Board of Governors of the Federal Reserve System

Federal Reserve Lending during the Crisis

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Overview:
The Fed addresses the crisis of 2007 - 09

- Three-pronged response:
  – Monetary-policy easing
  – Assistance for specific institutions
  – **Liquidity and lending programs**

- Why?
  – Support solvent institutions
  – Maintain market confidence
  – Prevent runs and fire sales
  – Ensure pass-through of monetary policy

A Simple Crisis Timeline

	Dates	Market Stress	Fed Lending Programs
Prologue	< Aug 2007	Low	
Crisis: Phase 1	Aug – Dec 2007	High	Term Primary Credit, TAF
Crisis: Phase 2	Jan – Aug 2008	Spreading	PDCF, TSLF
Crisis: Phase 3	Sep 2008 – Early 2009	Extraordinary	AMLF, CPFF, MMIF, TALF
Epilogue	> Early 2009	Improving	

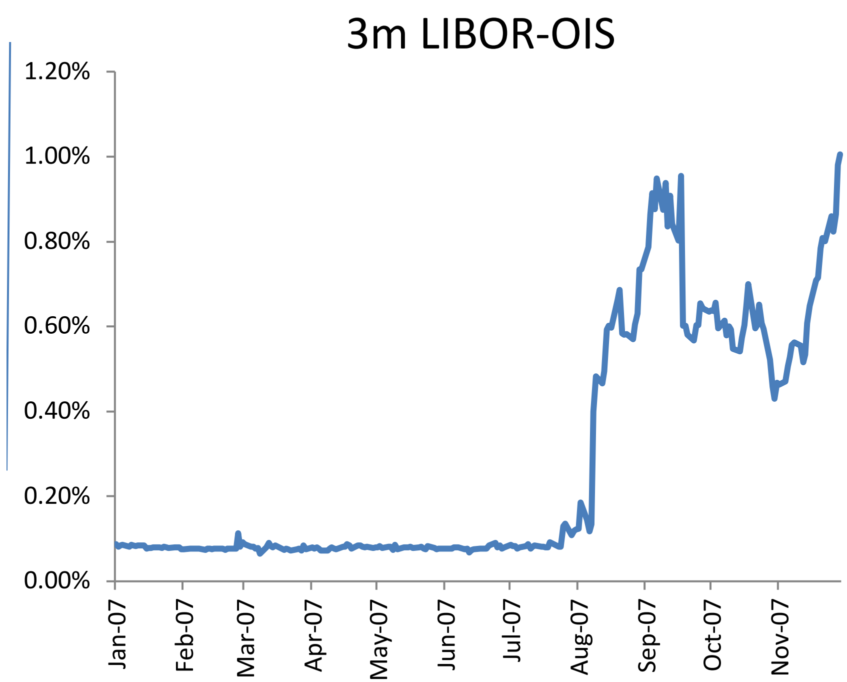
Financial Crisis: Prologue

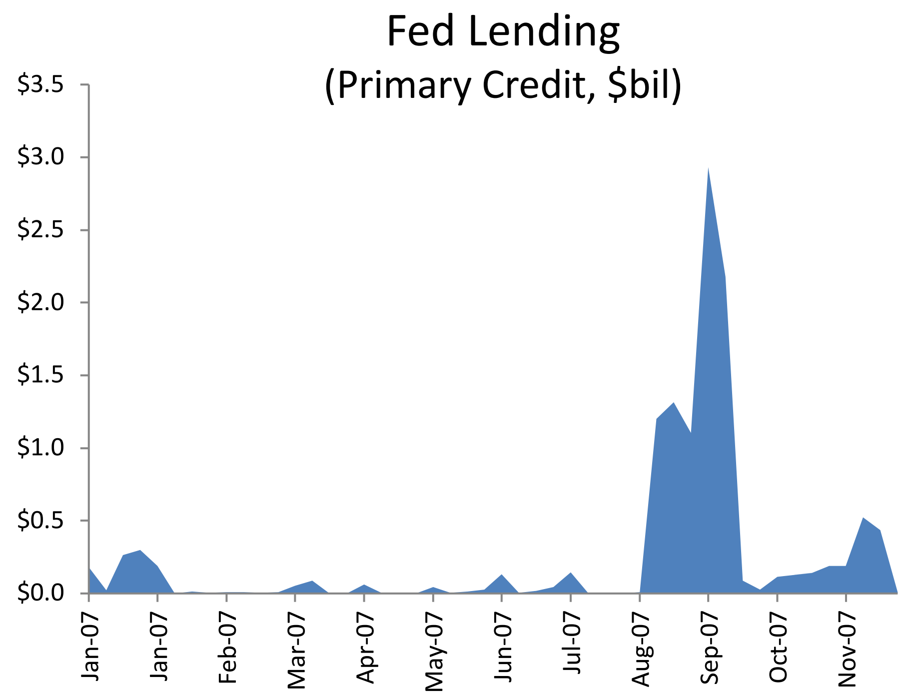
- The boom in housing stimulated over-lending in mortgages
  - Many subprime mortgages were packaged into securities
  - Often rated AAA because they were overcollateralized
- A large volume of securities were funded by short-term liabilities in "shadow banking system"
  - Effectively leveraged and subject to funding runs
  - Banks provided implicit or explicit support
- When house prices started to fall,
  - Losses on subprime mortgages exceeded expectations
  - Risk exposures through securitizations and credit derivatives became hard to evaluate
  - Investors lost confidence in securities, credit ratings, and counterparties…

Phase 1 of the Crisis: August 2007

- August 9 – BNP Paribas suspends redemptions from funds
  - Disruptions in money markets
  - Asset-backed commercial paper becomes stressed
  - Banks face increased draws on liquidity just as their sources of liquidity dry up
  - Interbank funding rates surge and become volatile
- August 17 – Fed lowers primary credit rate and offers 30-day **term primary credit**

Funding spreads and Fed lending through November 2007





- The LIBOR-OIS spread is what banks pay for unsecured term funding, *beyond* what they expect overnight funding rates to be.
- Measures interbank market stress.
  - Includes premiums for credit and liquidity risk.

Why didn’t this work better?

In a word, “Stigma.”

- Banks are reluctant to use the window – perceived to send a bad signal.
- If banks won’t borrow, then the discount window is a less effective tool for both monetary policy and financial stability.
- Primary credit is *supposed* to help by:
  - Maintaining confidentiality
  - Emphasizing the soundness of borrowers

The TAF

- The **Term Auction Facility** (TAF) was announced December 12, 2007.
- Offered funding for 28 or 35 days through periodic auctions.
  - Maturities were later extended.
- DI’s submitted bid schedules against a fixed amount of funding (initially $20 billion)
  - All primary-credit-eligible DI’s could participate
  - Lending was collateralized under standard margins.

Advantages of the TAF

- TAF likely mitigated stigma by:
  - Appearing to be something different than "normal" discount window borrowing
  - Having DI's approach the Fed collectively
    - Many DI's submitted bids at the same time
    - No institution could borrow more than 10% of offering
  - Reducing the appearance of immediate funding needs
    - Auctions settled after three days.
  - Allowing stigma to be "priced in"

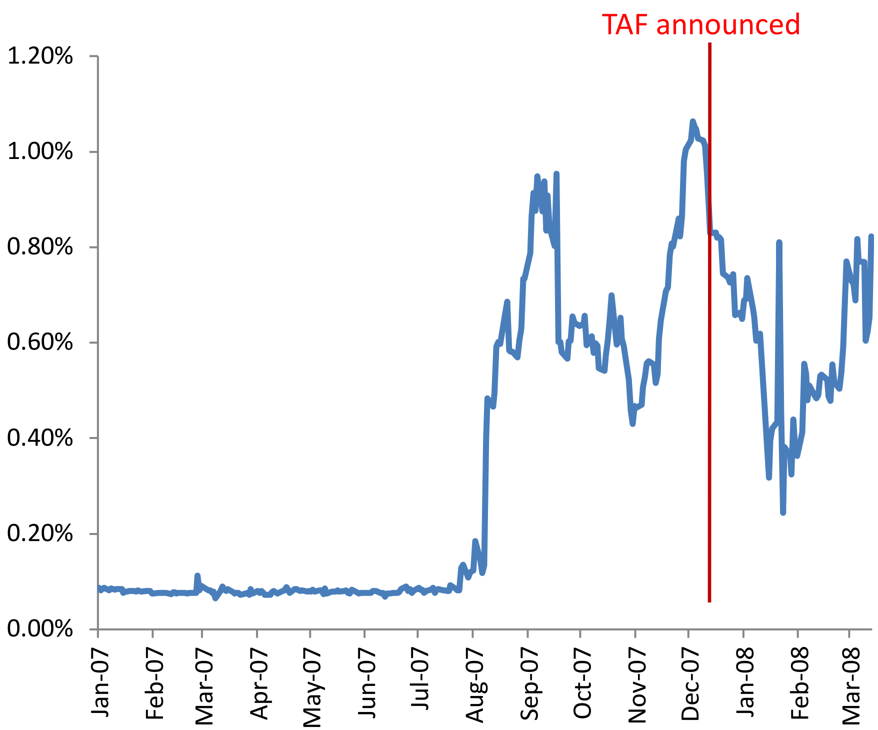
Response to the TAF

- 452 DI’s borrowed from the TAF over its lifetime.
  - Last auction was in March 2010.
  - By March 2008, $60 billion outstanding.
  - Much more was borrowed later, as stress increased.
- Following the creation of the TAF, funding conditions generally improved….

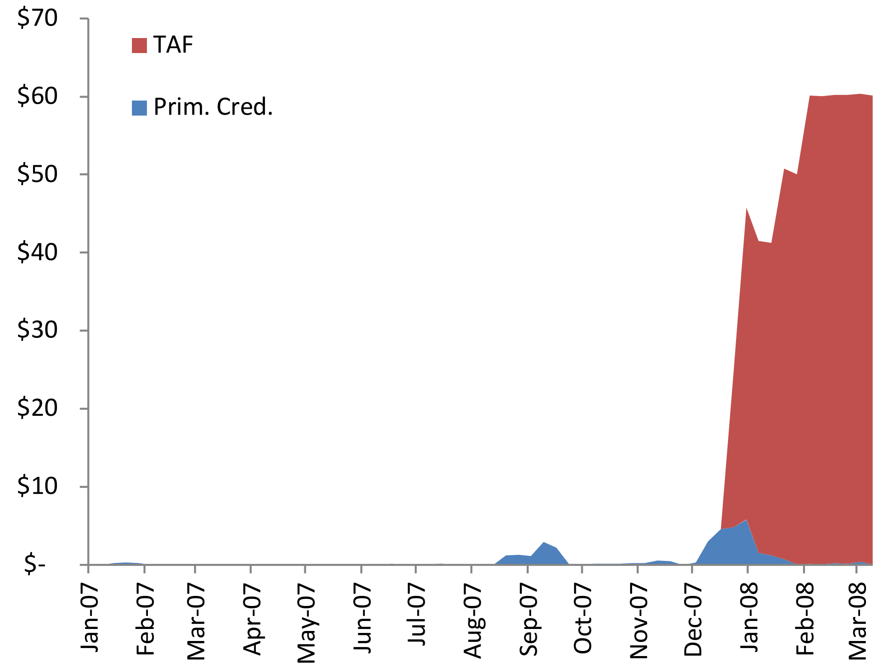
… but only for a while.

Funding spreads and Fed lending through early 2008

3m LIBOR-OIS



Fed Lending
($bil)



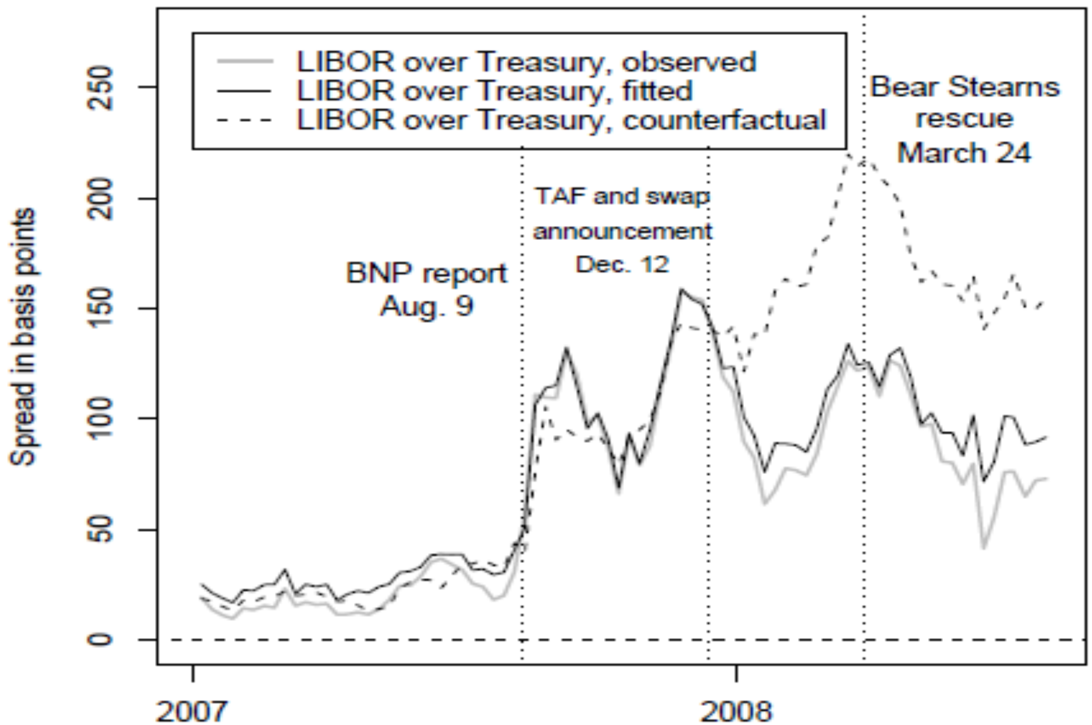
Excludes central bank liquidity swaps, secondary credit, and seasonal credit.

Did the TAF reduce funding costs?

- Taylor and Williams (2009) say no.
  - LIBOR-OIS was not significantly lower, on average, after the TAF than before.
    - Moreover, the spread didn’t fall after the auctions themselves.
  - They argue that funding pressures were driven by *counterparty credit risk*, so improving liquidity didn’t help.

- Other studies disagree.
  - Depends on how you measure it.
  - Also, you need to know the counterfactual.
    - Christensen, Lopez, and Rudebusch (2009) model interest rates as functions of monetary policy, credit risk, etc., taking account of arbitrage relationships

Estimated effects of TAF on LIBOR spreads



Source: Christensen et al. (2009)

- Effect averages about 70 bp.
- (These are spreads over *Treasury* rates, but LIBOR-OIS would be similar.)

Did the TAF avoid stigma?

Amantier, Ghysels, Sarkar, and Shrader (2011) examine individual TAF bids:

- Most participating DI’s bid *above* the primary credit rate.
- Average premium bid was 37 bp.
- The premium shot up in September 2008 when the crisis accelerated.
  - Likely reflected increased fear of sending a bad signal

Phase 2 of the Crisis: Bear Stearns and the Repo Market

- Why did LIBOR rise again in 2008?
  - Concerns about the economy deepened
  - Losses for financial institutions appeared bigger
- Repo market came under increased pressure.
  - This is a different set of counterparties from the unsecured market
  - Nonetheless, pressures spilled over into LIBOR and other rates
  - Contributed to Bear-Stearns acquisition on March 16
- Commercial paper market also experienced further strains.

Fed Response

- Expand TAF auction sizes to $50 billion
- Cut primary credit spread to 25 bp and offer term up to 90 days
- Assistance with Bear Stearns transaction
- **Term Securities Lending Facility** (TSLF)
  – Lend securities from SOMA at term to primary dealers.
  – Exchange less-liquid for more-liquid assets, facilitating repo and improving liquidity.
- **Primary Dealer Credit Facility** (PDCF)
  – Allow primary dealers to borrow from the Fed against a range of collateral.

Emergency Credit

- PDCF and TSLF were *not* straightforward extensions of standard Fed operations – required emergency authority
- The Federal Reserve can lend to non-DIs in special situations
  - "Unusual and exigent circumstances"
  - Credit is not available from other sources
  - On vote of at least five Governors
- Authority -- FRA 13(3) -- had not been used since 1930s
- But it was used extensively during the crisis...

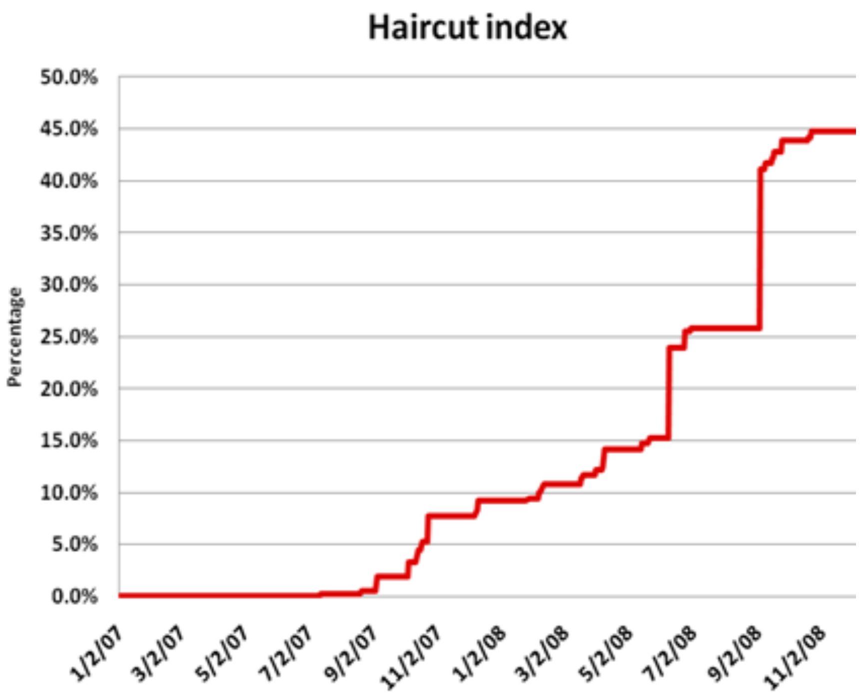
Phase 3 of the Crisis: Lehman, etc.

- On September 14, 2008 Lehman Brothers filed for bankruptcy, and Merrill Lynch was bought by B of A.
- This followed the conservatorship of Fannie and Freddie.
- Shortly after, enormous shortfalls were revealed at AIG.
- Shortly after, Washington Mutual failed and Wachovia was sold to Wells Fargo

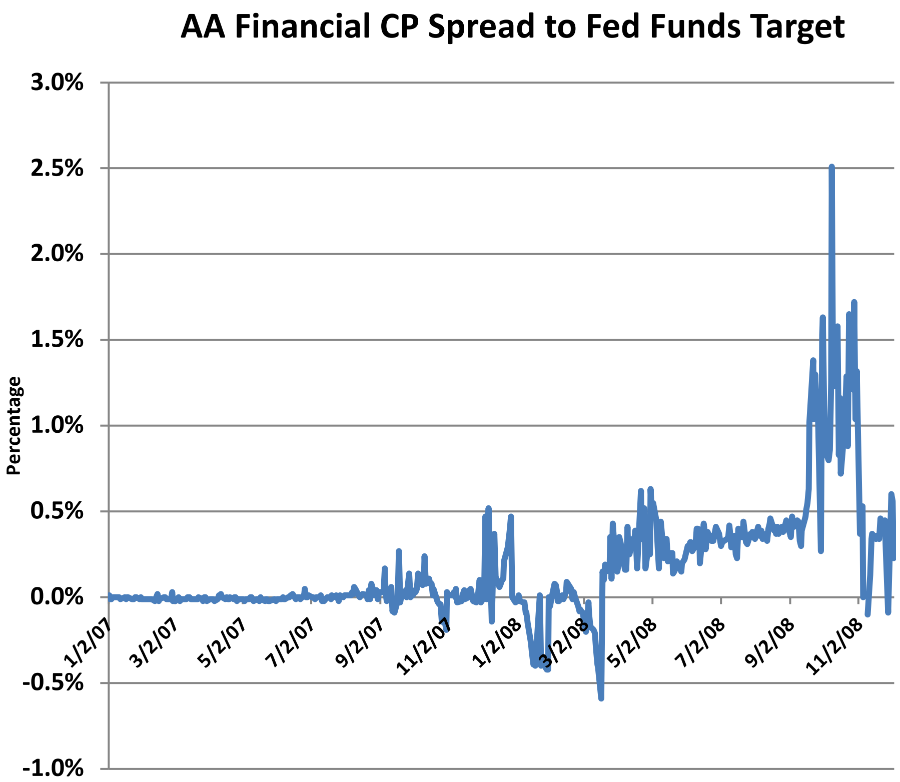
In Addition, Money Markets Came under Extraordinary Pressure

- On Sept. 16, the Reserve Primary Fund “broke the buck”
  - Investors fled when its exposure to Lehman became clear.
  - This precipitated “runs” on other prime money market funds.
- These funds were major holders of commercial paper.
  - CP became difficult to issue.
  - Threatened the operations of a wide variety of financial and nonfinancial businesses.
- The repo market seized up, making it difficult to fund all but the safest collateral.

Indicators of money-market stress



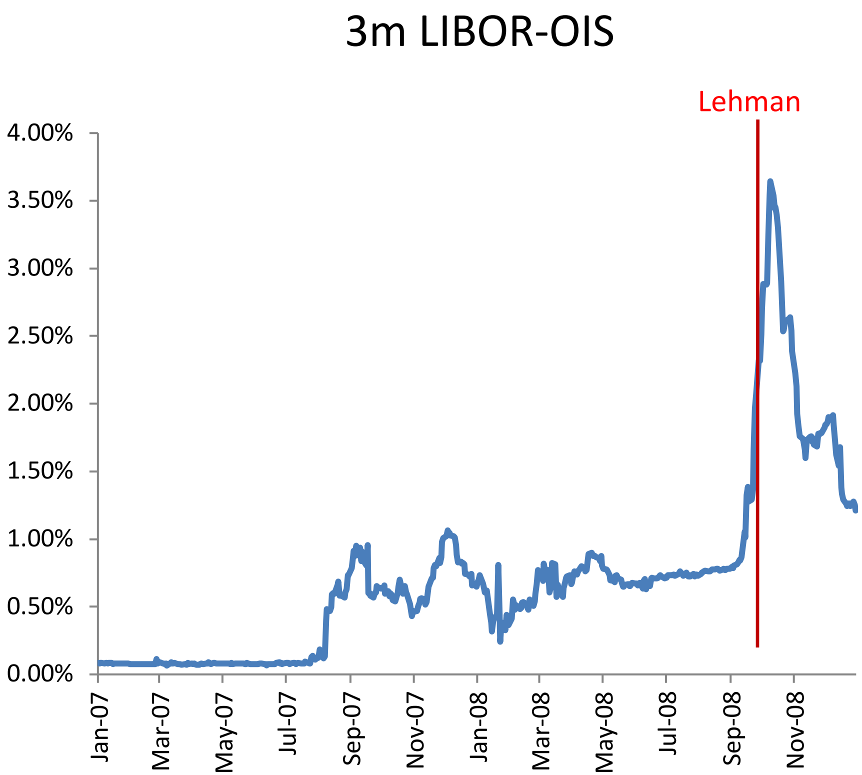
Source: Gorton and Metrick (2012)

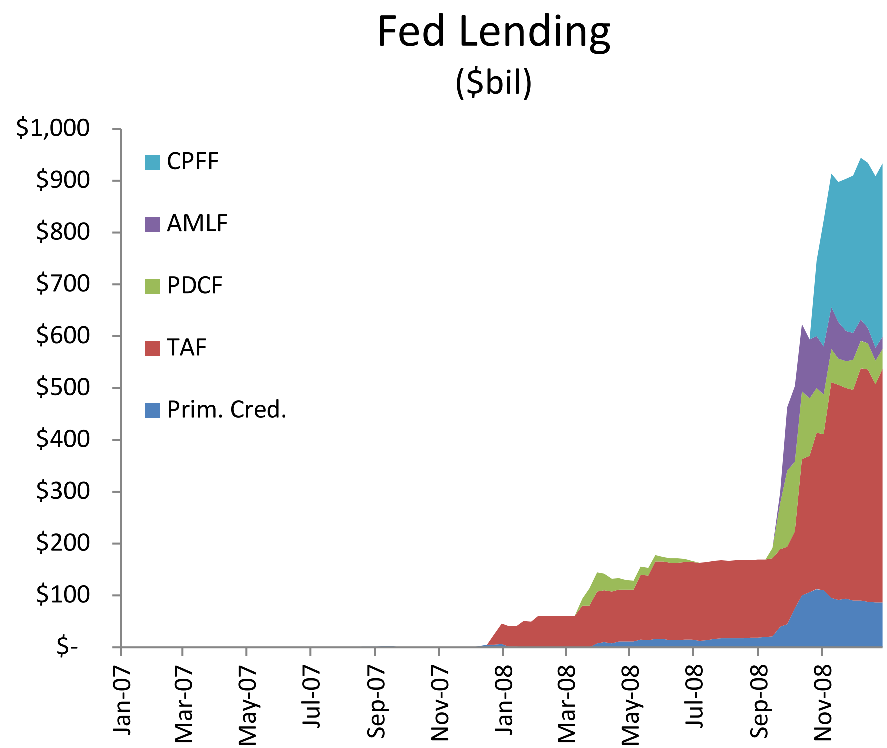


Fed Response

- Broadened collateral for PDCF and TSLF
- Suspended rule 23a
- Expanded TAF auctions to $150 bil
- Announced three new 13(3) programs:
  - **Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility** (AMLF)
    - Provided loans to DIs that purchased highly rated ABCP from money funds.
  - **Commercial Paper Funding Facility** (CPFF)
    - Purchased highly rated 3-month CP at a penalty rate.
  - **Money Market Investor Funding Facility** (MMIFF)
    - Would have provided loans to purchase assets from money funds. (Never used.)

Funding spreads and Fed lending through December 2008





Excludes central bank liquidity swaps, TSLF, Maiden Lane facilities, secondary credit, and seasonal credit.

TALF

- An additional market that came under pressure in late 2008 was that for asset-backed securities (ABS).
  - These fund a variety of consumer and small-business loans.
  - Disruption of the market could have significantly limited the availability of credit to households and businesses.

- Creation of the **Term Asset-Backed Securities Loan Facility** (TALF) was announced in Nov 2008.
  - Began operations in March, 2009.
  - FRBNY made term loans to holders of highly rated ABS.
  - Loans were over-collateralized and backstopped by Treasury.
  - Asset classes were later expanded to include CMBS and others.

Evidence on the Effects of the Fed's 13(3) Programs

- *Fleming et al. (2011)*:
  - The TSLF narrowed spreads between Treasury and other collateral in the repo market.
- *Duca (2012)*:
  - The CP-related facilities prevented a major decline in CP issuance.
- *Duygan-Bump et al. (2010)*:
  - The AMLF led to a decline in spreads on eligible ABCP.
- *Campbell et al. (2011*):
  - The TALF lowered spreads in the ABS and CMBS markets.

Epilogue:
Winding down and Cleaning up

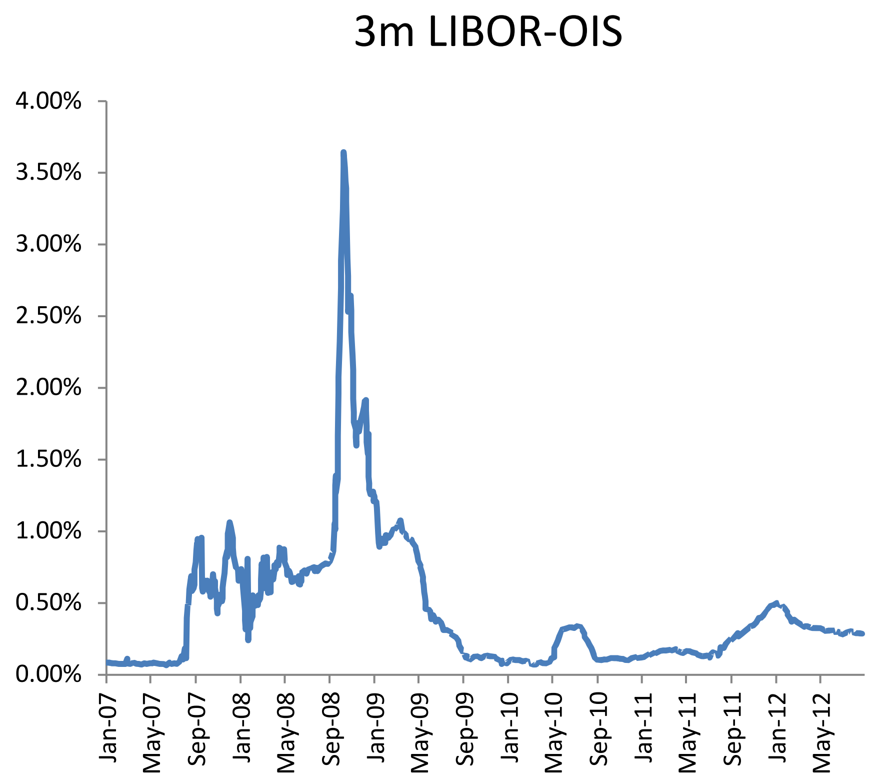
Market stress broadly declined following various policy actions in early 2009 -- especially the “stress test” results in May.

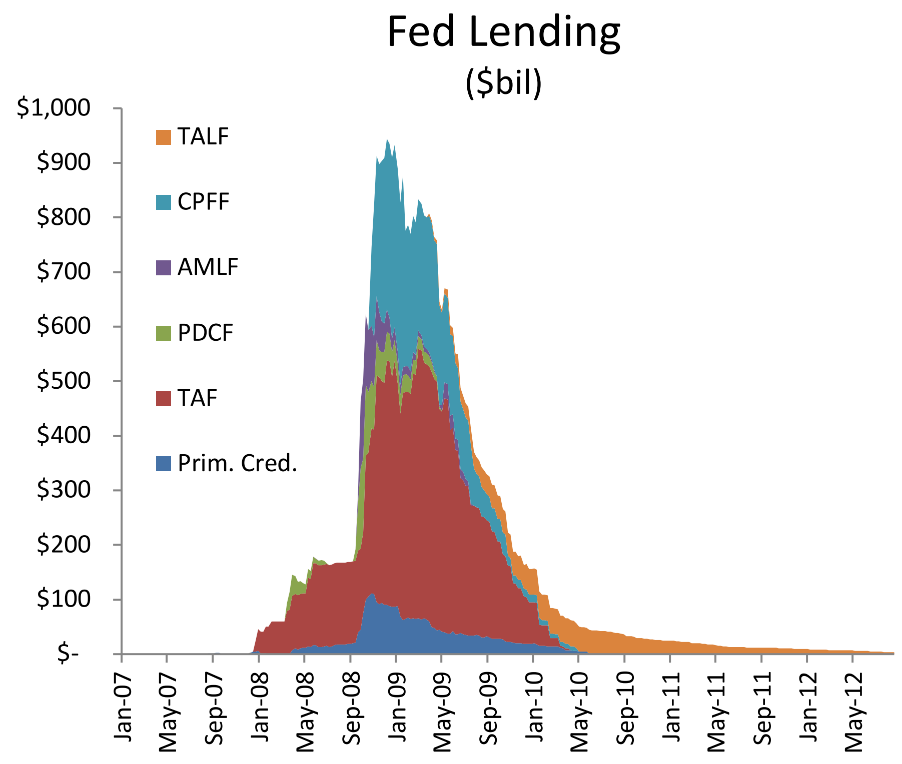
Subsequently, the Fed wound down its facilities:

- TAF and TSLF started scaling back in June 2009.
- MMIFF expired in October 2009.
- PDCF, TSLF, AMLF, and CPFF expired in February 2010.
- Primary credit terms were normalized in early 2010. (Rate is now 75 bp.)
- TALF stopped making loans in 2010 and has about $2 billion left

The Federal Reserve did not experience losses and made money for the taxpayer from these facilities.

Funding spreads and Fed lending through August 2012





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Some changes under the Dodd-Frank Act

- Discount window credit:
  - Reduced reliance on credit ratings
  - Borrowing disclosed after 2 years – implications for stigma?
- Emergency credit:
  - Only broad-based facilities are permitted (unless for financial market utility)
  - Approval of Secretary of the Treasury is required.
  - Collateral must be sufficient to protect taxpayers from losses.
  - Most of the credit facilities established during the crisis would still likely be permissible.

More Information

- Weekly updates on the Fed’s balance sheet in the H.4.1 release:

  http://www.federalreserve.gov/releases/h41/

- Information and data on lending facilities:

  http://www.federalreserve.gov/newsevents/reform_transaction.htm

- Quarterly Fed “Transparency Report”:

  http://www.federalreserve.gov/monetarypolicy/clbsreports.htm

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