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U.S. Repo Market Intermediation

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SUERF BAFFI Bocconi webinar

Repo market: Turmoil at the core of the financial system?

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Introduction

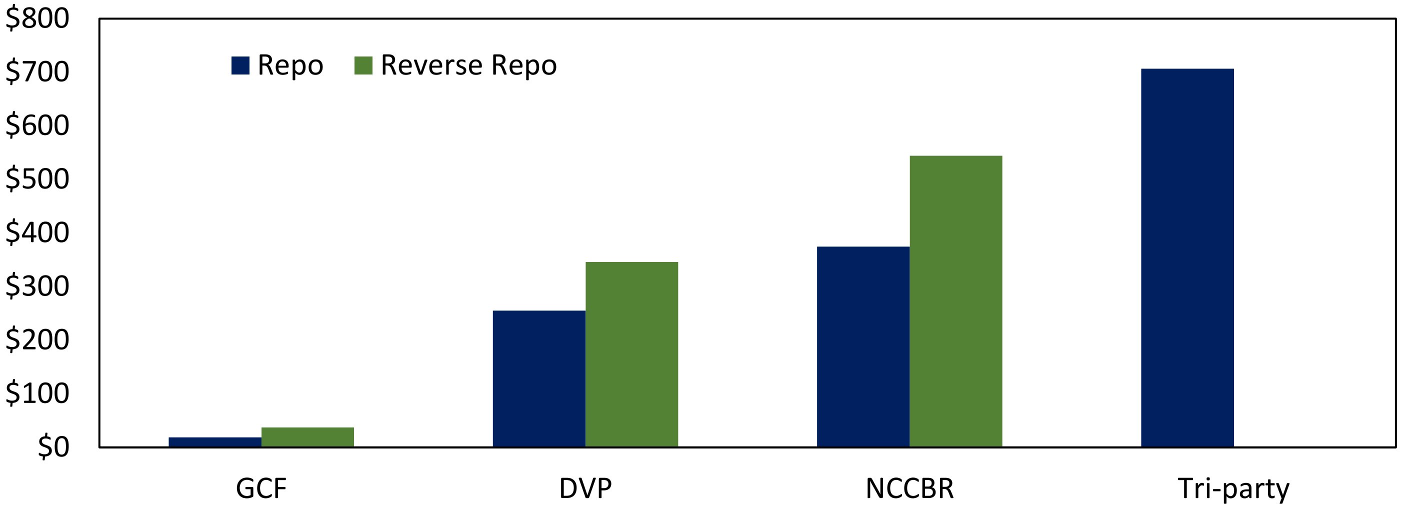
- **The repurchase agreement (repo) market is an integral component of the U.S. financial system, providing over $7 trillion of new funding every day and facilitating trading in U.S. Treasuries and other securities.**
  - Four repo market segments in the U.S.: Tri-Party, GCF, DVP, and NCCBR

- **Repo market dealers are responsible for intermediating collateral and cash across the four segments, as each of the segments has different requirements for eligible types of counterparties and collateral.**

- **Dealers manage collateral and cash across these segments (e.g., rehypothecation and collateral transformation).**
  - Dealers must manage their exposure to collateral, maturity, and counterparty risk, but how they are compensated for this risk is not well understood.

Four Main Segments of the U.S. Repo Market

		Settlement	
		Tri-Party	Bilateral
Clearing	Centrally Cleared	GCF	DVP
	Non-Centrally Cleared	Tri-Party	NCCBR



Note: Volumes (in $ billions) are for the nine pilot participants averaged across sample dates of June 15th, 22nd, and 30th, 2022.
Sources: 2022 OFR NCCBR Pilot Collection, OFR Cleared Repo Collection, Federal Reserve Tri-Party Repo Collection, Authors' analysis

- **The OFR conducted a pilot collection on outstanding NCCBR contracts in 2022 prior to its permanent collections in December 2024.**
- **This provided a first look at how the U.S. four segments relate to one another.**
  - While the sample is limited in days, the participants made up **17%** of Tri-Party repo, **12%** of DVP repo, **21%** of GCF repo, and an estimated **25%** of NCCBR.

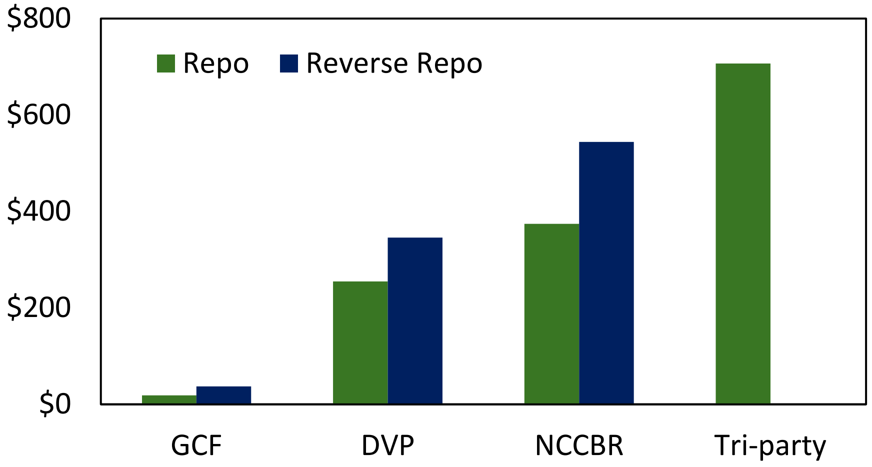
Repo Market Intermediation

- **While the dealers provision repo and reverse repo in each of these segments, these segment volumes are not necessarily independent of one another, as the collateral and cash can be reused not only within segments but across them.**

- **As there are differences in supply and demand for cash or collateral in each segment, and there are limits on where counterparties can trade, the cost of repo and reverse repo activities can vary across segments.**
  - Dealers seek to profit from these differences by completing this market.

Repo Market Intermediation: Collateral Rehypothecation & Transformation

- **Sample dealers lend $927 billion in reverse repo and borrow $1,355 billion in repo.**



Note: Volumes (in $ billions) are for the nine pilot participants averaged across sample dates of June 15th, 22nd, and 30th, 2022.
Sources: 2022 OFR NCCBR Pilot Collection, OFR Cleared Repo Collection, Federal Reserve Tri-Party Repo Collection, Authors' analysis

Collateral Received (Reverse Repo)	Collateral Delivered (Repo): GCF	DVP	NCCBR	Tri-Party	Balance
GCF	-	-	-	-	37.38
DVP	1.07	109.33	44.59	70.26	120.79
NCCBR	4.27	58.10	211.93	107.42	162.29
Tri-Party	-	-	-	-	-
Balance	13.14	87.61	118.07	528.84	

Note: Outstanding volumes are for the nine pilot participants averaged across sample dates of June 15, 22, and 30, 2022. The blue shading (rows) represents reverse repo activity from the dealer's perspective; conversely, green shading (columns) represents their repo activity.
Sources: 2022 OFR NCCBR Pilot Collection, OFR Cleared Repo Collection, Federal Reserve Tri-Party Repo Collection, Authors' analysis.

- **When offsetting matching collateral, at the collateral-dealer level, we find that $607 billion in collateral is rehypothecated in the U.S. repo market.**
  - **65 percent** of aggregate reverse repo or **44 percent** of aggregate repo.
    - US Treasuries making up 90% of dollar volume
  - Total unmatched reverse repo: **$320 billion**
- **These results suggest that rehypothecation *and* collateral transformation are both important parts of a dealer's business model.**

Repo Market Intermediation: Maturity Risk Transformation

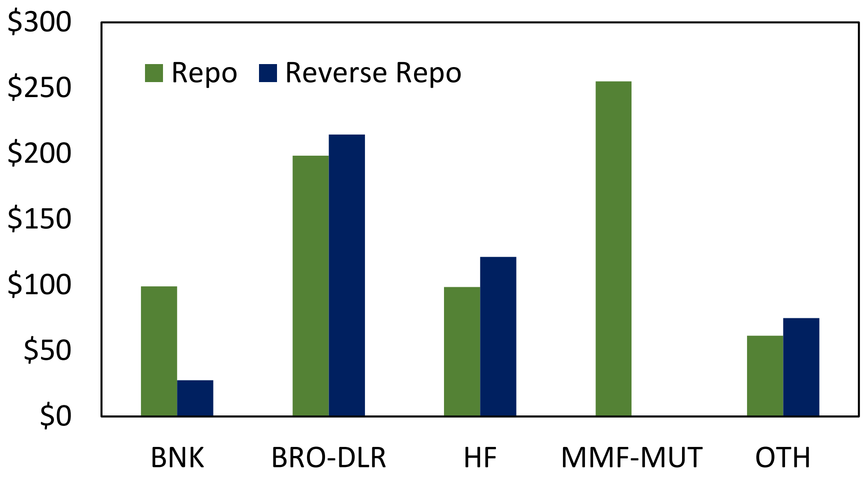
- **We match collateral by whether its associated repo is overnight, one week (2-7 days), one month (8-30 days), and long term (greater than 30 days).**
  - **60%** of total volume has matched tenor (white diagonal), of which two-thirds is overnight (top left cell).
  - For non-matched maturities, dealers tend to borrow short and lend long (in yellow) more than twice as much as they borrow long and lend short (in gray).

Volumes ($ billions)

Collateral Received (Reverse Repo)		Collateral Delivered (Repo)			
		Overnight	Week	Month	Long-Term
	Overnight	**244.76**	9.56	12.23	24.68
	Week	19.61	10.86	3.77	4.09
	Month	48.68	6.25	30.17	17.95
	Long-Term	79.01	7.88	11.50	73.33

Note: Outstanding volumes represent the matched collateral rehypothecated within and across repo market segment for the nine pilot participants, averaged across the sample dates of June 15, 22, and 30, 2022. Each group is binned into overnight (1 day), week (2-7 days), month (8-30 days), and long term (greater than 30 days).
Sources: 2022 OFR NCCBR Pilot Collection, OFR Cleared Repo Collection, Federal Reserve Tri-Party Repo Collection, Authors' analysis.

Repo Market Intermediation: Counterparty Risk Transformation



Note: Volumes (in $ billions) are for the nine pilot participants averaged across sample dates of June 15th, 22nd, and 30th, 2022.
Sources: 2022 OFR NCCBR Pilot Collection, OFR Cleared Repo Collection, Federal Reserve Tri-party Repo Collection, Authors' analysis.

Collateral Received (Reverse Repo) \ Collateral Delivered (Repo)	BNK	BRO-DLR	HF	MMF-MUT	OTH	Balance
BNK	3.26	4.91	3.06	5.52	1.21	9.64
BRO-DLR	12.65	**64.09**	19.87	**29.73**	8.34	79.92
HF	14.57	18.10	**31.12**	**24.47**	6.77	26.49
MMF-MUT	-	-	-	-	-	-
OTH	7.88	8.74	10.81	10.18	8.62	28.64
Balance	60.65	102.61	33.13	185.17	36.57	

Sources: 2022 OFR NCCBR Pilot Collection, OFR Cleared Repo Collection, Federal Reserve Tri-Party Repo Collection, Authors' analysis.

- **Broker dealers and hedge funds are major reverse repo customers and money market funds, broker dealers, banks and hedge funds are major repo customers.**
- **There appear to be a few strong financial institution interdependencies between different counterparties.**
  - Broker dealer activity is funded through the intermediation of collateral with other broker dealers.
  - Hedge fund activity is funded through other hedge funds and money market-mutual funds.
- **Suggests that dealers prefer to borrow from less risky/cash-rich counterparties and lend to riskier/cash-poor counterparties.**

Conclusion

- **Repo market intermediation is critical to the flow of cash and collateral across the U.S. financial system.**
  - We observe that **65 percent** of the collateral dealers receive is funded through rehypothecation within the U.S. repo market.
  - There is significant variation in what types of collateral are and are not rehypothecated.
- **Dealer are exposed to collateral, maturity, and counterparty risk:**
  - **Collateral Risk**: **$320 billion** of unmatched reverse repo.
  - **Maturity Risk: 40 percent** of intermediated collateral has unmatched tenors, mostly long-short operations.
  - **Counterparty Risk: 21 percent** of collateral delivered to MMFs is sourced from either hedge funds or dealers.