Crane's Money Fund Symposium
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Tokenizing repo

- *Shifting repo transactions onto distributed ledger (DLT) blockchains promises significant efficiencies*
  - *But much of the current focus is on using blockchains to increase intraday repo trading*

- Replacing the exchange of cash and collateral with a blockchained token would allow for real time (atomic) settlement, 24/7 markets along with a potential expansion of collateral eligibility
- Smart contract would make collateral substitution and optimization simpler and faster
- Tokenized repo could be tailored to “just in time” funding – where financing is provided only for the time it is needed regardless of the length
  - Just in time funding could reduce bank demand for surplus liquidity buffers
  - And it could reduce bank counterparty risk by shortening exposure periods
    - Reducing the size of surplus initial margin buffers

Blockchaining repo

- Intuitively, it makes sense to replace the physical movement of cash and collateral in a repo transaction with a token whose ownership is updated on a blockchain at the start and end of a trade[1/]

  - **Native tokens**: Securities are issued directly on a blockchain without an intermediary. The token-holder has the same rights as an investor recorded on the books and records of the issuer

  - **Wrapped tokens**: The token represents an interest in a custodied position of the underlying asset. The token allows the holder to receive the underlying asset upon delivery to the issuer. Legally, the wrapped tokens are separate securities and transferring the token moves the right to receive the asset[2/]

  - **Security entitlement tokens**: Accounting identities on the books and records of the custody agent that record the holder's entitlement to the security. These tokens are not securities themselves, but simply bookkeeping mechanisms used by the custodian to keep track of security entitlements

1/ Especially in a tri-party trade where the cash and collateral sit at the clearing bank
2/ Similar in concept to an ADR

Efficiency gains: Tri-party

- While the cash and collateral all sit at the tri-party clearing bank, there are three different ledgers that must be coordinated
  - The cash borrower
  - The lender
  - And the tri-party clearing bank
- Each participant needs to match what its ledger shows with what is recorded in the clearing bank's ledger
- Blockchaining would replace this with a single ledger visible (and accessible) to all three parties in the repo
  - Settlement can occur faster and more transparently

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Efficiency gains: Better collateral management

- The same blockchain could contain a record of the ownership of a portfolio of different assets
  - Each with different haircuts
    - And real time margining
  - Smart contracts allow for instantaneous collateral substitution and enhanced collateral optimization

- Multiple ledgers can be linked so that the movement of cash and collateral (or their repo tokens) can move without being constrained by borders or trading hours

- *As a result, borrowers can pledge a wider mix of collateral and more easily monetize their asset pools*

Just in time funding

- While there are significant benefits from moving and substituting collateral on a blockchain, the market seems most focused on intraday activity

- Intraday repo does not require tokenization
  - Blockchaining and smart contracts make it easier to tailor the transaction terms to meet counterparties' specific needs
    - For example, executing a repo when a cash balance falls below a specific target
      - And setting the unwind to match the point when the cash balance is higher

- *Borrowers only pay for repo funding when they need it*

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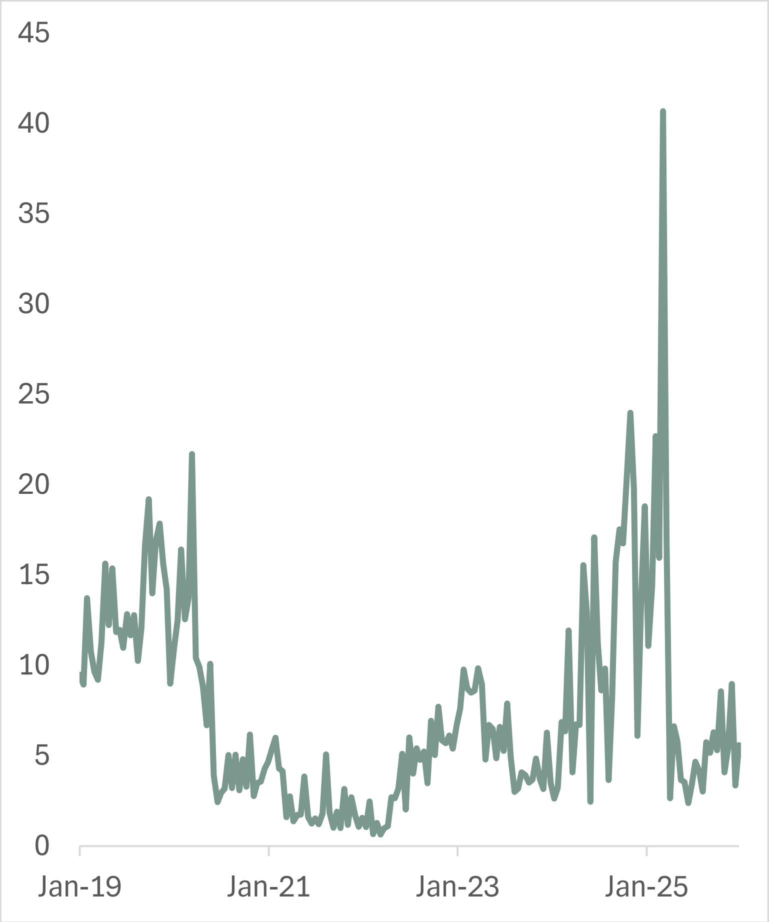
As needed repo

Peak intraday balances ($bn)



Sources: Federal Reserve, SMBC Nikko

- As needed repo would allow banks to smooth out any gaps in their intraday cash balances at the Fed
- But intraday collateralized borrowing from the Fed's discount window is free
- More broadly and assuming a liquid and deep intraday market develops, blockchained "smart repo" *might* allow banks to hold fewer reserves[1/]
  - As they could more easily monetize their HQLA quickly

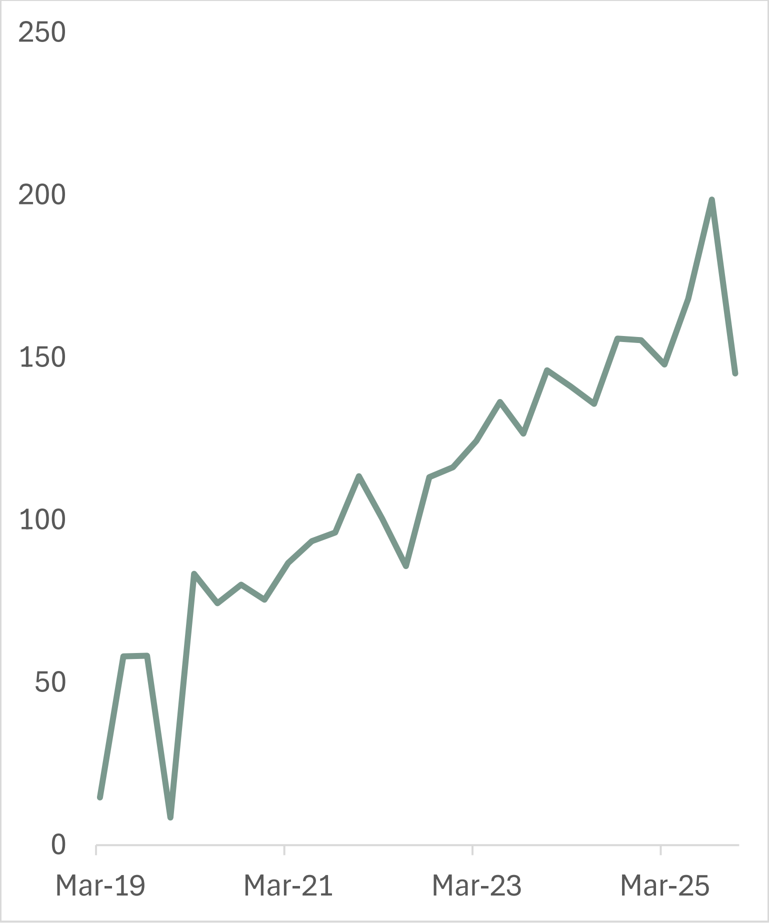
1/ And enable the Fed to shrink its balance sheet

Tokenized repo and margin calls

- Investors typically hold excess margin buffers to protect against unexpected increases in their initial margin requirements

- Just in time repo might allow investors to more easily raise the cash needed to meet an unexpected margin call
    - Without selling assets
        - And reducing their need for surplus margin

Global IM overcollateralization ($bn)



Sources: CCP12.org, SMBC Nikko

Shorter counterparty exposures

- Smart contracts allow for fine-tuning the amount of time counterparties are exposed to each other
  - And in turn, this shortens counterparty risk exposures and reduces capital requirements

- But repo counterparty exposure risk (PFE)[1/] is already low:
  - As the exposure horizon is short
  - Collateral is exchanged
  - And the effects of mark-to-market moves over a one-day period are small

1/ Projected future exposure

Repo rate fracturing

- Central clearing could lead to some repo rate fracturing that reflects differences in access models and margin costs. Costs may be reflected in the cash borrowing rate or the size of transactions

- Margin costs may be partially (or fully) absorbed by the intermediating dealer
  - This may be sensitive to the access model
    - Sponsored or agented; “done with” or “done away”
    - As well as opportunities for cross product margining[1/]

- The FICC’s VaR margining is sensitive to the maturity of the collateral pledged
  - Longer maturity collateral may trade at a different (higher) rate from shorter maturity GC

1/ FICC and the CME offer cross product margining. This requires gross margining.

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