FEDERAL RESERVE BANK of NEW YORK

Recent Developments in Short-Term Funding Markets

Patrick Dwyer
Steven Friedman
Matt Raskin
Fabiola Ravazzolo
Matthew Rutherford

U.S. Department of the Treasury

May 6, 2008

Overview

- Key terms
- Why is LIBOR elevated?
- Demand for the Term Auction Facility (TAF)
- Importance of money market funds as lenders to banks and dealers
- The importance of LIBOR and issues with its construction
- Role of the Term Securities Lending Facility (TSLF)
- Dealer provision of secured funding to clients

Key Points

- Unsecured bank funding rates remain elevated due to lenders' counterparty credit concerns, particularly regarding European banks. Lenders in the interbank market are also more sensitive to their own potential liquidity needs.
- Recent expansion of Term Auction Facility (TAF) and reciprocal currency arrangements with ECB and SNB could help ease strains in money markets at the shortest maturities.
- Even in the best of circumstances, LIBOR has its shortcomings. These are even more pronounced at present.
- Term Securities Lending Facility has eased pressures in repo markets for the highest-quality collateral.
- Dealers remain balance sheet constrained; as such, they are providing limited liquidity to clients in repo markets.

Overview

- **Key terms**
- Why is LIBOR elevated?
- Demand for the Term Auction Facility (TAF)
- Importance of money market funds as lenders to banks and dealers
- The importance of LIBOR and issues with its construction
- Role of the Term Securities Lending Facility (TSLF)
- Dealer provision of secured funding to clients

Some Key Money Market Terms

- The **BBA's LIBOR** (London Interbank Offered Rate) is a benchmark of the rate at which banks can borrow unsecured funds from other banks.
  - BBA publishes LIBOR each day at 11 am London time
  - Based on a sample of rates from 16 contributing banks, with the majority being European institutions
  - LIBOR is *indicative only* - it does not represent the level at which contributing banks raise funds
- The **Overnight Index Swap rate (OIS)** is an interest rate swap that provides a measure of the expected average overnight fed funds rate over a particular horizon.
- A widening **spread between LIBOR and OIS** at the same maturity can be viewed as reflecting increasing liquidity and/or counterparty credit concerns.

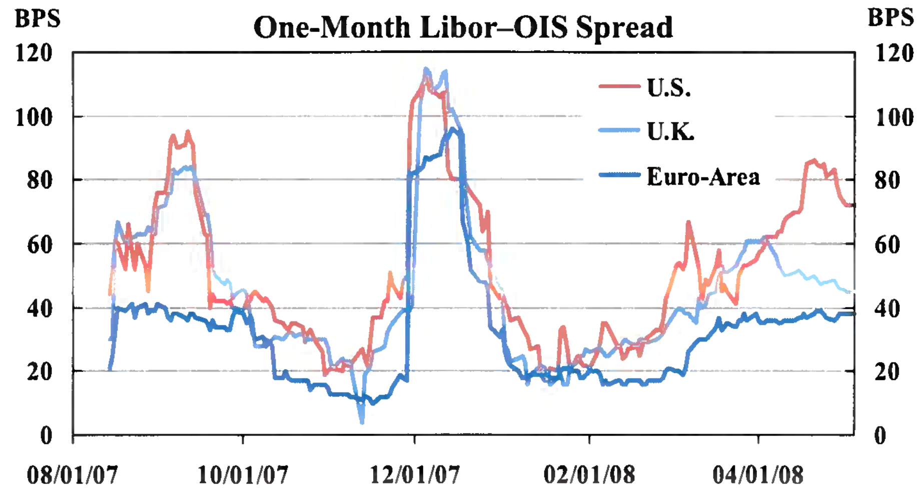
Overview

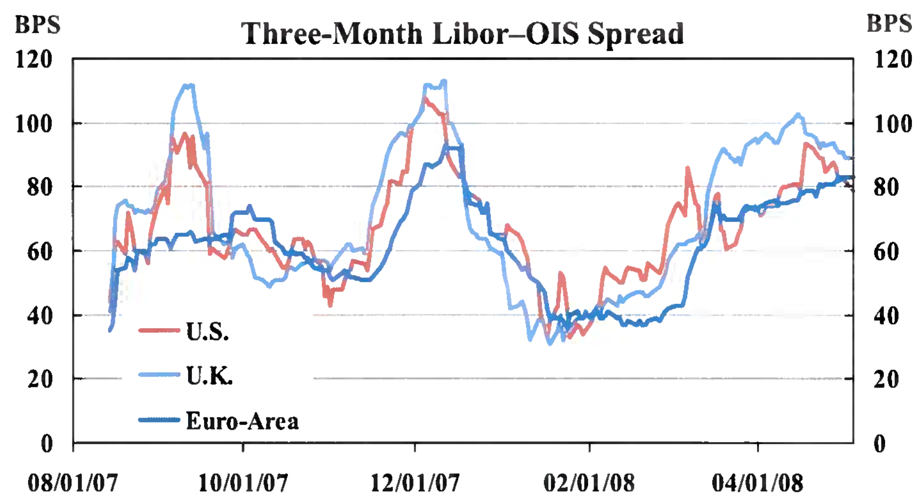
- Key terms
- **Why is LIBOR elevated?**
- Demand for the Term Auction Facility (TAF)
- Importance of money market funds as lenders to banks and dealers
- The importance of LIBOR and issues with its construction
- Role of the Term Securities Lending Facility (TSLF)
- Dealer provision of secured funding to clients

Spread of LIBOR to OIS rates

- Spreads of U.S. dollar LIBOR fixings to OIS rates have widened considerably since last summer.

- Similar spreads for the euro and sterling have also widened, though demand for 1-month dollar funding is most pronounced.





Why is LIBOR elevated?

- Banks are paying higher rates for funding on increasing counterparty credit risk concerns, in particular:
  - European banks believed to be paying up for funding;
  - many money market lenders, such as money funds and securities lenders, have been more selective in their credit allocation.
- Liquidity risk: Since last summer, banks have been more reluctant to lend in the interbank market due to concerns over their own liquidity.

Why is LIBOR elevated?

- European institutions are paying up for cash:
  - to fund particularly dollar-denominated assets, such as structured credit and subprime mortgage securities;
  - to shore up liquidity position given uncertainties regarding the length of current money market dysfunction;
  - as lenders are increasingly selective in choosing counterparties (credit tiering). Some have stopped lending to smaller European banks, such as the German landesbanks and U.K. building societies.

Why is LIBOR elevated?

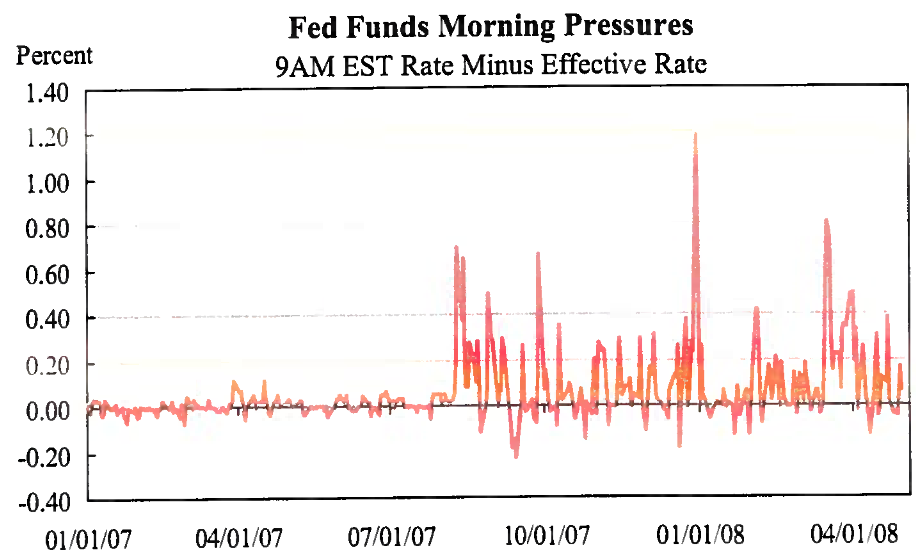
- Negative perception of European banks
  - European banks are generally less transparent than their U.S. counterparts regarding their exposures (subprime, structured credit) and valuations/writedowns.
  - The more fragmented European supervisory system also contributes to perception that European banks are under greater stress than their U.S. counterparts.
  - European institutions observed funding euro needs by paying higher rates for borrowing dollars and swapping back to euros.

Overview

- Key terms
- Why is LIBOR elevated?
- **Demand for the Term Auction Facility (TAF)**
- Importance of money market funds as lenders to banks and dealers
- The importance of LIBOR and issues with its construction
- Role of the Term Securities Lending Facility (TSLF)
- Dealer provision of secured funding to clients

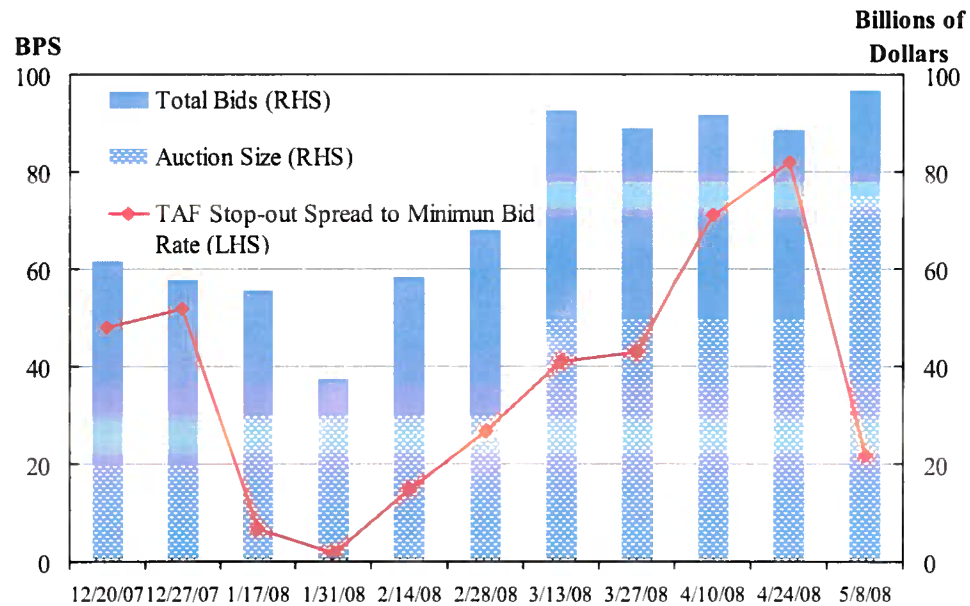
European Demand Pressures Overnight Rates

- Demand from European banks has persistently pressured morning fed funds rates since August
- Morning rates are frequently well above the fed funds target on non-high-payment-flow days
- Rates often trade sharply lower as European demand subsides over the session



Term Auction Facility Demonstrates Demand

- Participation has been strong, growing since a short-lived improvement in market conditions in January
- The amount of bids, the number of institutions participating, and the bid rates have all increased



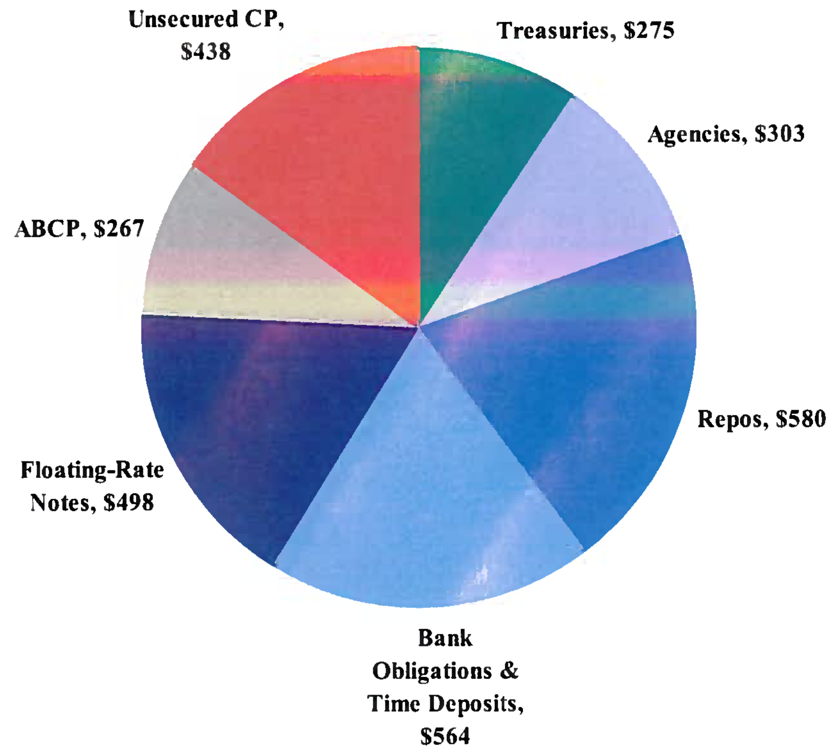
Overview

- Key terms
- Why is LIBOR elevated?
- Demand for the Term Auction Facility (TAF)
- **Importance of money market funds as lenders to banks and dealers**
- The importance of LIBOR and issues with its construction
- Role of the Term Securities Lending Facility (TSLF)
- Dealer provision of secured funding to clients

Money Market Mutual Funds

- Predominant money market investors and key source of funding for banks and dealers
- Funds have limited lending to some lesser-name banks and have reduced their holdings of asset-backed commercial paper
- Funds have shortened maturities, partly due to credit concerns, and increased overnight liquidity given the risk of large investor redemptions

Taxable Money Fund Portfolio Allocations
4/29/2008, in billions



Money Market Mutual Funds (Cont.)

- Funds have not recently made significant changes to credit limit and exposure amounts in secured lending to dealers
- However, funds have limited maximum maturities and collateral types with some dealers
- Many funds indicate that PDCF and TSLF programs give them comfort with dealer counterparties; some suggest they might not otherwise continue to transact with all dealers
- Most funds are seeking increased collateral haircuts, due to market volatility, not counterparty credit concerns

Overview

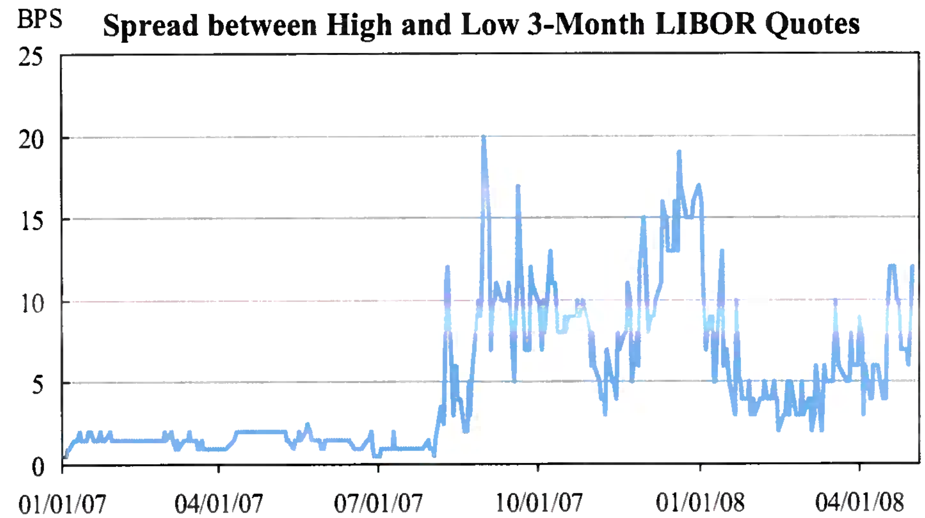
- Key terms
- Why is LIBOR elevated?
- Demand for the Term Auction Facility (TAF)
- Importance of money market funds as lenders to banks and dealers
- **The importance of LIBOR and issues with its construction**
- Role of the Term Securities Lending Facility (TSLF)
- Dealer provision of secured funding to clients

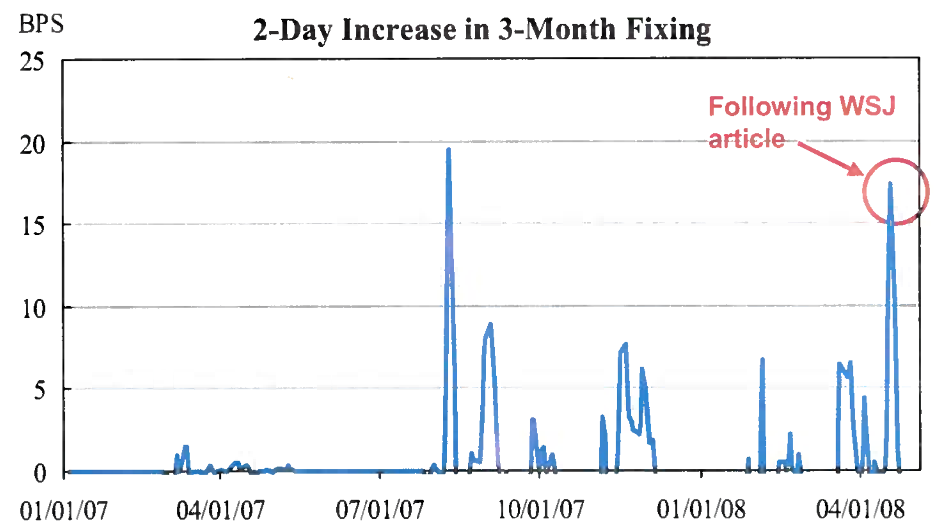
Why LIBOR Matters

- As discussed, LIBOR provides a gauge of conditions in wholesale unsecured funding markets
- LIBOR is referenced in a wide variety of financial contracts:
  - Interest rate swaps, interest rate futures, mortgages, leverage loans, etc.
- LIBOR is used to price many assets, even if not contractually linked
- Dislocations can be transmitted to markets that don't directly reference LIBOR

Recent Market Concerns re: LIBOR

- Questions regarding LIBOR's accuracy and relevance:
  - Banks' incentive to avoid signaling funding challenges
  - LIBOR's focus on the London interbank market, at 11am GMT
- Suggestions that banks were actually misquoting LIBOR:
  - Anecdotal evidence of bidding above LIBOR quotes
  - "Re-pricing" following WSJ article and BBA response
  - Difficult to gauge the extent – liquidity, timing, "market size"





Addressing LIBOR Remains a Focus

- Current efforts to address LIBOR:
  - The BBA is expediting scheduled reviews of the panel and construction
  - ICAP recently proposed the New York Funding Rate ("NYFR") as a supplementary index for wholesale unsecured funding rates (see appendix for details)

- Market participants are skeptical that LIBOR will lose its benchmark status, but see some changes as possible:
  - Market may increase indexing to alternatives going forward – e.g., OIS,
  - Continued LIBOR volatility may affect the details of interest rate swaps contracts – e.g., re-set dates aligned with Eurodollar futures

Overview

- Key terms
- Why is LIBOR elevated?
- Demand for the Term Auction Facility (TAF)
- Importance of money market funds as lenders to banks and dealers
- The importance of LIBOR and issues with its construction
- **Role of the Term Securities Lending Facility (TSLF)**
- Dealer provision of secured funding to clients

Term Security Lending Facility (TSLF)

- New "reserve neutral" liquidity tool
  - Reserve neutrality allows for faster ramp-up and unwind as there is no need to execute offsetting redemptions or sales of Treasury holdings. Nonetheless, it places a hold on Treasuries loaned (encumbers SOMA).
- Designed to complement existing daily securities lending operation which improves liquidity of *specific issue* repo market by limiting settlement fails.
  - Treasury collateral substituted out of TSLF if it becomes special
- TSLF provides "near cash" instead of a direct loan of cash
  - Not a perfect substitute for Open Market RP (which is a direct cash loan)
  - Dealer must enter another transaction with counterparty to convert Treasury collateral into cash (TSLF not necessarily useful for dealers with counterparty concerns)
  - Conversion of Treasury collateral into cash may add a floating cost if dealers place Treasury collateral in overnight repo market (fixed term/variable cost).

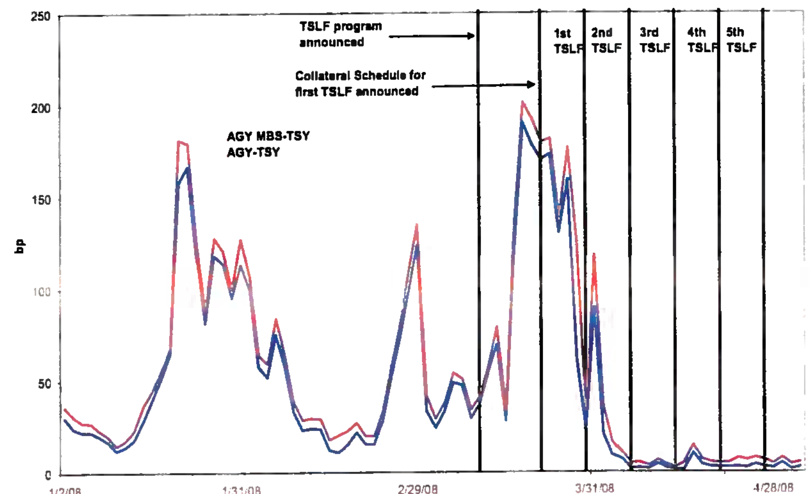
Term Security Lending Facility (TSLF)

- TSLF designed to narrow the spread between Treasury collateral rates and pledged collateral rates (increases supply of Treasury and demand for pledged collateral simultaneously).
- TSLF designed to improve liquidity and function in both Treasury and pledged collateral markets.
  - Monetary policy conducted in Treasury market
  - Monetary policy transmission improved by more liquid pledged collateral markets
- One-month term bond-for-bond securities loan (a swap of Treasury collateral for "riskier" collateral)
  - Single price auction with minimum price set slightly above "normal" spread between Treasury and eligible collateral repo rates.
  - Program might become "self-liquidating" as minimum price unattractive under normal conditions
  - Recent auctions undersubscribed at minimum price
    - Positive in that it reflects limits to dealer need for assistance
    - Although dealers report they generally are not extending facility to customers due to balance sheet concern

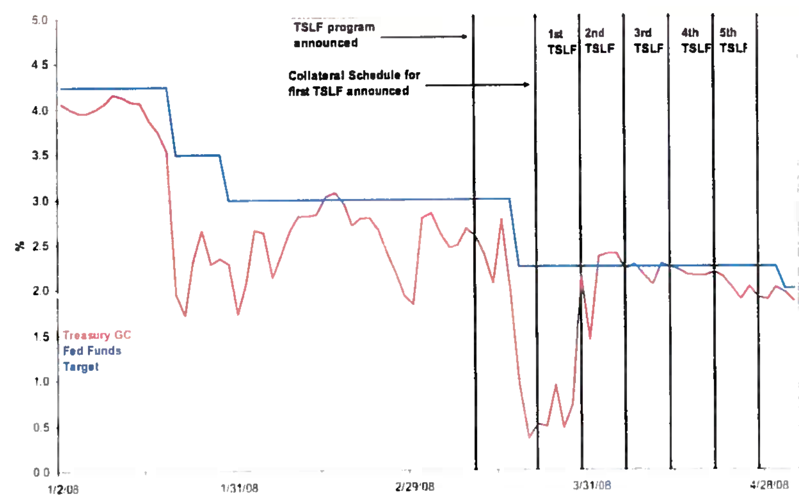
TSLF Reduces Repo Dislocation & Spreads

- The narrowing of repo spreads since the first TSLF largely reflects increases in Treasury RP rates as opposed to decreases in agency and MBS RP rates.
  - TSLF Treasury supply impact is more concentrated than increase in demand for "risky" collateral as a range of "riskier" collateral is eligible
- Treasury RP rates were very low relative to policy rate before TSLF due to "flights to safety"
- Return to more normal spread

Overnight Repo Spreads



Fed Funds Target and Treasury Repo Rates



Overview

- Key terms
- Why is LIBOR elevated?
- Demand for the Term Auction Facility (TAF)
- Importance of money market funds as lenders to banks and dealers
- The importance of LIBOR and issues with its construction
- Role of the Term Securities Lending Facility (TSLF)
- **Dealer provision of secured funding to clients**

Dealer provision of secured funding to clients

- No significant changes in haircuts since the deleveraging of February and early March; haircuts have stablized at higher levels
- But access to financing beyond one month is difficult/non-existent beyond highest-quality collateral
- Hedge funds and other dealer clients do not expect near-term improvements, citing balance sheet constraints at many dealers

Haircuts by Asset Class for One-Month Tenor

	Date	Average
Treasury	9-Apr	**0.6%**
	10-Mar	0.4%
	3-Mar	0.3%
	1-Feb	0.2%
Agency Debt	9-Apr	**2.1%**
	10-Mar	1.9%
	3-Mar	1.1%
	1-Feb	1.1%
Agency MBS	9-Apr	**6%**
	10-Mar	5%
	3-Mar	3%
	1-Feb	3%
Non-agency MBS		
Prime	9-Apr	**27%**
	10-Mar	19%
	3-Mar	16%
	1-Feb	11%
Alt-A	9-Apr	**36%**
	10-Mar	28%
	3-Mar	16%
	1-Feb	16%
Corporate Debt		
High Grade	9-Apr	**18%**
	10-Mar	15%
	3-Mar	13%
	1-Feb	10%
High Yield	9-Apr	**39%**
	10-Mar	27%
	3-Mar	27%
	1-Feb	24%

Source: FRBNYsurvey of buy-side firms

Appendix

FEDERAL RESERVE BANK of NEW YORK

Federal Reserve Bank of New York

May 2008

Forms of Federal Reserve Lending to Financial Institutions

	Regular OMOs	Single-Tranche OMO Program (announced March 7, 2008)	Discount Window[1]	Term Discount Window Program (announced August 17, 2007)	Term Auction Facility (announced December 12, 2007)	Primary Dealer Credit Facility (announced March 16, 2008)[2]	Securities Lending	Term Securities Lending Facility (announced March 11, 2008)
Who can borrow?	Primary dealers	Primary dealers	Depository institutions	Primary credit-eligible depository institutions	Primary credit-eligible depository institutions	Primary dealers	Primary dealers	Primary dealers
What are they borrowing?	Funds	Funds	Funds	Funds	Funds	Funds	U.S Treasuries	U.S. Treasuries
What collateral can be pledged?	U.S. Treasuries, agencies, agency MBS	U.S. Treasuries, agencies, agency MBS	Full range of Discount Window collateral	Full range of Discount Window collateral	Full range of Discount Window collateral	U.S. Treasuries, agencies, agency MBS, investment grade debt securities[3]	U.S. Treasuries	U.S. Treasuries, agencies, agency MBS, AAA/Aaa-rated private-label RMBS, CMBS, agency CMO and other ABS
Is there a reserves impact?	Yes	Yes	Yes	Yes	Yes	Yes	No (loans are bond-for-bond)	No (loans are bond-for-bond)
What is the term of loan?	Typically, term is overnight–14 days[4]	28 days[5]	Typically overnight, but up to several weeks[6]	Up to 90 days[7]	28 days[5]	Overnight	Overnight	28 days[5]
Is prepayment allowed if term is greater than overnight?	No	No	Yes	Yes	No	N/A	N/A	No
Which Reserve Banks conduct operations?	FRBNY	FRBNY	All	All	All	FRBNY	FRBNY	FRBNY
How frequently are operations conducted?	Typically once or more daily	Typically weekly	As requested	As requested	Every other week	As requested	Daily	Weekly
Where are statistics reported publicly?	Temporary OMO activity	Temporary OMO activity[8]	H.4.1 - Factors Affecting Reserve Balances	H.4.1 - Factors Affecting Reserve Balances	H.4.1 - Factors Affecting Reserve Balances	H.4.1 - Factors Affecting Reserve Balances	Securities lending activity	Term securities lending facility activity

[1] Discount Window includes primary, secondary and seasonal credit programs.
[2] The PDCF will remain in operation for a minimum period of six months and may be extended as conditions warrant.
[3] Investment grade debt securities include corporate securities, municipal securities, mortgage-backed securities and asset-backed securities.
[4] Open market operations are authorized for terms of up to 65 business days.
[5] 28-day term may vary slightly to account for maturity dates that fall on Bank holidays.
[6] Primary credit loans are generally overnight. Loans may be granted for term beyond a few weeks to small banks, subject to additional administration.
[7] Maximum maturity of term increased from 30 to 90 days on March 16, 2008.
[8] Data only available on days when 28-day term RP operations are conducted.

Federal Reserve Term Auction Facility:

Auction Settlement	*Term*	*Amount*	*Minimum Bid Rate*	*Stop-out Rate*	*Propositions*	*Bid/Cover*	*Bidders*
12/20/2007	28 Days	$20 b	4.17%	4.65%	$61.6 b	3.08	93
12/27/2007	35 Days	$20 b	4.15%	4.67%	$57.7 b	2.88	73
1/17/2008	28 Days	$30 b	3.88%	3.95%	$55.5 b	1.85	56
1/31/2008	28 Days	$30 b	3.10%	3.12%	$37.5 b	1.25	52
2/14/2008	28 Days	$30 b	2.86%	3.01%	$58.4 b	1.95	66
2/28/2008	28 Days	$30 b	2.81%	3.08%	$68.0 b	2.27	72
3/13/2008	28 Days	$50 b	2.39%	2.80%	$92.6 b	1.85	82
3/27/2008	28 Days	$50 b	2.19%	2.62%	$88.9 b	1.78	88
4/10/2008	28 Days	$50 b	2.11%	2.82%	$91.6 b	1.83	79
4/24/2008	28 Days	$50 b	2.05%	2.87%	$88.9 b	1.77	89

Term Securities Lending Facility:

Auction Settlement	*Term*	*Collateral*	*Amount*	*Minimum Fee Rate*	*Stop-out Rate*	*Propositions*	*Bid/Cover*
3/28/2008	28 Days	Schedule 2	$75 b	0.25%	0.33%	$86.1 b	1.15
4/4/2008	28 Days	Schedule 1	$25 b	0.10%	0.16%	$46.9 b	1.88
4/11/2008	28 Days	Schedule 2	$50 b	0.25%	0.25%	$40.0 b	0.68
4/18/2008	28 Days	Schedule 1	$25 b	0.10%	0.10%	$35.1 b	1.40
4/25/2008	28 Days	Schedule 2	$75 b	0.25%	0.25%	$ 59.5 b	0.79
5/2/2008	28 Days	Schedule 1	$25 b	0.10%	0.10%	$24.1 b	0.96

Appendix: USD LIBOR Panel Members

- *US*: Bank of America, Citibank, JP Morgan
- *Japanese*: Bank of Tokyo – Mitsubishi UFJ, Norinchukin
- *European*: Barclays, Credit Suisse, Deutsche Bank, HBOS, HSBC, Lloyds, Rabobank, RBS, UBS, West LB
- *Canadian*: RBC

Appendix: ICAP's NYFR

- According to ICAP, NYFR will be constructed in the following manner:
  - Respondents will be asked to estimate the rate at which a representative A1/P1 bank would be likely to obtain unsecured funds, rather than the rates at which they themselves could borrow (note: not just interbank)
  - Rates will be collected at 9:30am ET, for the 1-month and 3-month tenors; rates will be published around 10am ET
  - The number of contributors will vary from day to day, and will be at least 24 and perhaps as high as 40
  - NYFR will be calculated as the trimmed mean of all responses, with the 6 top and bottom responses dropped
  - Rates will be published, but not the names of individual contributors

- ICAP suggested last week that NYFR may launch as soon as this week