Repo Market Effects of the Term Securities Lending Facility

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Introduction

• Assess effects of TSLF, introduced March 11, 2008
• TSLF allows primary dealers to bid a fee to borrow Treasury securities for 28 days against pledge of other securities
  – Dealers can use borrowed securities as collateral to obtain cash
• TSLF promotes liquidity of secured funding (repo) markets
• Such markets widely used by dealers to finance positions
• Such markets play crucial role in efficient capital allocation
Background to TSLF

- Secured funding markets became impaired in early 2008
  - Increased haircuts, higher rates, withdrawal from market
- Disruptions compel dealers to seek alternative sources of funding or liquidate positions, or file for bankruptcy
- TSLF introduced in this environment of market stress
- TSLF increases ability of dealers to obtain financing
- TSLF could also be expected to affect markets directly
Figure 1 – Repo Spreads

Spread (in percent)

1/1/05 1/1/06 1/1/07 1/1/08

Agency Spread  MBS Spread
Related Literature

• Paper most related to work examining effects of TAF
  – Analysis of TSLF may provide cleaner test of liquidity facility effects
  – Overnight repo rates and spreads highly sensitive to floating supply of securities in market *on that day*, mitigating endogeneity issues

• Also related to work assessing supply effects more generally
  – We relate underlying supply of securities to financing costs

• Also related to work on repo market
  – That work primarily examines financing costs for particular securities
Remainder of Talk

• Hypotheses
• TSLF and repo rate data
• Empirical results
• Conclusions
Hypotheses - Background

• Analysis focuses on repo rates and spreads, and, in particular, effects of changes in collateral supply
• Premise is that an increase (decrease) in the amount of collateral available to the market should decrease (increase) its marginal value, resulting in a higher (lower) repo rate
Hypothesis 1

• TSLF allows dealers to swap lower quality collateral for Treasury collateral
• To the extent the TSLF is utilized, supply of Treasury collateral available to market should increase, reducing the collateral’s scarcity value, causing Treasury repo rates to rise
• *H1: Changes in the amount outstanding under the TSLF are positively related to Treasury GC repo rates*
Hypothesis 2

• Use of TSLF should reduce supply of lower quality collateral available to private market, increasing its scarcity value and causing repo rates on such collateral to decline

• Effect on repo rates for which we have data is ambiguous and/or contingent on collateral eligible to be pledged

• If such rates rise, they should rise less than Treasury repo rate

• H2: Changes in the amount outstanding under the TSLF are negatively related to agency and agency MBS repo spreads
Hypothesis 6

- TSLF effects depend on market conditions and, in particular, on the level of repo rates relative to the fed funds rate.
- Repos are secured, fed funds transactions are not.
  => Overnight repo rate nearly always < fed funds rate; fed funds rate effectively puts a cap on repo rate.
- $H_6$: The effects of changes in the amount outstanding under the TSLF on repo rates and spreads increase with the spread between the fed funds rate and the Treasury repo rate.
Data

• All 37 TSLF operations from March 27 to October 30
• TSLF options sold and exercised
• Daily repo rates from New York Fed’s trading desk
  – Treasury, agency, and agency MBS collateral
• Daily repo rates from Bloomberg
• Daily Treasury issuance/redemptions; corporate yield spreads
Empirical Results - Background

- Regress changes in *overnight* repo rates and spreads on changes in amount outstanding under the TSLF
- Focus on settlement days, when rates are affected by supply
- Change in amount outstanding = amount awarded in operation settling that day - amount maturing that day
  - Include amounts exercised through TSLF Options Program
- Include dummy variables for first and last days of quarter
Table 2 – TSLF Effects on Repo Rates and Spreads

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Treasury Rate</th>
<th>Agency Rate</th>
<th>Agency MBS Rate</th>
<th>Agency Spread</th>
<th>Agency MBS Spread</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-1.03 (1.94)</td>
<td>-1.06 (1.54)</td>
<td>-0.90 (1.54)</td>
<td>-0.03 (1.85)</td>
<td>0.13 (2.02)</td>
</tr>
<tr>
<td>TSLF</td>
<td>0.97*** (0.19)</td>
<td>0.66*** (0.15)</td>
<td>0.43*** (0.15)</td>
<td>-0.31* (0.18)</td>
<td>-0.54*** (0.20)</td>
</tr>
<tr>
<td>Quarter End</td>
<td>-54.44*** (14.42)</td>
<td>8.64 (11.47)</td>
<td>23.28** (11.46)</td>
<td>63.08*** (13.77)</td>
<td>77.71*** (14.99)</td>
</tr>
<tr>
<td>Quarter Beginning</td>
<td>58.81*** (14.42)</td>
<td>-21.75* (11.47)</td>
<td>-31.79*** (11.46)</td>
<td>-80.55*** (13.77)</td>
<td>-90.60*** (14.99)</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>24.1%</td>
<td>10.6%</td>
<td>9.1%</td>
<td>24.8%</td>
<td>28.8%</td>
</tr>
</tbody>
</table>
Other Results

- Results supportive of hypothesis that effects are greater when fed funds/Treasury repo spread is wider
- Results generally supportive of other hypotheses
- Results robust to split sample test and to inclusion of other control variables such as corporate credit spread
- Treasury issuance and redemptions also found to affect Treasury repo rates and repo spreads
Conclusions

• Evidence suggests TSLF narrows financing spreads between Treasury collateral and lower quality collateral
• Observed narrowing emanates from increase in Treasury repo rate and not decrease in repo rates on lower quality collateral
• Results supportive of additional hypotheses and robust
• Strong results may arise from powerful test of supply effects with minimal difficulties arising from endogeneity issues