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Research

The Decline in Financial Market Liquidity

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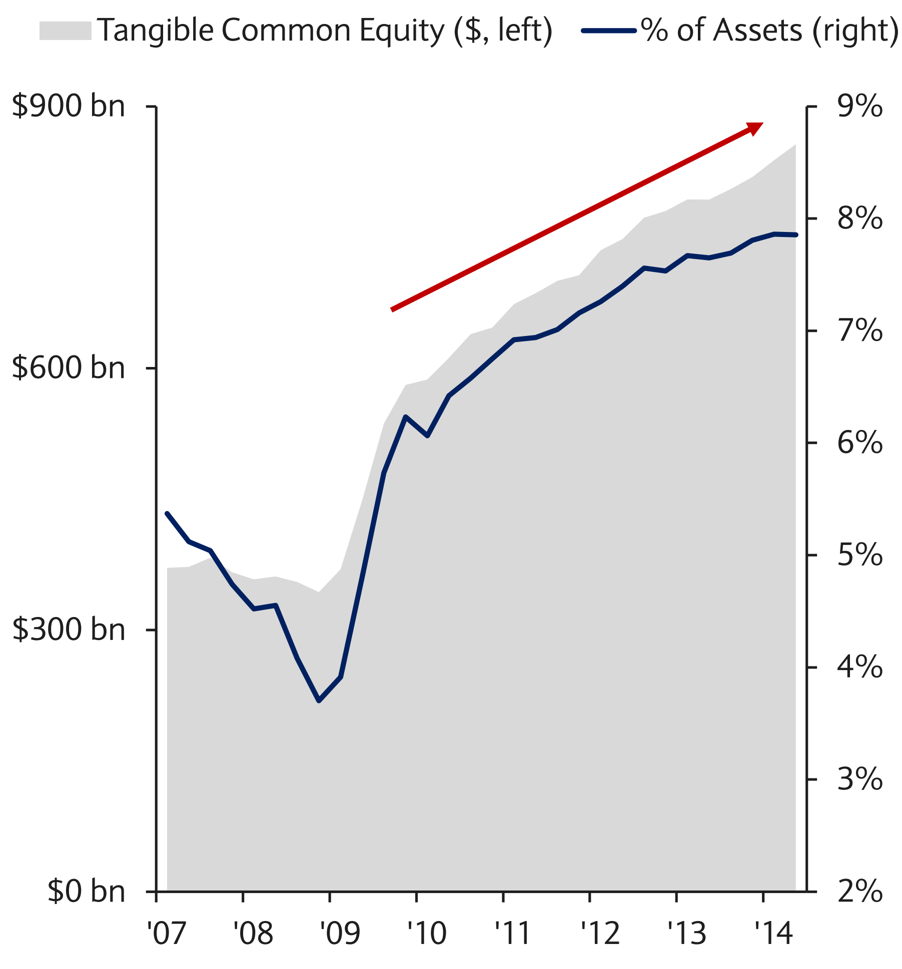
A New Regulatory Regime

New financial sector regulations sought to make banks safer and to reduce the risk of destabilizing “fire sales”

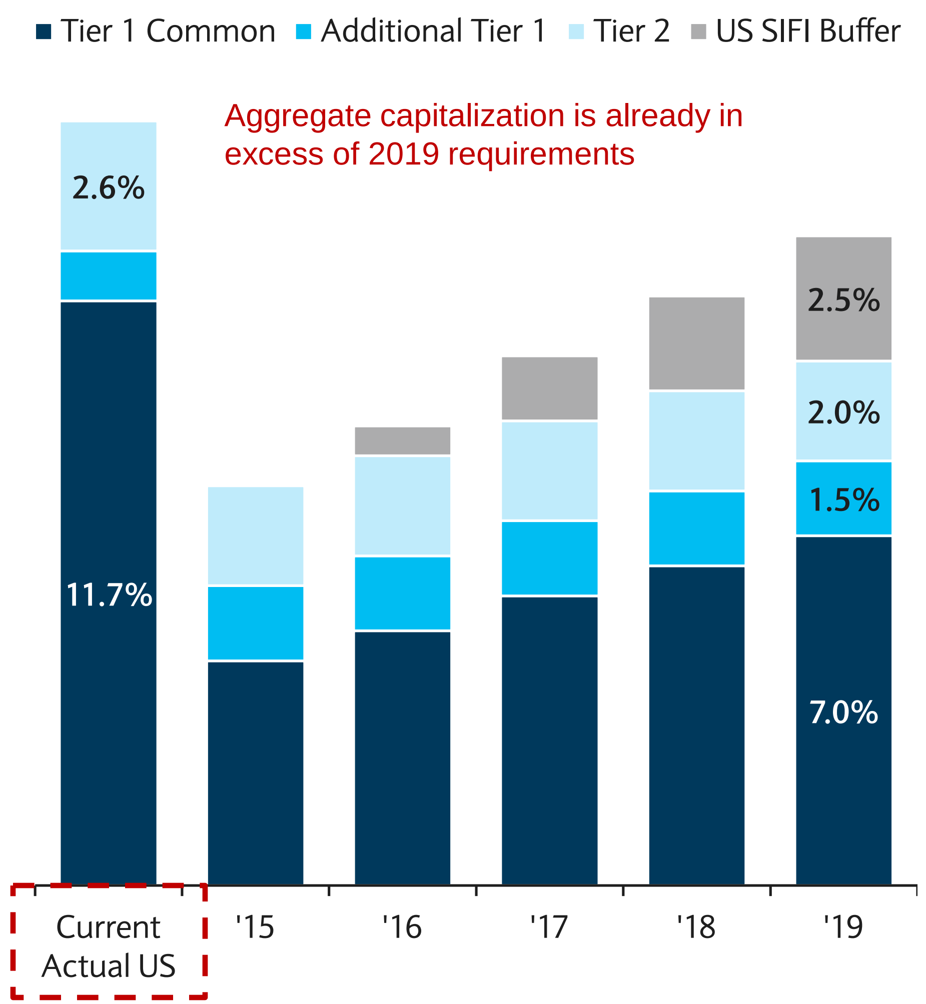
- Increased RWA-Based Capital Requirements
  - Additional “SIFI Buffer” for banks deemed systemically important
- Leverage Ratio
  - Simple 5% equity-to-asset requirement for largest banks
  - Even the safest assets count (i.e. no risk weighting)
  - Increases the cost of high volume, low margin assets that are balance sheet-intensive, such as repo
- Volcker Rule
  - Prohibits proprietary trading, securities positioning must be sized to market demand
- “Haircuts” (probable)
  - Regulation of loan-to-value ratios in securities lending

Banks de-risked their balance sheets in response

Aggregate Tangible Bank Equity



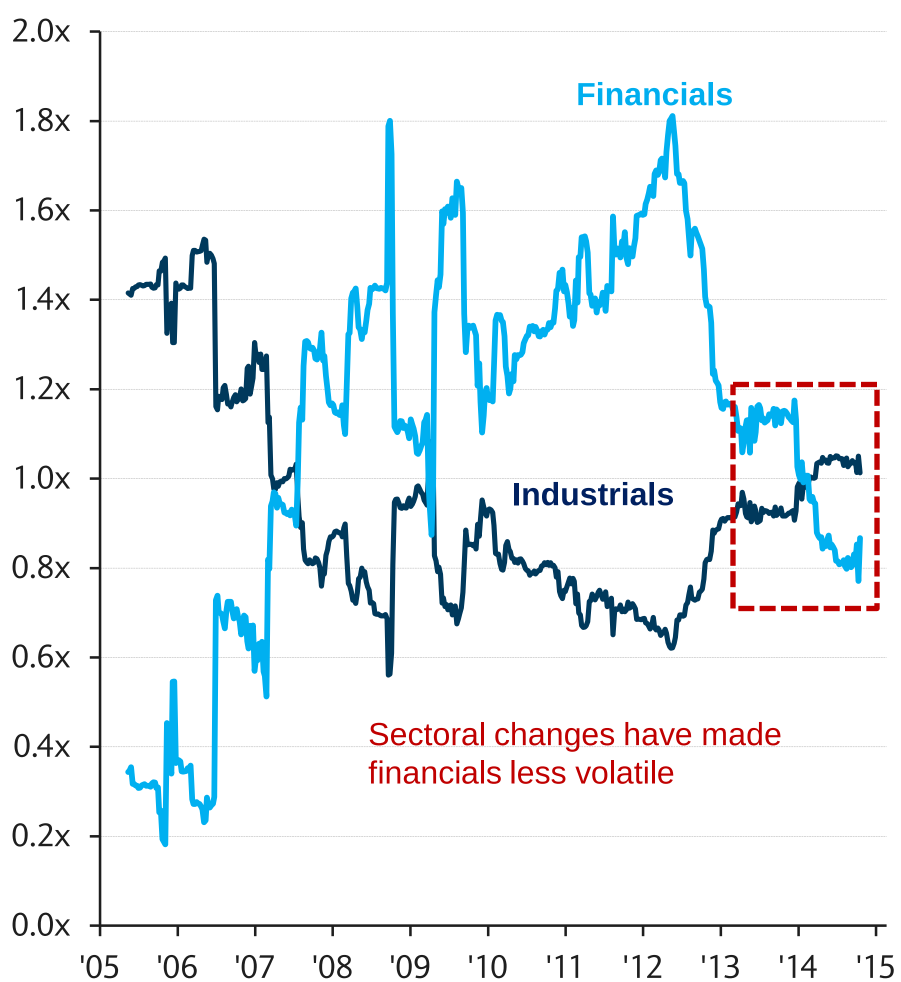
Basel III Capital Requirements vs. Actual



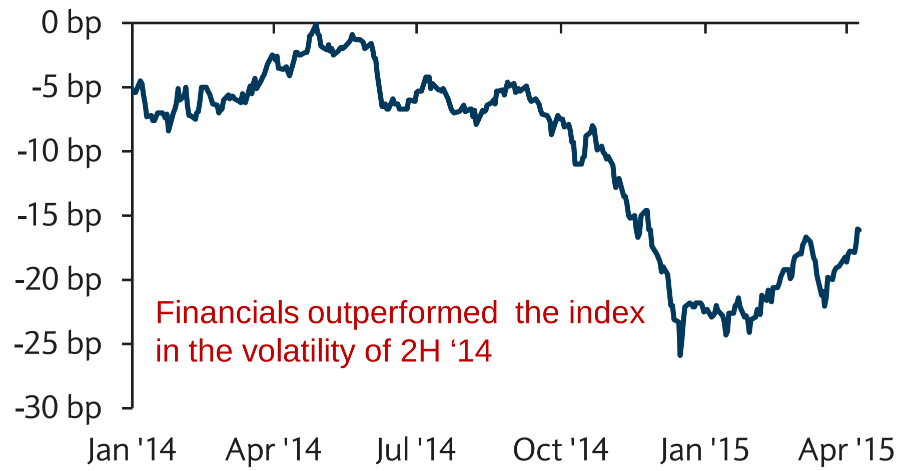
Source: Barclays Research

The extent of the de-risking is clearly evidenced in bond market pricing

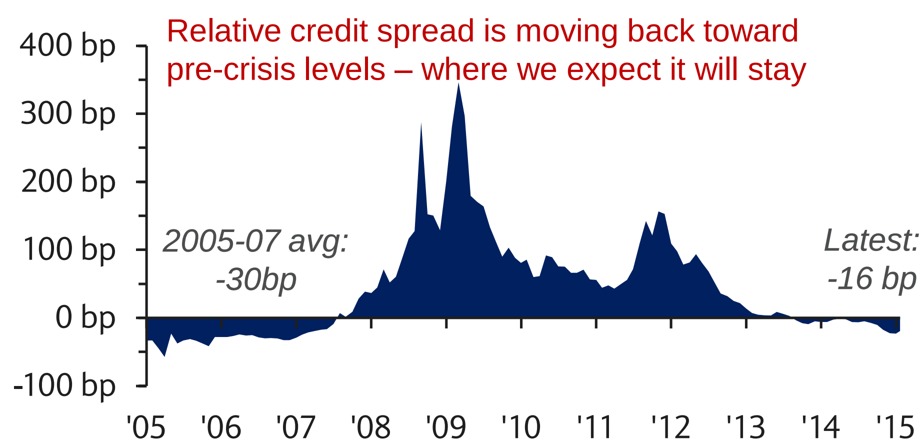
Sector Beta to Index



Financials Spread to Index 2014-Present



Financials Spread to Index Long Term



Note: "Beta" measures sensitivity (slope coefficient) of sector credit spread changes to index credit spread changes. Beta is estimated here using the set of weekly changes over the prior six months. Source: Barclays Research

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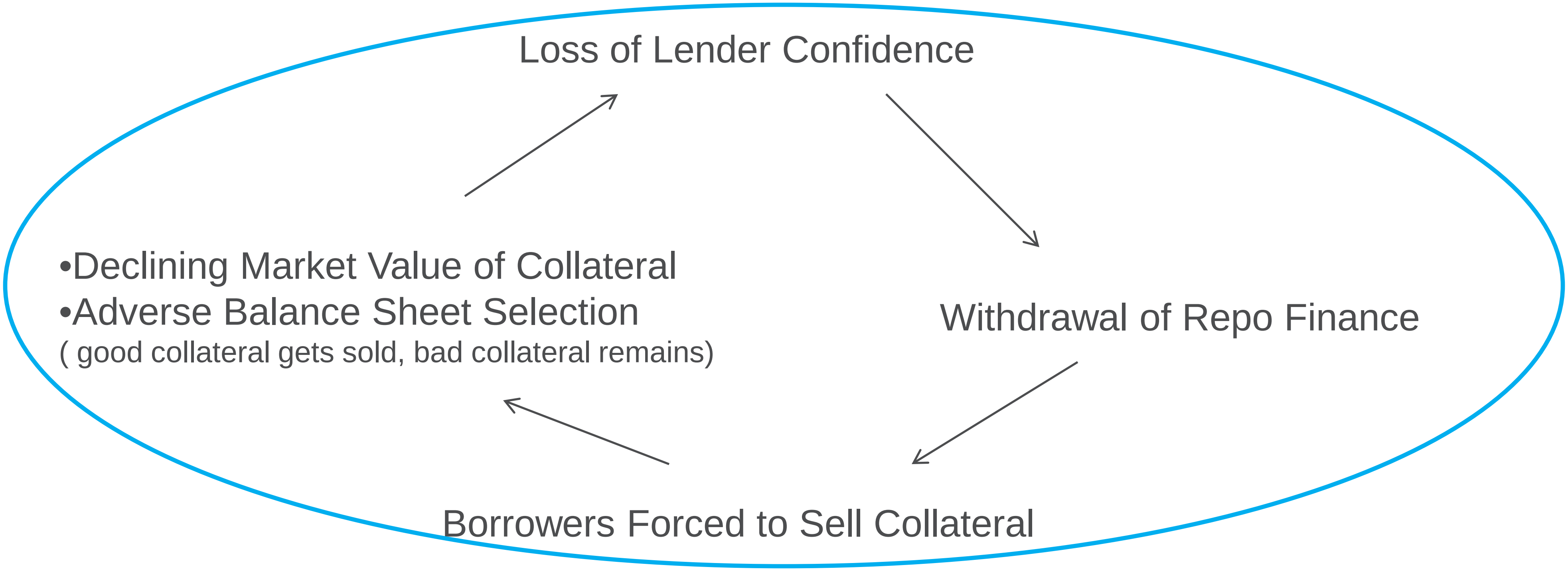
Repo formerly served as an inexpensive funding source for banks and a low-risk asset for short-term investors

Source: Barclays Research

- Repo a safe, liquid asset for money market funds (i.e., near cash substitute)
- Repo a low-cost liability for banks, but risky because must be rolled daily
- Repo balances ~$ 5trn pre-crisis
- **Safe collateral + capital rules based on risk weighting = Few limits to size or leverage**

Following the scare of 2008, however, regulators judged repo a systemic risk and moved to curtail it



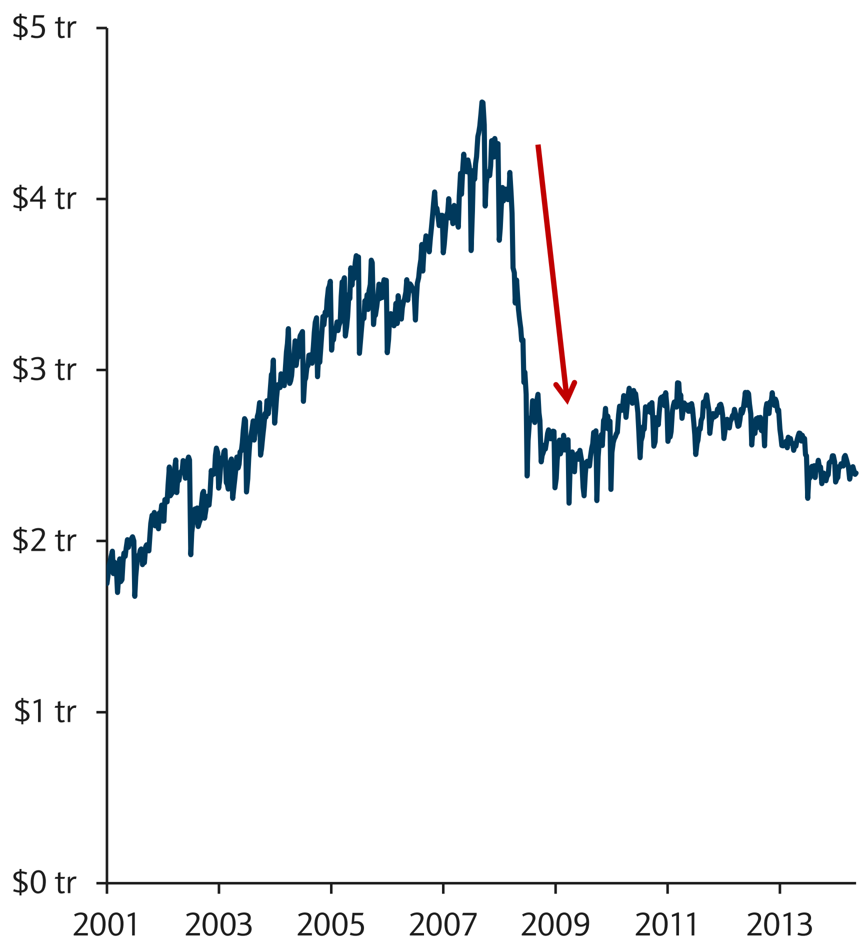
Source: Barclays Research

- Repo, like deposit banking, involves the funding of long-term assets with short term liabilities
- When a bank is locked out of the repo market, the dynamics are similar to a bank run
- **Lehman Brothers in 2008: Not the Full Cycle, But Enough for Regulators**

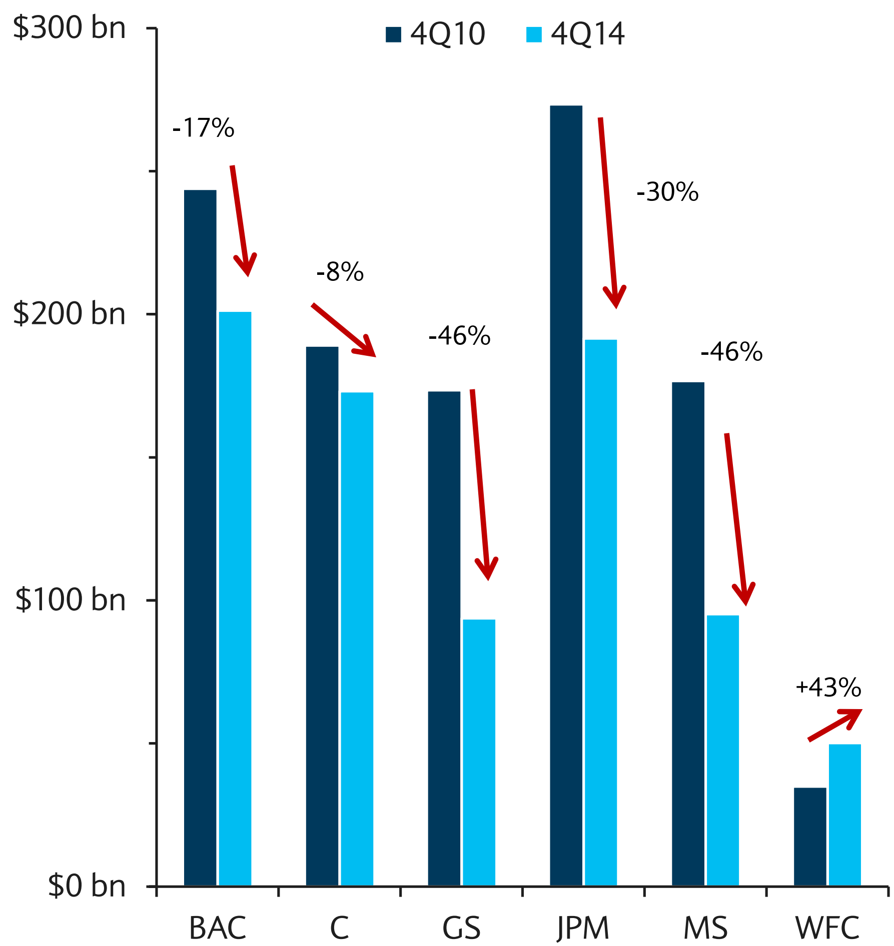
Financial Markets Have Changed in Response

Repo balances have fallen

Total Repo Outstanding



Dealers Have Reduced Use of Repo



Source: Federal Reserve, Barclays Research

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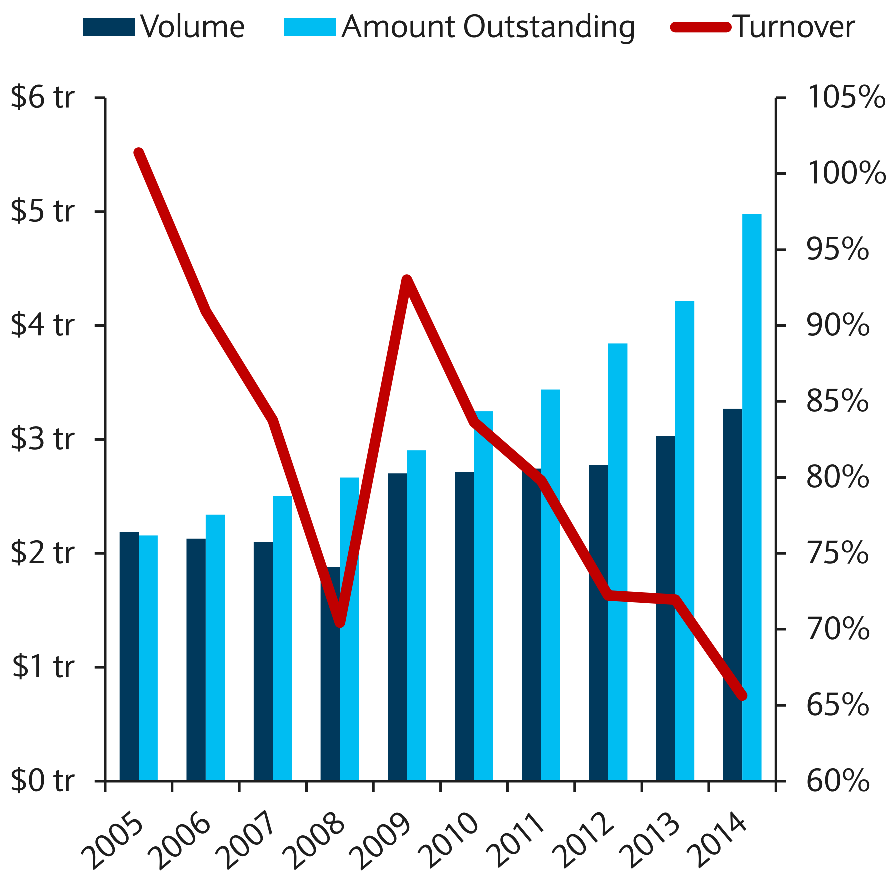
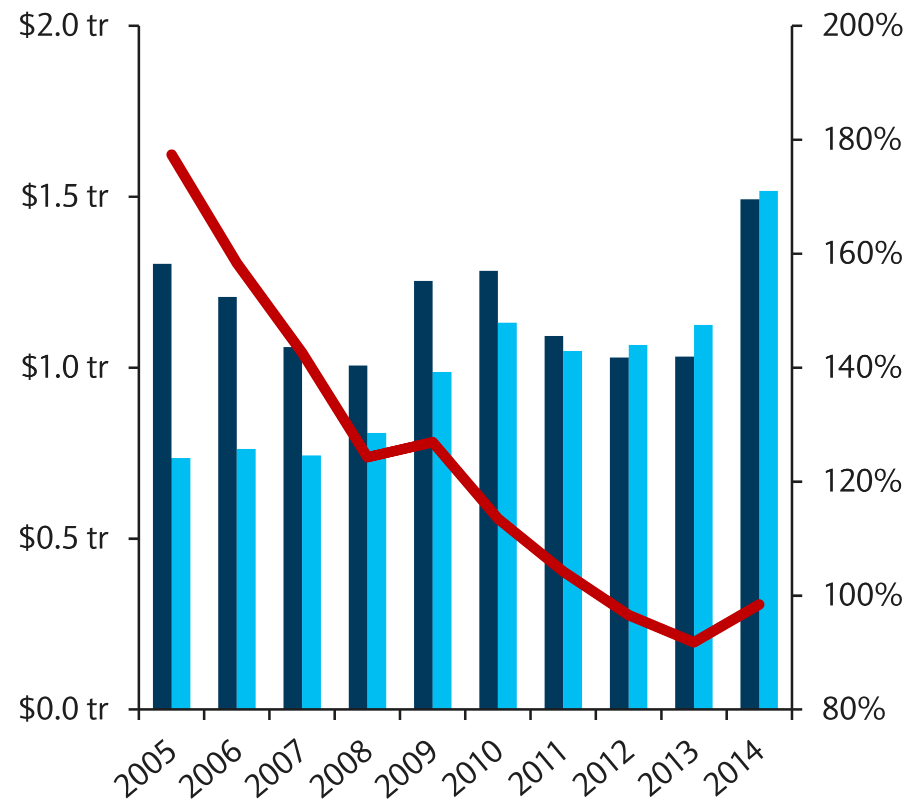
Bond market liquidity has deteriorated at the same time

Investment Grade



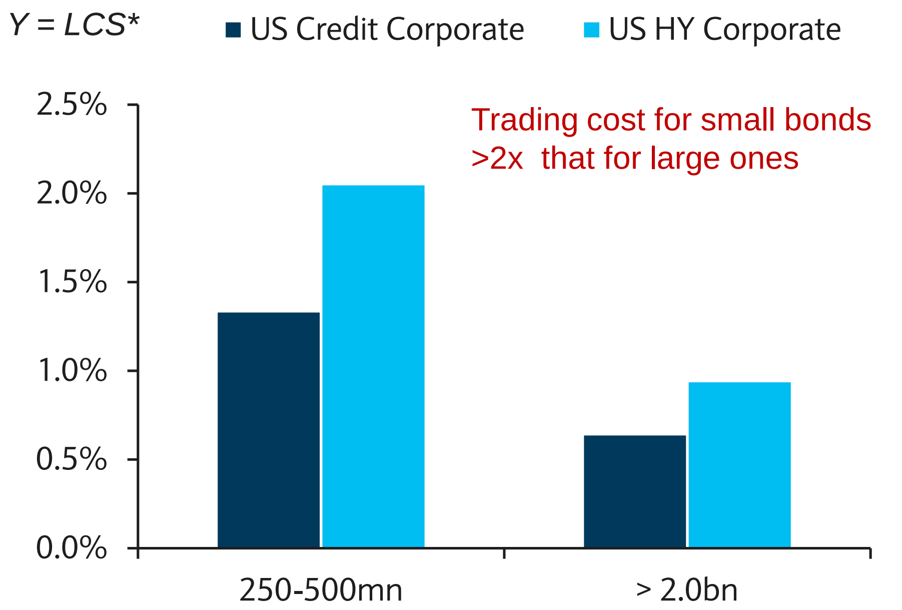
High Yield



Source: Barclays Research

Transaction costs have increased

Liquidity Concentrates in Large Issues



Transaction Costs Today vs. Pre-Crisis

	1/31/2007		1/31/2015		Change	
	Liquidity Score (LCS)*	Bid-Offer	LCS	Bid-Offer	LCS	Bid-Offer
US IG	0.53%	8.5 bp	0.95%	13.2 bp	**+79%**	**+55%**
US HY	1.28%	1.3 pts	1.55%	1.6 pts	**+21%**	**+23%**

Note: *Liquidity Cost Score is a proprietary Barclays estimate of round-trip trading costs as a percentage of market value.
Source: Barclays Research

There is a vicious cycle between deteriorating liquidity and reduced repo balances

- Dealers Use Repo
  - Formerly an inexpensive means to finance inventory
  - Means of sourcing and borrowing desired securities
- Investors Use Repo
  - Like dealers, many investors finance their holdings through secured borrowing
  - Repo can be a means of increasing leverage, allowing for trades of larger size
- Repo Facilitates Short Selling
  - Credit traders generally short a Treasury bond when buying a corporate bond, thus eliminating interest rate risk
  - Speculative shorts
    - Much maligned, but contribute to price discovery

The new regime has improved stability, but at what cost?

Benefits

- Diminished likelihood of another banking sector disaster
    - More capital equates to more tolerance for losses
    - Less short-term wholesale funding reduces likelihood of fire sales
- Was there too much liquidity pre-crisis?
    - Did it facilitate poor underwriting/ risk decisions?
    - Higher spreads may compensate investors for reduced liquidity

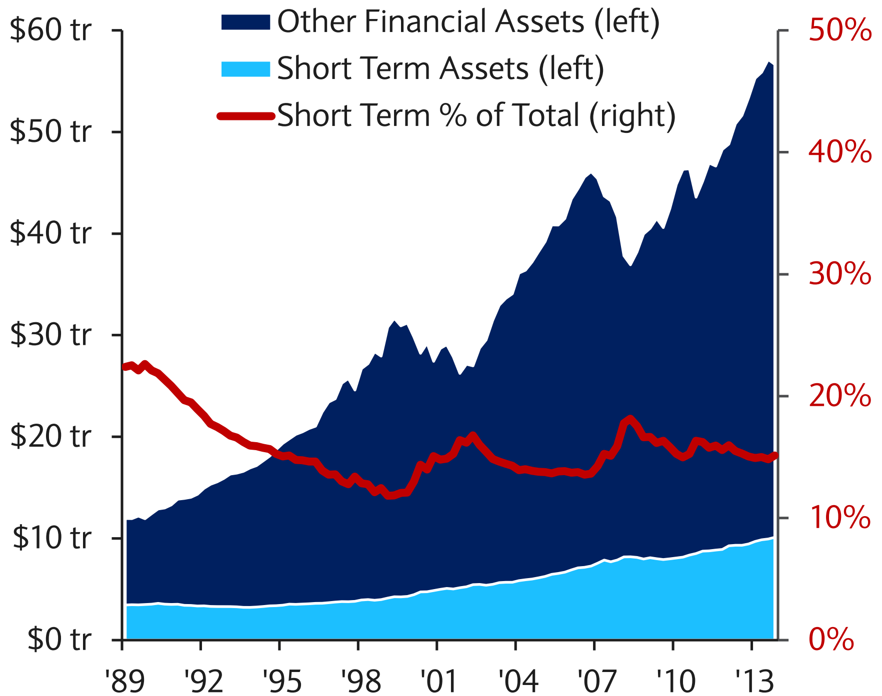
Potential Costs

- Clear implications for financial market participants
- There are also broader potential costs:
    - Scarcity of safe assets means low-risk investors must accept lower returns
    - Systemic risk and maturity mismatch have been re-located, not eliminated

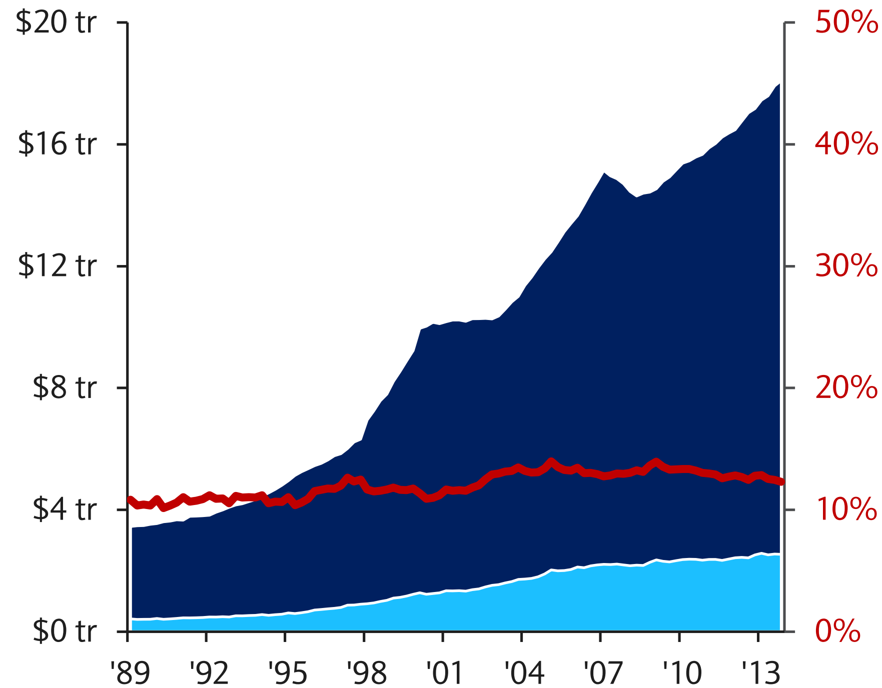
Big Picture Implications: A Safe Asset Conundrum

Households and corporations have historically kept a large percentage of their wealth in short-term assets

Household Financial Assets



Assets of Non-Financial Corporations

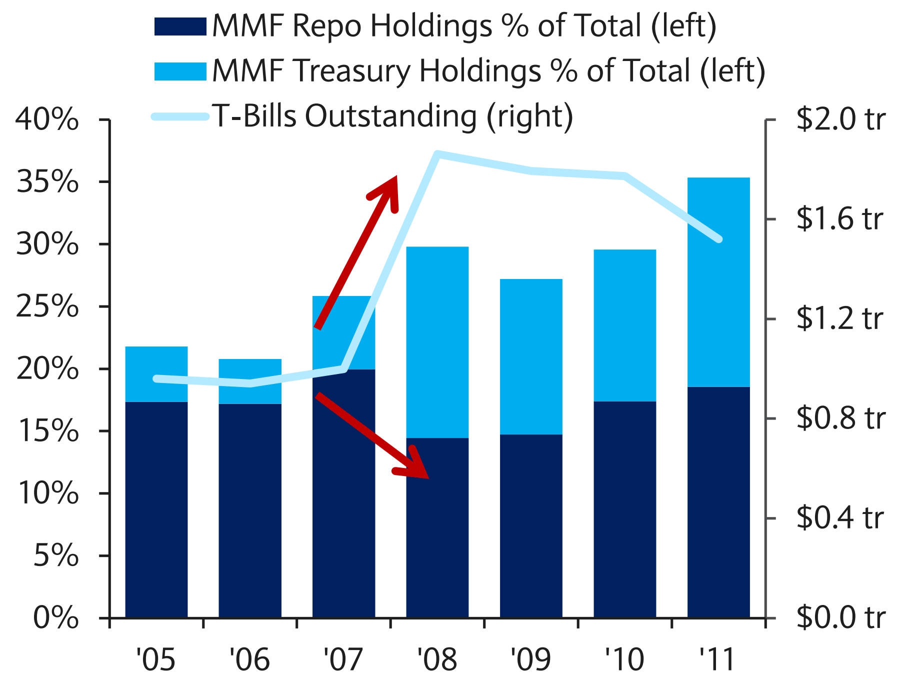


Source: Federal Reserve Z.1 Flow of Funds Report, Barclays Research

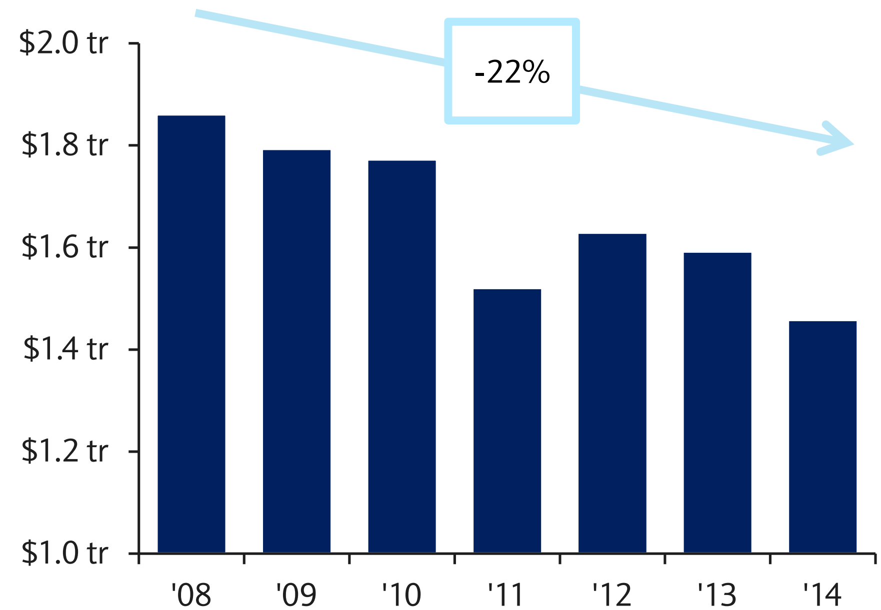
- Households keep 12-18% of their wealth in safe, near-cash assets
- Of these assets, a repo was a significant percentage, via money market funds
- Closest alternatives to repo all have drawbacks

Treasury bills are the nearest substitute for repo lending

Money Market Repo and T-Bill Holdings



Declining Treasury Bill Supply



Source: Federal Reserve Z.1 Flow of Funds Report, Barclays Research

- Upon contraction of repo in 2008, money market funds redeployed capital into Treasury bills, which were increasing in supply at that time
- However, bill volume has since declined and is unlikely to absorb incremental demand from declining repo

Deposits are already a core holding for households, but a lack of bank demand will likely keep rates unacceptably low

Banks Do Not Want More Deposits

- Deposits are already a core holding for households
- But there is little demand from banks for new deposits
  - US aggregate loan/deposit ratio ≈70%
  - Simple leverage rule constrains balance sheet size
  - Dearth of lending opportunities
- Recent commentary suggests banks are becoming reticent to accept new deposits
  - J.P. Morgan to charge corporate customers to place deposits
  - Net interest margins declining as longer-term rates remain low

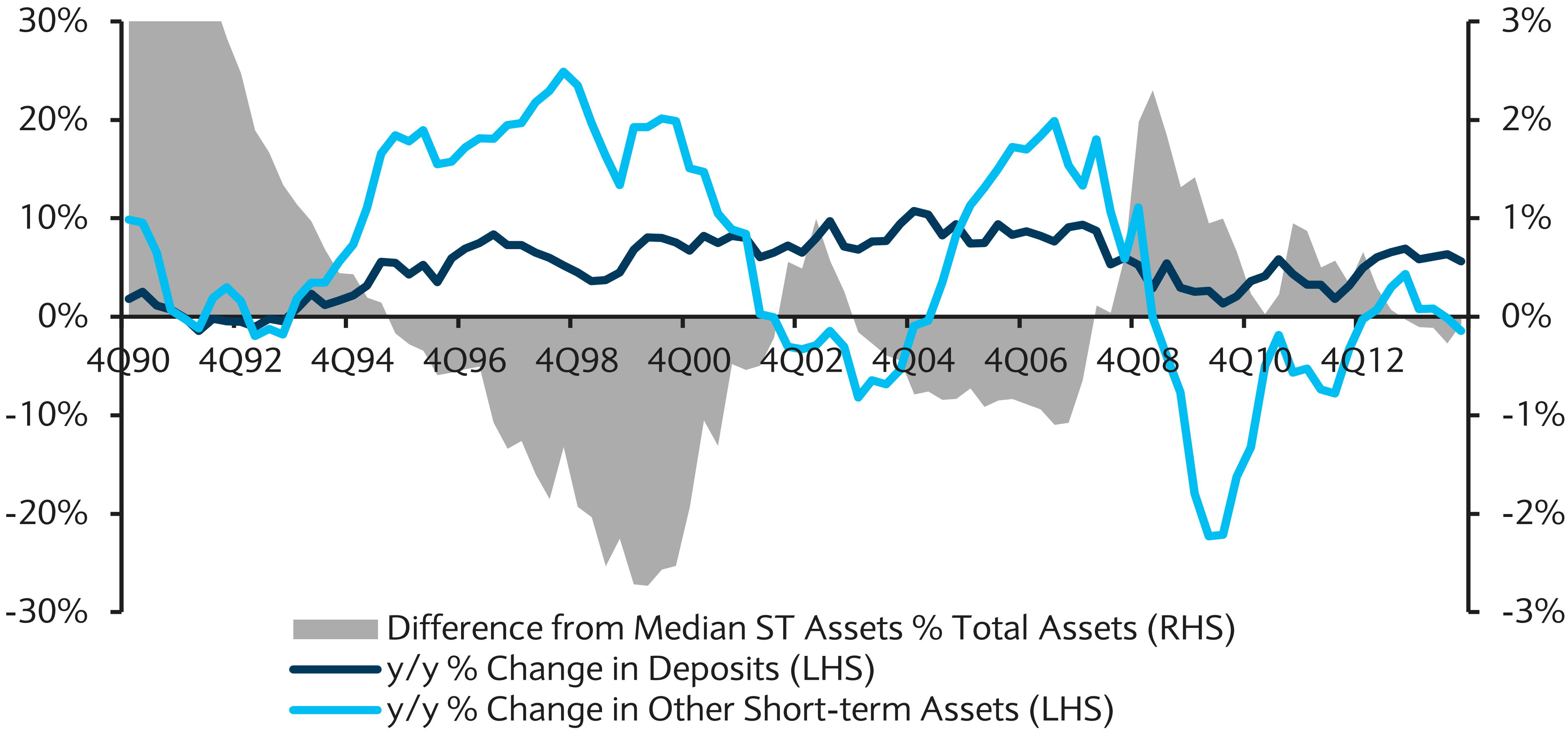
Short-Term Safe Assets Outstanding

Insured Deposits	**$6.0 tr**
Uninsured Deposits	**4.5**
Treasury Bills	1.5
Repo	2.4
Total	$14.4 tr

Source: Federal Deposit Insurance Corporation, Barclays Research

When short-term assets are scarce, non-traditional alternatives emerge to meet the need

Deposits Grow Steadily, Other Assets Grow As Needed



Note: Short-term assets and deposit assets for all entities. Median short-term asset rate represents aggregate of household and non-financial corporate data.
Source: Federal Reserve Flow-of-Funds data, Barclays Research

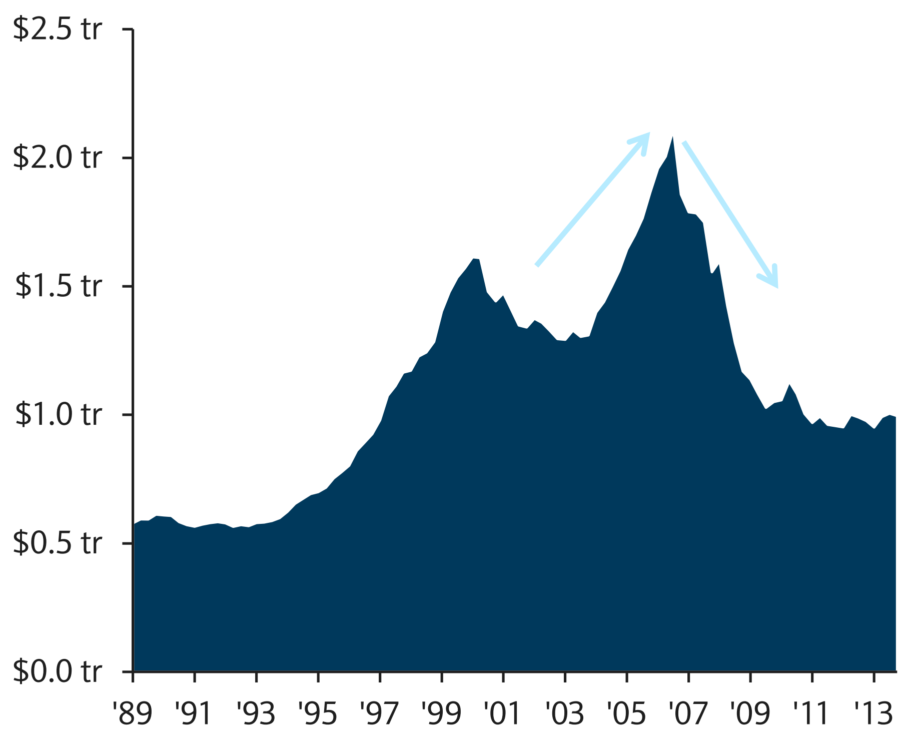
This happened in the last cycle as well

Short-Term Assets

- The last trough in household short-term asset holdings encouraged the creation of new products
  - Commercial paper
  - Asset-backed commercial paper (ABCP)
  - Auction Rate Securities
- When market sentiment turned, these assets proved less liquid and stable than expected
- Having performed poorly under stress, they are unlikely to return soon

Rise and Fall of Alternatives

Commercial Paper and Bankers Acceptances Outstanding

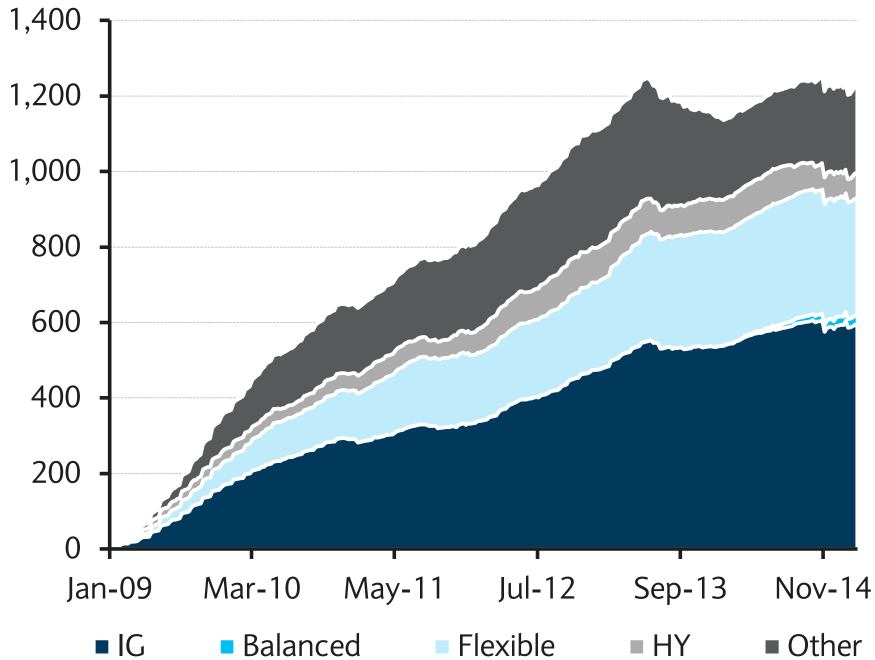


Source: Barclays Research

In the current cycle, mutual funds and ETFs are the preferred alternative

Mutual Fund Flows by Asset Class

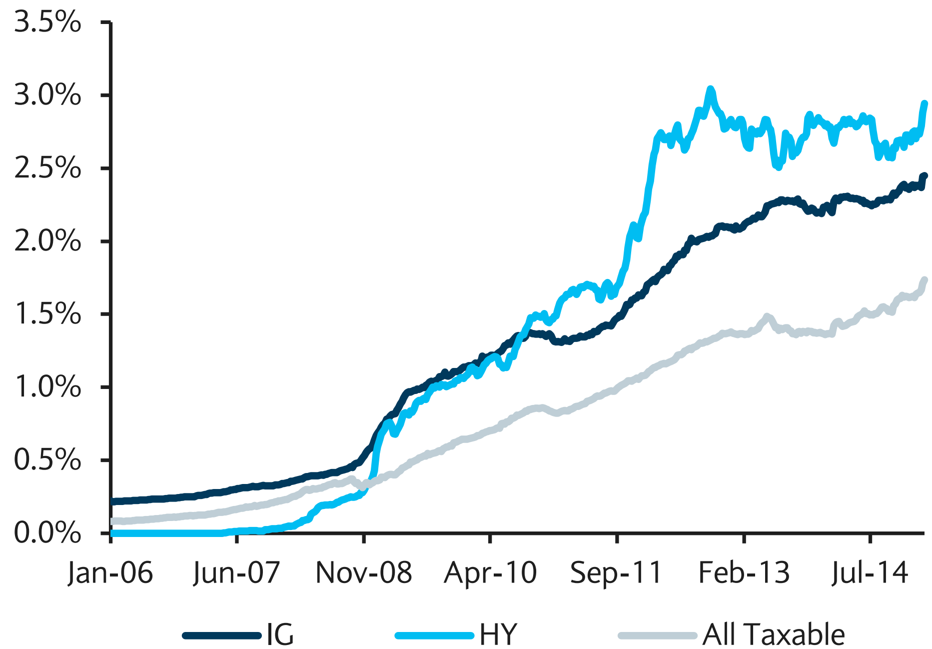
Record corporate bond inflows coincided with outflows from the money market



Source: Barclays Research

ETF Share of Corporate Fixed Income

Credit ETFs, virtually non-existent before the crisis, are growing rapidly



Mutual Funds and ETFs have the same weakness as repo: they promise daily liquidity to shareholders, but their assets are increasingly illiquid

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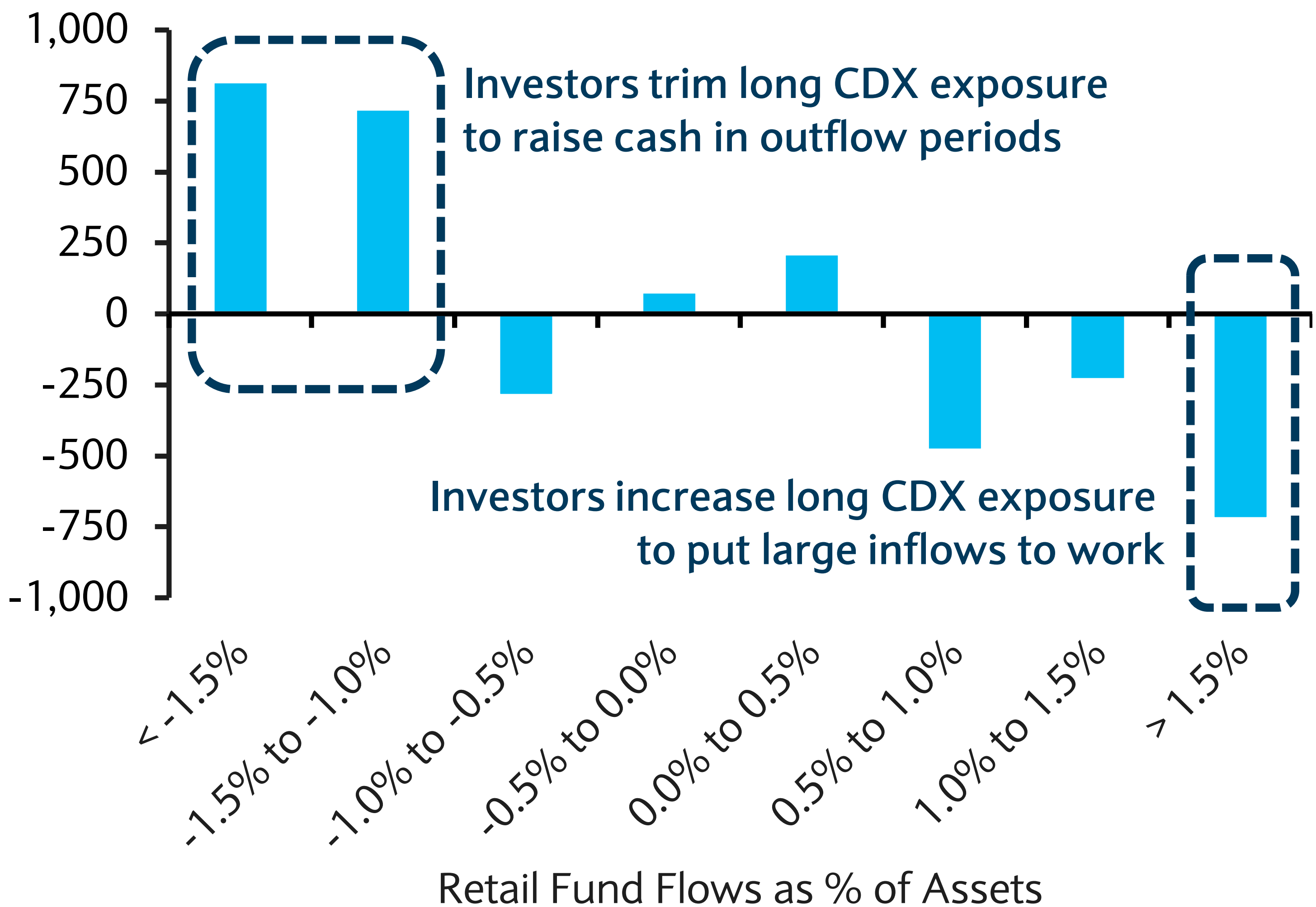
Fixed income managers have taken steps to mitigate the gap in liquidity, mostly through the use of portfolio products

Fund managers are using the CDX index as a source of daily liquidity



Source: Barclays Research

Portfolio products act as a proxy to dealer inventory

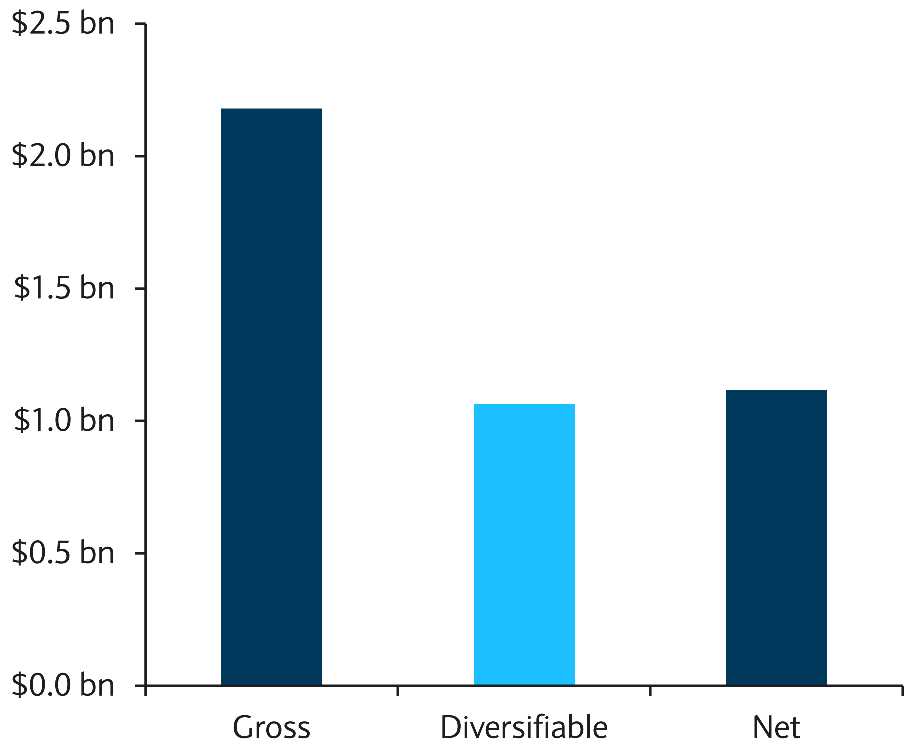
Before: Different bonds could be bought and sold into dealer inventory

After: Low dealer inventory impairs this process – swap portfolios instead

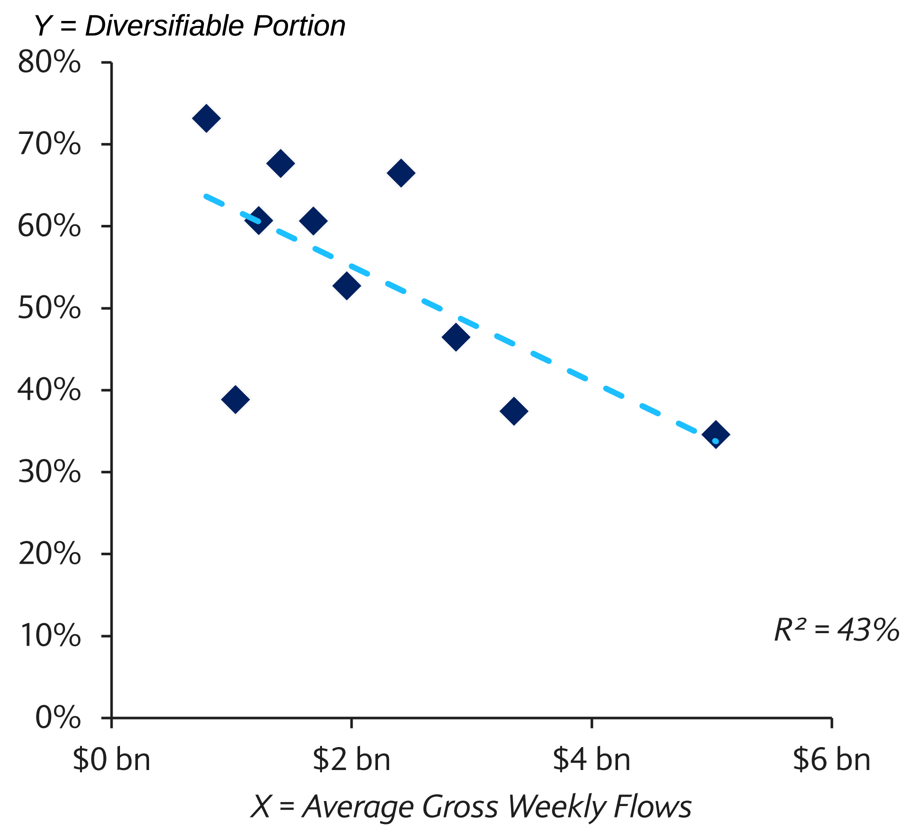
Source: Barclays Research

Flows at the individual fund level are surprisingly diversifiable, even amid large outflows

Nearly Half of Weekly Flows are Diversifiable



Larger Flows are Less Diversifiable



Source: Barclays Research, Lipper Fund Flows, based on weekly flows for over 800 individual mutual funds since January 2013

Summary

- **New regulations have successfully de-risked the banking sector...**
  - Balance sheet deleveraging
  - Reduced use of short-term financing, especially repo
- **...But not without consequences**
  - Diminished bond market liquidity
  - Shortage of low risk, short-term financial assets
- **As in the past, alternative forms of liquidity are emerging**
  - Mutual fund shares, ETFs
  - Credit derivatives
- **We believe poor liquidity is here to stay**
- **Systemic risk has been re-located, not eliminated**

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