FEDERAL RESERVE BANK *of* NEW YORK

Implementing Monetary Policy – Short-term Money Markets Monitoring

Domestic Money Markets, FRBNY

September 29, 2015

Agenda – Short-term Money Markets

I. Unsecured money markets
   i. Federal Funds / Eurodollars
   ii. Commercial Paper / Certificates of Deposit
II. Secured money markets - General Collateral (GC) repo
   i. Temporary Open Market Operations (TOMO)
III. U.S. Money Market Mutual Funds (MMMF)
IV. Risk Outlook

Useful abbreviations:

EFFR – Effective fed funds rate

FBO – Foreign banking organization

GSE – Government Sponsored Enterprises (Fannie Mae, Freddie Mac, Farmer Mac, Federal Home Loan Banks [FHLB])

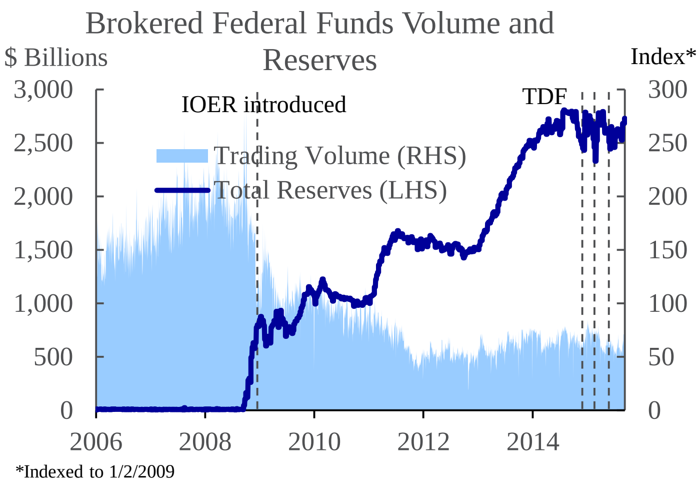
IOER – Interest on Excess Reserves

Short-term Wholesale Funding Markets

- Short-term wholesale funding markets provide financial intermediaries with funds that supplement retail deposits and long-term debt issuance.
- Motivations to borrow in funding markets:
  - To finance assets
  - To meet liquidity needs
  - Earn a spread by lending borrowed funds at a higher rate or depositing proceeds at the Fed (e.g. fed funds “IOER arbitrage” trades)
- Who lends in funding markets?
  - Institutions seeking returns on their cash positions (e.g. banks, GSEs, MMMFs, Securities Lenders, central banks, supranational)
- Transactions can be secured or unsecured
- Money market rates can reflect marginal borrowing costs, influence yields on longer-term assets (e.g. Treasury yields)

Federal Funds

- What are Federal Funds?
  - Unsecured loans of reserve balances at Federal Reserve Banks of eligible institutions
  - Governed by the Board of Governors of the Federal Reserve System's Regulation D (imposes reserve requirements on depository institutions)
  - In the current environment of increased excess reserve, the primary reason to borrow funds is to leave balances at the Fed for liquidity buffers and IOER
- Market Participants
  - Depository Institutions, Banks, Thrifts Eligible to **Lend**, **Borrow**, and receive **IOER**
  - Agencies and branches of foreign banks in the U.S. eligible to **Lend**, **Borrow**, and receive **IOER**
  - Federal Agencies (GSEs) Eligible to **Lend**
  - Government Security Dealers Eligible to **Lend**



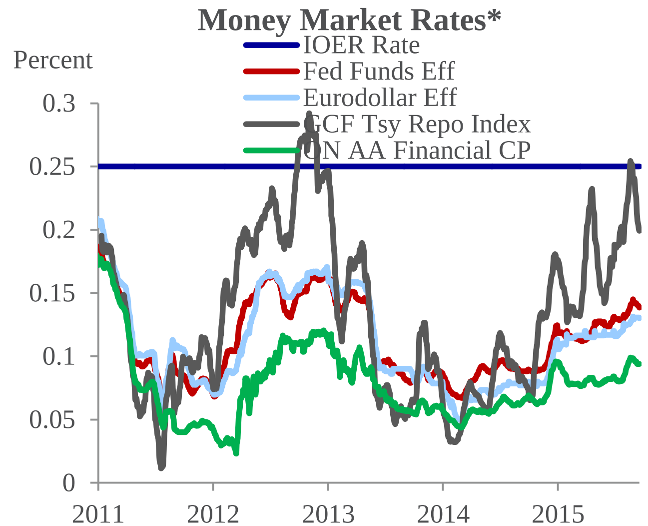
Is the fed funds rate representative of money market rates?

- Broadly in line with other money market rates, though secured and unsecured rates at times have diverged
- April/May 2013 FOMC Minutes:

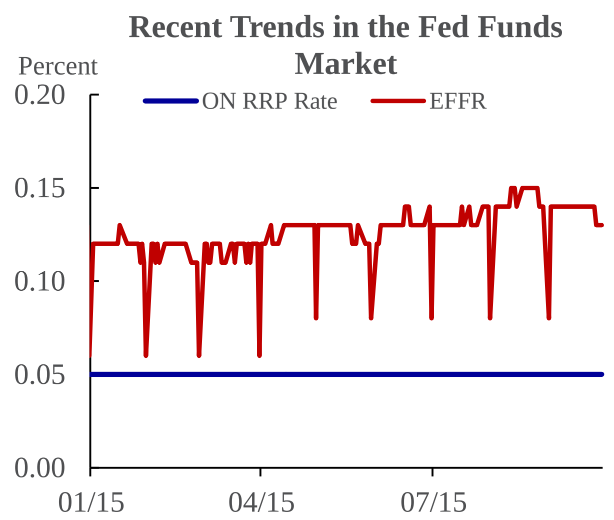
Several participants raised the possibility that the "**federal funds rate might not, in the future, be the best indicator of the general level of short-term interest rates**…"

- July 2014 FOMC Minutes:

"Almost all participants agreed that it would be appropriate to **retain the federal funds rate as the key policy rate**, and they support continuing to target a range of 25 basis points for this rate at the time of liftoff and for some time thereafter."



Source: Bloomberg, Wrightson; * 20-day moving average



Source: Bloomberg

Collection of Money Market Rates

- FRBNY and FR Board began new data collection: the *Report of Selected Money Market Rates* (FR 2420)
  - Since April 2014, daily transaction is collected on federal funds, Eurodollar time deposits, and certificates of deposit (CDs) of all tenors
  - Data collection covers U.S. depository institutions with total assets of $26 billion or more, and U.S. branches and agencies of foreign banks with third party assets of $900 million or more
  - Accounts for approximately 80 percent of total fed funds outstanding
  - Banks required to report by 7:00 am on the day after execution
- Data fields include:

All Product Types	Additionally for CDs
Volumes	Fixed or floating rate
Rates	Reset period
Maturity date	Reference rate
	Negotiable or non-negotiable

CD Data is reported with a 2-day lag; Fed funds and Eurodollar time deposits are reported with a 1-day lag.

Money Markets Rate Data for Market Monitoring

- FR 2420 data is expected to improve our ability to monitor money market conditions
  - Allows the Federal Reserve to collect both brokered and direct as well as term fed funds, Eurodollar time deposit transactions, and large CDs
- Enhanced data allow more flexibility
  - Allows for more expansive view into money market functioning
  - May be helpful for compliance with emerging financial benchmark best practices
  - Flexibility in considering broad-based unsecured funding rates for policy purposes

Changes to the Calculation of Money Market Rates

- On February 2, 2015, the New York Fed announced[1]:
  - intention to transition the source of the data used to calculate the effective fed fund rate from the major fed funds brokers to the FR 2420 data collection; and
  - expectations to begin publishing an overnight bank funding rate (OBFR) that is calculated using FR 2420-reported transactions in both federal funds and Eurodollars.
- Liberty Street Economics blog: The FR 2420 Data Collection: A New Base for the Fed Funds Rate[2].
- Liberty Street Economics blog: The Eurodollar Market in the United States[3].

[1]http://www.newyorkfed.org/markets/opolicy/operating_policy_150202.html
[2]http://libertystreeteconomics.newyorkfed.org/2015/04/the-fr-2420-data-collection-a-new-base-for-the-fed-funds-rate.html
[3]http://libertystreeteconomics.newyorkfed.org/2015/05/the-eurodollar-market-in-the-united-states.html#.Vfv-4_n9xtA

Revisions to FR 2420

- Revisions are underway to expand and enhance the data collection effort
  - Refine fed funds definition to align with Regulation D
  - Expand Eurodollar collection
  - Add data fields such as country where Eurodollar transactions are booked and counterparty type
- Reporters will begin submitting revised data on October 20th, 2015
  - Federal Register Notice was published in April 2015
  - Public Comment Period ended in June 2015
    - Commentary focused on implementation date and 7am reporting deadline

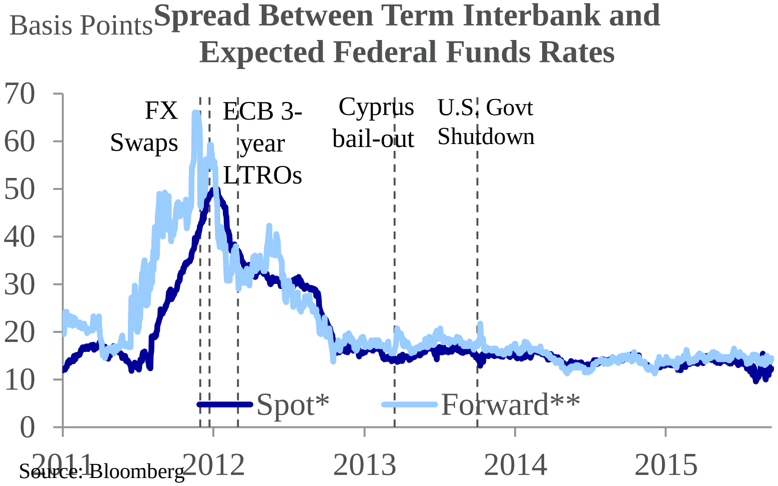
Offshore U.S. Dollar Funding

Related markets:

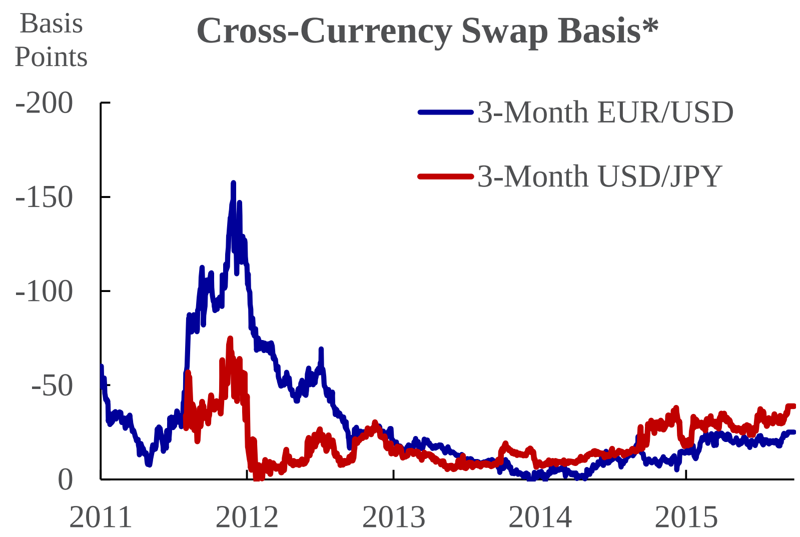
- **Eurodollar deposits**: USD deposits in a bank or bank branch outside the U.S.
- **FX Swaps**: Essentially a repo transaction with currency as collateral.

Funding metrics:

- **LIBOR**: Benchmark for the average rate at which a leading bank can obtain unsecured funding in the London market.
- **LIBOR-OIS**: spread between LIBOR and the Overnight Indexed Swap (OIS). Used to quantify stress in the interbank market, removes policy rate component from LIBOR rates, and therefore represents counterparty credit risk.
- **FRA-OIS**: Market expectations for LIBOR-OIS.
- **FX Swap Basis**: The basis is the premium paid by international institutions to obtain dollars in the FX swap market.



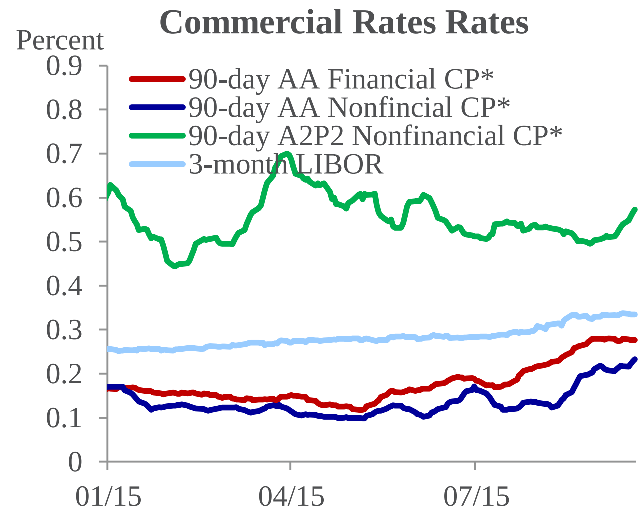
Source: Bloomberg
*3-month LIBOR less 3-month overnight index swap (OIS); ** 3-month Forward Rate Agreement (FRA) less 3-month OIS three months forward (3x6 FRA-OIS spread)



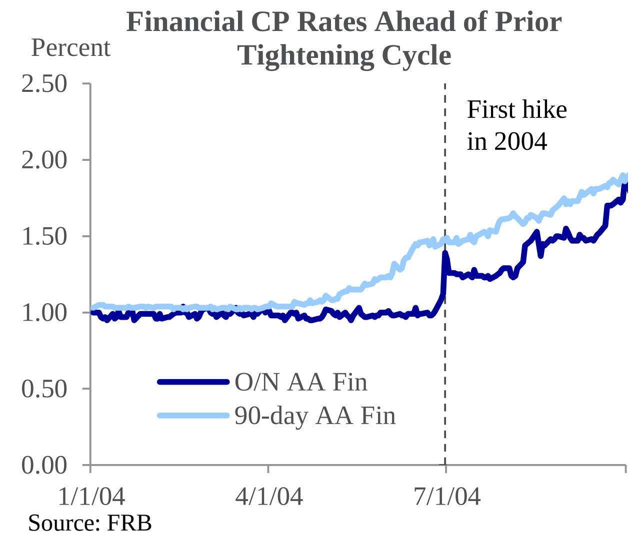
* Sign of change inverted so widening indicates higher cost of swapping currencies to USD.
Source: Bloomberg

Commercial Paper/Certificates of Deposit

- Financial commercial paper (CP) outstanding balances have increased earlier in the year, but most recently remained steady.
- CP curve steepened in line with market expectations for Fed policy tightening, similar to the trend observed ahead of the liftoff in the last tightening cycle.
- Rates on lower-rated (A2/P2) nonfinancial CP reached their highest levels in more than two years.



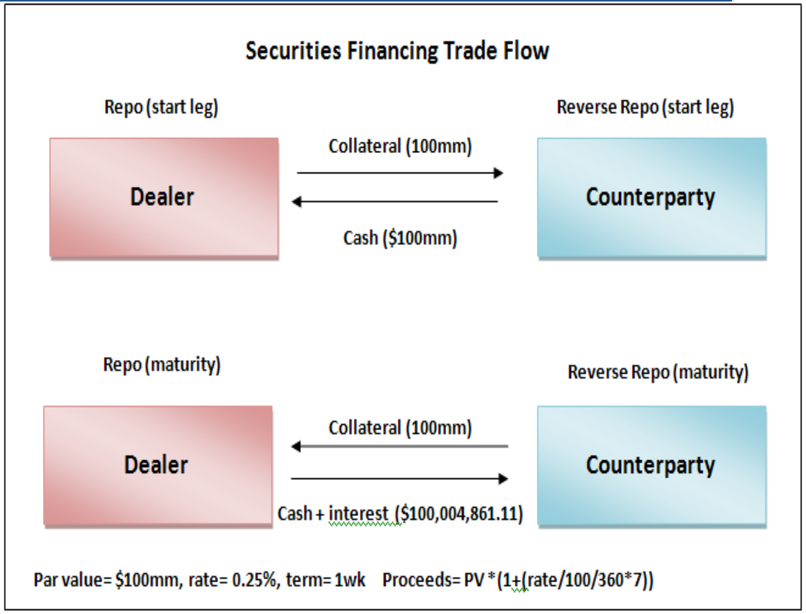
Source: FRB, Bloomberg; *10-day moving average

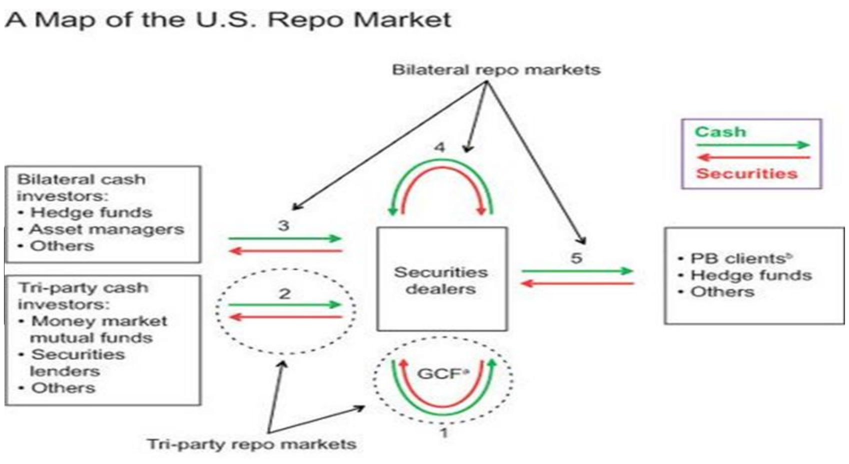


Source: FRB

Repurchase Agreement (Repo)

- What is repo?
  - Economically similar to a collateralized loan
  - Primary mechanism for temporarily adding or draining reserves – indirectly affect fed funds rates
- Tri-party vs. DVP
  - Securities dealers finance positions, intermediate cash and securities flows (matched-book)
  - Tri-party: Settle through Clearing Banks
  - DVP: OTC, settle bilaterally





[a] General Collateral Finance Repo.
[b] Prime brokerage clients.

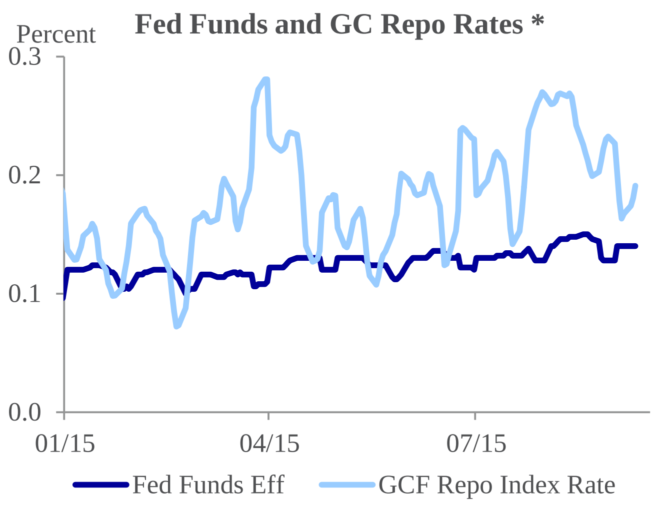
General Collateral (GC) Repo Market Trends

GC repo rates for Open Market Operations (OMO)-eligible collateral are highly dependent on calendar date and collateral settlement dynamics

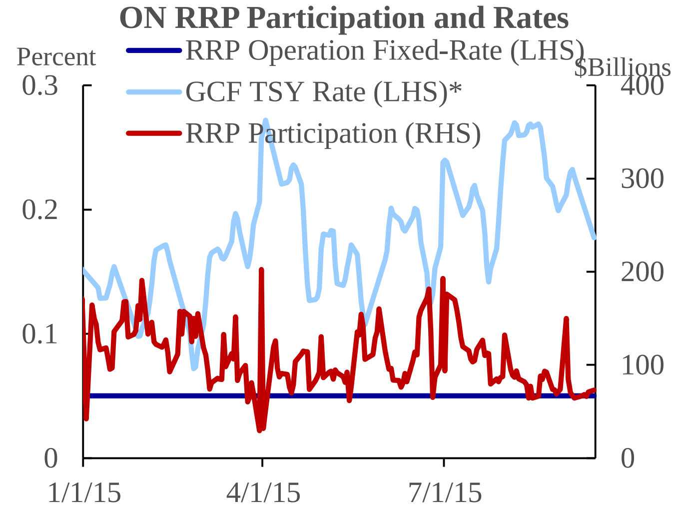
- Example: Treasury repo rates firm (increase) on settlement dates, soften on quarter-ends, as balance sheet constraints create collateral scarcity. Rates also rise

GCF repo rates have been elevated during 2015 amid increased volatility, particularly near reporting dates

- Stricter regulations and associated risk controls were named as the main drivers behind the recent dynamic in the GCF market.



Source: FRBNY, Bloomberg; *5-day moving average



Source: Bloomberg; *5-day moving average

Temporary Open Market Operations (TOMO)

- First mention of fixed-rate, full-allotment (FRFA) overnight reverse repurchase agreement (RRP) facility in minutes from July 2013 FOMC meeting
- September 20, 2013 Statement Regarding Overnight Fixed-Rate Reverse Repurchase Agreement Operational Exercise
  - FOMC authorized the Desk to conduct a series of daily overnight, fixed-rate RRP operations beginning the week of September 23, 2013 and potentially extending through January 29, 2014.
  - Following the January FOMC meeting, the authorization to conduct this exercise was extended.

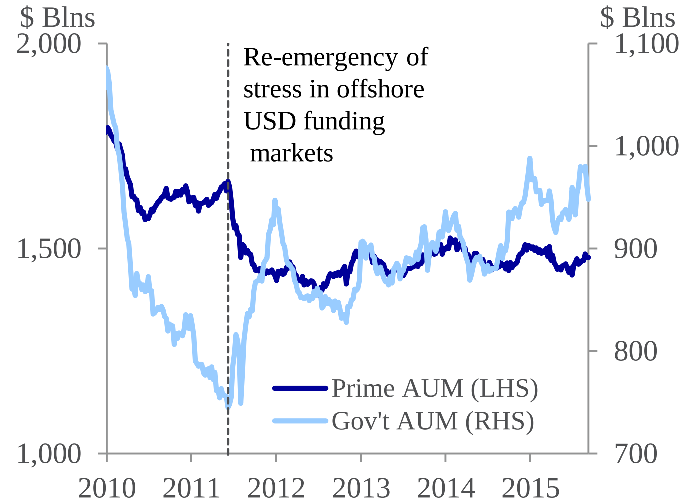
Money Market Funds Behavior

- Prime money market funds (MMFs) are active investors in secured and unsecured markets. As of 8/31/15, 60 percent of prime MMF AUM was invested in CDs, unsecured CP, and repo.
- MMF are most vulnerable to a tightening of available short-term investment opportunities on quarter-ends.
  - Quarter-end balance sheet reduction by foreign banks and primary dealers results in a harp decrease in activity in the overnight funding markets.
  - Regulatory reforms, including Basel III Leverage Ratio and intermediate holding company (IHC) reporting requirements contributed to reduction in foreign bank borrowings.
  - MMMF demand in O/N RRP operation increases on quarter-ends. This is particularly the case for prime funds as their private investment opportunities are drastically reduced.

Money Market Funds Reform

- On July 23, 2014 the SEC voted to adopt further amendments to Rule 2a-7, which governs MMMFs under the Investment Company Act. The reforms were designed, in part, to reduce MMMFs' susceptibility to destabilizing runs by investors.
- The two principal amendments to Rule 2a-7 require certain types of funds (1) to transact at a floating net asset value (NAV) per share, and (2) allow, under certain conditions, a fund to impose liquidity fees or redemption gates, subject to the fund's board of directors.
- Changes will go into effect after a two-year implementation period. Full compliance with new SEC rules required by October 2016.
- Some MMF shareholders have a strong preference for a stable NAV, and aversion to fees and gates.

MMMF Assets Under Management



Source: iMoneyNet

Money Market Funds Reform

- MMF complexes are starting to respond to SEC reforms by adjusting their product offerings, including fund conversions
  - E.g. Fidelity converting $114 bln. prime retail fund (Fidelity Cash Reserves)
- To date, MMF complexes announced about $140 billion in MMF AUM converting from prime to government
- Status of prime funds representing $850 billion in AUM has not been determined yet
- Market expectations for MMF reallocations are varied
  - Anecdotally, some market participants expecting total shift of up to $750 billion

Expected Outflows from Prime Funds (% of respondents)

	\$0 - \$100 bln	\$100 - \$200 bln	\$200 - \$400 bln	>\$400 bln
Institutional prime	4%	14%	50%	32%
Retail prime	49%	33%	11%	7%

Survey received 247 investor responses.

Source: Citi Money Market Industry Survey.

Risk Outlook

- Implementation of SEC Rule 2a-7 reform governing MMMFs
- Regulatory changes, e.g. Basel III, Dodd-Frank legislation (LCR, NSFR, SLR, LR)
- Tri-party reform
- Policy expectations, i.e. interest rates outlook, use of monetary polity tools