The Recent Financial Crisis and the Provision of Liquidity

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Overview

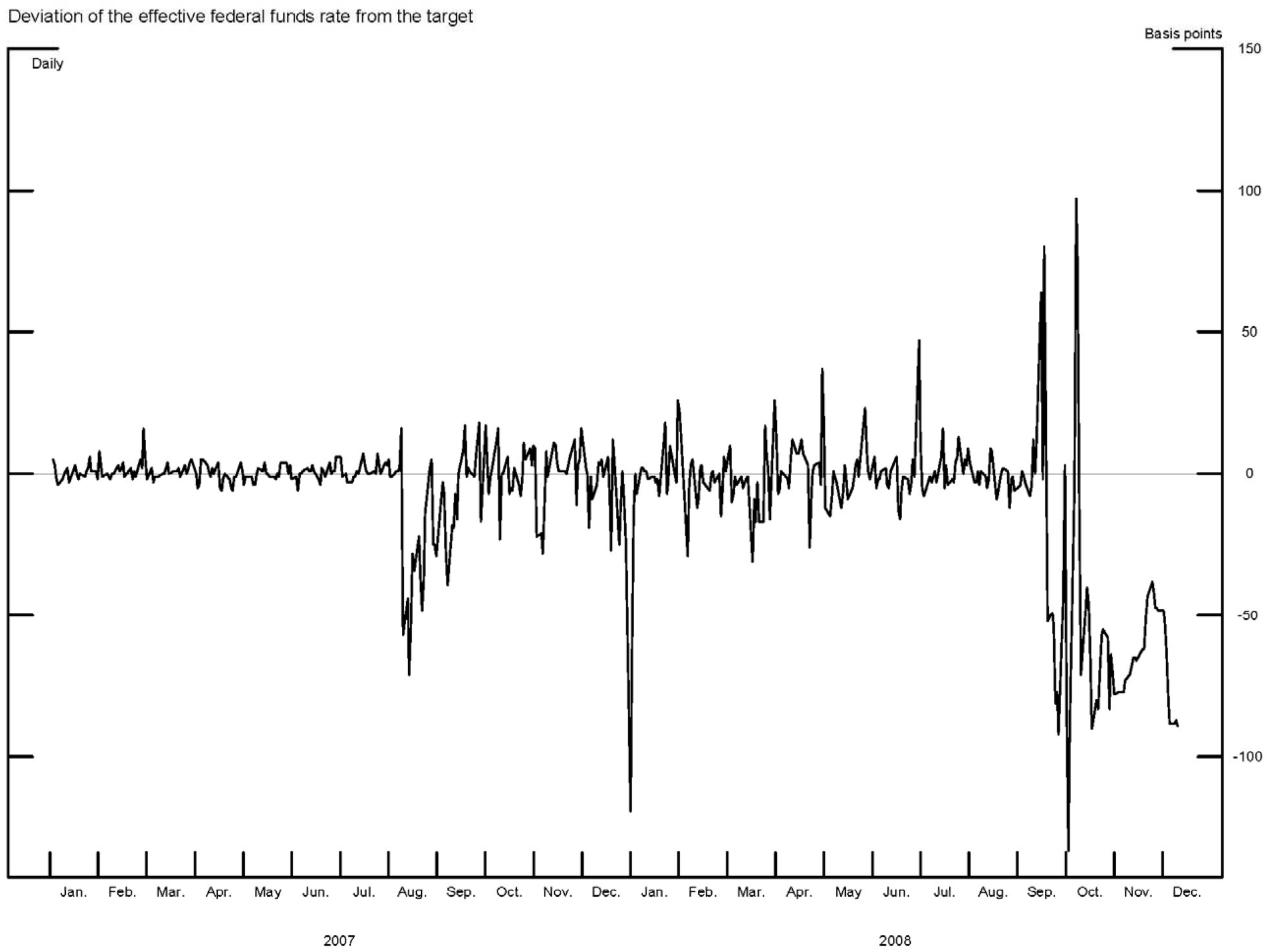
- The current crisis began in August 2007.
- For policy implementation, August 9 was the first important day.
- August 10, the Desk provided an unusually high level of balances to the banking system.
- The effects of the crisis continue and have evolved notably.

Overview

- This presentation will focus on:
  - Interbank funding markets;
  - The repo market; and
  - Federal Reserve liquidity facilities.

Interbank funding markets

- The federal funds market
  - The funds market is primarily an overnight market.
  - Brokered volume is usually between $100 and $120 billion.
  - The effective federal funds rate is a weighted-average of brokered trades.
  - Prior to August, deviations from the target rate were usually a couple basis points and intraday volatility was low.


Deviation of the effective federal funds rate from the target
Daily
Basis points
150
100
50
0
-50
-100
Jan.
Feb.
Mar.
Apr.
May
Jun.
Jul.
Aug.
Sep.
Oct.
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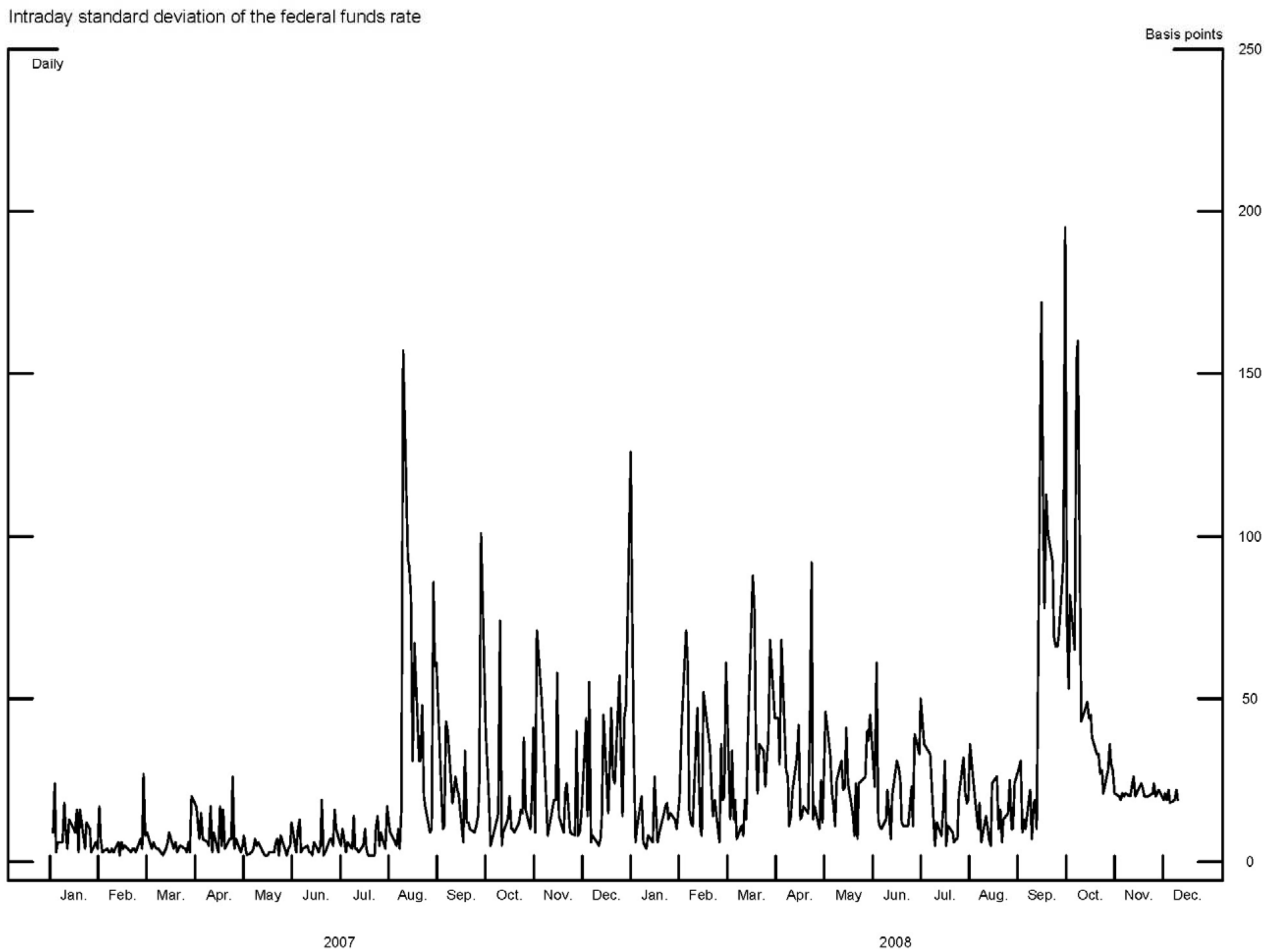

Intraday standard deviation of the federal funds rate
Daily
Basis points
250
200
150
100
50
0
Jan.
Feb.
Mar.
Apr.
May
Jun.
Jul.
Aug.
Sep.
Oct.
Nov.
Dec.
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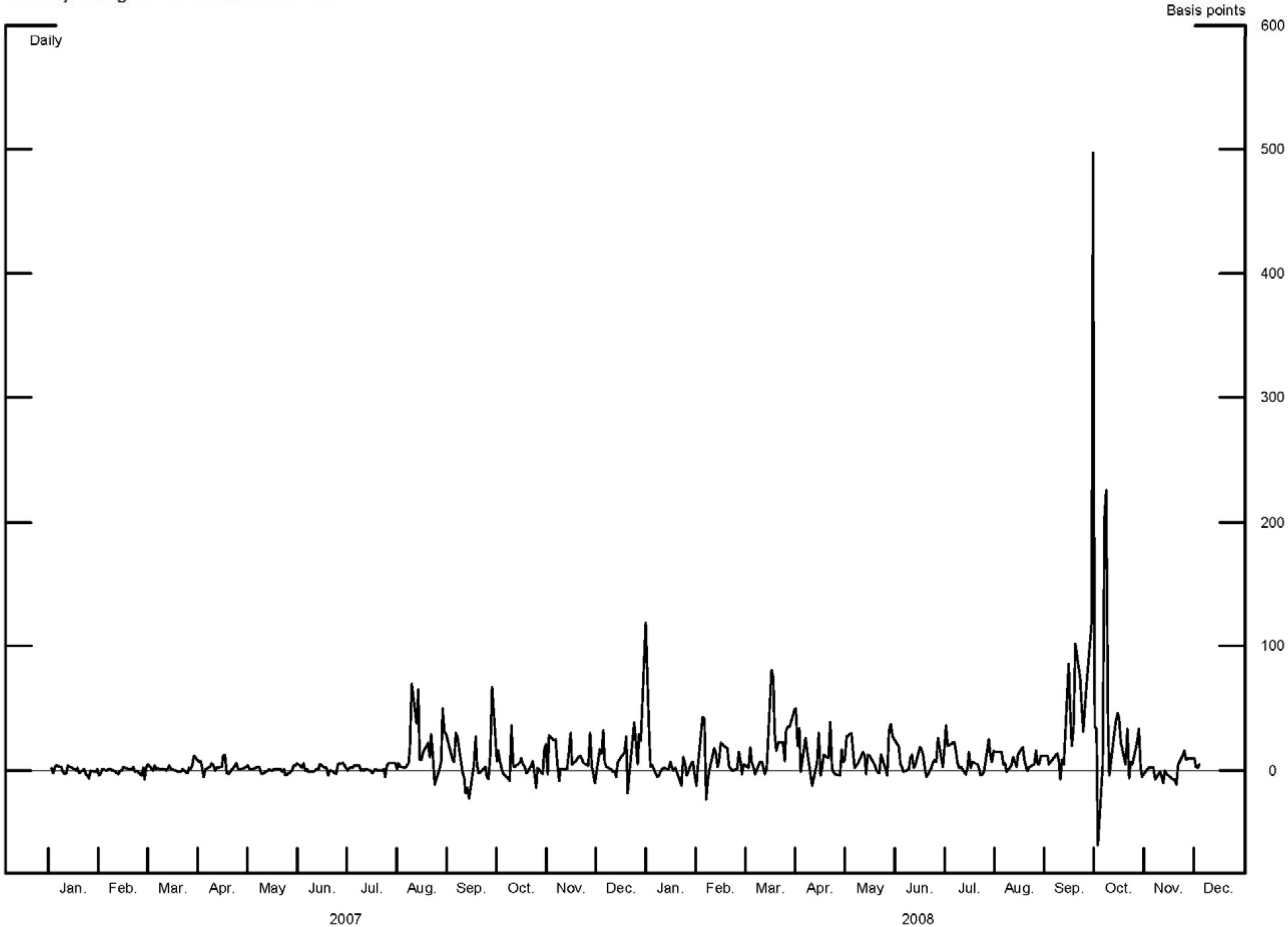
2008

Intraday patterns in the funds market

- After August 2007, the pattern changed.
- Funds tended to trade firm in the morning and then trade off later in the day.
- Reasons for this pattern include:
  - Strong demand by European banks in the morning.
  - Reduced willingness to arbitrage by other banks.

Intraday change in the federal funds rate

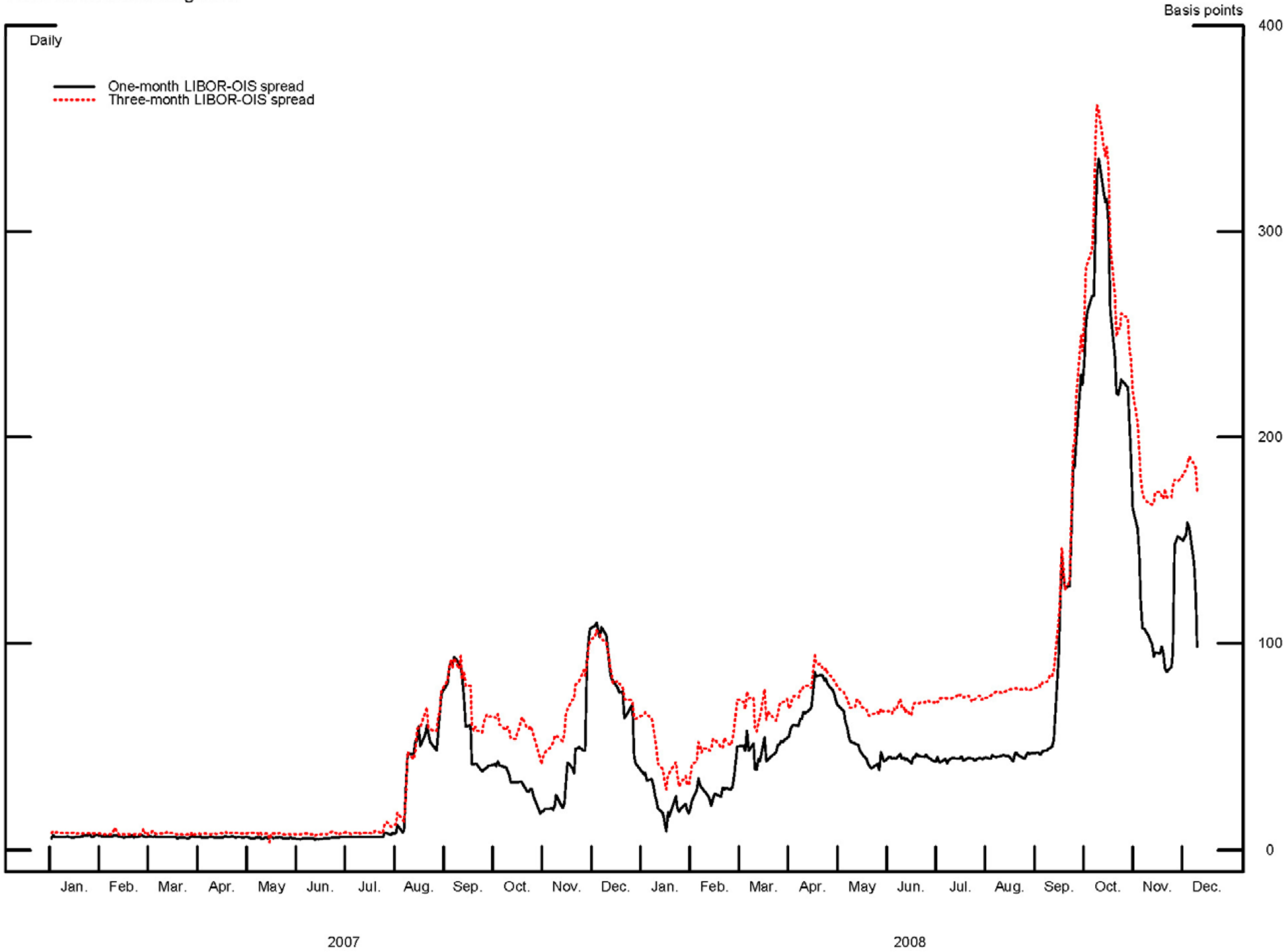


Note. Quoted 9 A.M. federal funds rate less effective federal funds rate

Term interbank funding

- The overnight-indexed swap (OIS) rate is a measure of the expected federal funds rate.
  - No principal is exchanged.
  - Essentially no credit risk or term risk.
- The spread between term Libor and an equivalent maturity OIS rate should reflect term premia from credit and liquidity risk.

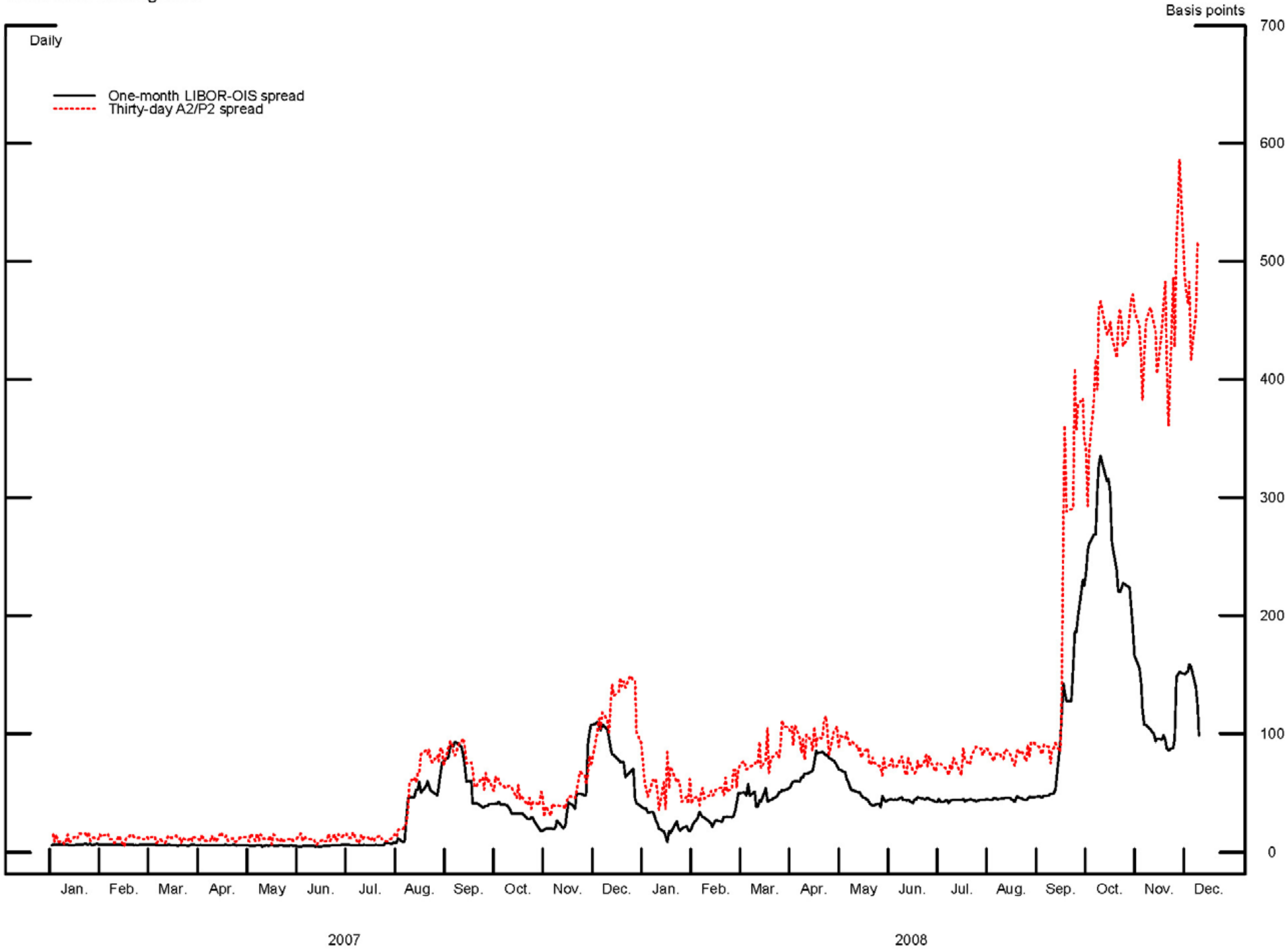
Term interbank funding rates



Bank funding and other markets

- Many banks provide liquidity backstops to the commercial paper market.
- Historically, there has been a tight link between term spreads and credit spreads for commercial paper.

Short-term funding rates

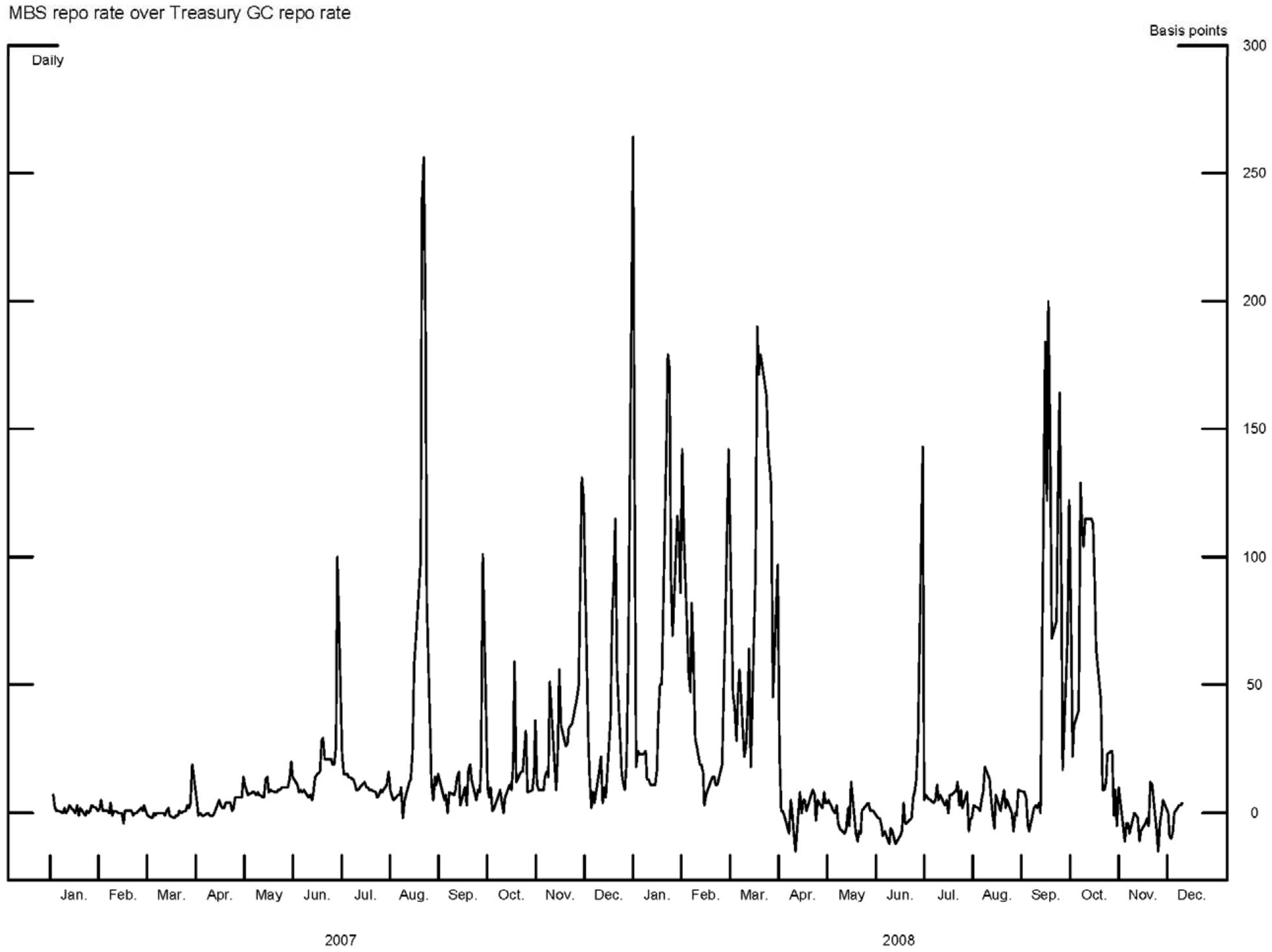


The repo market

- The repo market is a huge money market.
  - Trillions of dollars are traded each day.
  - Securities dealers rely heavily on financing through this market.
  - Large institutional investors lend funds in this market, including hedge funds, pension funds, and money market mutual funds.

The repo market

- In times of stress, Treasury repo rates tend to fall, because demand for safe Treasury securities is stronger.
- Spreads between rates on different collateral can give information into market function and ease or difficulty of financing various types of non-Treasury collateral.


MBS repo rate over Treasury GC repo rate
Daily
Basis points
300
250
200
150
100
50
0
Jan.
Feb.
Mar.
Apr.
May
Jun.
Jul.
Aug.
Sep.
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Oct.
Nov.
Dec.
2007
2008

The repo market

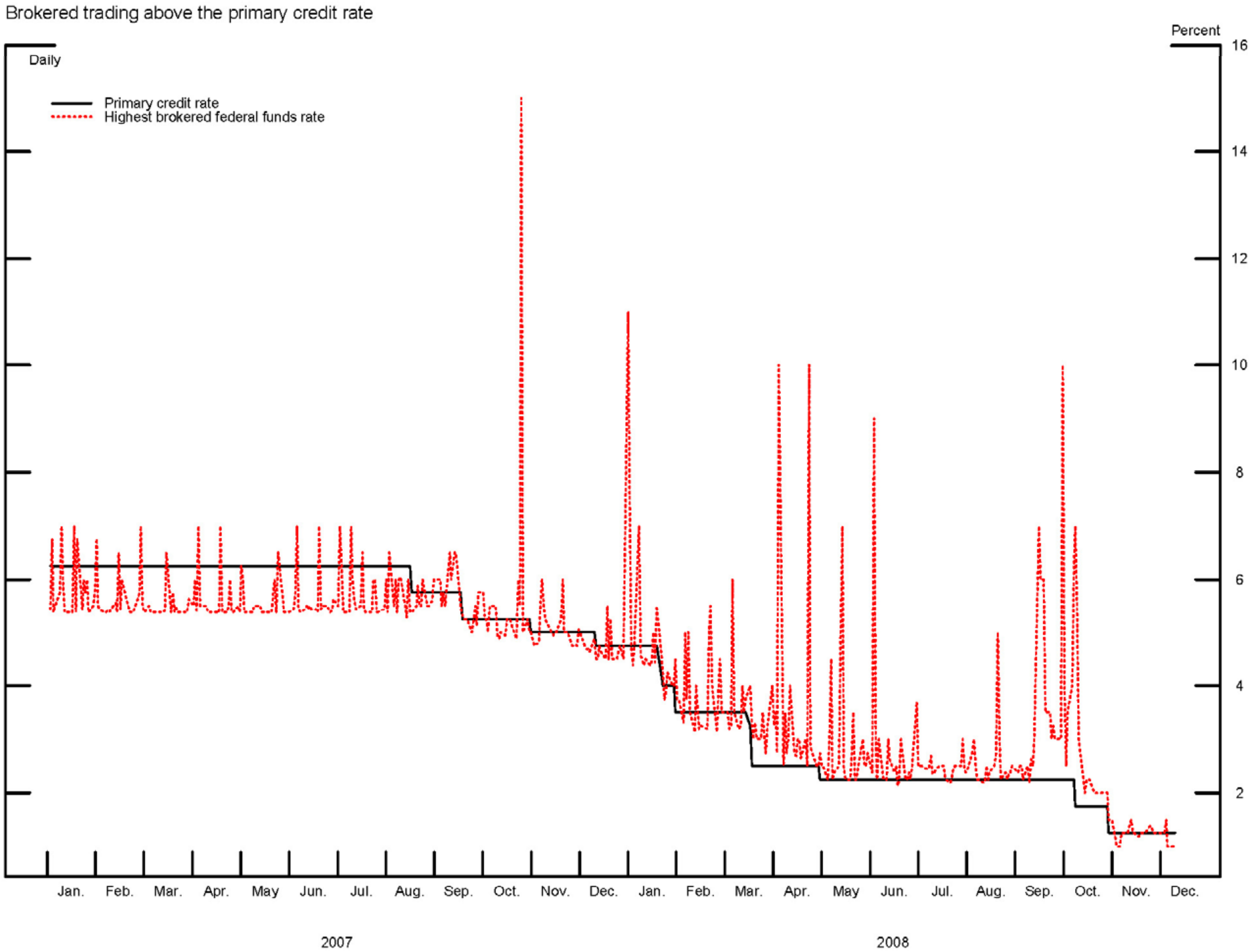
- In addition to rates, “haircuts” are an important aspect of the repo market.
- A haircut is the discounting of the value of the collateral that is required for the trade.
- Less-liquid, lower-quality collateral tend to have larger haircuts.
- Both spreads and haircuts increased in August 2007, and term repo lending became illiquid.

Federal Reserve Liquidity Facilities

- In response to the financial market turmoil, the Federal Reserve created or expanded liquidity facilities to promote market functioning and to reduce systemic risk.
- This paper discuss the facilities in four groups.
  - Discount window credit
  - Broker-dealer credit
  - Currency swaps
  - Broader lending facilities

Federal Reserve Discount Window Lending

- Primary Credit Facility
  - Overnight lending
  - Term lending
- Term Auction Facility (TAF)


Brokered trading above the primary credit rate
Daily
Percent
Primary credit rate
Highest brokered federal funds rate
16
14
12
10
8
6
4
2
Jan.
Feb.
Mar.
Apr.
May
Jun.
Jul.
Aug.
Sep.
Oct.
Nov.
Dec.
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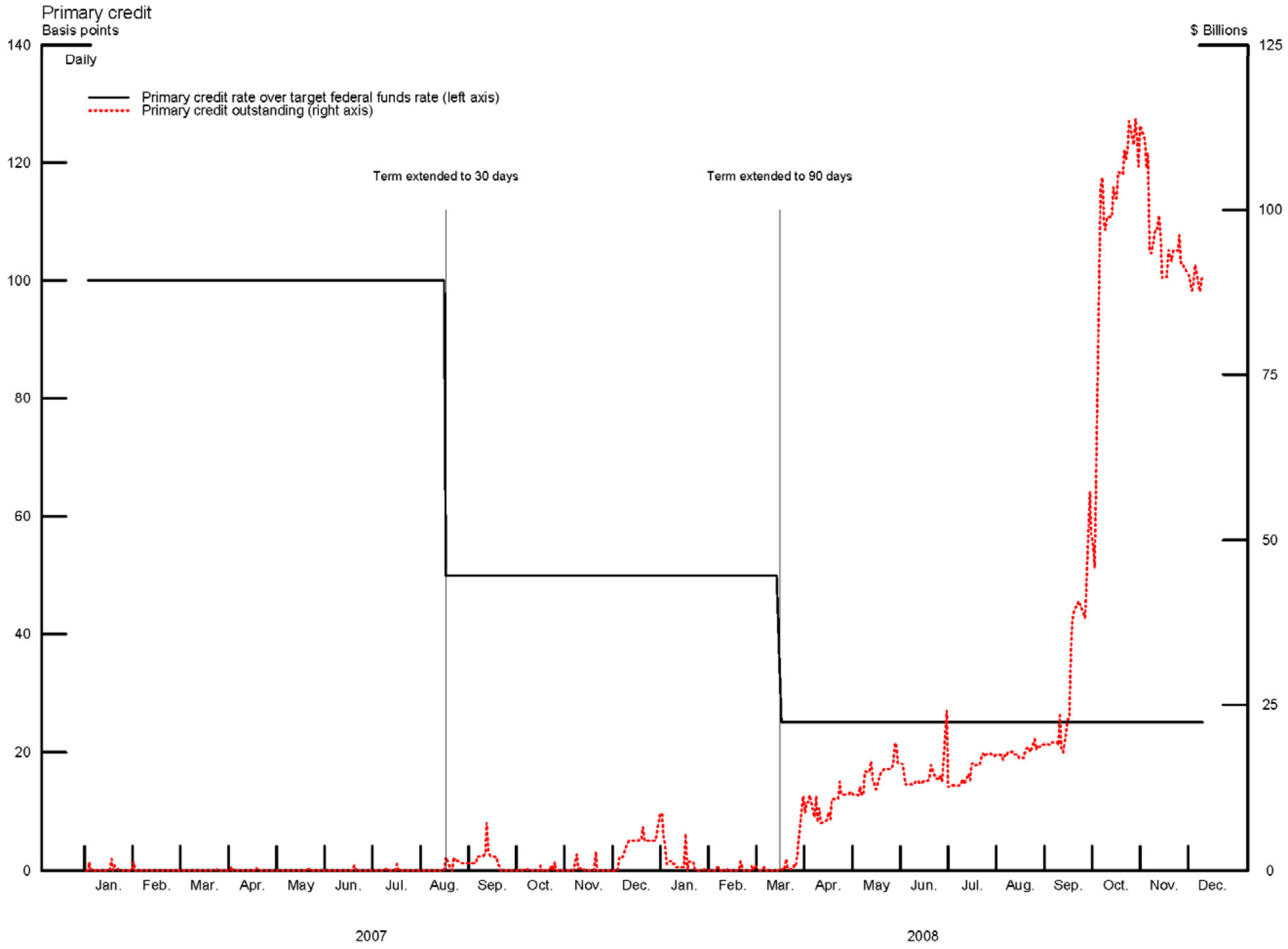
Oct.
Nov.
Dec.
2007
2008

Primary Credit Facility

- Until August, the Primary Credit Rate was 100 basis points over the target federal funds rate.
- In August, the Board lowered the spread to 50 basis points and made loans available for 30 days.
- In March, the Board lowered the spread to 25 basis points and made loans available for 90 days.

Primary Credit Facility

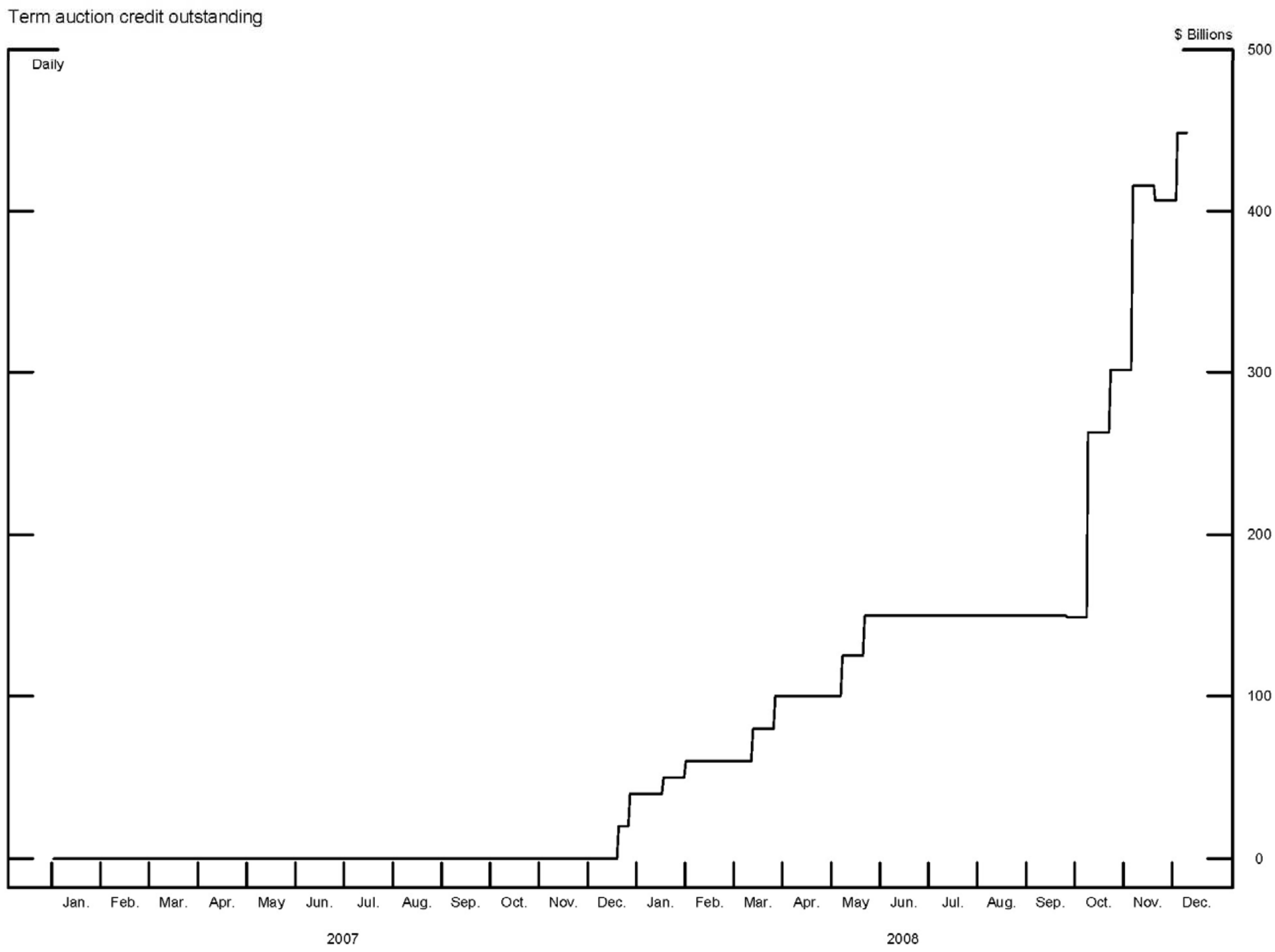
- Following these changes, borrowing from the primary credit facility increased dramatically.
- Presumably, increased demand as well as the easing of terms led to the increase.
- A wide mix of depository institutions have borrowed.



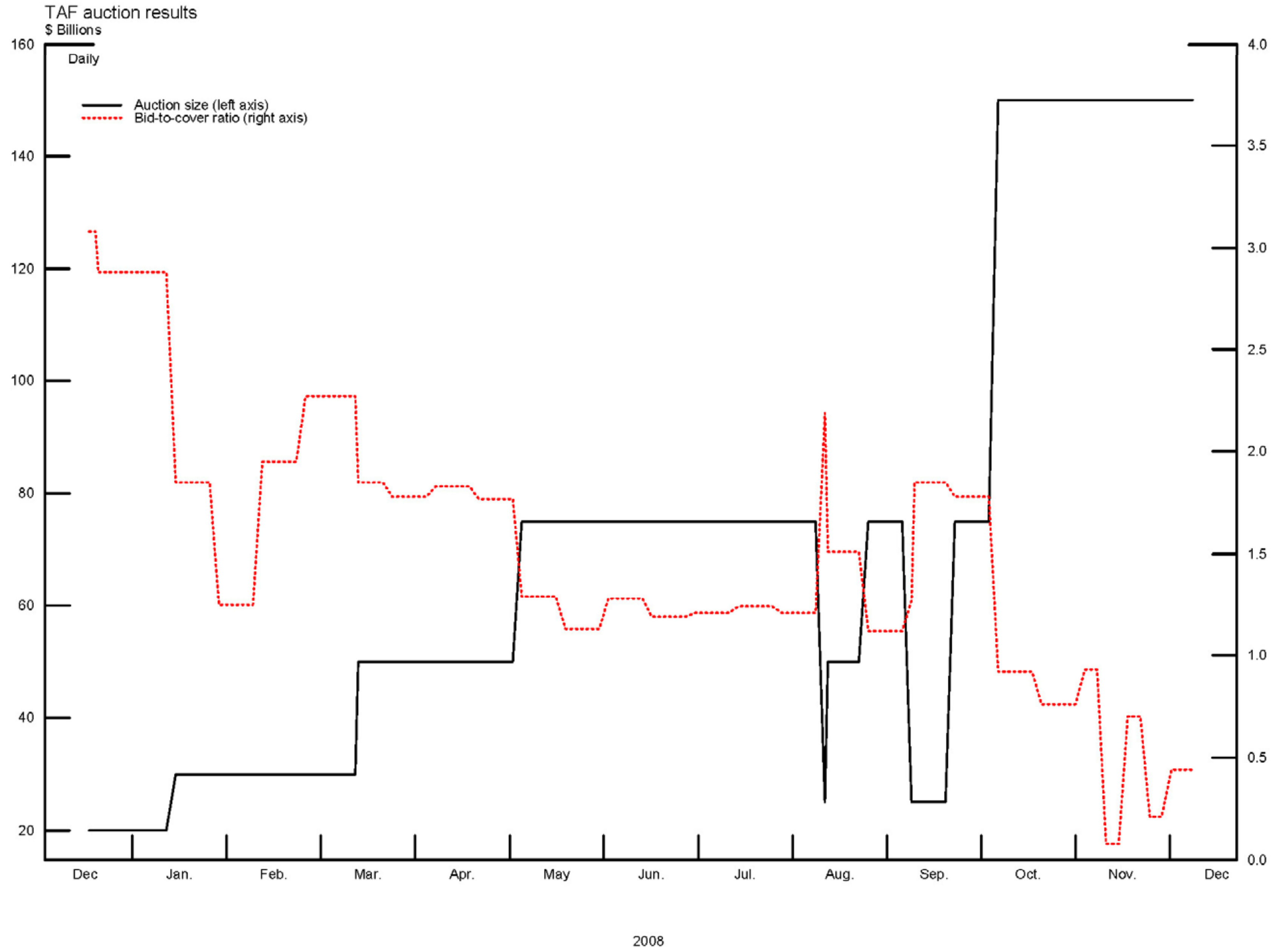
Primary credit
Basis points
Daily
$ Billions
Primary credit rate over target federal funds rate (left axis)
Primary credit outstanding (right axis)
Term extended to 30 days
Term extended to 90 days
140
120
100
80
60
40
20
0
125
100
75
50
25
0
Jan.
Feb.
Mar.
Apr.
May
Jun.
Jul.
Aug.
Sep.
Oct.
Nov.
Dec.
Jan.
Feb.
Mar.
Apr.
May
Jun.
Jul.
Aug.
Sep.
Oct.
Nov.
Dec.
2007
2008

Term Auction Facility

- Created in December 2007.
- Depository institutions are allowed to bid, subject to some restrictions.
  - Minimum bid and minimum bid rate imposed.
  - Maximum bid of 10 percent of total auction.
- To date, there have been 13 auctions.



Term auction credit outstanding
$ Billions
Daily
500
400
300
200
100
0
Jan.
Feb.
Mar.
Apr.
May
Jun.
Jul.
Aug.
Sep.
Oct.
Nov.
Dec.
2007
2008


TAF auction results
$ Billions
Daily
Auction size (left axis)
Bid-to-cover ratio (right axis)
160
140
120
100
80
60
40
20
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Dec
Jan.
Feb.
Mar.
Apr.
May
Jun.
Jul.
Aug.
Sep.
Oct.
Nov.
Dec
2008

Federal Reserve Broker-Dealer Liquidity Provision

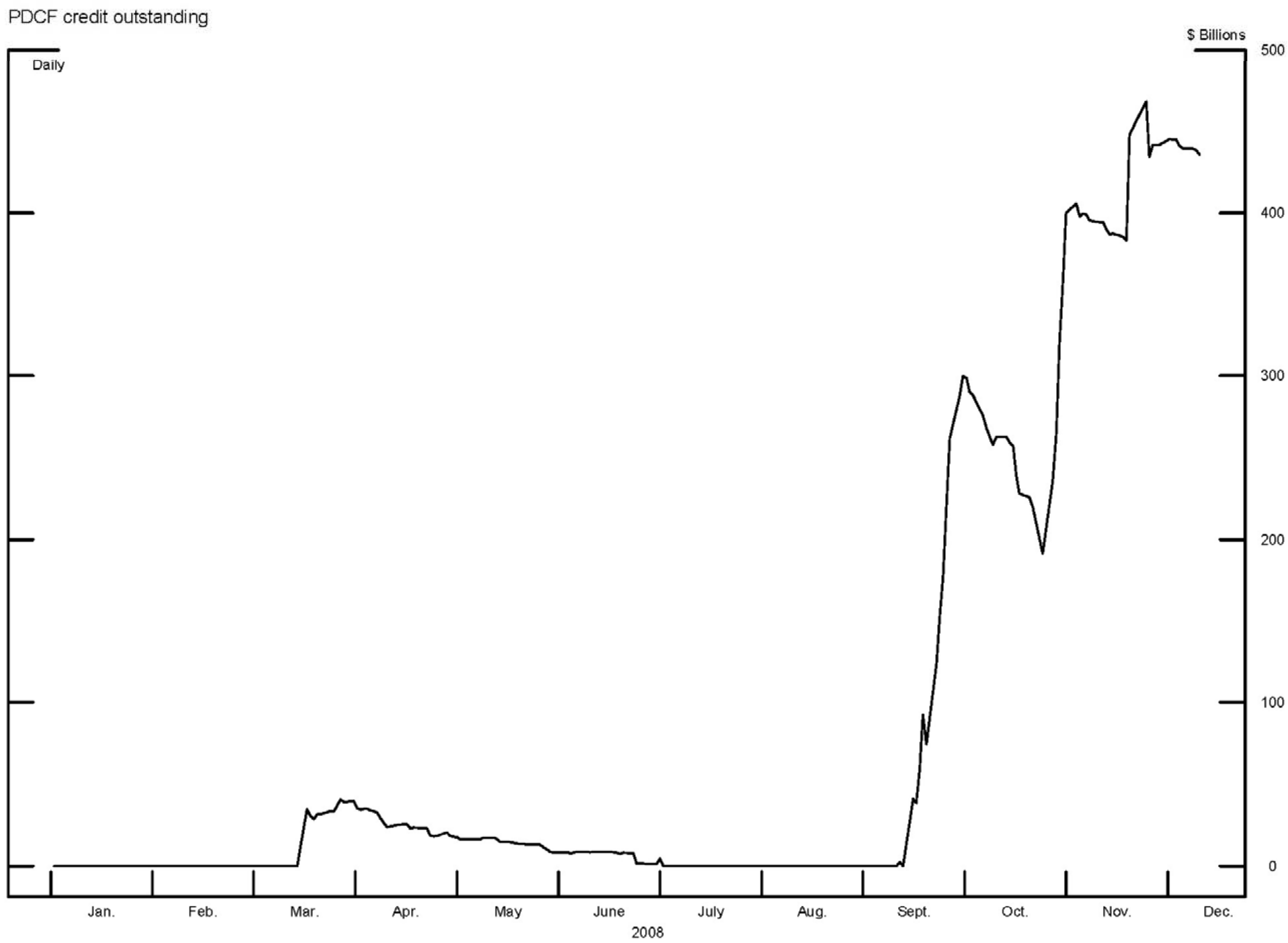
- Primary dealer credit facility (PDCF)
- Securities lending facility
  - Overnight securities lending
  - Term securities lending facility (TSLF)
  - TSLF options
- Single-tranche term repos

Primary Dealer Credit Facility

- Historically, only depository institutions could borrow directly from the Fed.
- The Federal Reserve Act allows the Fed to lend to non-depositories in “unusual and exigent” circumstances.
- In mid-March, one securities dealer experienced severe difficulty.
- The PDCF was created to avoid systemic disruptions.

PDCF

- Primary dealers can borrow directly from the Fed against a somewhat restrictive set of collateral.
- Initially, PDCF borrowing was heavy.
- Borrowing diminished, but erupted again in September.


PDCF credit outstanding
$ Billions
Daily
500
400
300
200
100
0
Jan.
Feb.
Mar.
Apr.
May
June
July
Aug.
Sept.
Oct.
Nov.
Dec.
2008

Term Securities Lending Facility

- Historically, the Fed has lent Treasury securities overnight to address “specialness” in markets.
- In March 2008, the Fed introduced the TSLF auctions.
- Dealers can borrow Treasury securities collateralized by other, less-liquid securities.

TSLF, continued

- TSLF lending has a term of 28 days.
- Auctions are against one of two schedules of collateral.
- Schedule 1 collateral:
  - Treasury securities
  - Agency securities
  - Agency-guaranteed MBS

TSLF, continued

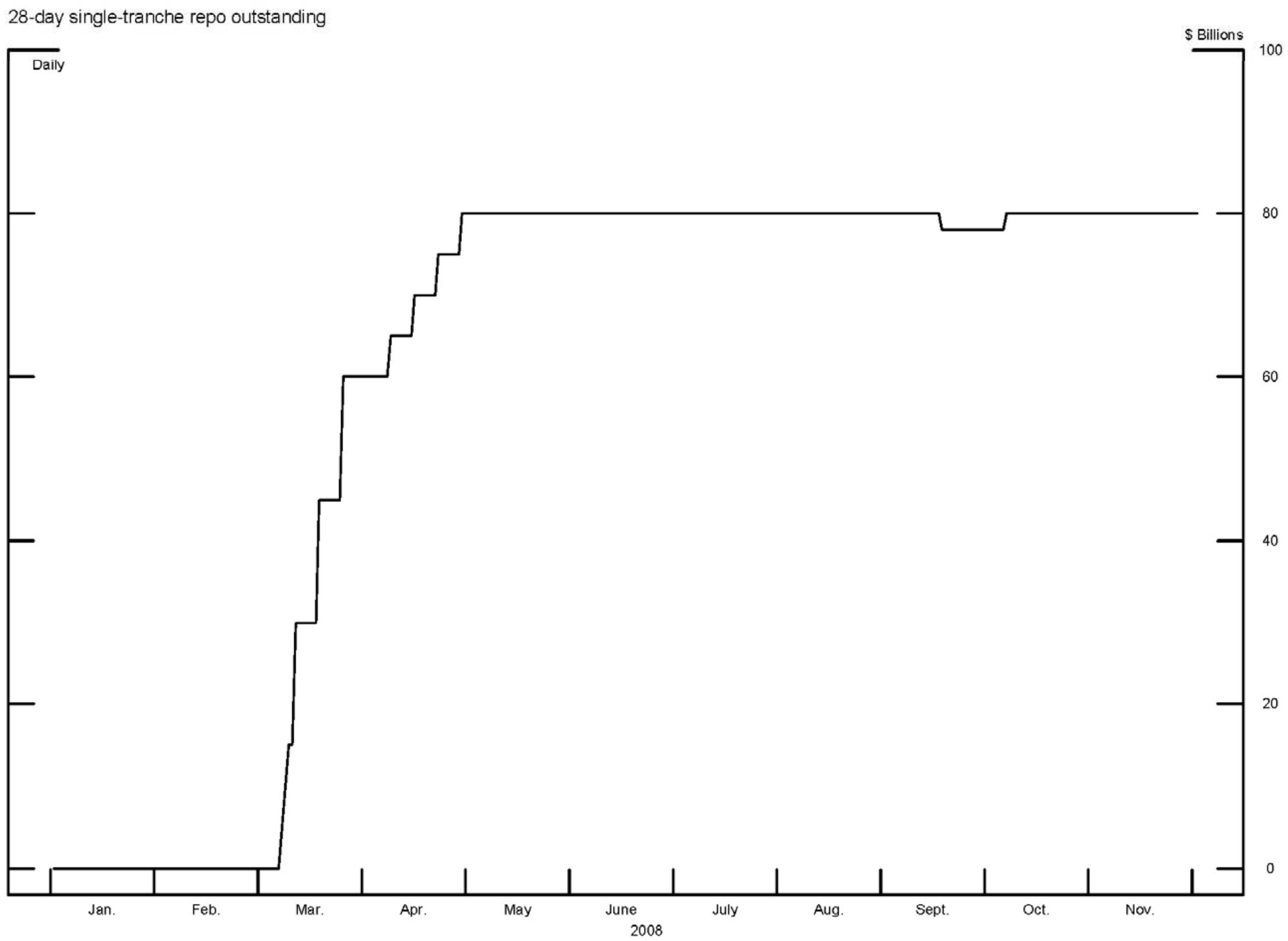
- Schedule 2 collateral
  - Schedule 1 collateral
  - Highly rated, private-label MBS (both commercial and residential)
  - Highly rated, private-label ABS.

Term single-tranche repos

- The Desk conducts open market operations primarily with repos against three types of collateral:
  - Treasury securities,
  - Federal agency securities,
  - Federal-agency-guaranteed MBS
- Awards are made relative to indicative market rates.

Term single-tranche repos

- Most repos for open market operations range from overnight to 14 days.
- In March, the Desk began a series of 28-day repos.
- Dealers were awarded funds based on bids regardless of collateral type.
- Effectively, this shift allowed dealers to finance less-liquid collateral with the Fed and to finance Treasury securities in the market.



28-day single-tranche repo outstanding
Daily
$ Billions
100
80
60
40
20
0
Jan.
Feb.
Mar.
Apr.
May
June
July
Aug.
Sept.
Oct.
Nov.
2008

Currency Swaps

- To address global demand for dollar funding, the Federal Reserve initiated a series of currency swaps with foreign central banks.
- The foreign central banks allocate the credit to banks in their jurisdictions.

Broader lending facilities

- Asset-backed commercial paper money market mutual fund lending facility (AMLF)
- Commercial paper funding facility (CPFF)
- Money market investor funding facility (MMIFF)

AMLF

- The commercial paper market was under considerable strain.
- Money market mutual funds were facing redemptions.
- Banks can borrow from the Fed to buy ABCP from money market mutual funds.

CPFF

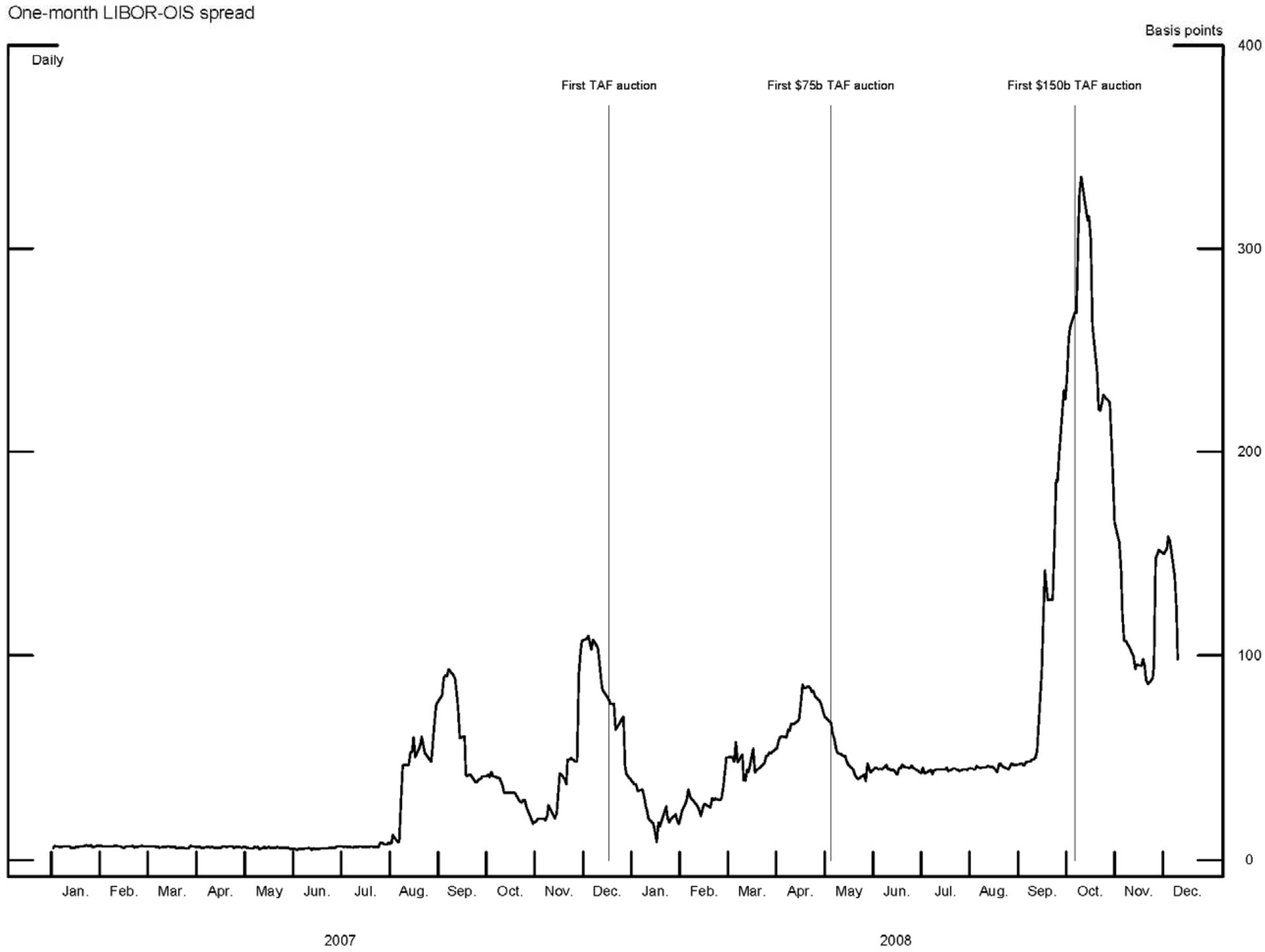
- The AMLF was trying to address two strains, the ABCP market and MMMF redemptions.
- To address the CP market directly, the CPFF was established.
- A special purpose vehicle was created to buy CP to provide a backstop to the market.

MMIFF

- To address continuing strains in money markets 5 SPVs were established.
- These private sector entities can purchase CDs, bank notes, and CP.
- The purpose is to ensure functioning in the secondary market by assuring investors that they will be able to liquidate their positions without a significant loss.

Effects of the Liquidity Facilities

- It is difficult to assess the effect of liquidity facilities.
- The counterfactual outcome is impossible to know.



One-month LIBOR-OIS spread
Daily
Basis points
First TAF auction
First $75b TAF auction
First $150b TAF auction
400
300
200
100
0
Jan. Feb. Mar. Apr. May Jun. Jul. Aug. Sep. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May Jun. Jul. Aug. Sep. Oct. Nov. Dec.
2007
2008

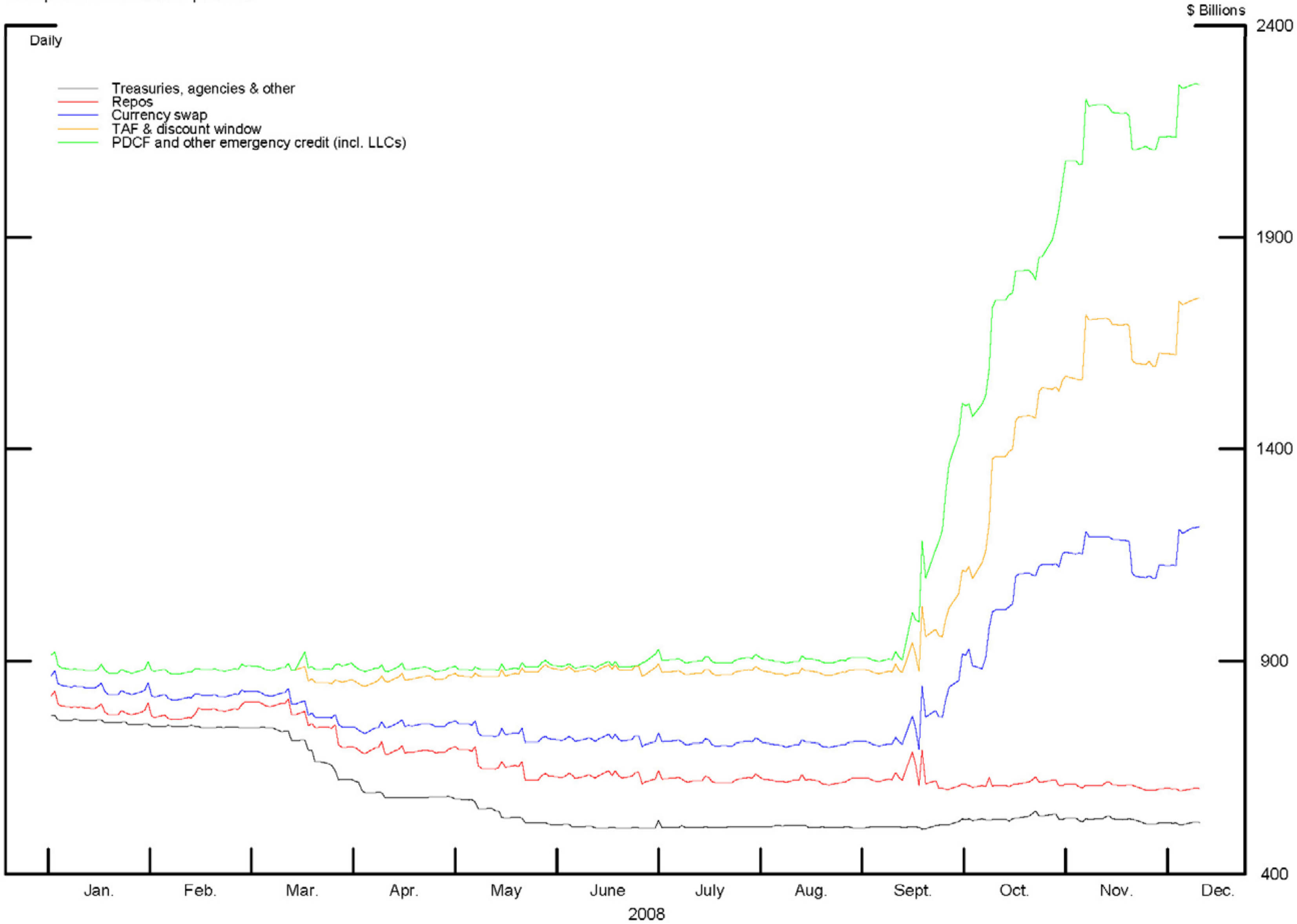
Effects of Liquidity Facilities

- In repo markets, the effect has been more dramatic, but imperfect.
- Availability of Treasury securities is much higher.
  - The Fed has sold Treasuries.
  - TSLF and the Treasury issuing debt have also increased availability.
  - PDCF and the single-tranche repo book have assured financing for dealers.

Effects of Liquidity Facilities

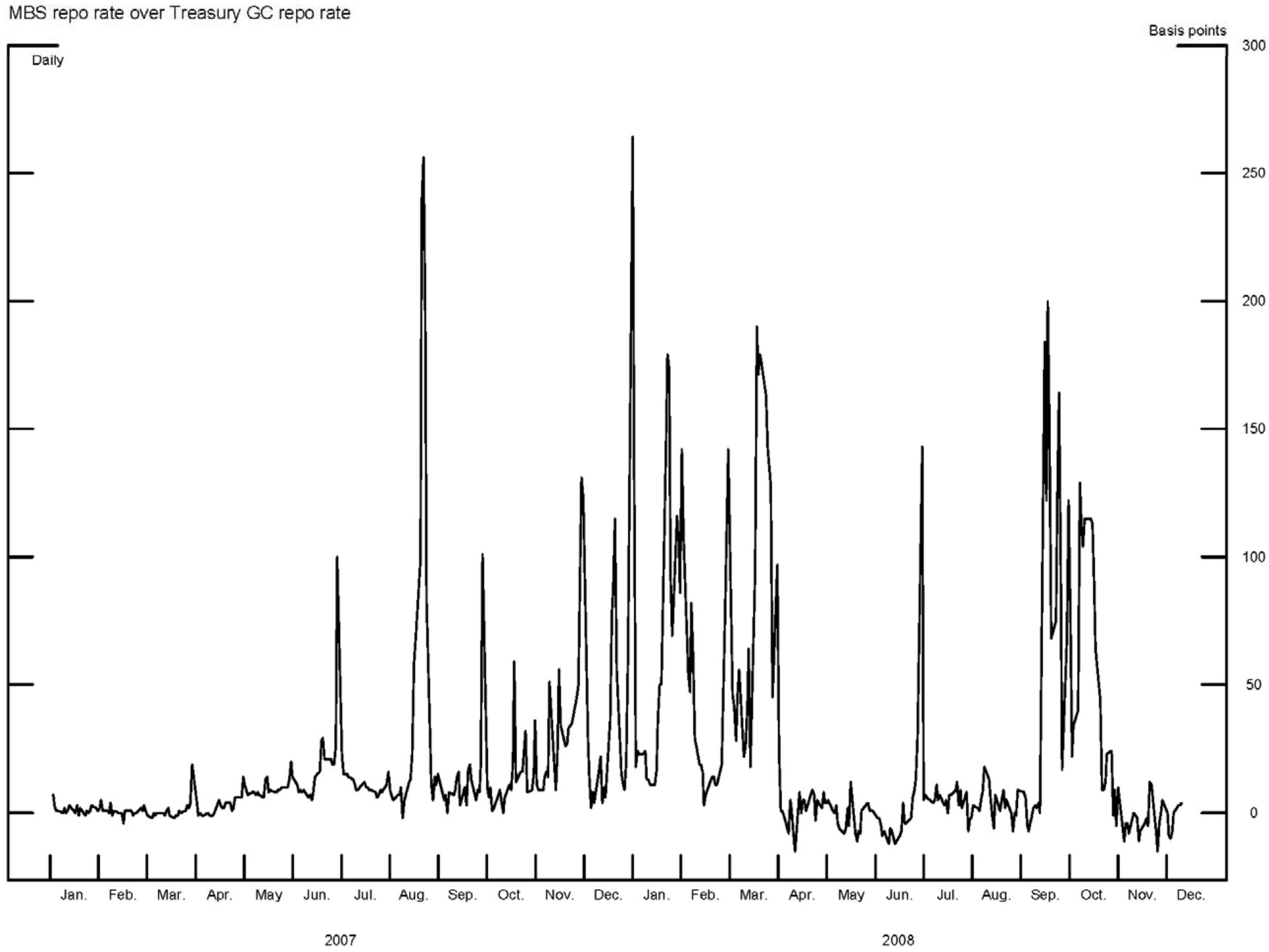
- Many of the facilities provided balances to depository institutions.
- All other things equal, these additional balances would cause the federal funds rate to fall well below the target.
- The Desk has not been able to redeem or sell sufficient quantities of Treasury securities to push the funds rate up to the target.

Composition of SOMA portfolio



Effects of Liquidity Facilities

- Repo spreads narrowed significantly, but blew out again.
- The increased availability of Treasury securities pushed up Treasury repo rates.
- The improved market functioning reduced rates on other collateral.
- The general fall in short-term rates combined with various guarantees has led to some improvement.


MBS repo rate over Treasury GC repo rate
Daily
Basis points
300
250
200
150
100
50
0
Jan.
Feb.
Mar.
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2007
2008

Thank you