

The Value of Value Investors

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Disclaimer: The views expressed herein are those of the authors and do not necessarily reflect those of the Federal Reserve Board or its staff. Maureen O'Hara is a trustee of TIAA, but she has no role in bond execution decisions.

Motivation: Who buys when everyone else is selling?

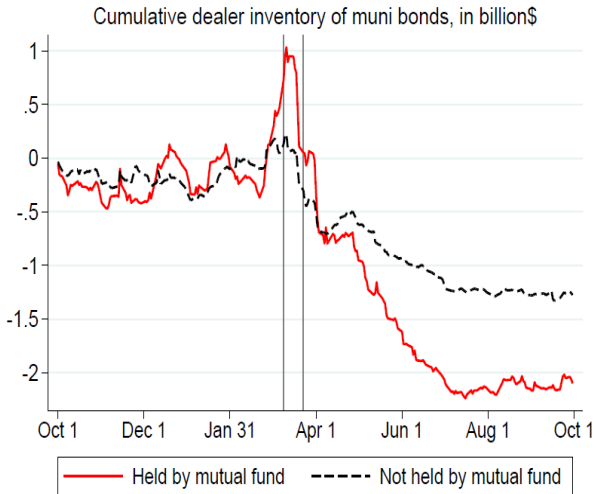
- There are growing concerns about the functioning and liquidity of bond markets in stress (and other) times.
 - UK LDI Gilt problems in Sept.
 - US Treasury market tightness this year.
 - US Covid period problems in Treasuries, corporate bonds, and municipal bonds.
- Who buys when everyone else is selling?
 - Dealers - except when they don't!

Dealer Inventory Changes in Corporate Bonds [O'Hara and Zhou (2021)]



..... Cumulative Dealer Buy - - - - Cumulative Dealer Sell — Cumulative Inventory Change

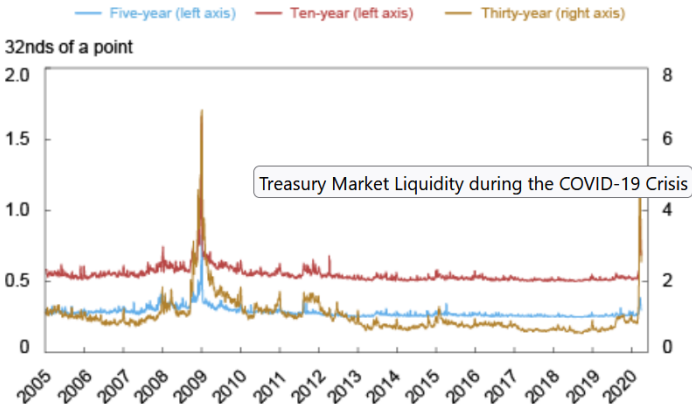
Dealer Inventory Changes in Municipal Bonds [Li, O'Hara and Zhou (2023)]



Drop lines: March 9 and March 23

Treasury Market Liquidity [Fleming and Ruela (2020)]

Bid-Ask Spreads at their Widest since the 2007-09 Financial Crisis



Dealers are buyers of "first resort".

- Dealer liquidity provision in the post-GFC era:
 - Regulatory reforms (Dodd-Frank, Basel III, Volcker Rule) appear to curtail dealers' capacities for market making.
 - *Adrian, Boyarchenko, and Shachar (2017), Schultz (2017), Bao, O'Hara and Zhou (2018), Bessembinder, Jacobsen, Maxwell, and Venkataraman (2018), Dick-Nielsen and Rossi (2019), Rapp and Waibel (2022).*
 - Higher funding costs increase the costs of liquidity provision.
 - *Rapp (2018), Andersen, Duffie, and Song (2019), Berndt, Duffie, and Zhu (2020), Macchiavelli and Zhou (2022).*
 - Dealers are primarily buyers of "first resort", with neither the capital nor the inclination to take on contrarian risks.
 - *Treynor (1987), Levine (2015).*
- ▶ **Who are the buyers of "last resort"?**

Value Investors

- Value investors are the buyers of "last resort".
 - Entities with long-term investment horizons that allow them to step in when market dislocations present investment opportunities.
 - Long-term investment horizons paired with stable funding to buy and hold what appears undervalued.

Insurers bear the hallmarks of value investors.

- Insurers are the largest domestic investors in U.S. corporate bonds (30% of the amount outstanding).
 - Access to leverage through underwriting is integral to central role (*Koijen and Yogo (2022)*).
- Insurers bear the essential hallmarks of value investors.
 - Long-term investors with stable funding and liability structures, allowing them to ride out market fluctuations (*Hanson, Shleifer, Stein, and Vishny (2015)*, *Chodorow-Reich, Ghent, and Haddad (2021)*, and *Knox and Sørensen (2021)*).
- What role, if any, did insurers play in the Covid financial crisis?

Research Questions

Our paper answers the following question(s):

- ▶ How does insurers' funding stability affect their ability to extract value from "last resort" liquidity provision?
 - Did insurers' trading activities contribute to stabilizing the corporate bond market?
 - How did funding stability affect insurers' trading behavior?
 - Which dealers did insurers trade with - did prior relationship matter?
 - How did insurers' liquidity provision through dealers affect market liquidity?

Some Short Answers

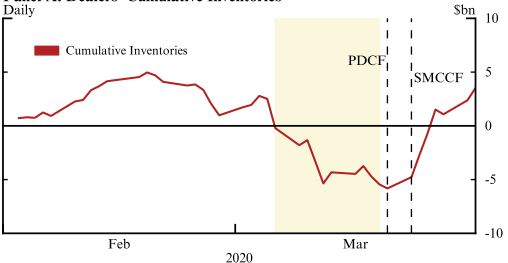
- Did insurers' trading activities contribute to stabilizing the corporate bond market? **Yes!**
- How did funding stability affect insurers' trading behavior? **A lot!**
- Which dealers did insurers trade with - did prior relationship matter? **Absolutely.**
- How did insurers' liquidity provision through dealers affect market liquidity?
Dealers with these insurance buddies charged lower transaction costs.

Data: two-sided identification of counterparties in bond transactions.

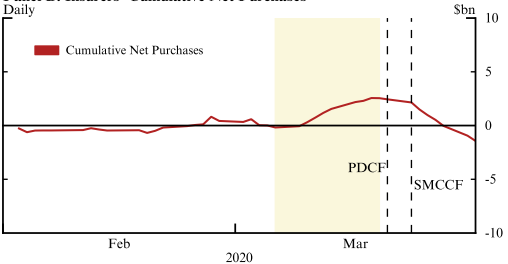
- ▶ Corporate bond transaction data:
 - ① NAIC (insurers' bond transactions): Issue/issuer identities, execution date, par amount, market value, trade direction, **identities on both counterparties (insurers and dealers)**.
 - ② Regulatory TRACE (all secondary market bond transactions): Issue/issuer identities, execution date and time, trade price and quantity, trade direction, **dealer identities**.
- ▶ Insurers' statutory financial data:
 - ③ S&P Global Market Intelligence (formerly SNL Financial): Quarterly cash flow and balance sheet data.
- Supplementary data:
 - Mergent FISD: bond characteristics.
 - Refinitiv eMaxx: mutual funds' corporate bond holdings.
 - SEC FOCUS: dealers' balance sheets and income statements.

1. Insurers' Bond Trading during Covid Crisis

Panel A: Dealers' Cumulative Inventories



Panel B: Insurers' Cumulative Net Purchases



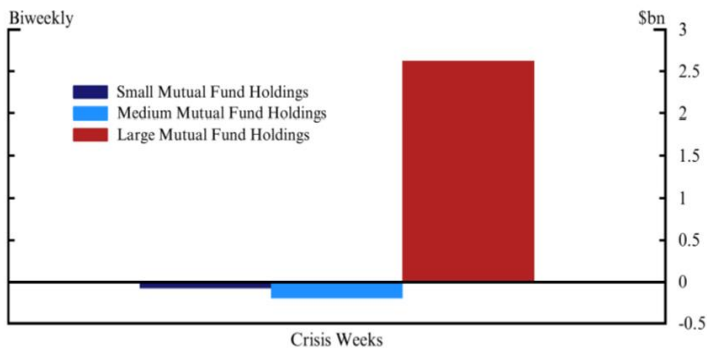
1. Insurers' Bond Trading during Covid Crisis

$$Insurer\ Trades_{b,t} = \beta_1 Dealer\ Trades_{b,t} + \beta_2 Dealer\ Trades_{b,t} \times Crisis_t + Controls_{b,t}^T \gamma + \mu_r + \mu_t + \epsilon_{b,t}$$

	I	II	III	IV	V	VI
	Insurer Trades	Insurer Trades	Insurer Buys	Insurer Sells	Insurer Buys	Insurer Sells
Dealer Trades	0.199*** (15.54)					
Crisis * Dealer Trades	0.033** (2.28)					
MF Holding		0.004 (0.96)	-0.001 (-0.48)	0.005 (1.24)	-0.003 (-0.97)	0.005 (1.45)
Crisis * MF Holding		0.010* (1.88)	0.009** (2.75)	0.001 (0.31)	0.012** (2.81)	-0.000 (-0.07)
Bond Controls	Yes	Yes	Yes	Yes	Yes	Yes
Rating Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Day Fixed Effects	Yes	Yes	Yes	Yes	No	No
Issuer-Day Fixed Effects	No	No	No	No	Yes	Yes
Nobs	93,547	90,850	90,850	90,850	84,031	84,031
Rsq	0.08	0.02	0.02	0.01	0.17	0.16

1. Insurers' Bond Trading during Covid Crisis

Insurer purchases and mutual fund holdings:



2. Funding Stability and Insurers' Trading during the Crisis

- **Hypothesis:** Insurers with more stable insurance funding were more active buyers.
- Insurer-level measure of funding stability that builds on Knox and Sørensen (2021) and represents the five-year historical standard deviation of quarterly insurance funding:

$$\sigma_{i,(t-20;t)} \left(\frac{\text{Net Cash from Underwriting}_{i,t} + \text{Net Cash from Financing}_{i,t}}{\text{Liabilities}_{i,t-1}} \right)$$

Net Cash from Underwriting $_{i,t}$ = Premium $_{i,t}$ – Losses $_{i,t}$ – Expenses $_{i,t}$ + Misc $_{i,t}$

Net Cash from Financing $_{i,t}$ = Net Cash from Debt & Equity $_{i,t}$ – Dividends $_{i,t}$

2. Funding Stability and Insurers' Trading during the Crisis

$$\text{Net Buyer}_{i,t} = \beta_1 \text{Variation in Insurance Funding}_{i,19:Q4} + \text{Controls}_{i,19:Q4}^T \gamma + \mu_k + \epsilon_{i,t}$$

	I	II	III	IV
	Net Buyer	Net Buyer	Net Buyer	Net Buyer
	(Pre-Crisis)	(Crisis)	(Pre-Crisis)	(Crisis)
Variation in Insurance Funding	-0.0331 (-1.51)	-0.0895*** (-3.64)		
Variation in Underwriting Profitability			-0.0837** (-2.00)	-0.258*** (-4.95)
Insurer Controls	Yes	Yes	Yes	Yes
Insurer Type Fixed Effects	Yes	Yes	Yes	Yes
Nobs	1,744	1,744	1,744	1,744
Rsqr	0.129	0.105	0.129	0.107

- Life insurers are more likely to be net buyers than P&C insurers, but the overall relation holds for both types.

3. Insurers' Dealer Choice during Crisis Trading

- Pervasive relationship trading in OTC markets.
 - Dealers provide better execution to their relationship insurers for repeat business (*O'Hara, Wang, and Zhou (2018), Hendershott, Li, Livdan, and Schürhoff (2020)*).
- **Hypothesis:** Liquidity support to a dealer increases with the extent of prior relationships.
 - Insurers increase bond purchases from but not bond sales to their relationship dealers in a one-sided market.

3. Insurers' Dealer Choice during Crisis Trading

$$\begin{aligned} & \text{Insurer Buys from Dealer}_{i,j,t} / \text{Insurer Sell to Dealer}_{i,j,t} \\ & = \beta_2 \text{Past Trading}_{i,j} + \beta_3 \text{Crisis}_t \times \text{Past Trading}_{i,j} + \mu_{i,t} + \mu_{j,t} + \epsilon_{i,j,t} \end{aligned}$$

	Insurer <i>i</i> 's buys from dealer <i>j</i>	Insurer <i>i</i> 's sells to dealer <i>j</i>
Past Trading	0.175*** (12.88)	0.140*** (10.57)
Crisis * Past Trading	0.038** (2.05)	-0.032** (-1.97)
Insurer-Day Fixed Effects	Yes	Yes
Dealer-Day Fixed Effects	Yes	Yes
Nobs	871,266	871,266
Rsq	0.09	0.10

4. Insurer Funding Stability and Corporate Bond Liquidity

- **Hypothesis:** Dealers with stronger relationships to more stable funded insurers charge lower transaction costs.
- $Cost_k = \beta_1 \times Crisis_t + \beta_2 \times Variation\ in\ Insurance\ Funding_j$
 $+ \beta_3 \times Crisis_t \times Variation\ in\ Insurance\ Funding_j$
 $+ \gamma \times X_{i,t} + \mu_r + \mu_d + \mu_s + \epsilon_k$
- where *Variation in Insurance Funding_j* is the average variation in insurance funding of dealer *j*'s relationship insurers.

4. Insurer Funding Stability and Corporate Bond Liquidity

	I Cost (All Trades)	II Cost (All Trades)	III Cost (All Trades)	IV Cost (All Trades)
Crisis	26.175*** (9.27)		25.187*** (8.73)	
Variation in Insurance Funding	0.125*** (7.92)	0.120*** (7.82)		
Crisis * Variation in Insurance Funding	0.238*** (6.60)	0.152*** (5.29)		
Variation in Underwriting Profitability			0.242*** (7.48)	0.234*** (7.46)
Crisis * Variation in Underwriting Profitability			0.470*** (6.64)	0.291*** (5.09)
Bond Controls	Yes	No	Yes	No
Rating Fixed Effects	Yes	No	Yes	No
Trade Size Fixed Effects	Yes	No	Yes	No
Trade Direction Fixed Effects	Yes	No	Yes	No
Bond-Day-Trade Size-Trade Direction Fixed Effects	No	Yes	No	Yes
Nobs	191694	102063	191694	102063
Rsq	0.17	0.65	0.17	0.65

4. Insurer Funding Stability and Corporate Bond Liquidity

- Results remain robust after controlling for a host of dealer characteristics.

	I Cost (All Trades)	II Cost (All Trades)	III Cost (All Trades)	IV Cost (All Trades)	V Cost (All Trades)	VI Cost (All Trades)
Variation in Insurance Funding	0.165*** (5.49)	0.162*** (4.93)	0.083*** (3.55)			
Crisis * Variation in Insurance Funding	0.151*** (5.27)	0.190*** (5.12)	0.341*** (6.48)			
Variation in Underwriting Profitability				0.293*** (5.16)	0.237*** (4.06)	0.122** (2.80)
Crisis * Variation in Underwriting Profitability				0.290*** (5.05)	0.375*** (5.18)	0.567*** (5.99)
Dealer Market Share & Underwriter Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Dealer Balance Sheet Controls	No	Yes	Yes	No	Yes	Yes
Dealer Balance Sheet Controls * Crisis	No	No	Yes	No	No	Yes
Bond-Day-Trade Size-Trade Direction Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Nobs	102063	66268	66268	102063	66268	66268
Rsq	0.65	0.69	0.70	0.65	0.69	0.70

4. Insurer Funding Stability and Corporate Bond Liquidity

- **Hypothesis:** More stable insurer funding leads to lower transaction costs, particularly in bonds with greater mutual fund holdings.
- $Cost_k = \text{Lower Order Interactions}$
 $+ \beta_6 \times Crisis_t \times Variation\ in\ Insurance\ Funding_j \times MF\ Holding_{b,t}$
 $+ \gamma \times X_{i,t} + \mu_{b,t,s,d} + \epsilon_k$
 - where $Variation\ in\ Insurance\ Funding_j$ is the average variation in insurance funding of dealer j 's relationship insurers.

4. Insurer Funding Stability and Corporate Bond Liquidity

	I Cost	II Cost	III Cost	IV Cost
Variation in Insurance Funding	0.150*** (5.22)			
Crisis * Variation in Insurance Funding	0.115*** (3.25)			
Variation in Insurance Funding * Share by MMF	0.069** (2.46)	0.058*** (2.98)		
Crisis * Variation in Insurance Funding * Share by MMF	0.153** (2.54)	0.131** (2.10)		
Variation in Underwriting Profitability			0.262*** (4.92)	
Crisis * Variation in Underwriting Profitability			0.199*** (2.91)	
Variation in Underwriting Profitability * Share by MMF			0.135** (2.44)	0.114*** (2.92)
Crisis * Variation in Underwriting Profitability * Share by MMF			0.388*** (3.29)	0.320** (2.50)
Dealer Market Share & Underwriter Dummy	Yes	Yes & No	Yes	Yes & No
Bond-Day-Trade Size-Trade Direction Fixed Effects	Yes	Yes	Yes	Yes
Dealer-Day Fixed Effects	No	Yes	No	Yes
Nobs	102063	101889	102063	101889
Rsqr	0.65	0.71	0.65	0.71

Conclusions

Value investors are valuable!

- They help dealers by stepping up to buy from (and not sell to) their relationship dealers in crisis times.
- They help the market by allowing dealers to set lower transaction fees because they know they have someone to offset their positions
- They help offset mutual fund selling pressure and so help alleviate strains caused by excess redemptions.

Conclusions

- Liquidity provision is complex and it depends upon the interactions of a variety of players.
- These issues are of particular concern today when post-crises regulations have limited dealer capital, bond market size has grown very large, and mutual funds package illiquid assets into liquid wrappers
- Our results highlight the important role played by non-bank financial institutions in this liquidity mosaic.