0.088	0.092	0.114	0.074	0.124	0.095
Adj R^2 (proj)	0.060	0.064	0.061	0.065	0.061	0.065	0.063	0.068	0.093	0.030	0.103	0.051
num obs	403,724	403,724	403,724	403,724	403,724	403,724	403,724	403,724	117,299	61,383	117,023	61,107
num bonds	10,522	10,522	10,522	10,522	10,522	10,522	10,522	10,522	2,803	2,766	2,803	2,766

Table IA.57: Credit Spread Changes

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_{i,t} = \eta_i + \beta_1 \Delta\sigma_t^{D2D,Low-D2D} + \beta_2' Controls_{i,t} + \varepsilon_{i,t}$$

where $\Delta\sigma_t^{D2D,Low-D2D}$ is the simple average change in dealer market price dispersion across all bonds from month $t-1$ to month t using bonds with low bond-level interdealer price dispersion controlling for bond-level liquidity, credit rating, duration, proportion of dealer participation and proportion of block trades, η^i is bond fixed effect, $Controls_{i,t}$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor; (5) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. To compare with regression results in Friedwald and Nagler (2019), we follow their filtering approach to construct a new data sample from January 2003 to December 2013, and use the new sample to do regression only for model specification with FN controls. For all other model specifications (Columns 1-8), we use the sample of January 2004 to December 2019. See Section 5.1 for details. In this table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D,Low-D2D}$ (bps)		20.102		21.169		24.801		25.424		10.309		8.839
		(0.93)		(0.99)		(1.18)		(1.19)		(0.50)		(0.43)
DEF			0.036	0.037								
			(1.29)	(1.34)								
HKM					-16.330	-19.070						
					(-1.26)	(-1.47)						
HKS-1: $\Delta Inventory$ ($M)							-24.867**	-25.001**				
							(-2.31)	(-2.22)				
HKS-2: dealer distress							0.743	0.871				
							(1.35)	(1.57)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.112	0.113	0.113	0.114	0.113	0.114	0.116	0.117	0.123	0.115	0.133	0.133
Adj R^2 (full)	0.089	0.089	0.090	0.091	0.090	0.091	0.092	0.093	0.102	0.073	0.112	0.092
R^2 (proj)	0.085	0.085	0.086	0.087	0.086	0.087	0.088	0.089	0.114	0.074	0.124	0.092
Adj R^2 (proj)	0.060	0.061	0.061	0.062	0.061	0.062	0.063	0.065	0.093	0.030	0.103	0.049
num obs	403,724	403,724	403,724	403,724	403,724	403,724	403,724	403,724	117,299	61,383	117,023	61,107
num bonds	10,522	10,522	10,522	10,522	10,522	10,522	10,522	10,522	2,803	2,766	2,803	2,766

Table IA.58: Bond Basis Changes

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_{i,t} - \Delta FVS_{i,t} = \eta_i + \beta_1 \Delta\sigma_t^{D2D,High-D2D} + \beta_2' Controls_{i,t} + \varepsilon_{i,t}$$

where $\Delta\sigma_t^{D2D,High-D2D}$ is the simple average change in dealer market price dispersion across all bonds from month $t-1$ to month t using bonds with high bond-level interdealer price dispersion controlling for bond-level liquidity, credit rating, duration, proportion of dealer participation and proportion of block trades, η^i is bond fixed effect, $Controls_{i,t}$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor. The sample is monthly from January 2004 to December 2019. See Section 5.2 for details. In the table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D,High-D2D}$ (bps)		0.298**		0.295**		0.293**		0.332***		0.133*		0.098
		(2.73)		(2.66)		(2.67)		(3.10)		(1.92)		(1.05)
DEF			0.024	0.012								
			(0.88)	(0.35)								
HKM					-2.417	-16.059						
					(-0.32)	(-1.05)						
HKS-1: $\Delta Inventory$ (\$M)							-11.928	-37.829***				
							(-0.85)	(-3.17)				
HKS-2: dealer distress							0.243	0.714				
							(0.4)	(1.18)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.047	0.050	0.047	0.050	0.047	0.051	0.047	0.052	0.150	0.139	0.172	0.156
Adj R^2 (full)	0.024	0.019	0.024	0.019	0.024	0.020	0.024	0.021	0.126	0.091	0.148	0.110
R^2 (proj)	0.026	0.016	0.026	0.016	0.026	0.016	0.026	0.018	0.129	0.094	0.151	0.112
Adj R^2 (proj)	0.002	-0.016	0.002	-0.016	0.002	-0.016	0.002	-0.014	0.104	0.044	0.127	0.063
num obs	344,782	253,936	344,782	253,936	344,782	253,936	344,782	253,936	82,069	42,175	82,069	42,175
num bonds	8,081	8,019	8,081	8,019	8,081	8,019	8,081	8,019	2,244	2,188	2,244	2,188

Table IA.59: Bond Basis Changes

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_{i,t} - \Delta FVS_{i,t} = \eta_i + \beta_1 \Delta\sigma_t^{D2D,Low-D2D} + \beta_2' Controls_{i,t} + \varepsilon_{i,t}$$

where $\Delta\sigma_t^{D2D,Low-D2D}$ is the simple average change in dealer market price dispersion across all bonds from month $t-1$ to month t using bonds with low bond-level interdealer price dispersion controlling for bond-level liquidity, credit rating, duration, proportion of dealer participation and proportion of block trades, η^i is bond fixed effect, $Controls_{i,t}$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor. The sample is monthly from January 2004 to December 2019. See Section 5.2 for details. In the table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D,Low-D2D}$ (bps)		22.642		23.245		28.625		30.889		13.834		0.141
		(1.01)		(1.03)		(1.30)		(1.38)		(0.75)		(0.01)
DEF			0.024	0.018								
			(0.88)	(0.53)								
HKM					-2.417	-20.664						
					(-0.32)	(-1.39)						
HKS-1: $\Delta Inventory$ (\$M)							-11.928	-32.52**				
							(-0.85)	(-2.61)				
HKS-2: dealer distress							0.243	0.96				
							(0.4)	(1.66)				
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.047	0.049	0.047	0.049	0.047	0.049	0.047	0.051	0.150	0.138	0.172	0.156
Adj R^2 (full)	0.024	0.018	0.024	0.018	0.024	0.018	0.024	0.020	0.126	0.090	0.148	0.109
R^2 (proj)	0.026	0.015	0.026	0.015	0.026	0.015	0.026	0.016	0.129	0.093	0.151	0.111
Adj R^2 (proj)	0.002	-0.018	0.002	-0.017	0.002	-0.017	0.002	-0.016	0.104	0.043	0.127	0.062
num obs	344,782	253,936	344,782	253,936	344,782	253,936	344,782	253,936	82,069	42,175	82,069	42,175
num bonds	8,081	8,019	8,081	8,019	8,081	8,019	8,081	8,019	2,244	2,188	2,244	2,188

Table IA.60: Full Table: Credit Spread Changes (CDGM)

This table reports the regression estimations from Equation (14):

$$\Delta YieldSpread_t^i = \beta_0^i + \beta_1^i \Delta\sigma_t^{D2D} + \beta_2^{i\prime} Controls_t^i + \varepsilon_t^i$$

where $\Delta\sigma_t^{D2D}$ is the simple average change in dealer market price dispersion across all bonds from month $t-1$ to month t, $Controls_t^i$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor; (5) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. To compare with regression results in Friedwald and Nagler (2019), we follow their filtering approach to construct a new data sample from January 2003 to December 2013, and use the new sample to do regression only for model specification with FN controls. For all other model specifications (Columns 1-8), we use the sample of January 2004 to December 2019. See Section 5.1 for details.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D}$ (bps)		1.365***		1.291***		1.398***		1.412***		0.339***		0.603***
		(27.66)		(25.99)		(27.6)		(27.33)		(5.23)		(4.30)
DEF			0.039***	0.033***								
			(7.61)	(6.41)								
HKM					−14.417***	−10.887***						
					(−8.44)	(−6.13)						
HKS-1: $\Delta Inventory$ ($M)							−10.491***	−11.534***				
							(−3.79)	(−4.06)				
HKS-2: dealer distress							0.638***	0.397***				
							(8.31)	(5.06)				
$\triangle lev_t^i$	3.729***	3.694***	3.699***	3.639***	3.67***	3.656***	3.515***	3.527***	2.89***	2.688***	3.101***	3.188***
	(29.84)	(29.12)	(28.94)	(28.14)	(28.58)	(27.67)	(26.71)	(26.49)	(18.06)	(16.37)	(9.91)	(9.76)
$\triangle r_t^{10}$	-4.361*	4.694*	-5.172**	4.523*	-3.761	6.758**	-1.366	11.951***	8.625	52.772**	20.484	141.056***
	(-1.84)	(1.88)	(-2.18)	(1.8)	(-1.56)	(2.65)	(-0.54)	(4.46)	(0.53)	(2.24)	(0.69)	(3.03)
$(\triangle r_t^{10})^2$	-237.053***	-227.105***	-218.666***	-211.838***	-228.745***	-208.197***	-213.722***	-197.793***	-16.897	-39.623	-260.738	-306.051
	(-11.6)	(-11.02)	(-10.27)	(-9.65)	(-10.92)	(-9.91)	(-10.25)	(-9.24)	(-0.1)	(-0.18)	(-0.78)	(-0.57)
$\triangle slope_t$	-4.939***	-7.151***	-4.748***	-6.867***	-4.612***	-6.965***	-5.118***	-7.312***	-35.331***	-32.739***	-43.771***	-25.058***
	(-3.56)	(-5.08)	(-3.41)	(-4.83)	(-3.27)	(-4.86)	(-3.52)	(-4.97)	(-12.15)	(-9.41)	(-8.37)	(-3.42)
$\triangle VIX_t$	3.542***	2.962***	3.608***	3.061***	3.352***	2.769***	3.253***	2.596***	4.012***	3.73***	2.712***	2.272***
	(32.08)	(26.03)	(31.96)	(26.4)	(29.05)	(23.39)	(26.97)	(20.79)	(27.42)	(18.41)	(8.66)	(5.05)
$S\&P_t$	-0.023***	-0.021***	-0.021***	-0.019***	-0.023***	-0.021***	-0.023***	-0.021***	0.005***	0.009***	0.007***	0.004
	(-25.6)	(-22.83)	(-23.74)	(-19.56)	(-25.09)	(-22.3)	(-24.7)	(-20.93)	(4.18)	(6.33)	(3.14)	(1.11)
$\triangle jump_t$	11.231***	15.229***	8.868***	13.666***	11.73***	15.904***	14.726***	19.544***	3.406***	2.989***	0.87	-1.693
	(-7.71)	(-9.81)	(-6.09)	(-8.95)	(-8.04)	(-10.16)	(-9.93)	(-12.2)	(4.47)	(2.95)	(0.49)	(-0.66)
Intercept	2.087***	0.791***	-7.131***	-8.045***	2.49***	1.051***	2.251***	0.67***	-3.118***	-3.8***	-4.694***	-4.916***
	(10.13)	(3.43)	(-5.93)	(-6.39)	(11.62)	(4.44)	(10.45)	(2.76)	(-9.08)	(-7.24)	(-6.17)	(-4.29)
$\triangle inv_t$											-0.029***	-0.033***
											(-10.46)	(-9.43)
$\triangle match.trd_t$											0.428	2.187***
											(0.95)	(3.92)
$\triangle ted_t$											54.225***	39.797***
											(9.58)	(6.78)
$\triangle centr_t$											0.973	1.157
											(0.1)	(0.12)
$\triangle chain.len_t$											-39.299*	-61.665**
											(-1.74)	(-2.7)
$\triangle lvc.sales_t$											742.795*	655.028
											(1.78)	(1.5)
$\triangle svc.sales_t$											-863.515***	-1815.114***
											(-4.21)	(-7.22)
$\triangle block.trd_t$											-5.145***	-5.8***
											(-11.12)	(-11)
$\triangle dlr.conc_t$											0.001	0.004
											(0.4)	(1.19)
$\triangle ig2junk_t$											0.035	-0.303*
											(0.28)	(-1.91)
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Mean adj R^2	0.205	0.237	0.206	0.237	0.205	0.237	0.227	0.257	0.284	0.318	0.383	0.407
Median adj R^2	0.181	0.217	0.183	0.216	0.182	0.217	0.215	0.247	0.292	0.338	0.413	0.444
num obs	542,798	542,798	542,798	542,798	542,798	542,798	542,798	542,798	117,023	117,023	117,023	117,023
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table IA.61: Full Table: Credit Spread Changes

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_{i,t} = \eta_i + \beta_1 \Delta\sigma_t^{D2D} + \beta_2' Controls_{i,t} + \varepsilon_{i,t}$$

where $\Delta\sigma_t^{D2D}$ is the simple average change in dealer market price dispersion across all bonds from month $t-1$ to month t, η^i is bond fixed effect, $Controls_{i,t}$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor; (5) three groups of over-the-counter market frictions (FN) from Friedwald and Nagler (2019): inventory frictions, search frictions and bargaining frictions. To compare with regression results in Friedwald and Nagler (2019), we follow their filtering approach to construct a new data sample from January 2003 to December 2013, and use the new sample to do regression only for model specification with FN controls. For all other model specifications (Columns 1-8), we use the sample of January 2004 to December 2019. See Section 5.1 for details. In this table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D}$ (bps)		0.777***		0.775***		0.777***		0.777***		0.693*		0.838**
		(5.12)		(4.83)		(5.09)		(5.10)		(2.00)		(2.68)
DEF			0.049	0.048								
			(1.23)	(1.29)								
HKM					−4.21	−4.23						
					(−0.47)	(−0.53)						
HKS-1: $\Delta Inventory$ ($M)							−9.58	−13.87				
							(−0.56)	(−0.89)				
HKS-2: dealer distress							0.46	0.35				
							(0.67)	(0.53)				
$\triangle lev_t^i$	5.214***	5.153***	5.197***	5.137***	5.211***	5.150***	5.201***	5.142***	5.300***	5.309***	5.322***	5.384***
	(10.97)	(10.99)	(10.84)	(10.89)	(10.99)	(10.99)	(10.98)	(10.94)	(5.10)	(4.85)	(4.95)	(4.99)
$\triangle r_t^{10}$	-16.982	-26.022	-12.074	-21.197	-16.641	-25.680	-16.602	-25.391	-68.603*	-76.455**	-73.734**	-75.259**
	(-1.04)	(-1.68)	(-0.82)	(-1.57)	(-1.01)	(-1.64)	(-1.02)	(-1.63)	(-1.88)	(-2.21)	(-2.15)	(-2.55)
$(\triangle r_t^{10})^2$	127.368*	141.879*	146.708**	160.783**	127.815*	142.329*	129.117*	144.839*	208.051**	102.671	338.964***	164.365
	(1.79)	(1.80)	(2.15)	(2.07)	(1.79)	(1.80)	(1.79)	(1.81)	(2.49)	(0.93)	(3.21)	(1.31)
$\triangle slope_t$	10.037	3.568	8.576	2.152	10.065	3.596	10.355	3.920	-26.965	-26.692	-30.745	-23.548
	(0.68)	(0.28)	(0.64)	(0.18)	(0.68)	(0.28)	(0.70)	(0.30)	(-0.99)	(-1.12)	(-1.09)	(-1.07)
$\triangle VIX_t$	4.834***	3.700***	4.987***	3.851***	4.815***	3.680***	4.764***	3.621***	4.713***	3.541**	4.079**	3.232*
	(4.27)	(3.35)	(4.52)	(3.56)	(4.22)	(3.30)	(4.09)	(3.20)	(3.56)	(2.16)	(2.38)	(1.85)
$S\&P_t$	-0.013**	-0.015***	-0.011*	-0.013**	-0.013**	-0.014***	-0.012*	-0.014***	0.009	0.008	0.010	0.013*
	(-2.13)	(-2.98)	(-1.71)	(-2.38)	(-2.12)	(-2.96)	(-2.03)	(-2.98)	(1.12)	(1.28)	(1.25)	(1.91)
$\triangle jump_t$	16.402*	13.998	14.038	11.689	16.439*	14.035	16.883*	14.486	-2.119	-3.314	-1.506	-0.854
	(-1.75)	(-1.38)	(-1.50)	(-1.21)	(-1.76)	(-1.38)	(-1.84)	(-1.45)	(0.76)	(1.11)	(0.52)	(0.29)
$\triangle inv_t$											-0.003	-0.019*
											(-0.44)	(-1.78)
$\triangle match.trd_t$											3.744	6.779**
											(1.68)	(2.33)
$\triangle ted_t$											25.552	-7.047
											(1.02)	(-0.25)
$\triangle centr_t$											-17.311	-11.911
											(-0.58)	(-0.40)
$\triangle chain.len_t$											-93.592	-127.168*
											(-1.56)	(-2.03)
$\triangle lvc.sales_t$											-136.753	-738.678
											(-0.35)	(-1.41)
$\triangle svc.sales_t$											-369.864*	-348.738
											(-1.75)	(-1.35)
$\triangle block.trd_t$											-0.603	-2.352
											(-1.41)	(-0.82)
$\triangle dlr.conc_t$											0.005	-0.002
											(1.61)	(-0.26)
$\triangle ig2junk_t$											-0.539	-0.509
											(-0.93)	(-0.91)
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.071	0.076	0.072	0.077	0.071	0.076	0.072	0.077	0.123	0.139	0.133	0.150
Adj R^2 (full)	0.053	0.058	0.054	0.059	0.053	0.058	0.053	0.058	0.102	0.117	0.112	0.128
R^2 (proj)	0.056	0.061	0.056	0.061	0.056	0.061	0.056	0.061	0.114	0.130	0.124	0.141
Adj R^2 (proj)	0.037	0.042	0.038	0.043	0.037	0.042	0.037	0.042	0.093	0.107	0.103	0.119
num obs	542,798	542,798	542,798	542,798	542,798	542,798	542,798	542,798	117,023	117,023	117,023	117,023
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803

Table IA.62: Full Table: Bond Basis Changes

This table reports the regression estimations from the following equation:

$$\Delta YieldSpread_{i,t} - \Delta FVS_{i,t} = \eta_i + \beta_1 \Delta\sigma_t^{D2D} + \beta_2' Controls_{i,t} + \varepsilon_{i,t}$$

where $\Delta FVS_{i,t}$ is the change in fair value spread of bond i from month $t-1$ to t, $\Delta\sigma_t^{D2D}$ is the simple average change in dealer market price dispersion across all bonds from month $t-1$ to month t, η^i is bond fixed effect, $Controls_{i,t}$ contains different combinations of bond- and market-level controls as follows: (1) CDGM controls (changes in (i) issuer-firm leverage, (ii) risk-free rate, (iii) squared risk-free rate, (iv) yield-curve slope, (v) VIX, (vi) S&P500 return, (viii) slope of Volatility Smirk); (2) a default factor (DEF) similar to Bessembinder, Kahle, Maxwell, and Xu (2008) which is the difference between the yields of long-term investment-grade corporate bonds and long-term treasuries; (3) the capital ratio growth rate of the whole sector of primary dealers (HSM) from He, Kelly, and Manela (2017); (4) two risk factors (HKS) from He, Khorrami, and Song (2019): the dealer inventory factor and the intermediary distress factor. The sample is monthly from January 2004 to December 2019. See Section 5.2 for details. In the table, standard errors are clustered at bond and month levels.

	CDGM		DEF		HKM		HKS		FN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\Delta\sigma_t^{D2D}$ (bps)		0.596***		0.596***		0.596***		0.60***		0.261***		0.158*
		(4.22)		(4.04)		(4.36)		(4.18)		(3.81)		(2.15)
DEF			0.024	0.023								
			(0.88)	(0.96)								
HKM					−2.42	−2.42						
					(−0.319)	(−0.349)						
HKS-1: $\Delta Inventory$ ($M)							−11.93	−16.44				
							(−0.85)	(−1.28)				
HKS-2: dealer distress							0.243	0.166				
							(0.40)	(0.28)				
$\triangle lev_t^i$	-2.462***	-2.503***	-2.469***	-2.510***	-2.464***	-2.506***	-2.469***	-2.509***	-1.983***	-2.041***	-2.017***	-2.031***
	(-6.73)	(-6.87)	(-6.77)	(-6.90)	(-6.74)	(-6.86)	(-6.74)	(-6.87)	(-9.42)	(-9.62)	(-9.59)	(-9.70)
$\triangle r_t^{10}$	-18.410	-26.549**	-15.790	-24.000**	-18.224	-26.363**	-18.288	-26.355**	-6.341	-8.029	-11.771	-11.888
	(-1.55)	(-2.33)	(-1.37)	(-2.26)	(-1.52)	(-2.29)	(-1.54)	(-2.32)	(-0.68)	(-0.94)	(-1.37)	(-1.53)
$(\triangle r_t^{10})^2$	79.790	91.944	89.283*	101.126*	79.955	92.109	82.388	96.036	40.240*	4.040	124.182***	92.861**
	(1.56)	(1.62)	(1.84)	(1.80)	(1.56)	(1.62)	(1.58)	(1.65)	(1.84)	(0.19)	(3.51)	(2.58)
$\triangle slope_t$	6.964	1.031	6.242	0.338	6.988	1.054	7.106	1.111	-4.506	-4.550	-7.530	-6.821
	(0.67)	(0.12)	(0.63)	(0.04)	(0.67)	(0.13)	(0.67)	(0.13)	(-0.66)	(-0.75)	(-1.26)	(-1.20)
$\triangle VIX_t$	4.365***	3.546***	4.450***	3.629***	4.352***	3.533***	4.311***	3.483***	1.674***	1.416***	1.059***	0.987**
	(5.29)	(4.95)	(5.59)	(5.18)	(5.21)	(4.89)	(5.03)	(4.76)	(4.83)	(4.38)	(2.79)	(2.58)
$S\&P_t$	-0.001	-0.002	0.000	-0.001	-0.001	-0.002	-0.001	-0.002	0.005	0.005*	0.006**	0.006**
	(-0.21)	(-0.38)	(-0.06)	(-0.18)	(-0.19)	(-0.36)	(-0.19)	(-0.43)	(1.58)	(1.74)	(2.27)	(2.43)
$\triangle jump_t$	3.405	0.645	1.724	-0.980	3.447	0.687	3.347	0.381	3.359***	3.552***	2.597**	2.691**
	(-0.38)	(-0.07)	(-0.19)	(0.10)	(-0.39)	(-0.07)	(-0.39)	(-0.04)	(3.02)	(3.27)	(2.28)	(2.43)
$\triangle inv_t$											-0.017***	-0.016***
											(-3.72)	(-3.54)
$\triangle match.trd_t$											1.431	1.607*
											(1.49)	(1.72)
$\triangle ted_t$											22.093***	16.901**
											(3.08)	(2.14)
$\triangle centr_t$											2.469	4.465
											(0.18)	(0.33)
$\triangle chain.len_t$											-23.399	-32.702
											(-0.88)	(-1.24)
$\triangle lvc.sales_t$											-190.423	-226.778
											(-0.84)	(-1.03)
$\triangle svc.sales_t$											20.379	-5.557
											(0.16)	(-0.04)
$\triangle block.trd_t$											-1.876	-1.595
											(-1.59)	(-1.33)
$\triangle dlr.conc_t$											0.001	0.001
											(0.41)	(0.28)
$\triangle ig2junk_t$											-0.274	-0.260
											(-1.06)	(-1.04)
CDGM	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
FN OTC frictions	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Bond FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
R^2 (full)	0.047	0.051	0.047	0.052	0.047	0.051	0.047	0.052	0.115	0.128	0.151	0.154
Adj R^2 (full)	0.024	0.029	0.024	0.029	0.024	0.029	0.024	0.029	0.088	0.101	0.125	0.128
R^2 (proj)	0.026	0.03	0.026	0.030	0.026	0.030	0.026	0.030	0.084	0.097	0.121	0.124
Adj R^2 (proj)	0.002	0.007	0.002	0.007	0.002	0.002	0.037	0.007	0.056	0.069	0.094	0.097
num obs	344,782	344,782	344,782	344,782	344,782	344,782	344,782	344,782	75,369	75,369	75,369	75,369
num bonds	10,537	10,537	10,537	10,537	10,537	10,537	10,537	10,537	2,803	2,803	2,803	2,803