Responses to the Financial Crisis, Treasury Debt, and the Impact on Short-Term Money Markets

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The views expressed do not necessarily represent those of the Federal Reserve Bank of New York or the Federal Reserve System.
Introduction

• Δ collateral → collateralized funding markets
  • During crisis, reduce term/flight to quality
  • Tsy collateral and O/N Tsy GC repo rates—one of most important money market rates

• More supply—higher rates—smaller spread to FF benchmark

• Settlement, not announcement matters for O/N
Introduction

• Interaction btw various policies
  • Only TSLF designed to directly impact stresses in money-markets via \( \Delta Tsy \) collateral
  • Policies could run counter to each other

\[
\Delta(\text{FF target-GC repo rate spread})_t = \alpha + \beta \times \Delta Tsy \text{ Collateral}_t + \gamma \times \Delta X_t + \varepsilon_t
\]

• Expect \( \beta < 0 \)

• Are all Tsy the same?
  • e.g., Bills impact ≠ Notes and Bonds?
  • Different holders of Tsy securities
Treasury GC Repo Rates & Fed Funds Target Rates

Fed Funds Target

Treasury GC Overnight Repo

Effective Fed Funds

FF target = range 0-25bps

Source: Federal Reserve Bank of New York and Bloomberg
<table>
<thead>
<tr>
<th>Type</th>
<th>Maturities</th>
<th>Schedule</th>
<th>Maturities</th>
<th>Schedule</th>
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<tbody>
<tr>
<td><strong>Bills:</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Cash-Management Bills</td>
<td>As Needed</td>
<td>Weekly</td>
<td>Cash-Management Bills</td>
<td>As Needed</td>
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<tr>
<td>4-week</td>
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<td>4-week</td>
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<td>13-week</td>
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<tr>
<td>52-week</td>
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<td>Every 4 weeks</td>
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<tr>
<td><strong>Notes:</strong></td>
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<tr>
<td>2-years</td>
<td>Monthly</td>
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<td>2-years</td>
<td>Monthly</td>
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<td>3-years</td>
<td>Quarterly</td>
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<td>3-years</td>
<td>Monthly</td>
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<td>5-years</td>
<td>Monthly</td>
<td></td>
<td>5-years</td>
<td>Monthly</td>
</tr>
<tr>
<td>10-years</td>
<td>8 times a year</td>
<td></td>
<td>7-years</td>
<td>Monthly</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>10-years</td>
<td>Monthly</td>
</tr>
<tr>
<td><strong>Bonds</strong></td>
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<td></td>
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<tr>
<td>30-years</td>
<td>2 times a year</td>
<td></td>
<td>30-years</td>
<td>Monthly</td>
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<tr>
<td><strong>Inflation-Indexed:</strong></td>
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<tr>
<td>5-year Notes</td>
<td>2 times a year</td>
<td></td>
<td>5-year Notes</td>
<td>2 times a year</td>
</tr>
<tr>
<td>10-year Notes</td>
<td>4 times a year</td>
<td></td>
<td>10-year Notes</td>
<td>4 times a year</td>
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<tr>
<td>20-year Bonds</td>
<td>2 times a year</td>
<td></td>
<td>20-year Bonds</td>
<td>2 times a year</td>
</tr>
</tbody>
</table>

Source: U.S. Department of the Treasury
Changes in Treasury Collateral (Temporary OMOs)

Source: Federal Reserve Bank of New York
SOMA Treasury Holdings

Source: Federal Reserve Bank of New York
$\Delta FF$ target-GC repo rate spread$_t$  
$= \alpha + \beta \ast \Delta Treasury \ Collateral$_t$ + \gamma \ast \Delta X_t + \varepsilon_t$

**First-Difference Regression**

**Dependent Variable: $\Delta($FF target-GC rate$)$ (bps)**

<table>
<thead>
<tr>
<th></th>
<th>Coeff.</th>
<th>Coeff.</th>
<th>Coeff.</th>
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<tbody>
<tr>
<td>Constant</td>
<td>0.76</td>
<td>0.431</td>
<td>3.995***</td>
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<tr>
<td>$\Delta All \ Tsy \ Collateral$</td>
<td>-0.212***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\Delta TSLF$</td>
<td>-1.235***</td>
<td></td>
<td>-1.104***</td>
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<tr>
<td>$\Delta SFP$</td>
<td>-0.167*</td>
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<td>-0.0574</td>
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<tr>
<td>$\Delta Tsy \ Bills$</td>
<td>-0.159**</td>
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<td>-0.100</td>
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<tr>
<td>$\Delta Tsy \ Notes \ and \ Bonds$</td>
<td>-0.140***</td>
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<td>-0.125**</td>
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<tr>
<td>$\Delta Temporary \ OMOs$</td>
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<td>$\Delta SOMA \ Bills$</td>
<td>0.556</td>
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<td>1.439**</td>
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<td>$\Delta SOMA \ Notes \ and \ Bonds$</td>
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<td>0.143</td>
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<tr>
<td>$\Delta (FF \ Target-GC)_{t-1}$</td>
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<td>-0.150***</td>
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</table>

**Sample Period:** 1/2/07-5/28/10  
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

**Robustness:** other sample periods, other dep vars, various specs
Summary of Results

• TSLF had largest impact
  • Different types/sources/holders of collateral—different probability of hitting repo markets

• Evidence (in paper) that TSLF impact is stronger with greater stress in funding markets
Changes in Treasury Coupon Collateral (Permanent OMOs)

Source: Federal Reserve Bank of New York
## Distribution of ownership of Treasury and agency securities

$ billions and percentage points, end of quarter, not seasonally adjusted

<table>
<thead>
<tr>
<th></th>
<th>Treasury securities</th>
<th>Agency debt and MBS</th>
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<tbody>
<tr>
<td></td>
<td>2010Q1</td>
<td>Change from 2008Q4</td>
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<tr>
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<td>Level</td>
<td>Percent</td>
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<td>All sectors</td>
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<td>Households and nonprofit organizations</td>
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<tr>
<td>Nonfarm nonfinancial corporate business</td>
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<td>1</td>
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<tr>
<td>Nonfarm noncorporate business</td>
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<td>State and local governments</td>
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<td>Federal government</td>
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<tr>
<td>Rest of the world</td>
<td>3936</td>
<td>49</td>
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<td>Federal Reserve</td>
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<td>Depository institutions</td>
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<td>Insurance companies</td>
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<td>Pension and retirement funds</td>
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<td>9</td>
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<td>Investment funds</td>
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<td>Government-sponsored enterprises</td>
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<td>Issuers of asset-backed securities</td>
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<td>Real estate investment trusts</td>
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<tr>
<td>Security brokers and dealers</td>
<td>131</td>
<td>2</td>
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</tbody>
</table>

Source: Flow of Funds accounts, tables L209 and L210
First-Difference Regression

Dependent Variable: Δ(FF target-GC rate) (bps)

WITH INTERACTIONS  Coeff.
ΔTSLF         -0.0252
ΔSFP          -0.123
ΔTsy Bills     -0.0201
ΔTsy Notes and Bonds -0.109*
ΔTemporary OMOs -0.194
ΔSOMA Bills    -1.773
ΔSOMA Notes and Bonds -0.471**
(FF Target-GC)_{t-1} -0.286***

Sample Period: 1/2/07-5/28/10

*** p<0.01, ** p<0.05, * p<0.1