

# Understanding Collateral Re-use in the United States Financial System

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<sup>1</sup>The views of this presentation are solely the responsibility of the authors and should not be interpreted as reflecting the views of the Board of Governors of the Federal Reserve System or of any other person associated with the Federal Reserve System.

# Motivation

- ▶ Securities circulate throughout the financial system through their use and **re-use** as collateral for secured funding transactions (SFTs)

repo, securities lending, margin loans, etc.

- ▶ Activity enhances underlying market liquidity...
- ▶ ...however, policymakers are concerned over financial stability implications
- ▶ Before engaging in cost-benefit analysis, first ask:
  - How much collateral re-use is there?
  - What drives collateral re-use?
  - How does collateral re-use relate to private safe asset creation?
- ▶ Hard to answer due to opaque nature of these markets
- ▶ Shed light using confidential supervisory data

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## Benefits of Collateral Use and Re-use

- ▶ The use of securities as collateral provides numerous benefits

For example:

- Seamlessly raise funds through SFTs
- Satisfy margin requirements for derivatives positions

- ▶ The re-use of securities as collateral—use of collateral sourced from a counterparty to be returned in the future—efficiently distributes these benefits

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## Costs of Collateral Re-use

- ▶ Collateral re-use increases interconnectedness and can contribute to fragility  
→ One security can be used in multiple transactions: “collateral chains”
- ▶ Increases uncertainty as to who holds the collateral and whether it can be recovered in bankruptcy
- ▶ Financial Stability Board (FSB) highlights the financial stability risks of increased interconnectedness:

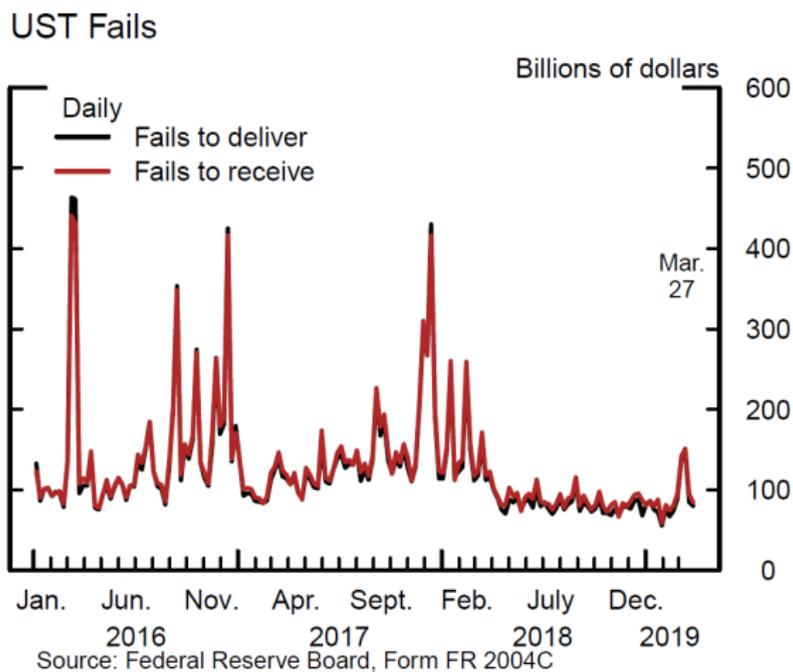
*“increasing the interconnectedness of market participants, due to chains of transactions involving the re-use of collateral, which may create a risk of contagion where fails to deliver re-used collateral by one party may potentially cause additional fails”*

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## Evidence of Collateral Re-use



## What we do

- ▶ Document sizable amount of collateral re-use by large primary dealers  
→ Particular focus on U.S. Treasuries
- ▶ Construct precise **firm-level** measures of collateral re-use to gauge aggregate market activity
- ▶ Posit three possible drivers behind the high level of U.S. Treasury re-use
  - 1) Intermediation of cash through SFT
  - 2) Intermediation of securities through SFT
  - 3) "Stripping" and distributing safe asset benefits of U.S. Treasuries

# Literature Review

- ▶ Measures of collateral re-use:  
Singh (2011), Fuhrer, Guggenheim & Schumacher (2016), Financial Stability Board (2017)
- ▶ Theory of Repo Rehypotheication:  
Infante (2019), Gottardi, Maurin & Monnet (2019), Huh & Infante (2018), Infante & Vardoulakis (2019)
- ▶ Private and Public Safe Assets:  
Krishnamurthy Vissing-Jorgensen (2012), Greenwood, Hansen & Stein (2015), van Binsbergen, Diamond & Grotteria (2019), Infante (2019)

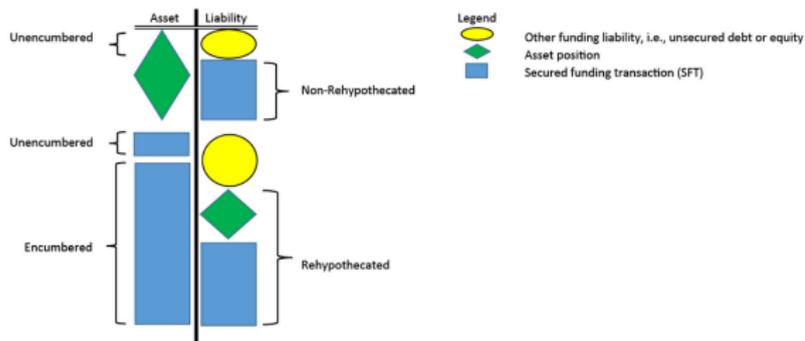
# The Data

- ▶ FR 2052a Complex Institutional Liquidity Monitoring Report
- ▶ Daily view of large U.S. bank holding companies' (BHC) and foreign banking organizations' (FBO) liquidity profile—used for LCR calculation
- ▶ Firms report: inflows, outflows, wholesale financing transactions, prime brokerage activities, internal vs. external trades, etc.
- ▶ Focus of this paper:
  - 9 largest primary dealer subsidiaries associated with BHC and FBO
  - Incoming and outgoing collateral through cash trades and SFTs

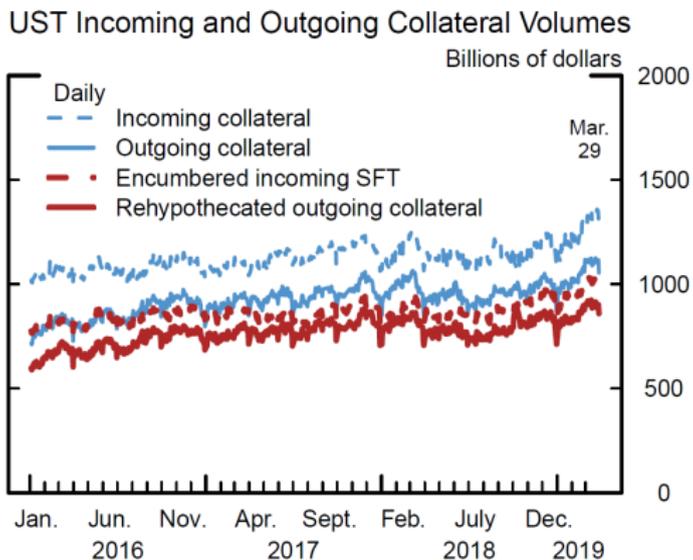
collateral values, collateral class, and contract type

# Stylized View of Incoming and Outgoing Collateral

- ▶ Incoming collateral (asset side):
  - Unencumbered: available to be re-used
  - Encumbered: already re-used or restricted from re-use
- ▶ Outgoing collateral (liability side):
  - Non-rehypothecated: owned by the firm and distributed through SFTs
  - Rehypothecated: sourced from SFT and distributed through SFTs or sales
- ▶ Stylized dealer balance sheet:



# Volumes of Incoming and Outgoing Collateral



- ▶ For U.S. Treasuries, roughly 85% of SFTs are with reverse repo/repo  
→ likely driven by limited restrictions on re-use of repo collateral and seniority in bankruptcy

## Measures of Collateral Re-use: Collateral Multiplier

- ▶ From non-rehypothecated and rehypothecated transactions we construct a firm-level collateral multiplier:

$$m = \frac{\text{SFT Rehypothecated} + \text{SFT Non-Rehypothecated}}{\text{SFT Non-Rehypothecated}}$$

- ▶ Firm-level measure akin to a money multiplier:

The collateral multiplier (**money multiplier**) measures SFTs (**deposits**) as a multiple of the total amount of collateral (**reserves**) owned

- ▶ **Assumption**

Average of dealer collateral multiplier is representative of system-wide activity

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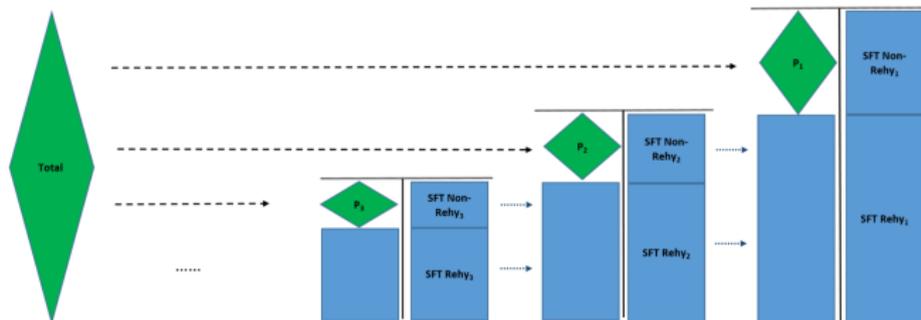
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## Why a Collateral Multiplier?

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- ▶ ...firm level measurement is a multiplier



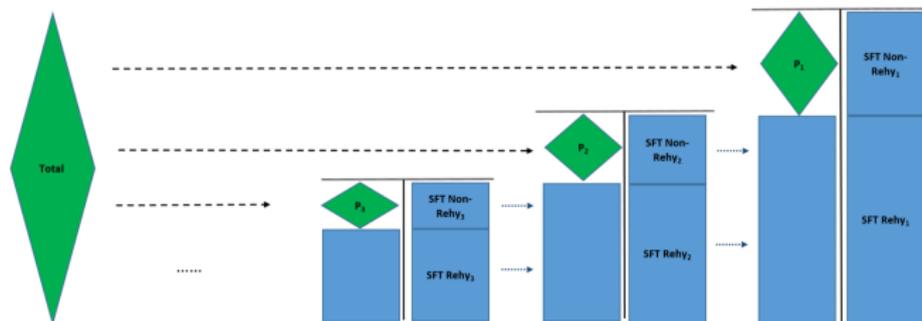
$$\sum_{i=1}^{\infty} SFT\ Rehy_i + SFT\ Non-Rehy_i = m \times Total$$

Stylized case  $m$  also corresponds to average length of the collateral chain

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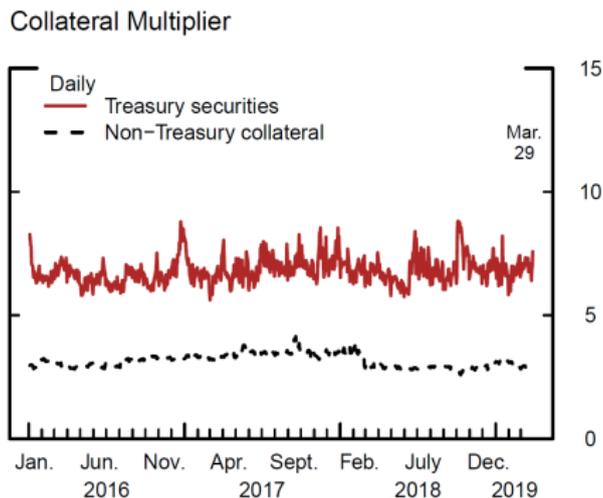


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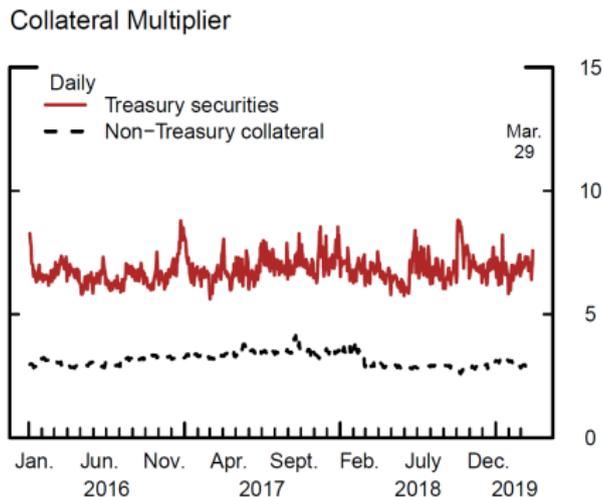
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# Collateral Multiplier in U.S. Financial System



- ▶ Primary dealers create between six to seven times more liabilities backed by Treasury securities than they own
- ▶ Possible interpretation: U.S. Treasuries are used in six to seven different SFTs  
→ proxy for length of collateral chain

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# Drivers Behind Re-use of U.S. Treasuries

- ▶ Three possible drivers behind the high level of U.S. Treasury re-use:  
1) intermediation of cash, 2) intermediation of securities, or 3) “stripping” and distributing safe asset benefits of U.S. Treasuries

## 1) Intermediation of cash:

- Informational or regulatory restrictions limit borrowers directly interacting lenders
- Collateral only serves to protect cash lenders → General Collateral (GC) repo
- Fungibility reduces the likelihood of high re-use

## 2) Intermediation of securities:

- Dealers use SFTs to source and distribute securities in high demand  
e.g., on-the-run Treasuries
- Higher re-use more likely for markets with higher search costs

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# Drivers Behind Re-use of U.S. Treasuries—Safe Asset Distribution

## 3) Stripping and distribution of U.S. Treasuries as safe assets

- Evidence that investors value both long- and short-term safety differently
  - lower yields on long- and short-term Treasuries because of safe asset status
- Dealers convert long-term safety to short-term safety
  - safe asset status of Treasury repo stems from collateral itself (Infante 2019)
- Hypothesis: absent counterparty risk, sourcing through longer-term SFTs and distributing through short-term SFTs, dealers can “strip” Treasury safety
- Unlikely that sourcing and distributing U.S. Treasuries “creates” new safe assets, but rather it distributes safe assets efficiently

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## Concluding Remarks

- ▶ Using confidential supervisory data we document the high degree of collateral circulation through its re-use
- ▶ Show that collateral re-use is sizable in the U.S. Treasury market
- ▶ Posit possible drivers behind collateral re-use activity
- ▶ Necessary first step to address broader question for future work:

What are the economic benefits and financial stability implications of collateral re-use?