

Treasury Triparty Repo Pricing

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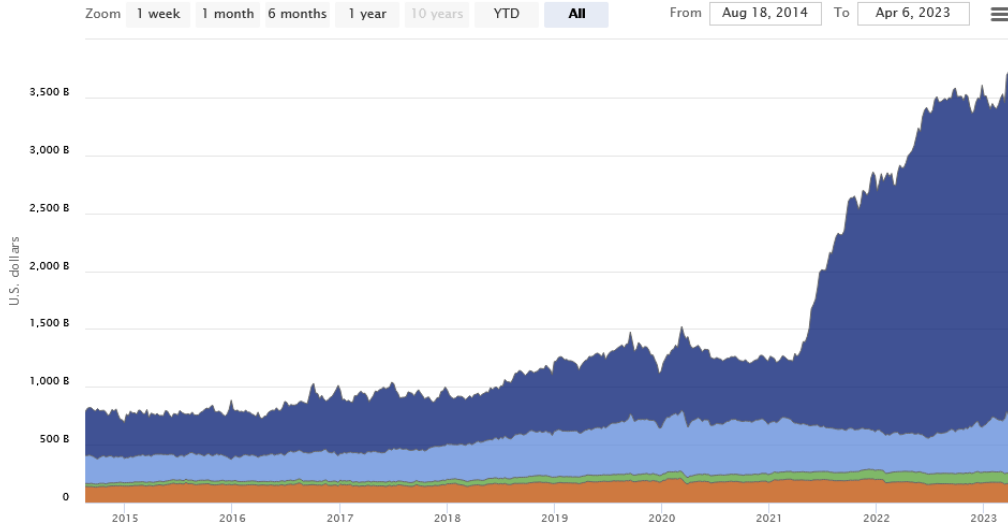
Session: Banking and Financial Intermediation
EEA

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Triparty Repos play a Pivotal Role in Funding Markets

Tri-party repo transaction volume by collateral type

Transaction volume in tri-party repo market broken out by type of collateral



What do we learn?

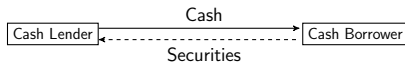
- Treasury triparty repo market is considerably more segmented than previously documented.
- Treasury triparty repo pricing depends on a delicate interplay between three factors:
 - number of counterparties
 - their counterparties' market share
 - how participants diversify their activities
- This interplay can be reshaped in times of stress.

Institutional Features

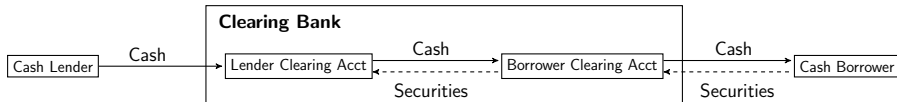
- A repo resembles a collateralized loan

Difference between bilateral and triparty repos

Bilateral Repo



Triparty Repo



- Triparty repos are bilaterally negotiated and settled through a clearing bank
- Institutions can only trade if they have signed a master agreement—which specifies collateral haircuts

Data Description

- Transaction level data from the Bank of New York Mellon's Triparty Clearing Facility from September 2015 through March 2021 at daily frequency
- Our data contains information on:
 - identity of institutions
 - collateral
 - loan sizes, interest rates, haircuts, and time stamps
- Baseline sample:
 - ▶ \approx 1.4 million trades among 471 participants over 1370 days
 - ▶ \approx 1,900 different lender - borrower pairs consisting of 48 borrowers and 423 lenders
 - ▶ **Treasury sample:** \approx 620K trades among 1104 different lender - borrower pairs consisting of 48 borrowers and 288 lenders

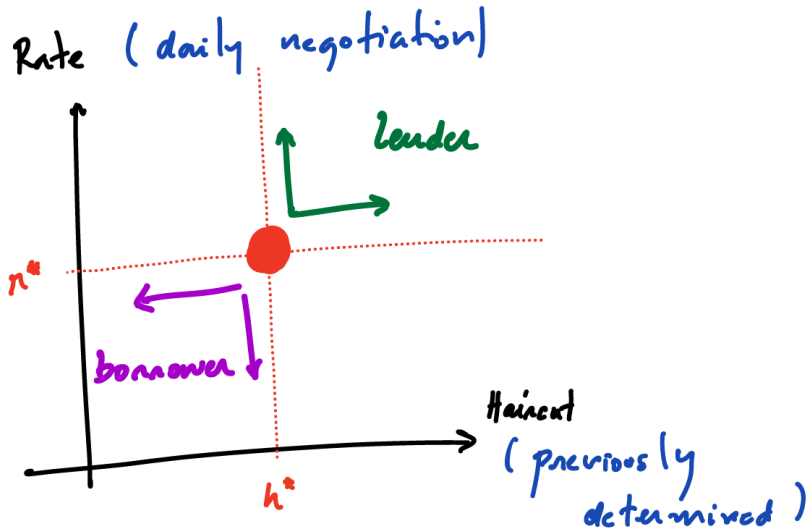
Summary Statistics

Daily Activity on Treasuries

	Mean	SD	10%	90%
Lenders	118	9	105	126
volume (in billions)	3.8	0.69	2.97	4.63
# trades	3.93	0.71	3.1	4.8
# borrowers	3.15	0.52	2.54	3.77
Borrowers	31	6	24	38
volume (in billions)	14.6	2.61	11.7	18.3
# trades	14.9	0.93	13.9	16
# lenders	12	0.73	11.1	13
Pricing				
rates (in %)	1.02	0.86	0.07	2.37
haircuts (in %)	1.58	0.28	1.19	1.89

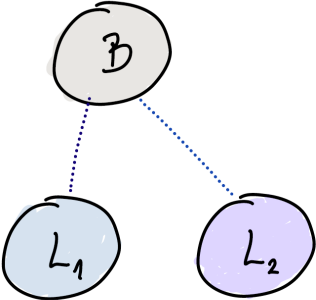
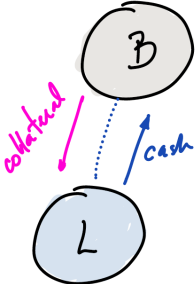
Understanding Repo Pricing

Incentives

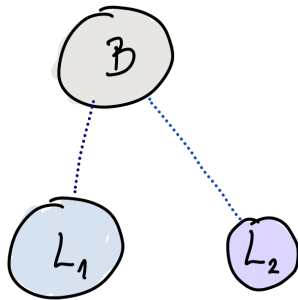
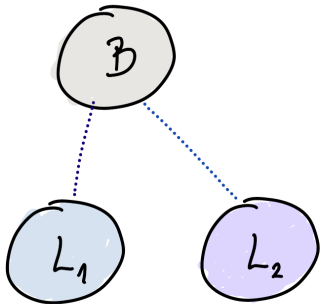


Empirical Hypotheses

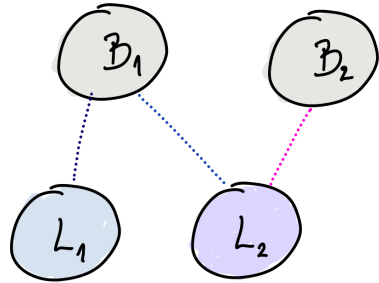
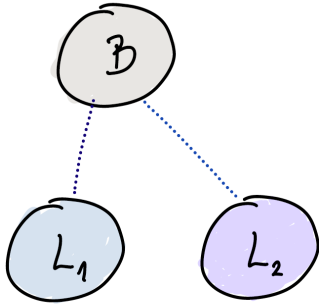
Having more counterparties alter bargaining power



Counterparties' size can reshape bargaining power



Diversification of activity among counterparties could matter



Treasury Triparty Repo Pricing

Borrowers

$$Y_{it} = X_{it}\beta + \epsilon_{it}$$

	<i>Dependent Variable: Log (Repo Rate)</i>						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
# of counterparties	0.002			0.004	0.008**		0.010**
log(borrowing concentration)		0.044			0.102**	0.036	0.105**
log(counterparties' market-share)			-0.037*	-0.043**		-0.035	-0.044**

Controls: avg. intra-day time; treasury percentage; changes in liquidity needs; Fed activity; policy rate; non-affiliated counterparties; market volume; Month/Quarter/FOMC fixed effects.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

- **Rates:** For the average borrower, (1) trading with more lenders than usual, (2) borrowing in a more concentrated fashion, and (3) borrowing from counterparties whose trading activity represents a lower share of the market is associated with higher rates.
- **Haircuts:** With respect to the average borrower, borrowers trading in a more concentrated fashion and from counterparties trading more actively post more collateral.

Lenders

$$Y_{it} = X_{it}\beta + \epsilon_{it}$$

	Dependent Variable: <i>Log(Repo Rate)</i>						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
# of counterparties	-0.001			-0.001	0.005		0.002
log(lending concentration)		0.040			0.055	0.025	0.032
log(counterparties' market-share)			0.218**	0.218**		0.218**	0.218**

Controls: avg. intra-day time; treasury percentage; changes in liquidity needs; Fed activity; policy rate; non-affiliated counterparties; market volume; Month/Quarter/FOMC fixed effects.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

- **Rates:** For the average lender, lending from counterparties whose trading activity represents a higher share of the market is associated with higher rates.
- **Haircuts:** In contrast to borrowers, neither lending concentration nor counterparties' market share affects haircuts for the average lender.

Relevance of potential counterparties

- Borrowers:
 - ▶ **Less connected:** For the average less connected borrower none of the factors alter rates. Yet, counterparties' market share matters for their haircuts.
 - ▶ **Well connected:** All factors matter for well connected borrowers along the rate dimension—and their marginal impact is higher when compared to the average borrower in the sample. Only counterparty concentration alter haircuts.
- Lenders:
 - ▶ **Less connected:** For the average less connected lender, the impact of her counterparties' market share is higher than for the average lender. Yet, no factor matters for haircuts.
 - ▶ **Well connected:** Among well connected lenders, lending to more borrowers than usual and in a less concentrated fashion is associated with lower rates. Although decreasing lending concentration reduces rates, it allows lenders obtain higher haircuts.

Pricing in Times of Stress

Borrowers in Times of Stress

$$Y_{it} = X_{it} \times \mathbf{1}_t \mu + X_{it} \gamma + \mathbf{1}_t \theta + \varepsilon_{it},$$

	Dependent Variable: <i>Log(Repo Rate)</i>						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
stress \times # of counterparties	-0.000			-0.001	-0.001		-0.002
stress \times log(borrowing concentration)		-0.004			-0.020	0.014	-0.005
stress \times log(counterparties' market-share)			0.038***	0.042***		0.041***	0.040***

Controls: avg. intra-day time; treasury percentage; changes in liquidity needs; Fed activity; policy rate; non-affiliated counterparties; market volume; Month/Quarter/FOMC fixed effects.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

- For the average borrower, the impact of neither her number of counterparties nor her borrowing diversification materially changes in times of stress. Yet, the pricing impact of her counterparties' market share changes.
- And it only changes among less connected borrowers.

Lenders in Times of Stress

$$Y_{it} = X_{it} \times \mathbf{1}_t \mu + X_{it} \gamma + \mathbf{1}_t \theta + \varepsilon_{it},$$

	<i>Dependent Variable: Log(Repo Rate)</i>						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
stress \times # of counterparties	-0.004			-0.002	-0.005		-0.003
stress \times log(lending concentration)		0.028			0.000	0.009	-0.009
stress \times log(counterparties' market-share)			-0.069	-0.066		-0.065	-0.065

Controls: avg. intra-day time; treasury percentage; changes in liquidity needs; Fed activity; policy rate; non-affiliated counterparties; market volume; Month/Quarter/FOMC fixed effects.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

- For the average lender the impact of none of our explanatory variables changes in times of stress.
- However, the situation is different for different types of lenders.

Concluding Remarks

- The treasury triparty repo market is considerably more segmented than previously documented.
- Treasury triparty repo pricing depends on the interplay between three factors:
 - number of counterparties
 - their market share
 - the diversification of activity among them
- This interplay can be reshaped in times of stress.