Evolving Market Dynamics and the Impact on Your Portfolio

PFM Asset Management LLC

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Market Dynamics Are Changing

- Interest rate environment
- Federal agency supply and value
- Credit environment
- Regulatory changes
- Trading conditions

Interest Rate Environment

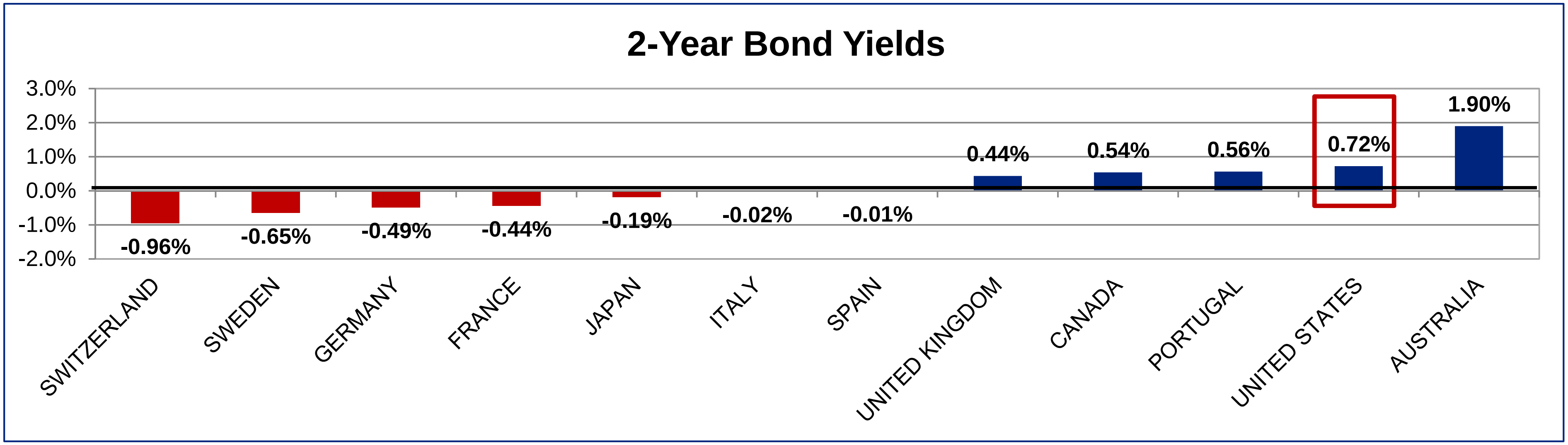
Market's Expectations For a Rate Hike

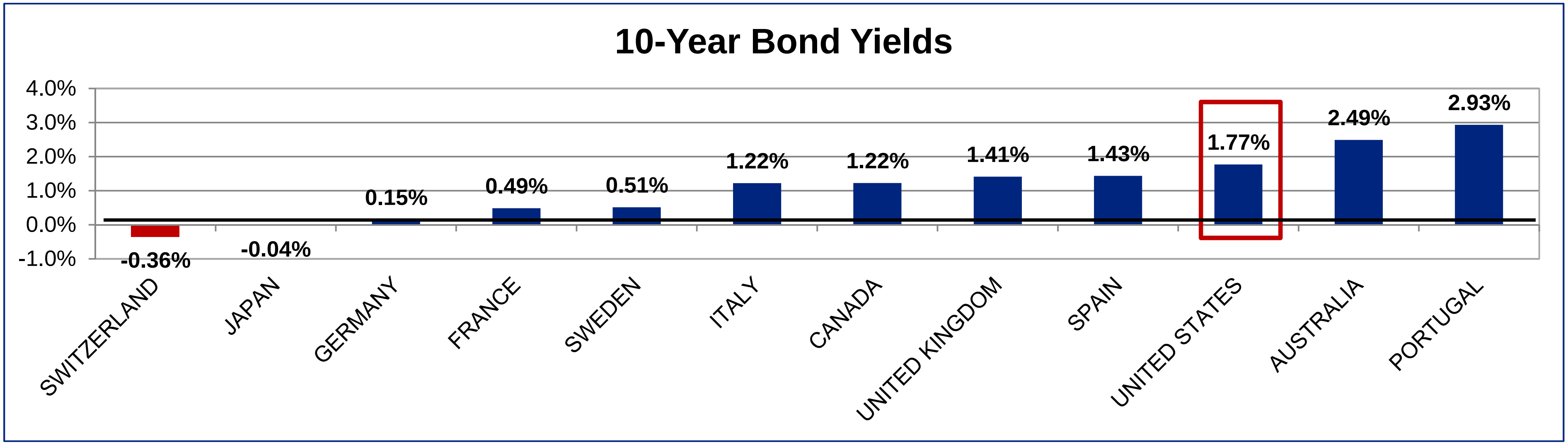
Implied Probabilities of a Rate Hike from Federal Funds Futures by Meeting Date

FOMC Meeting Dates	12/31/15 Futures	3/4/16 Futures	4/4/16 Futures
4/27/16	56%	23%	0%
6/15/16	75%	51%	24%
7/27/16	79%	56%	36%
9/21/16	87%	66%	46%
11/2/16	89%	69%	50%
12/14/16	93%	78%	60%
2/1/17	95%	79%	63%

Source: Bloomberg WIRP

Central Bank Policies Keeping Rates Down



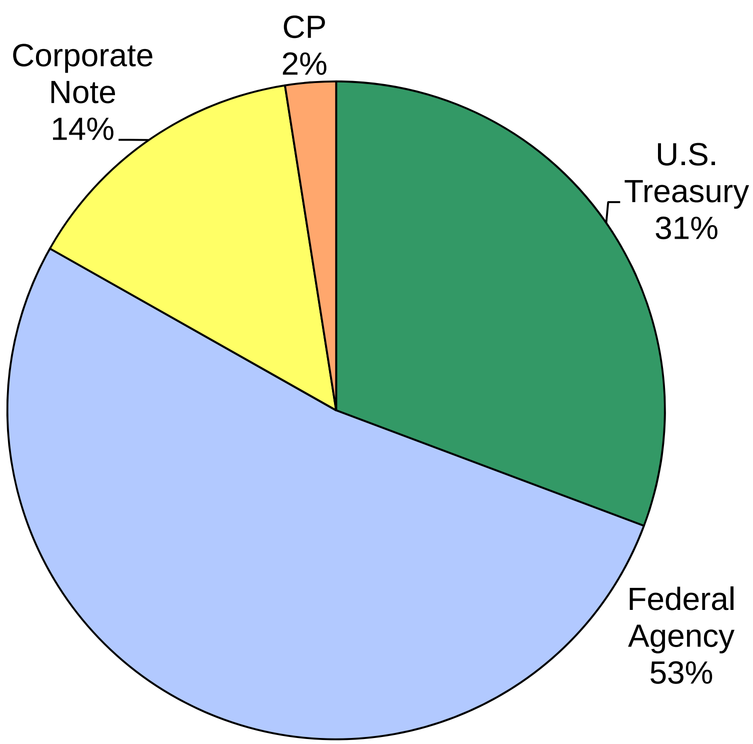


Source: Bloomberg, as of 3/31/2016.

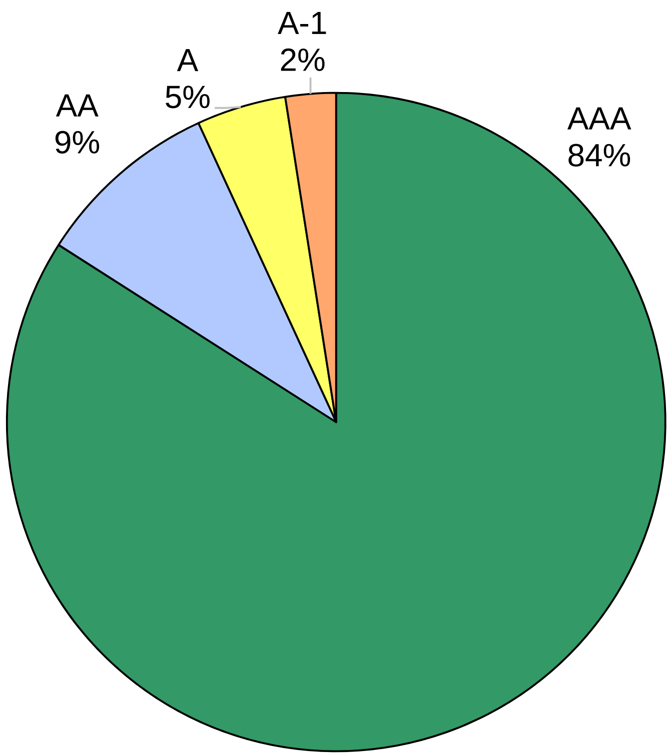
Changing Dynamics of Federal Agency Debt

Example Portfolio - Pre-Financial Crisis

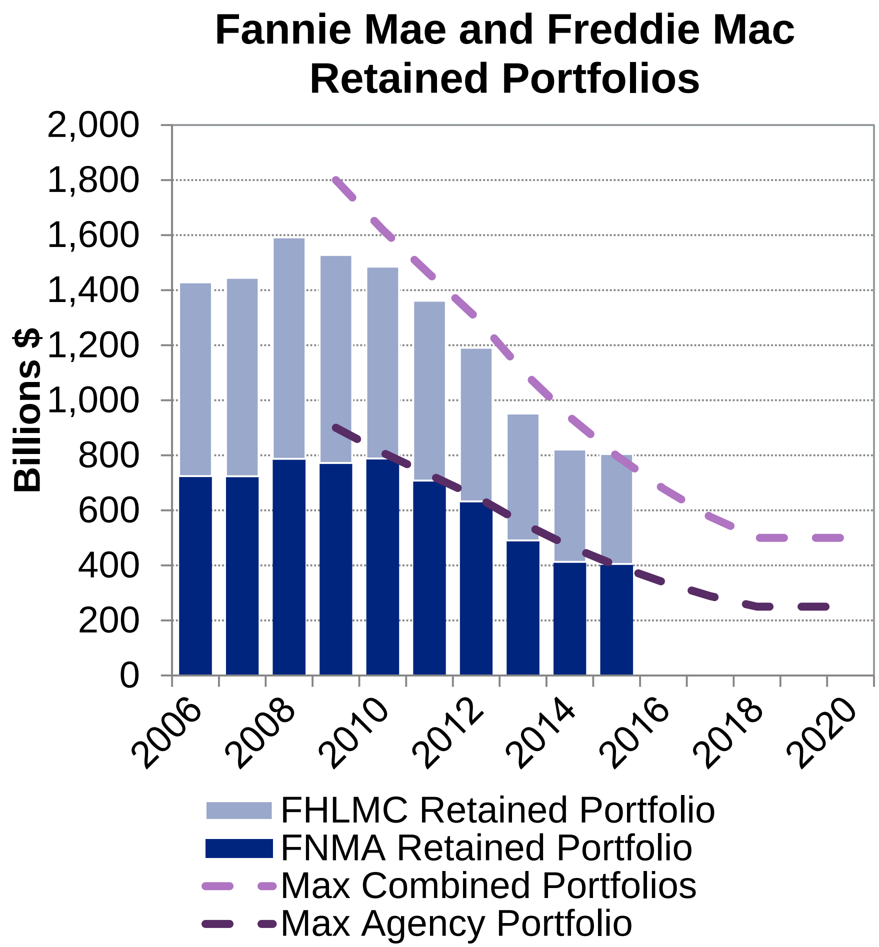
Sector Distribution
December 31, 2006



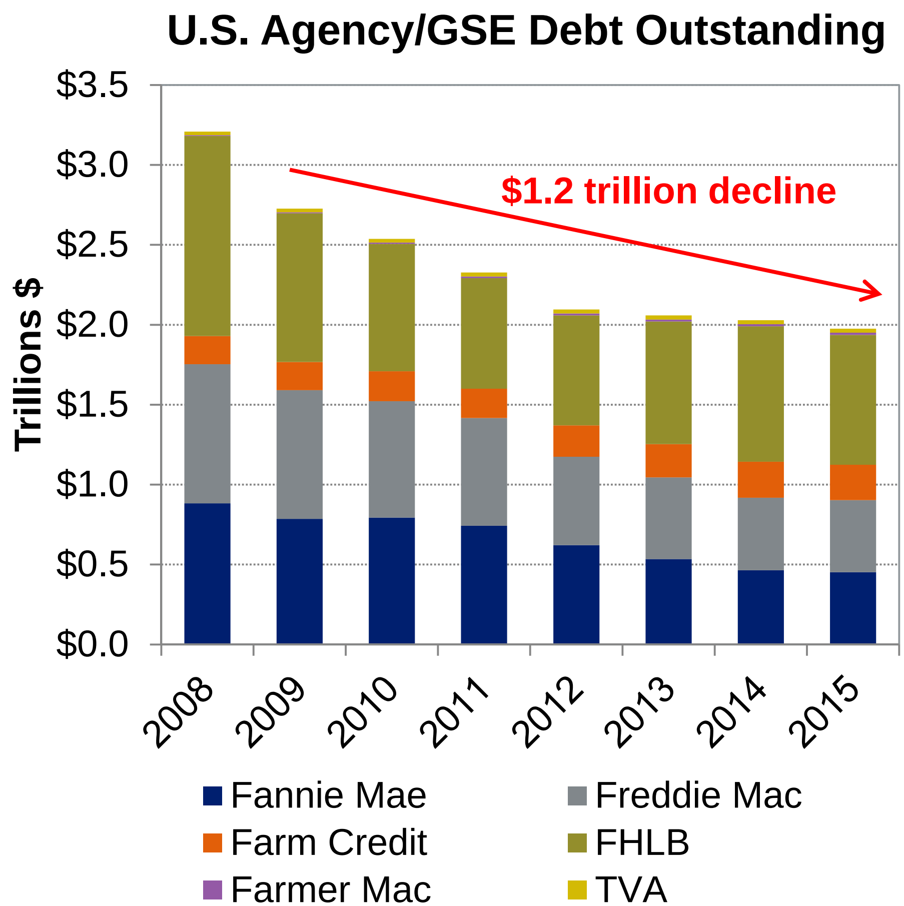
Credit Quality
December 31, 2006



Declining Importance of Federal Agency Debt

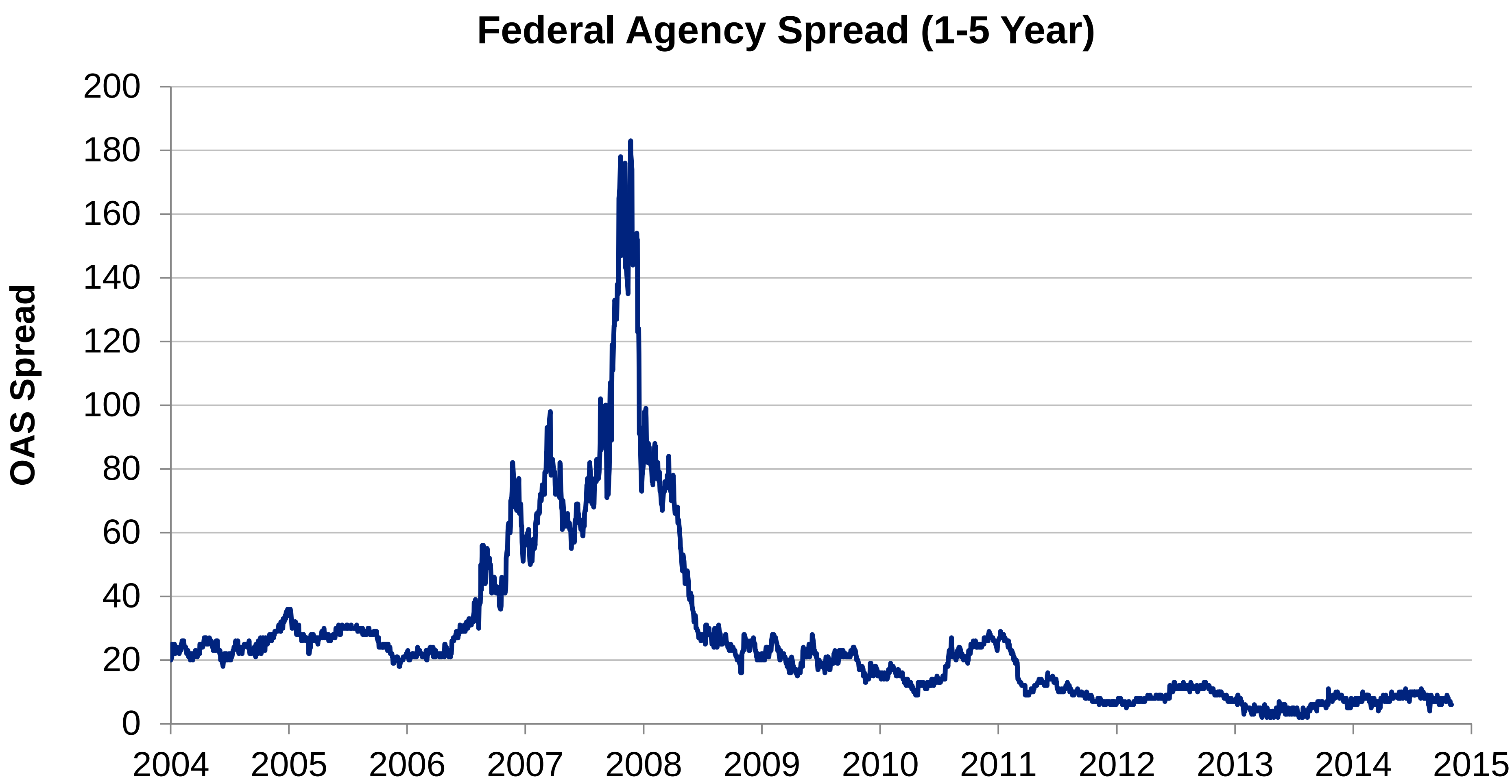


Source: Fannie Mae and Freddie Mac. Projected portfolio sizes represent legislatively mandated balance sheet maximums.



Source: Securities Industry and Financial Markets Association (SIMFA). 2015 YTD through March 31, 2015.

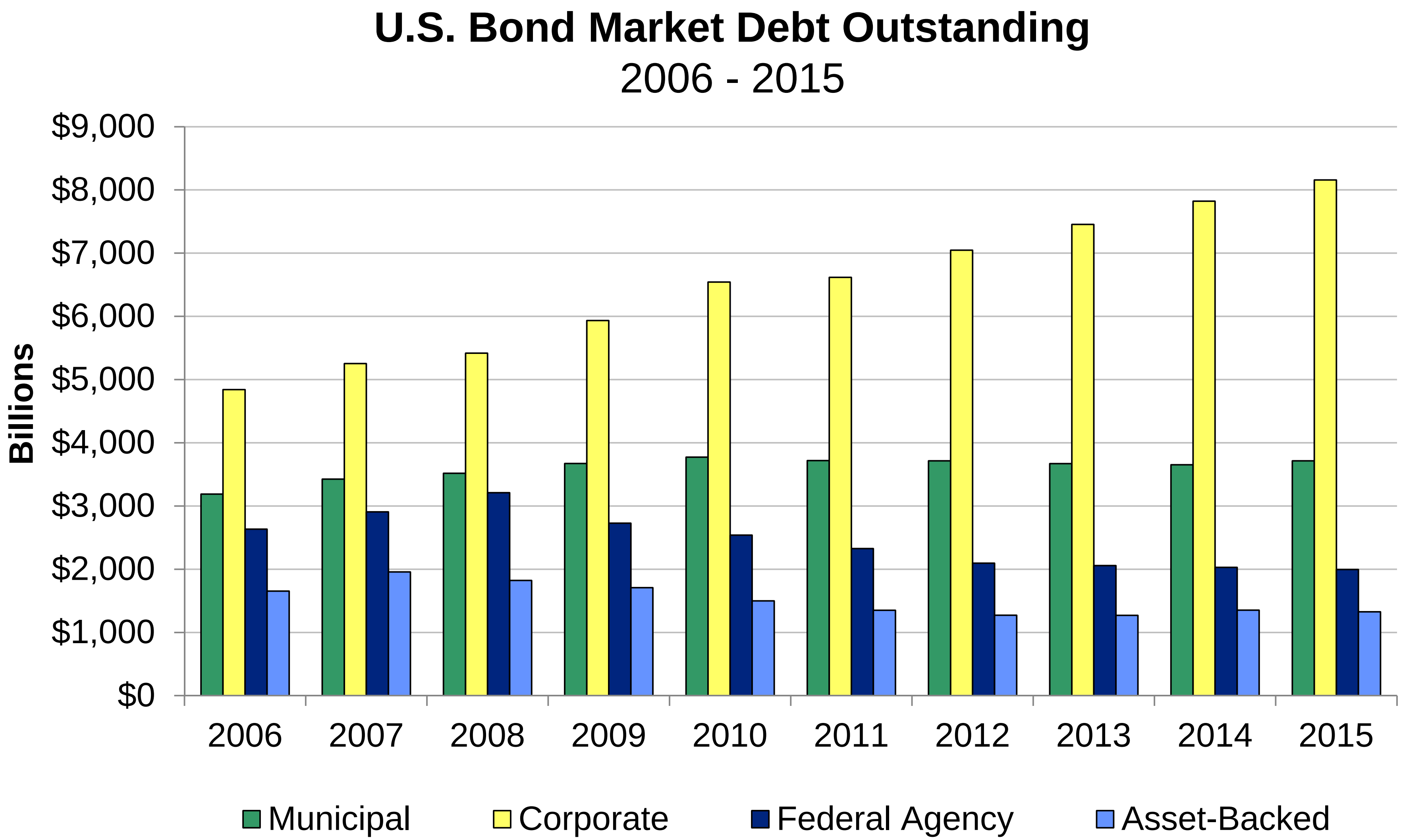
Declining Federal Agency Yield Spreads



Source: Spread from BofA ML 1-5 Year Agency Index.

Corporates As An Alternative

Changing Composition of Fixed-Income Debt

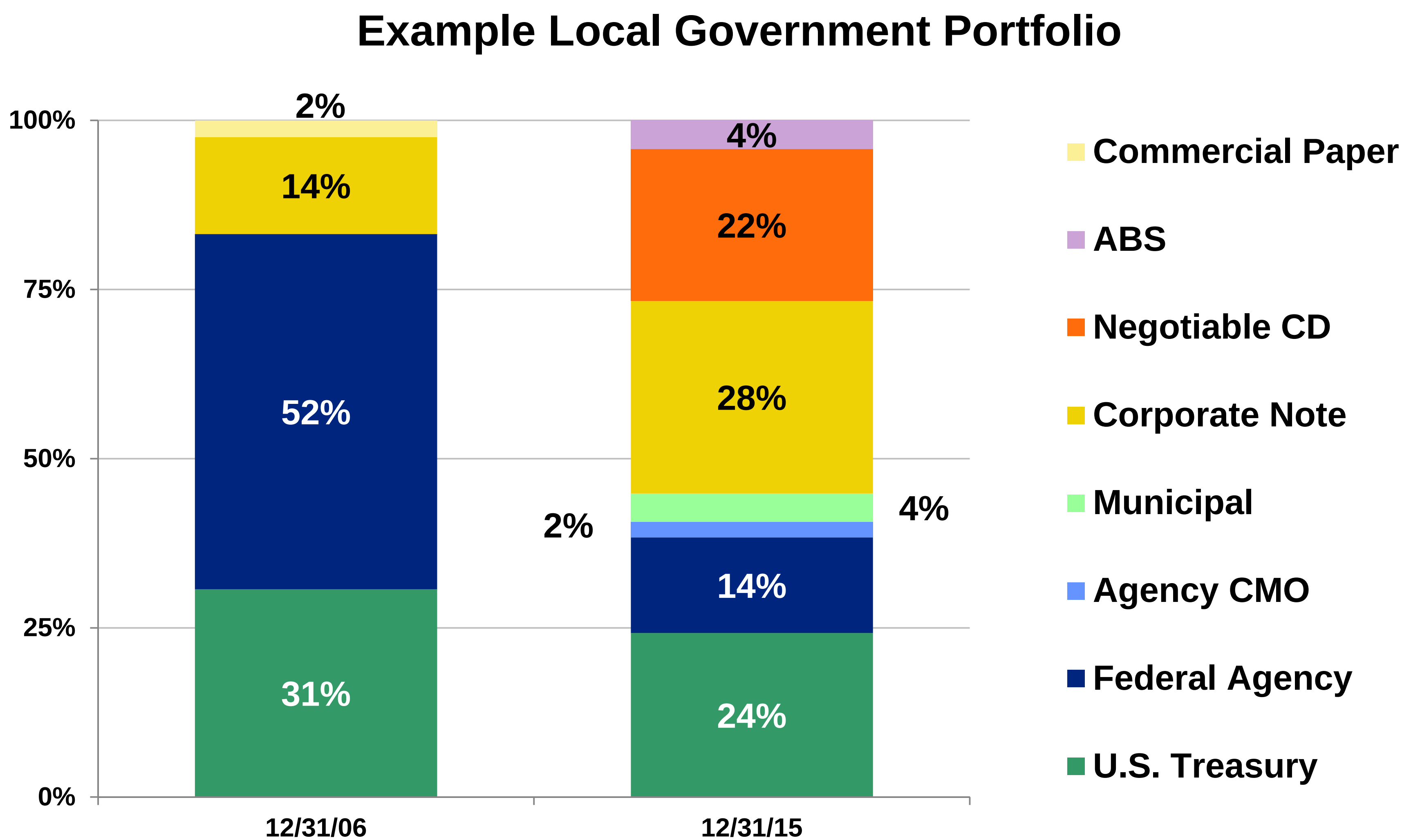


Source: http://www.sifma.org/research/statistics.aspx. Excludes Treasury and Mortgage Related Debt

Added Yield With Corporate Securities

Source: Spread from BofA ML 1-5 Year A-AAA Corporate Index.

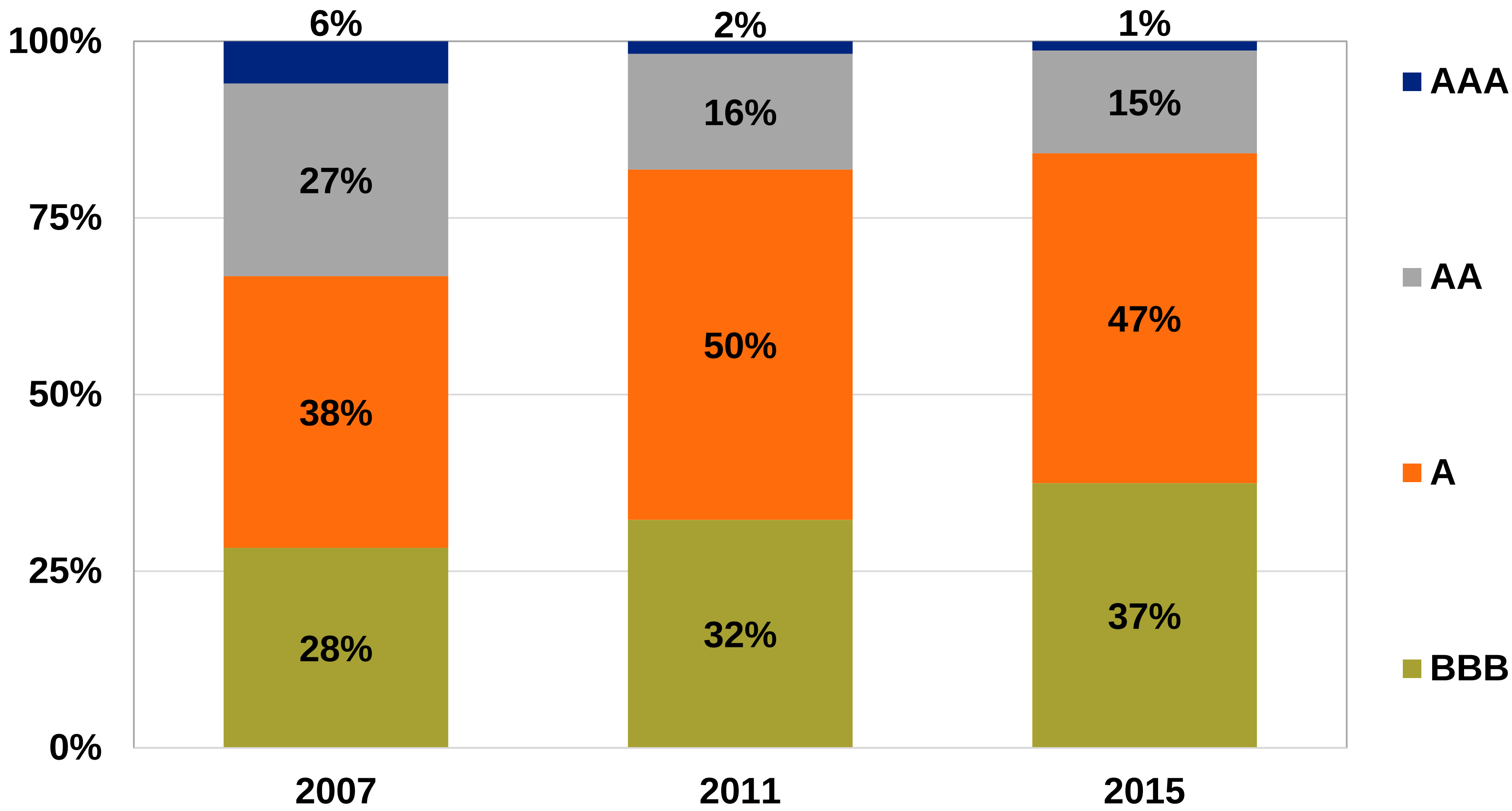
Example Portfolio - Post-Financial Crisis



Note: This graphic is for illustrative purposes only. It is not a and is not intended to provide specific advice or a specific recommendation.

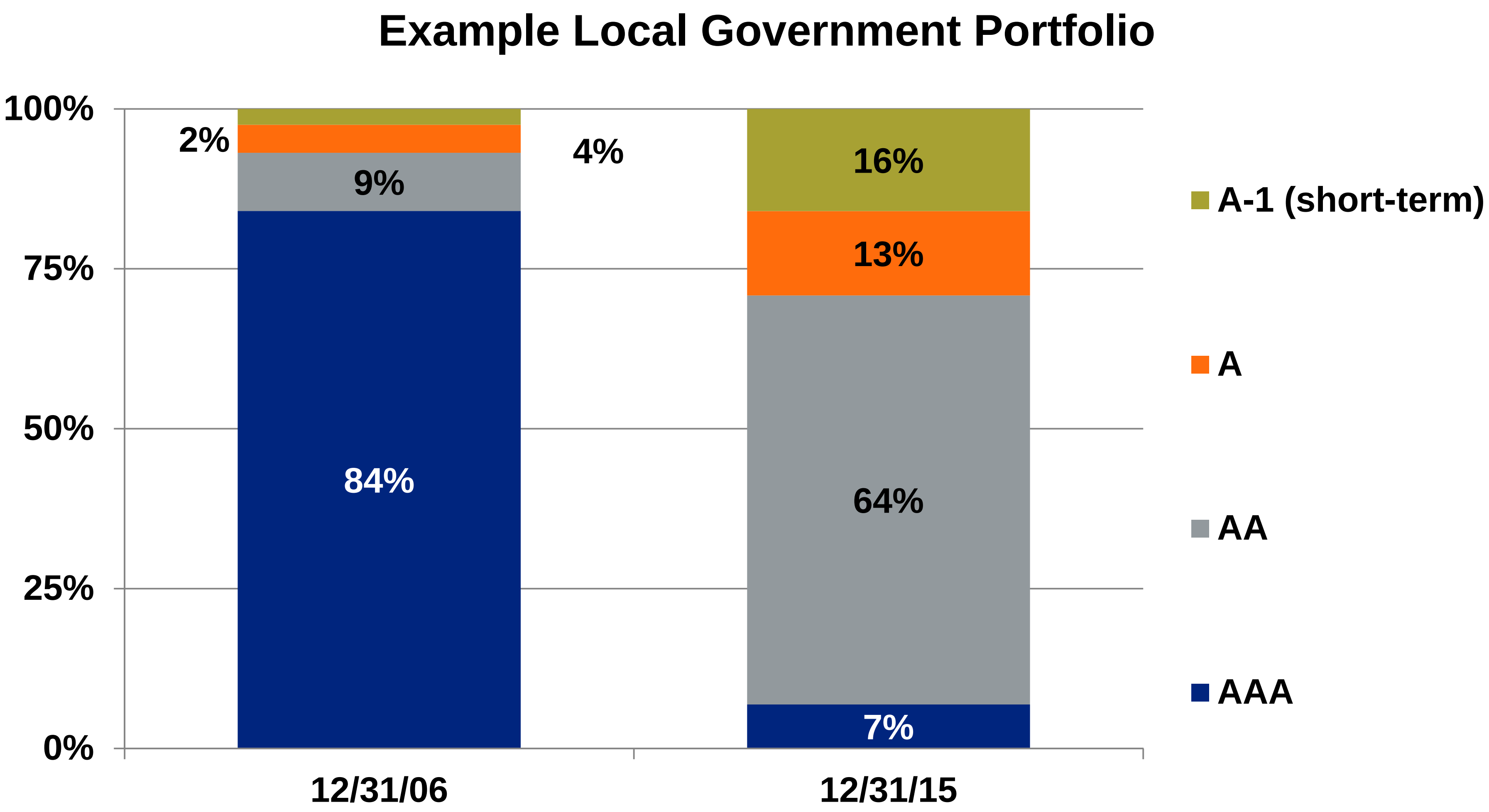
Corporate Ratings Landscape Continues to Evolve

Composition of Bank of America Merrill Lynch 1-5 Year Corporate Index By Face Value



Source: BofA Merrill Lynch Indices composite ratings. Data as of 12/31/15.

Impact of an Evolving Credit Environment



Ratings: Standard & Poor's

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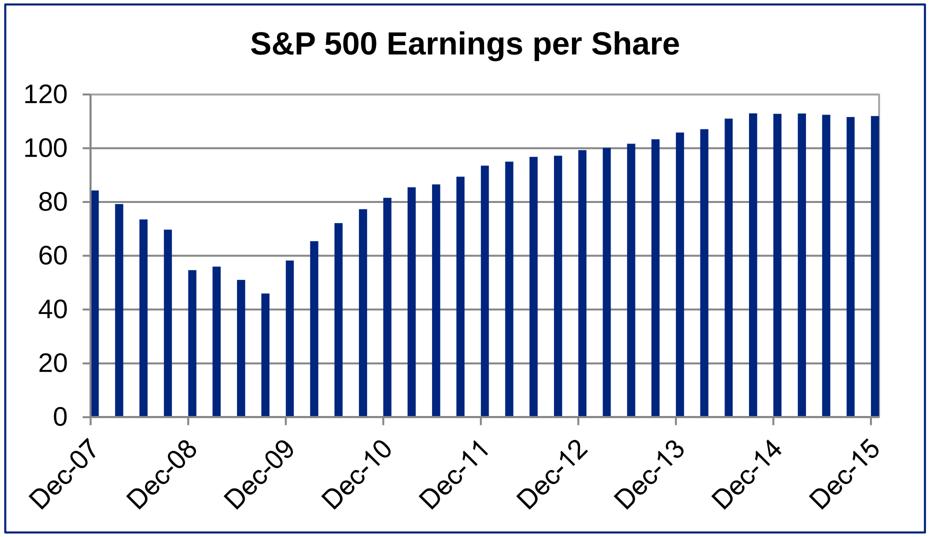
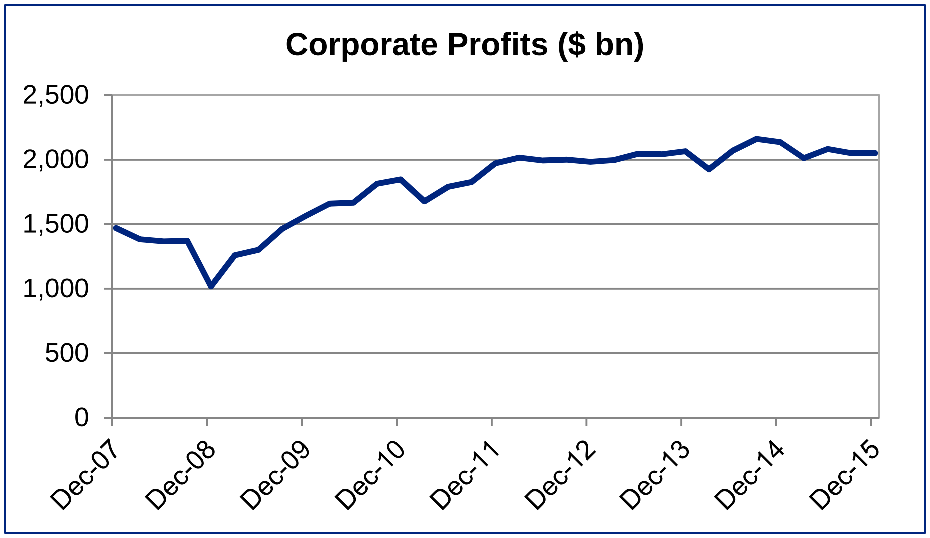
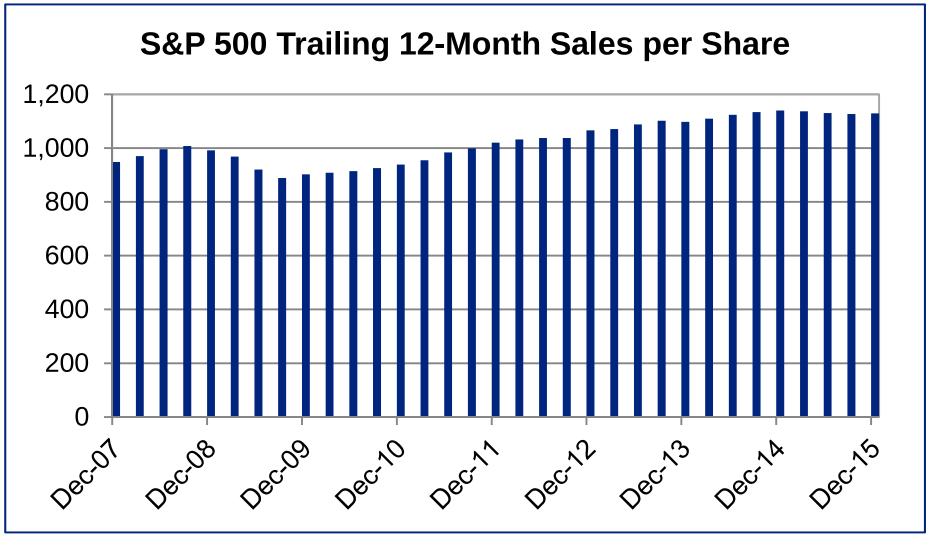
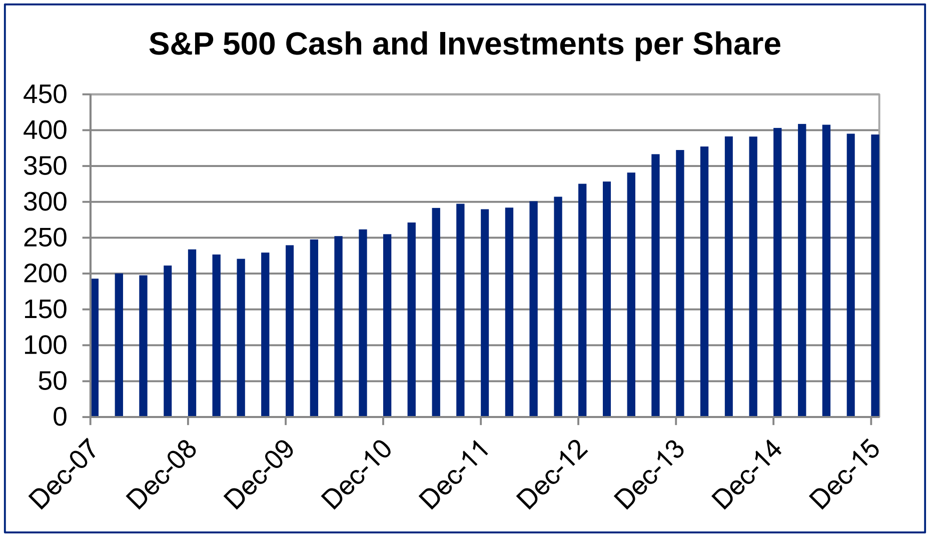
Trends in Corporate Fundamentals





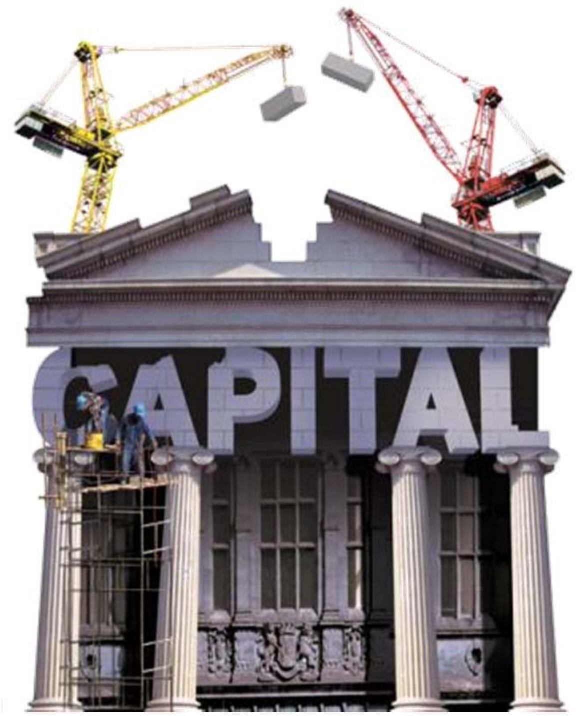




Source: Bloomberg, as of 12/31/2015.

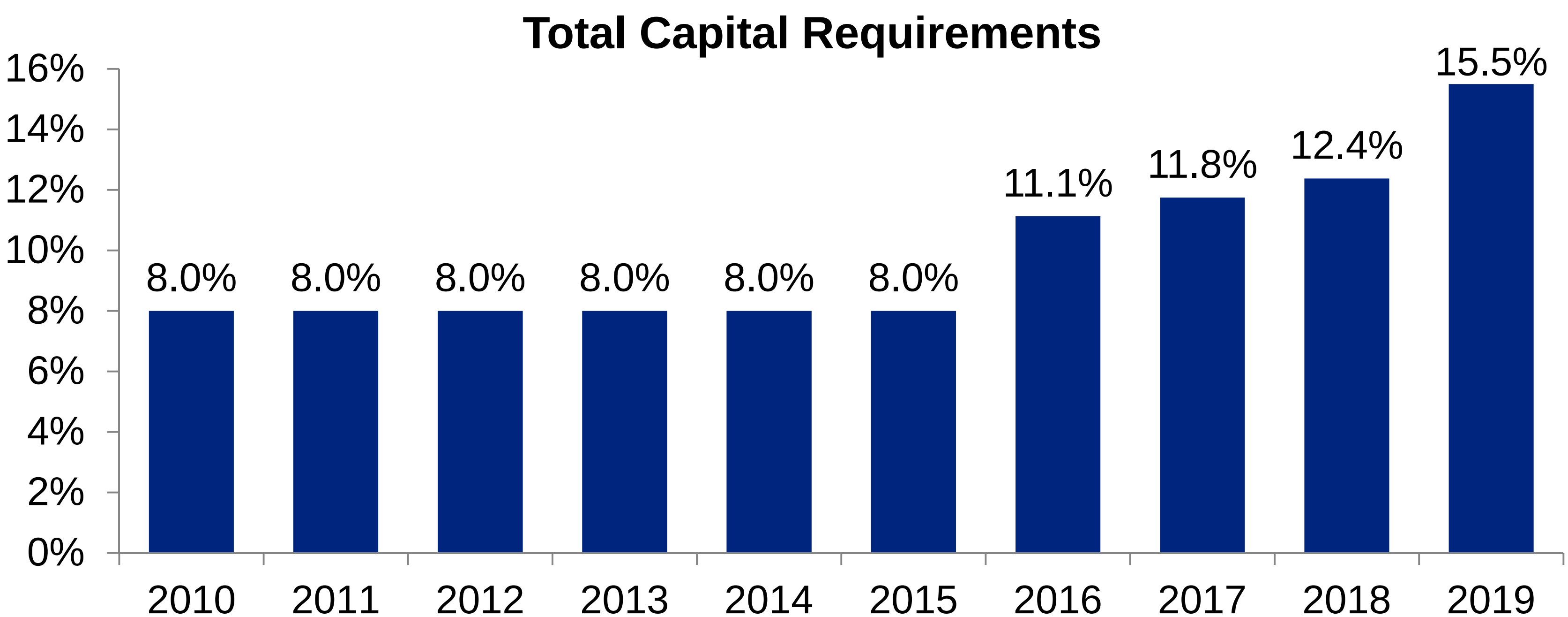
Basel III Banking Regulations

Basel III – New Banking Regulations

Capital	Leverage	Liquidity
		

Capital Ratio Requirements

Required Capital Ratio = Capital (according to new definition) / Risk-Weighted Assets



Source: JP Morgan, U.S. Fixed-Income Regulatory Update for 3Q14.

Banks Deleverage

- To make banks more stable, Basel III requires many banks to increase their capital or decrease their total assets.

De-Leveraging Requirements by Bank ($billion)		
	Capital Increase	(or) Asset Reduction
Bank of America	-	-
Citibank	2	(49)
JP Morgan	10	(204)
Wells Fargo	-	-
Goldman Sachs	5	(107)
Morgan Stanley	8	(166)
Bank of New York	4	(72)
State Street	-	-
Total	**29**	**(598)**

Source: Barclays Research, Leverage Ratio, An Attack on Repo, August 2013.

Impact of Liquidity Requirements

- Retail and “operational wholesale” deposits more valuable.
- High-quality, liquid assets are precious.
- Liquid reserves needed for undrawn commitments.
- Desire for longer-term funding.

$$\frac{\textbf{High-Quality Liquid Assets}}{\textbf{Total Net Cash Outflows}} \geq \textbf{100\%}$$

Liquidity Crisis: Withdrawals of deposits, draws on letters of credit, etc.

Money Market Reform

Background: Money Market Funds

- Stable net asset value (NAV) of $1.00 per share
- Registered and regulated by the Securities and Exchange Commission (SEC).
  - Required to follow SEC Rule 2a-7:
    - Weighted average maturity (WAM)
    - Credit Quality
    - Liquidity
    - Diversification
    - Stress testing
    - Disclosures

Money Market Fund Regulations Changed in 2010

- Decreased maximum WAM from 90 to 60 days.
- Introduced a weighted average life (WAL) with a maximum of 120 days.
- Instituted daily and weekly liquidity requirements.
- Required periodic stress testing.
- Instituted stricter rules on securities with lower credit quality.

Money Market Fund Regulations Are Changing

2016 Changes

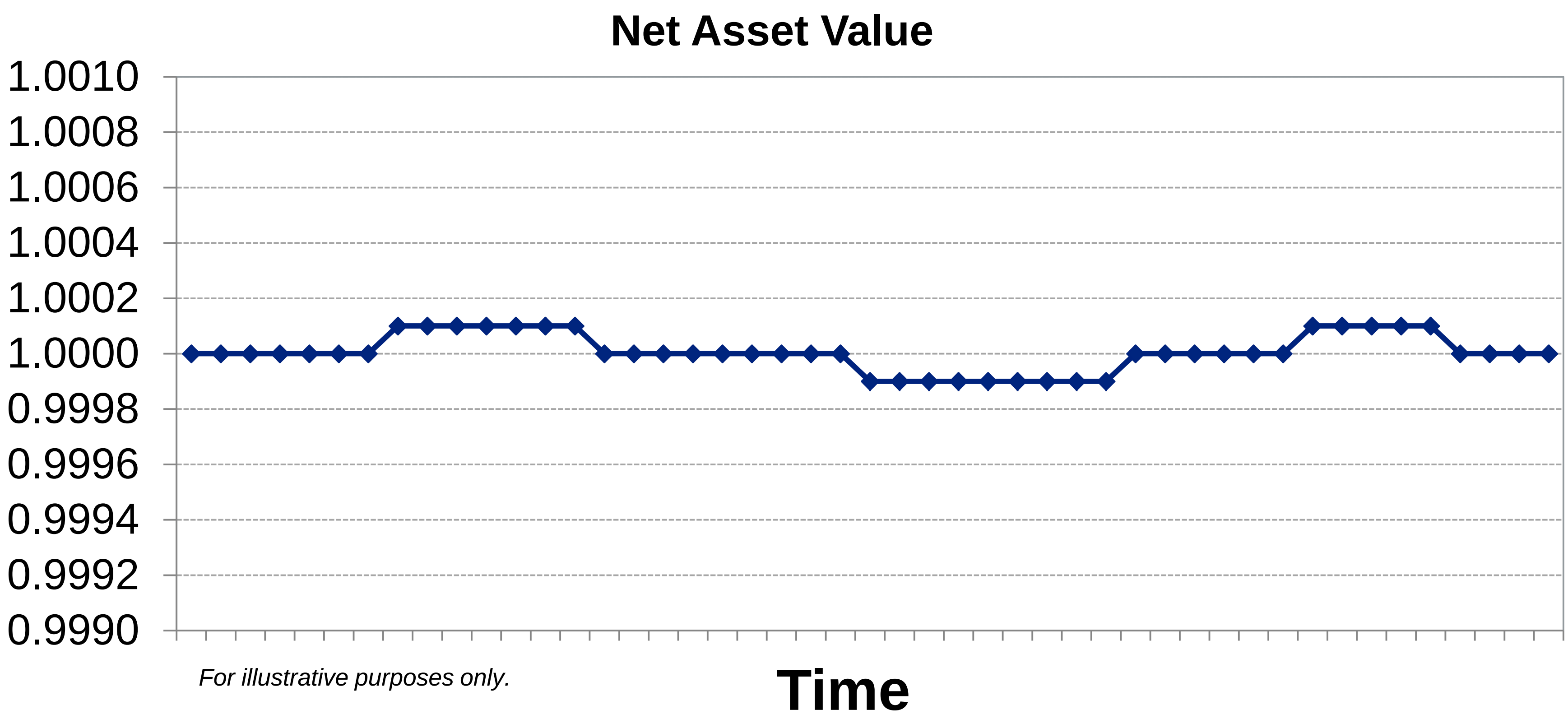
- Floating NAV for institutional prime money market funds
- Liquidity fees
- Redemption gates

Depends on fund classification:

- Prime
- Government
- Institutional
- Retail

Prime/Institutional Variable NAV

- 2016 changes will require that prime institutional money market funds operate with a floating, market value-based, NAV rounded to the fourth decimal place.
- A variation in the NAV of 0.0001 = $1,000 on a $10 million fund balance.



For illustrative purposes only.

Liquidity Fee

- Fee charged for a withdrawal under certain circumstances:
  - If weekly assets fall below 30% of total assets, liquidity fees may be charged.
  - If weekly assets fall below 10% of total assets, there is a “default” 1% liquidity fee on redemptions.*
  - Fees can be lower or higher, up to a maximum of 2%.*
- Liquidity fees can be lifted once weekly liquid assets rise above 30% of total assets, and could be lifted at any time by the Board.

**At Board’s discretion.*

Redemption Gates

- Suspension of redemptions
  - If a fund's weekly liquid assets fall below 30% of its total assets, the money market fund's Board may temporarily suspend redemptions for up to 10 business days.
- Government money market funds are exempt from liquidity fees and redemption gates, but are permitted to institute them if disclosed.

Money Market Fund Regulations: Key Elements

	Prime Fund	Government Fund
Retail Fund	• Constant NAV • Redemption gates • Liquidity fees	• Constant NAV • Optional redemption gates • Optional liquidity fees
Institutional Fund	• Variable NAV • Redemption gates • Liquidity fees	• Constant NAV • Optional redemption gates • Optional liquidity fees

Effective October 14, 2016.

Variable NAV Accounting Problems

Activity	Transaction (Shares)	Share Balance	NAV	Share Price	Value of Shares
Buy 10 million shares at $1.0000 per share	+10,000,000	10,000,000	1.0000	$1.0000	$10,000,000
Write check for $1 million	-	10,000,000	1.0000	$1.0000	$10,000,000
Check clears 2 days later when share price is $0.9999	-1,000,100	8,999,900	0.9999	$0.9999	$8,999,000
One week later, share price is $0.9998	-	8,999,900	0.9998	$0.9998	$8,998,100
Write check for $1 million	-	8,999,900	0.9998	$0.9998	$8,998,100
Check clears 2 days later when share price is $0.9996	-1,000,400	7,999,500	0.9996	$0.9996	$7,996,300

Constant NAV Accounting

Activity	Transaction (Shares)	Share Balance	NAV	Share Price	Value of Shares
Buy 10 million shares at $1.0000 per share	+10,000,000	10,000,000	1.0000	$1.0000	$10,000,000
Write check for $1 million	-	10,000,000	1.0000	$1.0000	$10,000,000
Check clears 2 days later when share price is $0.9999	-1,000,000	9,000,000	0.9999	$1.0000	$9,000,000
One week later, share price is $0.9998	-	9,000,000	0.9998	$1.0000	$9,000,000
Write check for $1 million	-	9,000,000	0.9998	$1.0000	$9,000,000
Check clears 2 days later when share price is $0.9996	-1,000,000	8,000,000	0.9996	$1.0000	$8,000,000

Where Can You Invest Your Liquidity Now?

Local Government Investment Pools (LGIPs)

- Money market fund rules will not apply to LGIPs
- Examples of LGIPs in California
  - Local Agency Investment Fund (LAIF)
  - Shares issued by a joint powers authority
    - California Asset Management Program (CAMP)
    - CalTrust
  - County pool

Why Weighted Average Maturity Matters

Value of a $1.00 Investment

	Weighted Average Maturity (WAM)					
	Money Market Fund		Mutual Fund			
	30 Days	60 Days	180 Days	1 Year	1.5 Years	2 Years
If Rates Rise 3%	0.9975	0.9950	0.9850	0.9700	0.9550	0.9400
If Rates Rise 2%	0.9983	0.9967	0.9900	0.9800	0.9700	0.9600
If Rates Rise 1%	0.9992	0.9983	0.9950	0.9900	0.9850	0.9800
If Rates Rise 0.5%	0.9996	0.9992	0.9975	0.9950	0.9925	0.9900
If Rates Unchanged	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
If Rates Fall 0.5%	1.0004	1.0008	1.0025	1.0050	1.0075	1.0100
If Rates Fall 1%	1.0008	1.0017	1.0050	1.0100	1.0150	1.0200
If Rates Fall 2%	1.0017	1.0033	1.0100	1.0200	1.0300	1.0400
If Rates Fall 3%	1.0025	1.0050	1.0150	1.0300	1.0450	1.0600

NAV changes, share price changes, and dollar losses assume an immediate change in interest rates.

Stable vs. Variable NAV

- LGIPs that meet certain GASB criteria will be able to round their NAVs to the nearest penny.

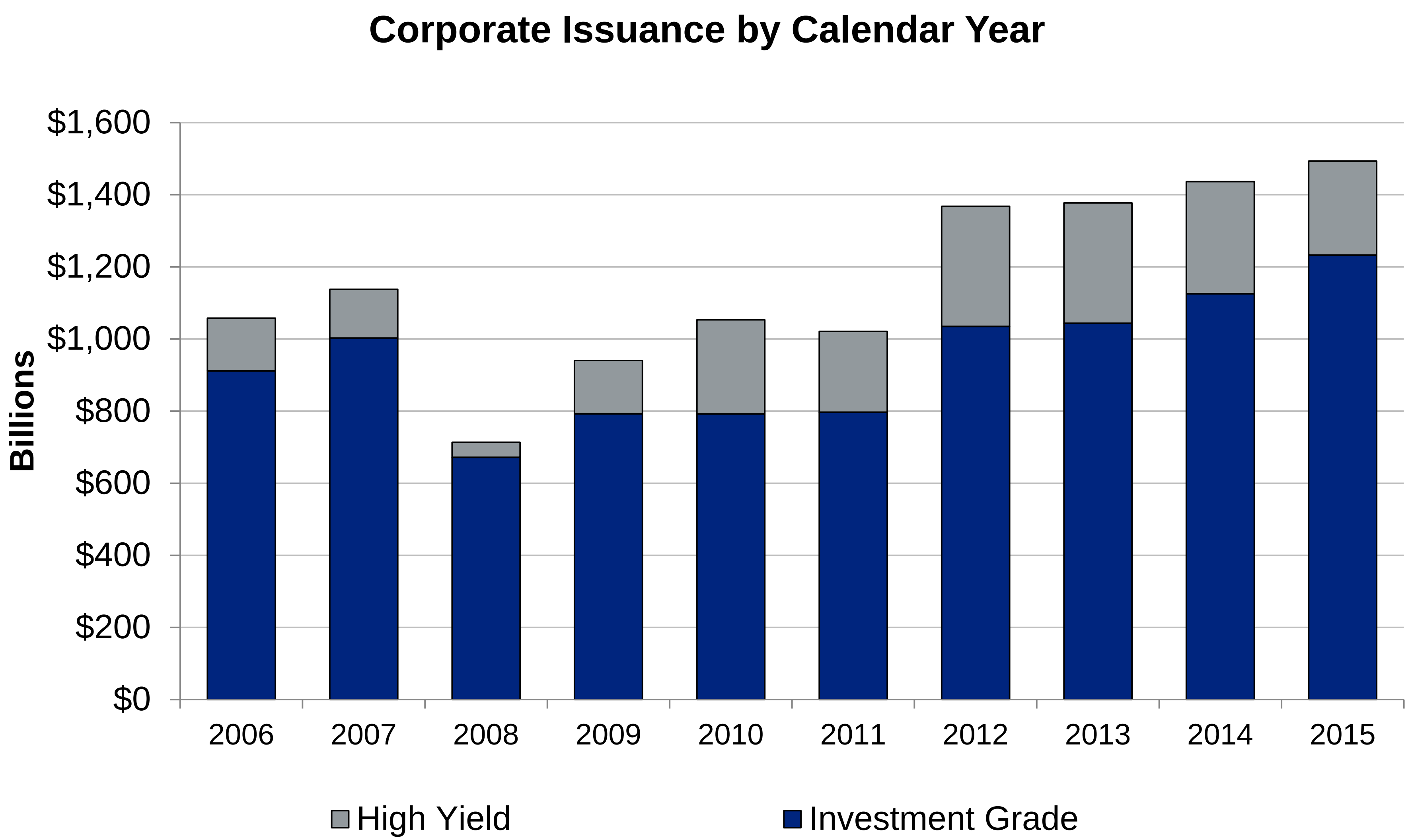
Impact of 0.5% Rate Increase

	Stable NAV LGIP/Gov MMF	Variable NAV MMF	Variable NAV Mutual Fund or LGIP
WAM	60 days	60 days	1.5 years
NAV	0.9992	0.9992	0.9925
Share price	$1.0000	$0.9992	$0.9925
Loss on $10 million	**$0**	$8,000	$75,000
Loss on $50 million	**$0**	$40,000	$375,000

NAV changes, share price changes, and dollar losses assume an immediate change in interest rates. For illustrative and educational purposes only.

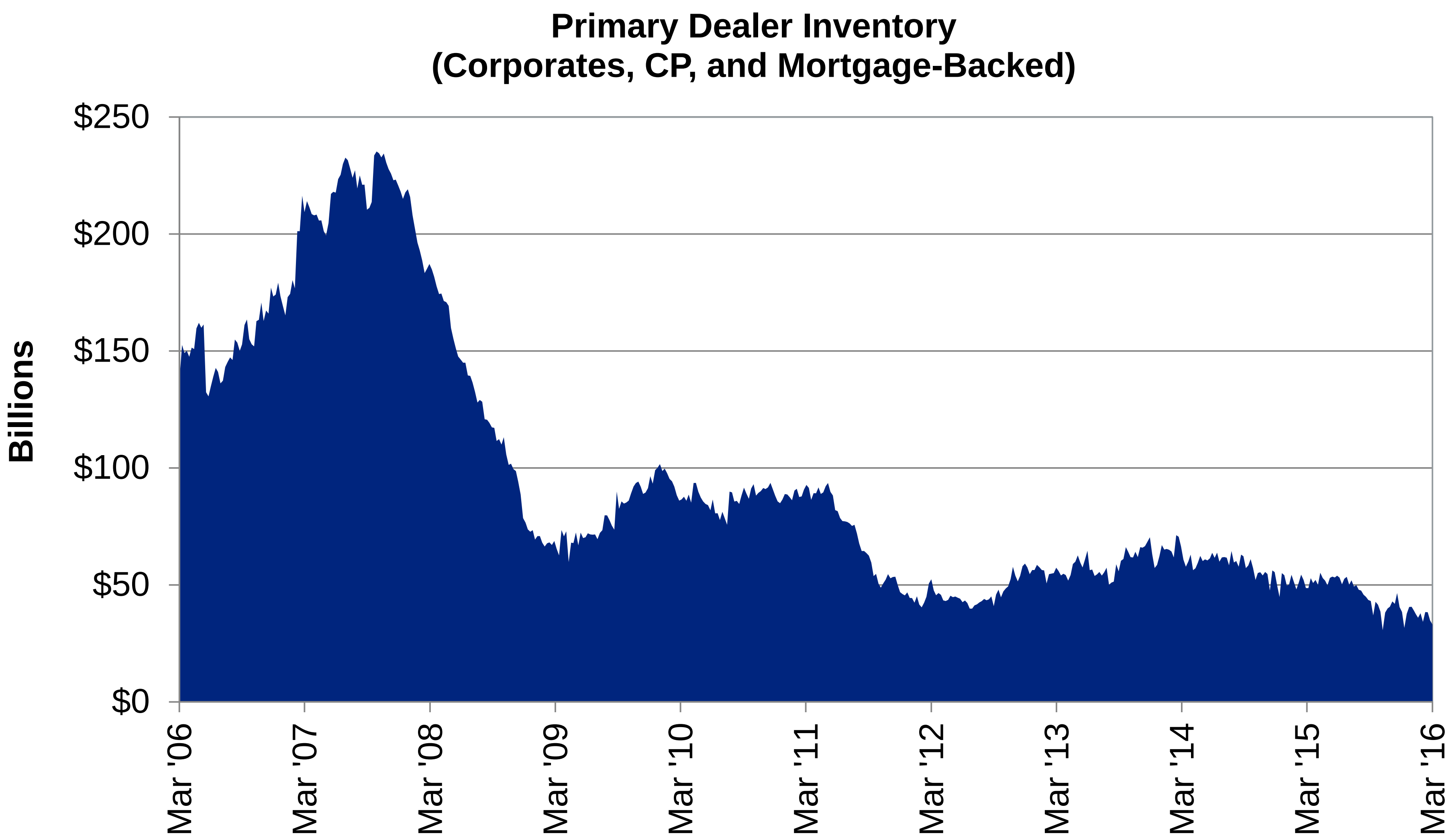
Changing Dynamics in Fixed-Income Trading

Primary Market Liquidity is Strong



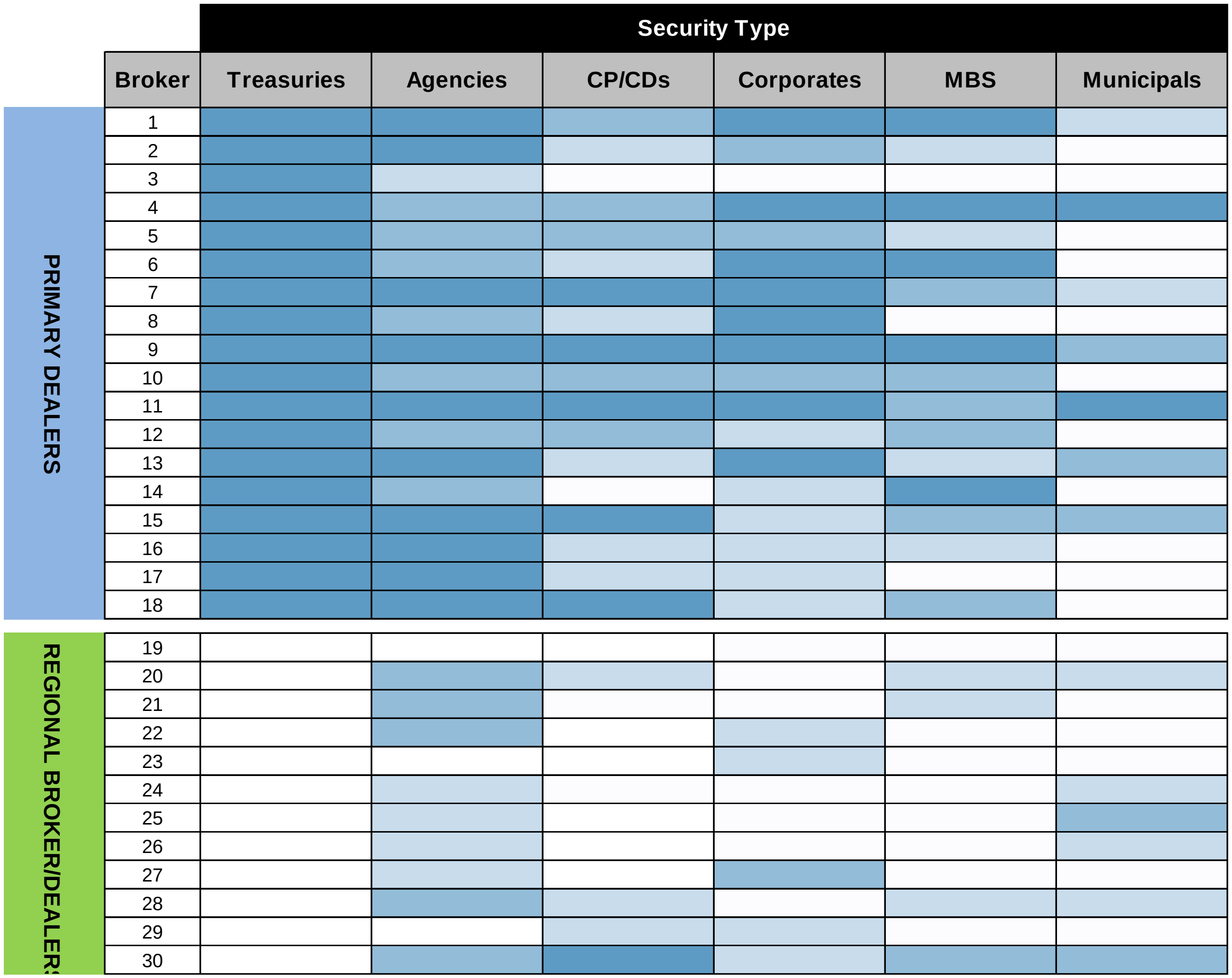
Source: SIFMA

Secondary Market Liquidity Decreasing



Source: MarketAxess as of 02/15/2016 and Company Institute as of 02/29/2016.

Need For Broad Market Access



Ranking
0=No inventory/do not trade
1=Low inventory/availability
2=Medium inventory/availability
3=High inventory/availability

Note: This graphic is for illustrative purposes only. It may not reflect the actual inventory levels or bidding activity of broker/dealers.

Evolving Dynamics of Market Interactions

Manual Processes

Electronic Systems

Automation

Summary

- Interest rates are likely to remain low for an extended period
- Federal agency debt is losing its importance for local government portfolios
- Corporates are gaining importance as an investment option, but additional care must be taken when investing in corporates.
- Bank reform is changing local government's ability to use deposits to manage liquidity.
- LGIPs and money market securities provide alternatives for liquidity no longer deposited with banks or invested in money market funds
- Decreasing secondary market liquidity increases the need for wide broker networks
- Technology and market dynamics are moving trading to electronic systems

Questions?

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