



# Presentation to the Treasury Borrowing Advisory Committee

U.S. Department of the Treasury  
Office of Debt Management  
August 3, 2010



# Agenda

- Fiscal Developments
- Auction Demand
- Portfolio Metrics Update
- Long-Term Challenges

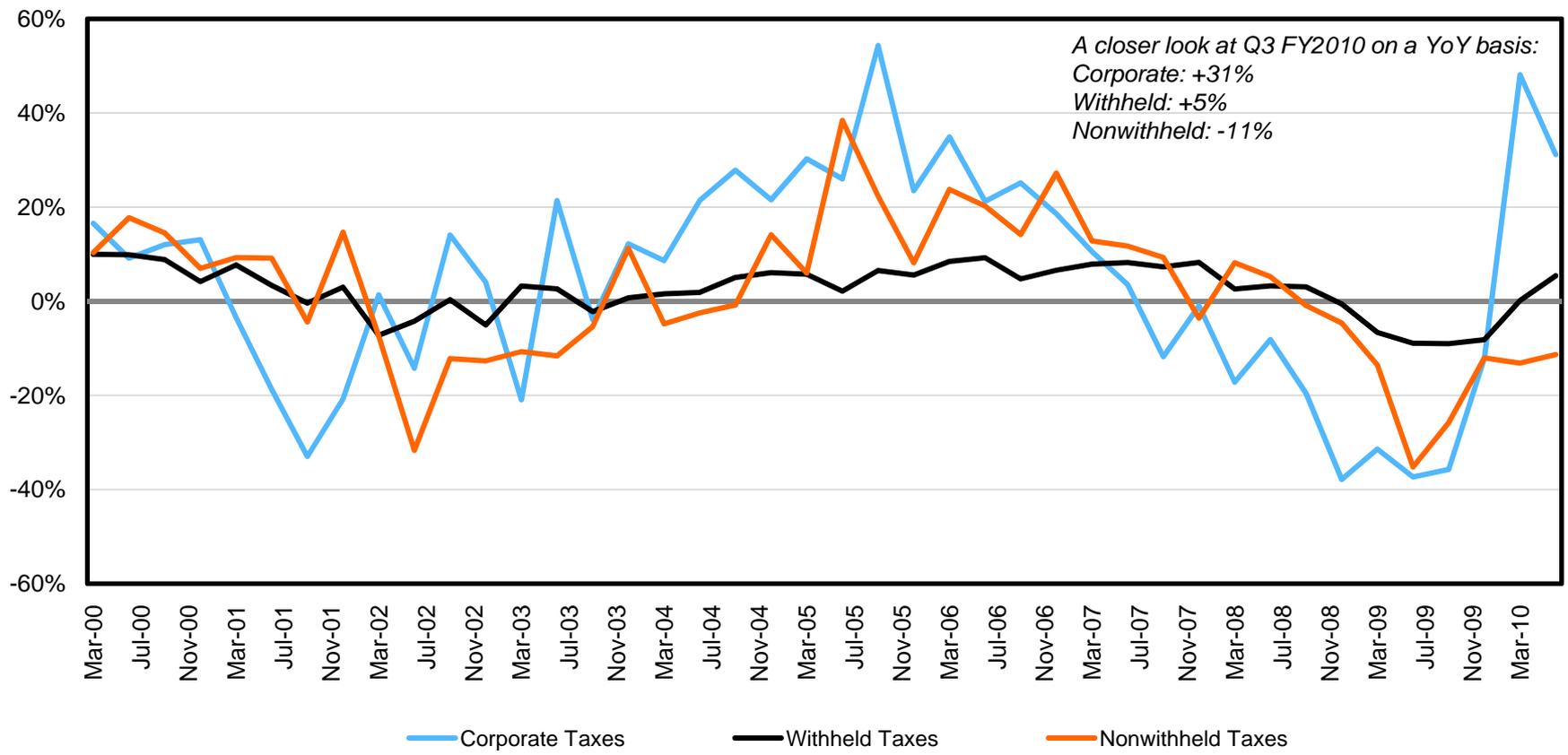
# FISCAL DEVELOPMENTS





# Tax Receipts

## Quarterly Tax Receipts Year over Year Percentage Change through June 30, 2010



Note: Adjusted for 9/11/01 Corporate Tax Receipts disruption

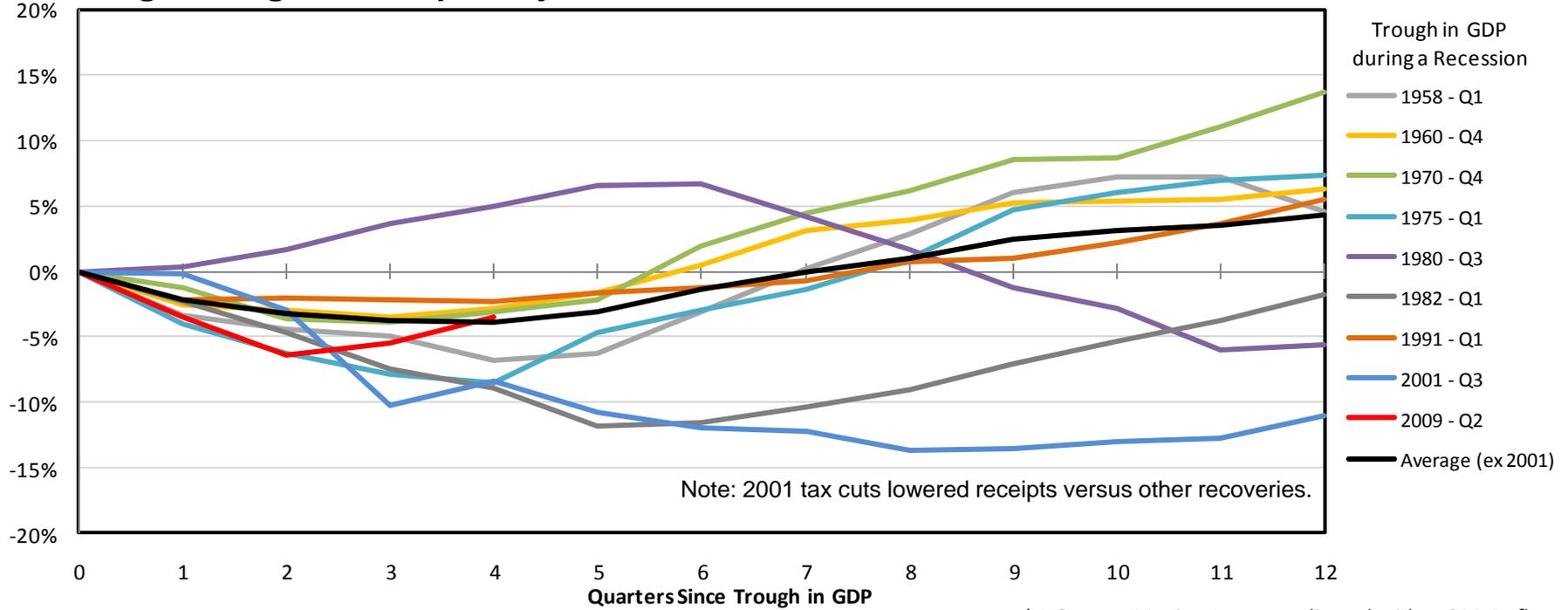
Note: Data plotted are year over year changes in quarterly receipts



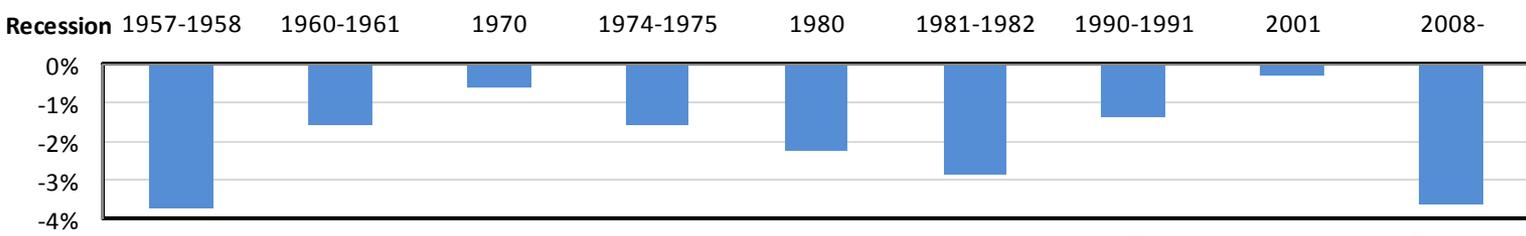


# Recovery in Receipts Compared to Previous Recessions

## Growth in Receipts From Each Recession's Trough in GDP Percentage Change in Receipts Adjusted for Inflation\* from T=0



## Peak to Trough Change in Real GDP



\*4-Quarter Moving Average adjusted with a GDP Deflator

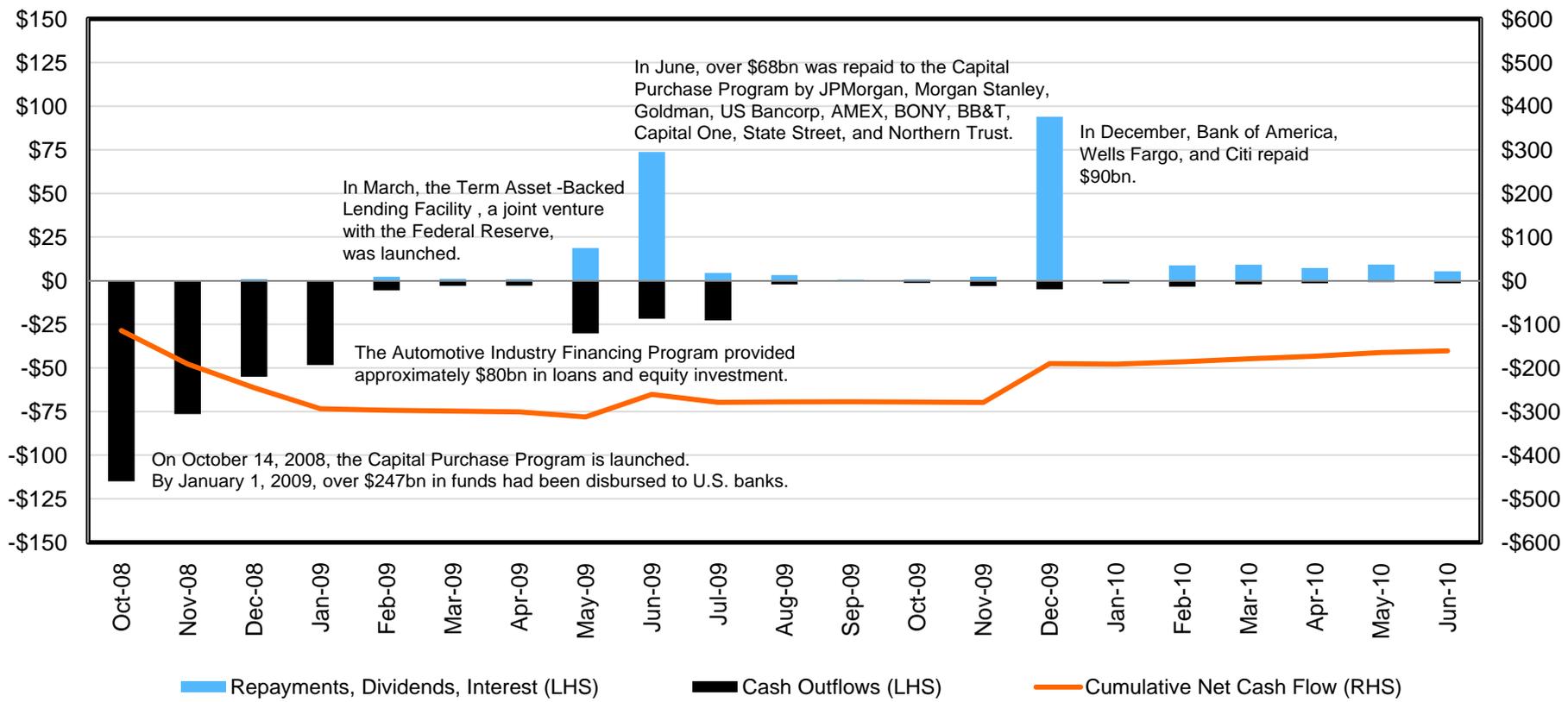
Data: Monthly Treasury Statement, Bureau of Economic Analysis





# TARP Repayments

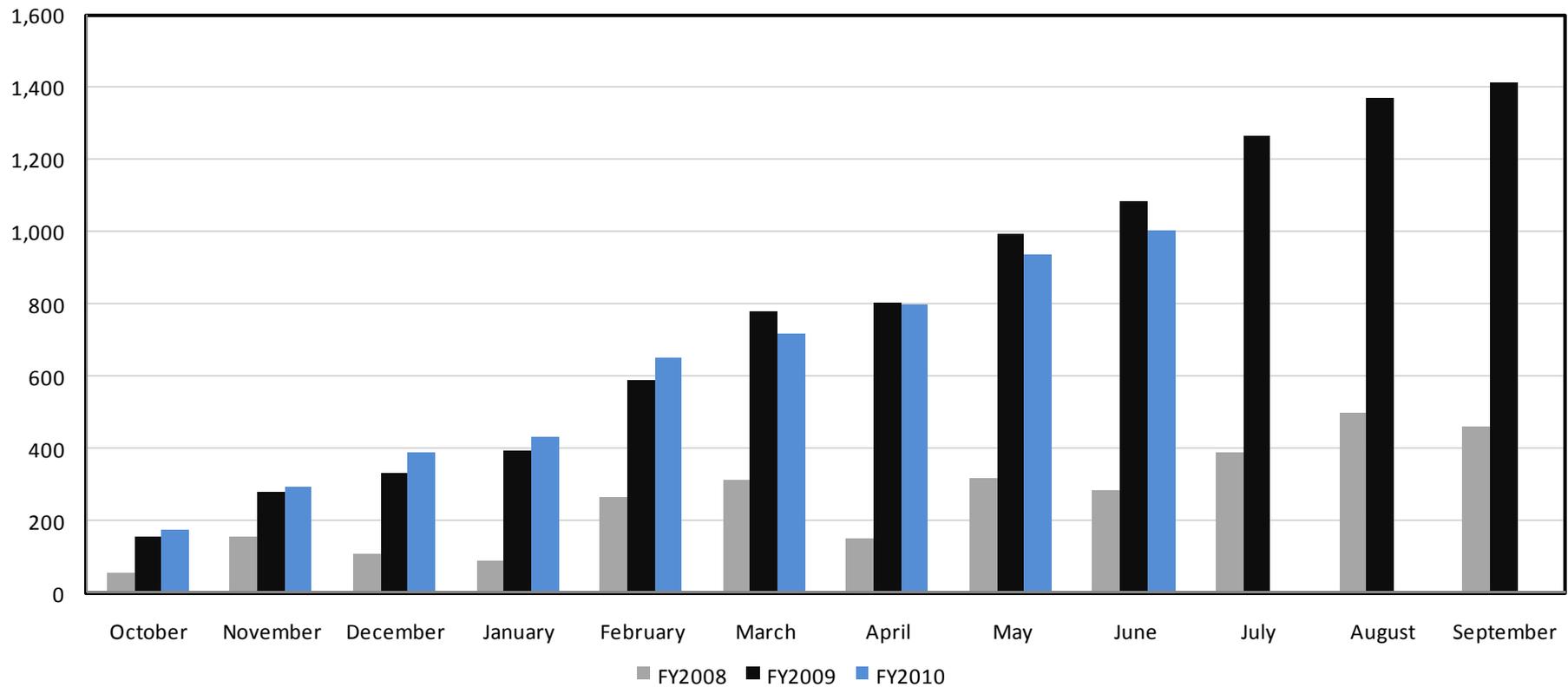
## TARP Cash Flows In Billions \$





# Cumulative Fiscal Budget Deficits Year-to-Date

## Fiscal Year to Date Deficits In Billions \$



Data: OMB for end of Fiscal Year, Monthly Treasury Statement for other months





# Primary Dealer and Government Deficit Estimates

FY 2010-2012 Deficit and Borrowing Estimates		\$ Billions	
	Primary Dealers*	CBO	OMB
FY 2010 Deficit Estimate	1,351	1,349	1,471
FY 2011 Deficit Estimate	1,207	980	1,416
FY 2012 Deficit Estimate	997	650	911
FY 2010 Deficit Range	1,250-1,500		
FY 2011 Deficit Range	995-1,400		
FY 2012 Deficit Range	642-1,200		
FY 2010 Marketable Borrowing Range	1,150-1,700		
FY 2011 Marketable Borrowing Range	950-1,479		
Estimates as of:	Jul 2010	Jan 2010	Jul 2010

\*Based on Primary Dealer feedback on July 26, 2010. Deficit estimates are averages.



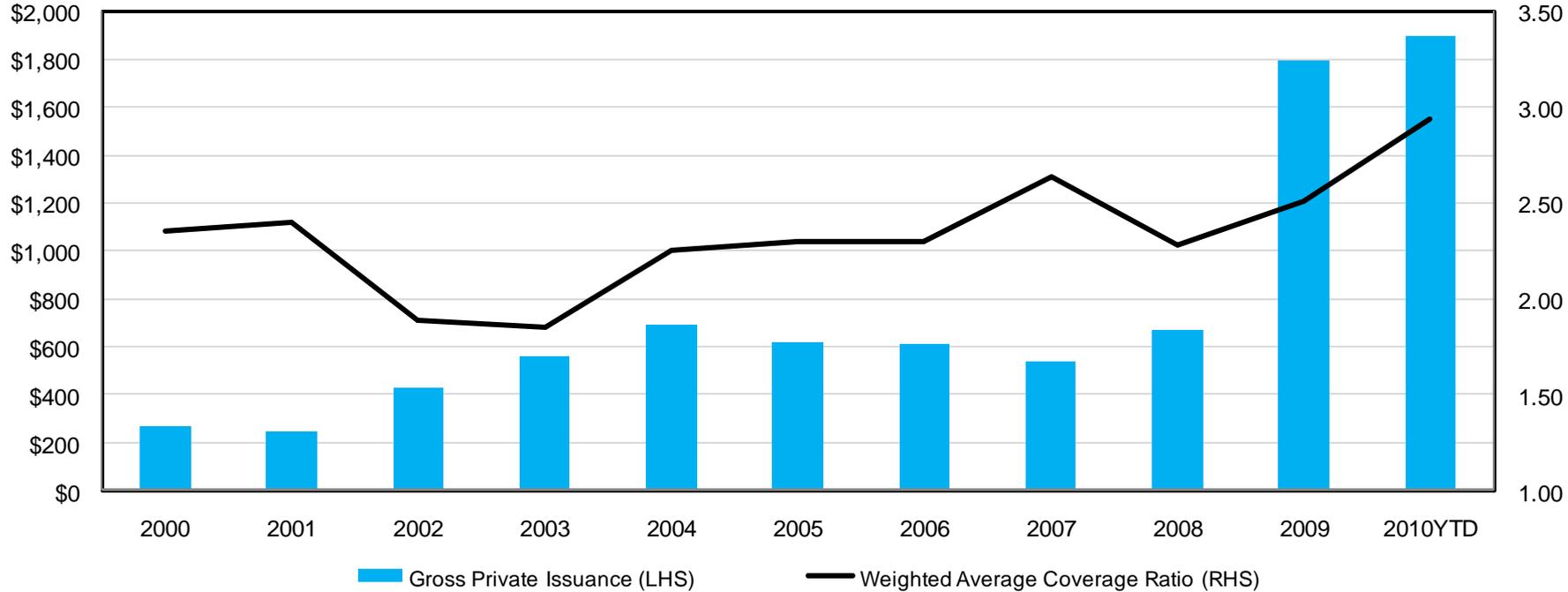
# AUCTION DEMAND





# Auctions Continue to Exhibit Strong Coverage

## Weighted Average Coverage Ratio on Notes and Bonds In Billions \$, Coverage Ratio



Note: Excludes TIPS and Bills issuance.

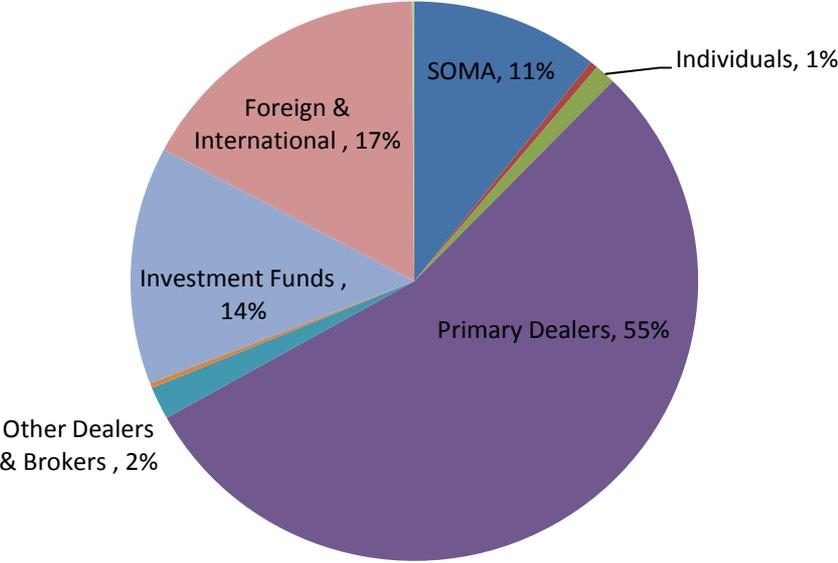
Source: Treasury Investor Class Data



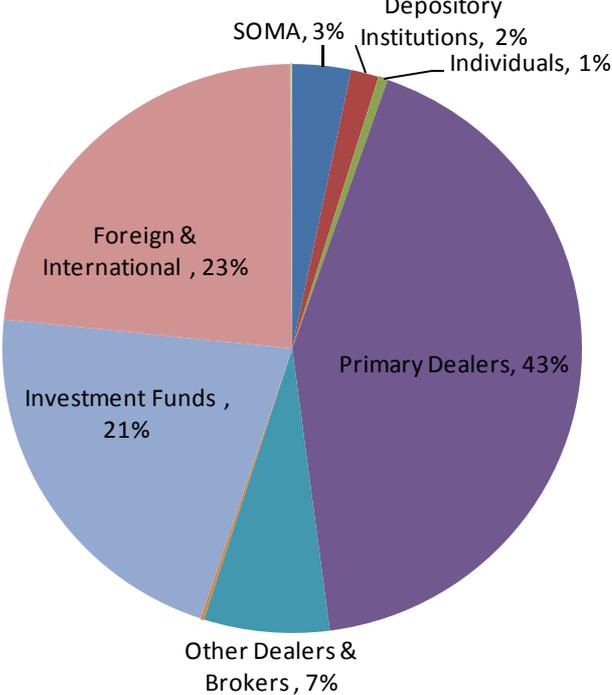


# Investment Funds Have Increased Coupon Auction Participation

FY2004-09: Average Investor Class Allotments



FYTD2010: Average Investor Class Allotments



Note: Excludes Bills

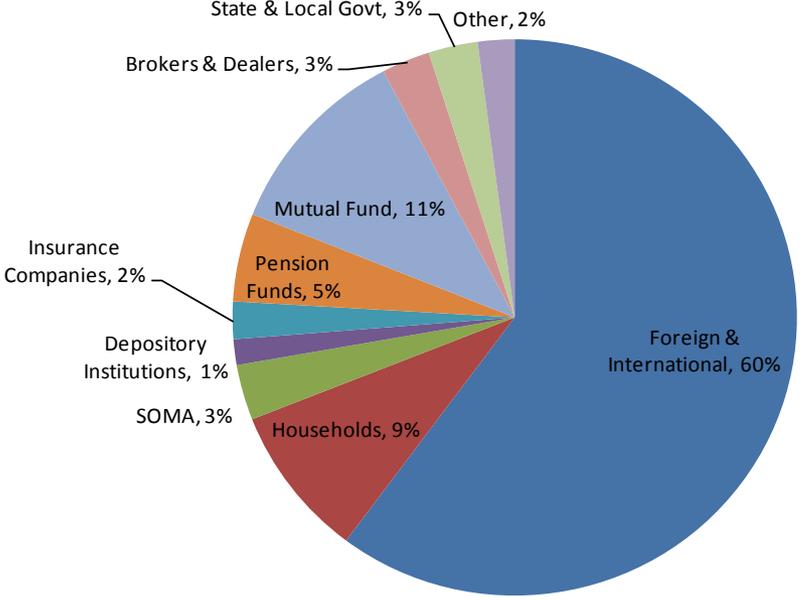
Source: Treasury Investor Class Data





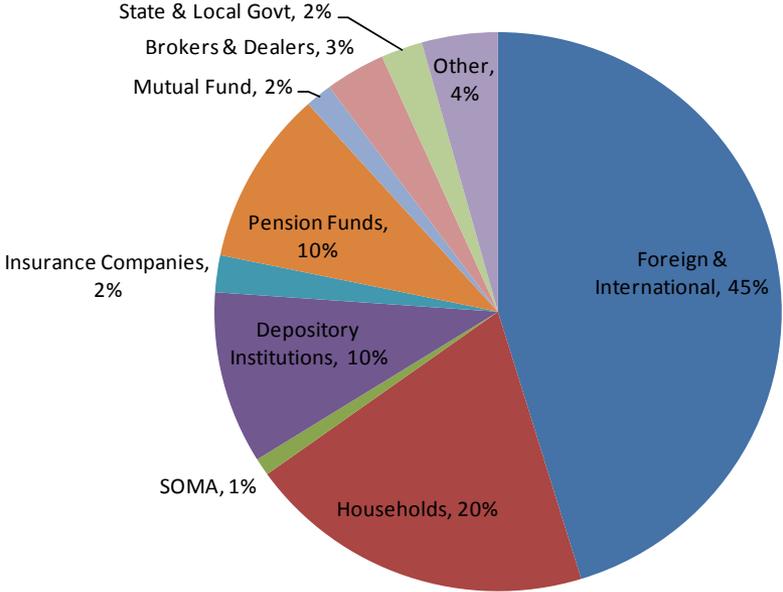
# Domestic Accounts Have Exhibited Increased Overall Demand\*

Purchase of Net Issuance by Investor Type:  
FY2004-09  
**Change in Holdings as a Percentage of Net Issuance**



Net Issuance FY2004-09: 3.5 Trillion

Purchase of Net Issuance by Investor Type:  
FY2010 through Q2  
**Change in Holdings as a Percentage of Net Issuance**



Net Issuance FY2010: 1.1 Trillion

Households includes households, domestic hedge funds, and non-profits.  
Mutual Funds include Mutual Funds, Money Markets, Closed-end Funds, and ETFs.

\*Please note figures represent net changes in holdings accomplished via secondary market transactions as well as auction participation.

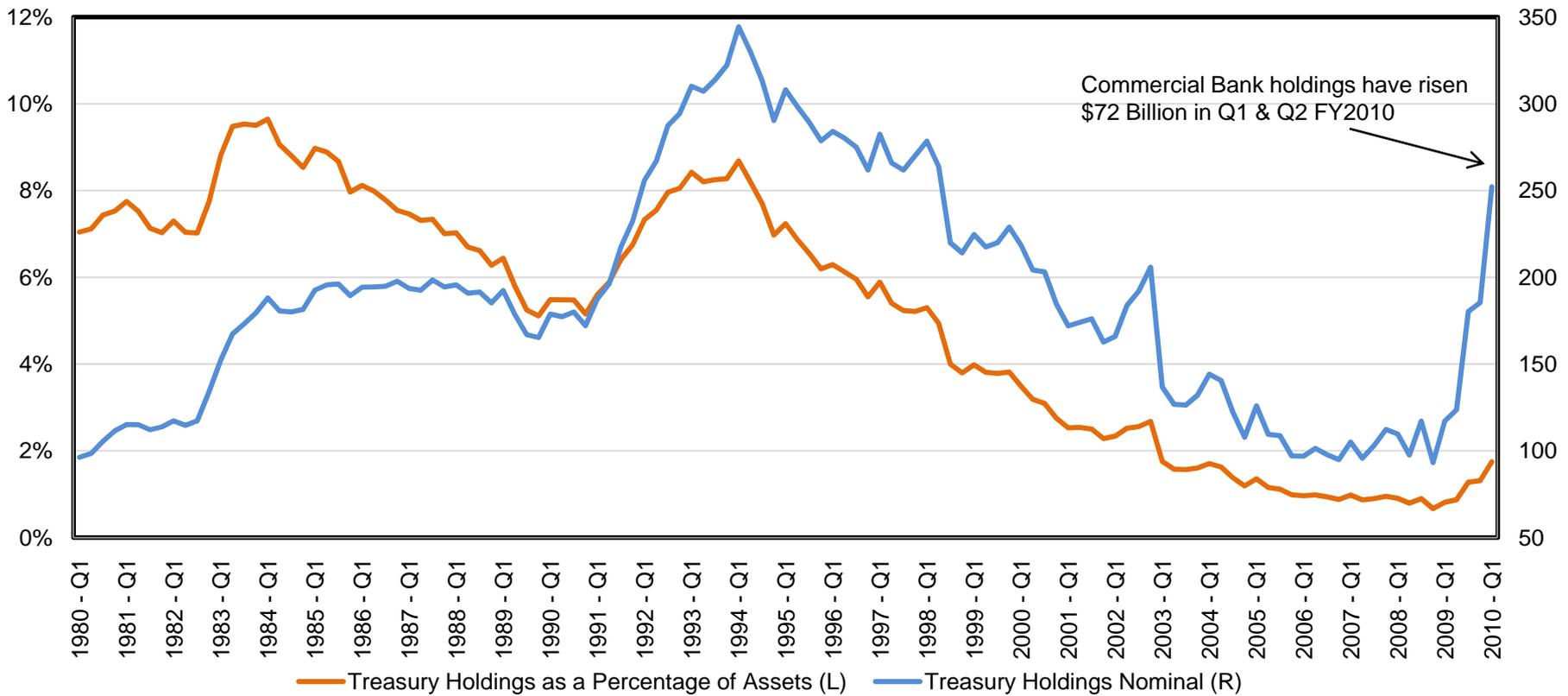
Source: Federal Reserve Flow of Funds, Monthly Statement of Public Debt





# Bank Holdings of Treasuries Have More Than Doubled Since 2008

## Treasury Securities Held by Commercial Banks Percentage of Total Financial Assets, In Billions \$



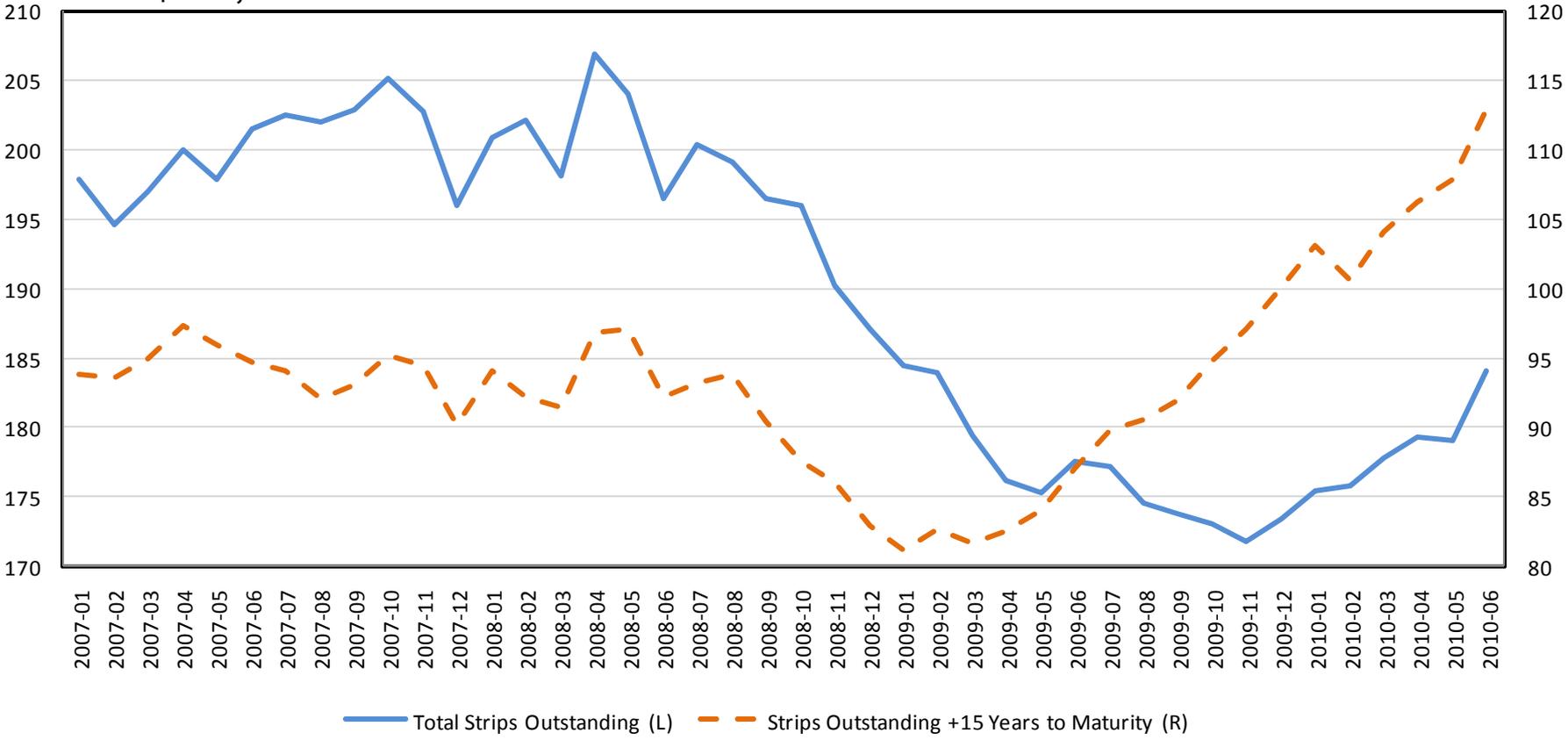
Source: Federal Reserve Flow of Funds





# Demand For Duration Has Led to a Growth in Longer STRIPS Outstanding

## Securities Held in STRIPS Form In Billions \$ Par, End of Month



Source: Monthly Statement of Public Debt



# PORTFOLIO METRICS UPDATE

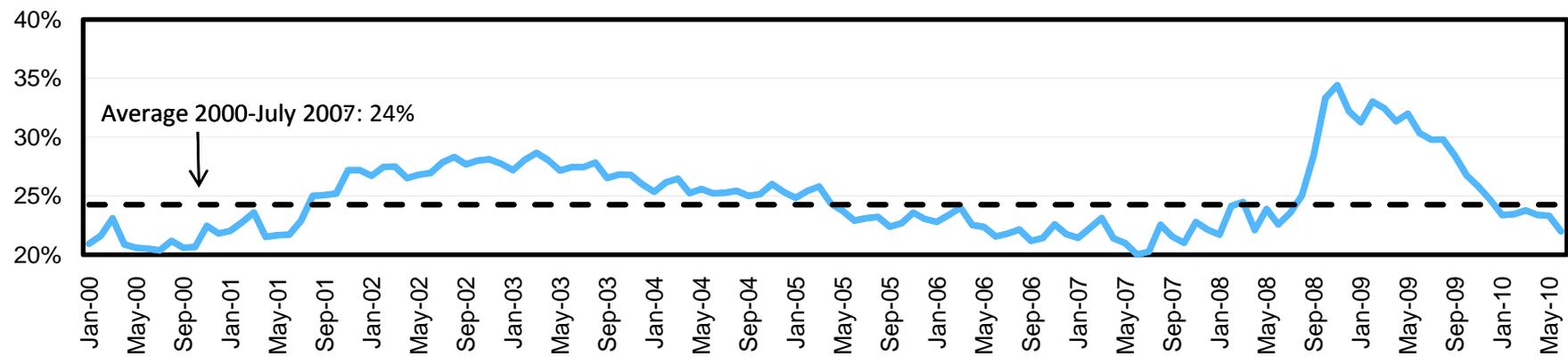




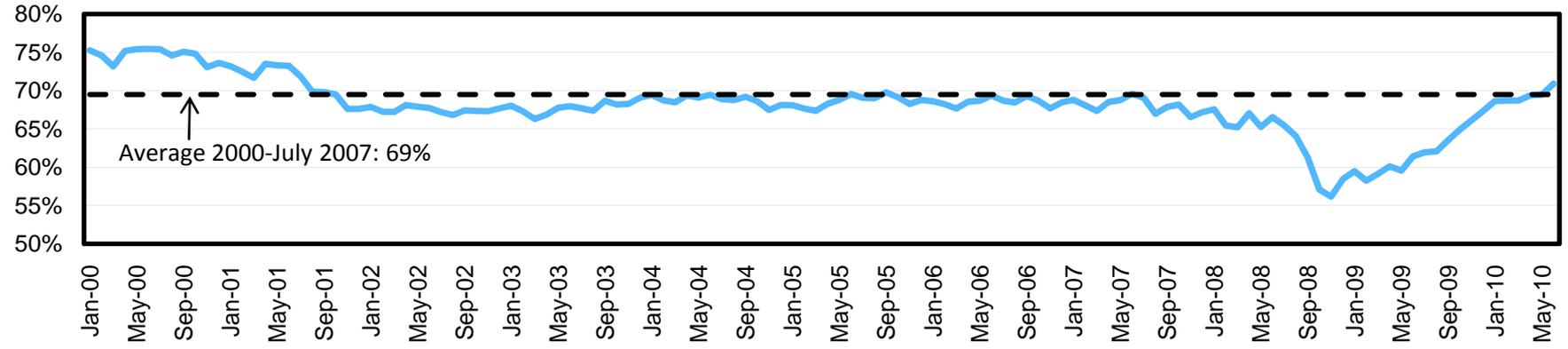
# Nominal Coupons and Bills as a Percentage of the Portfolio

### Bills Percentage of Total Portfolio

Notes: Includes SFP and CMBs



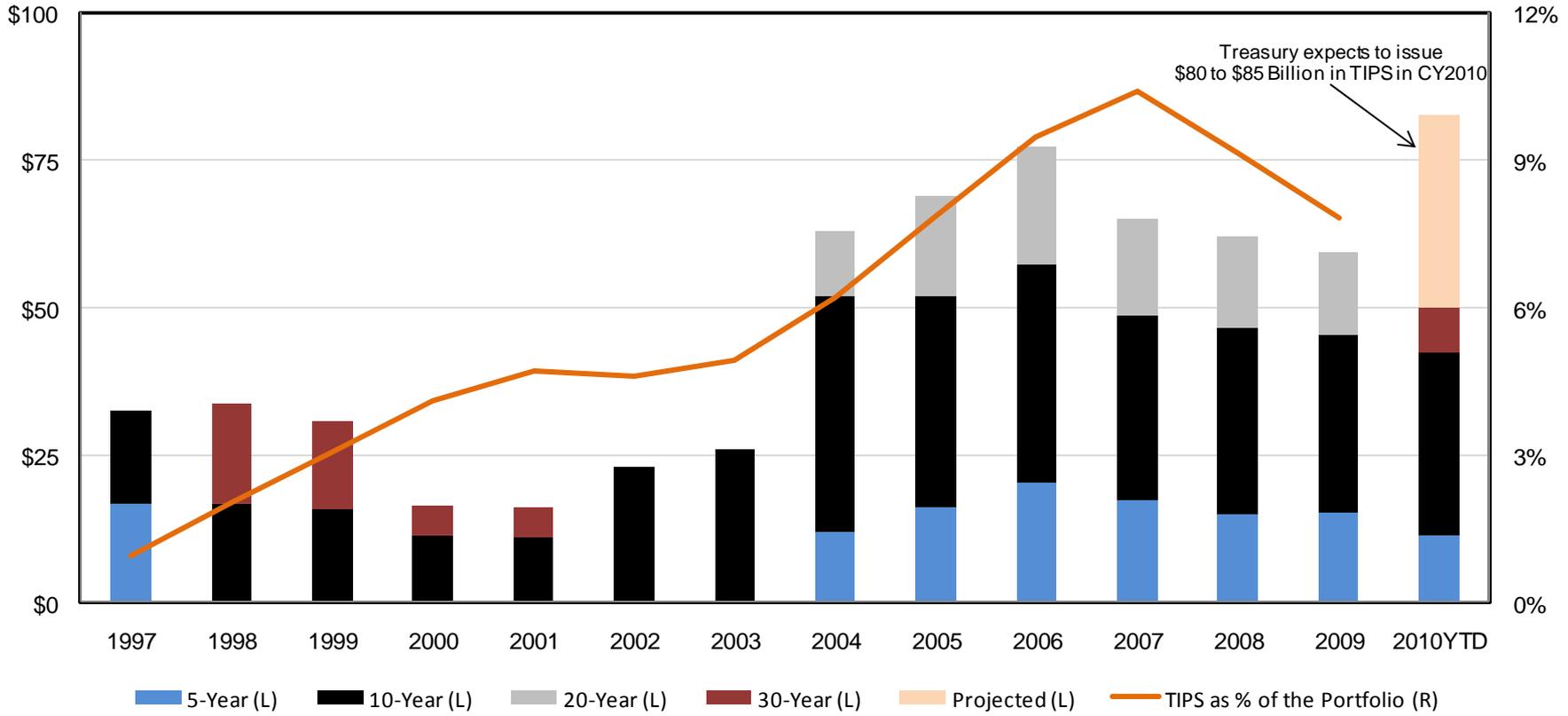
### Nominal Coupons Percentage of Total Portfolio





# TIPS Issuance Will Continue to Increase

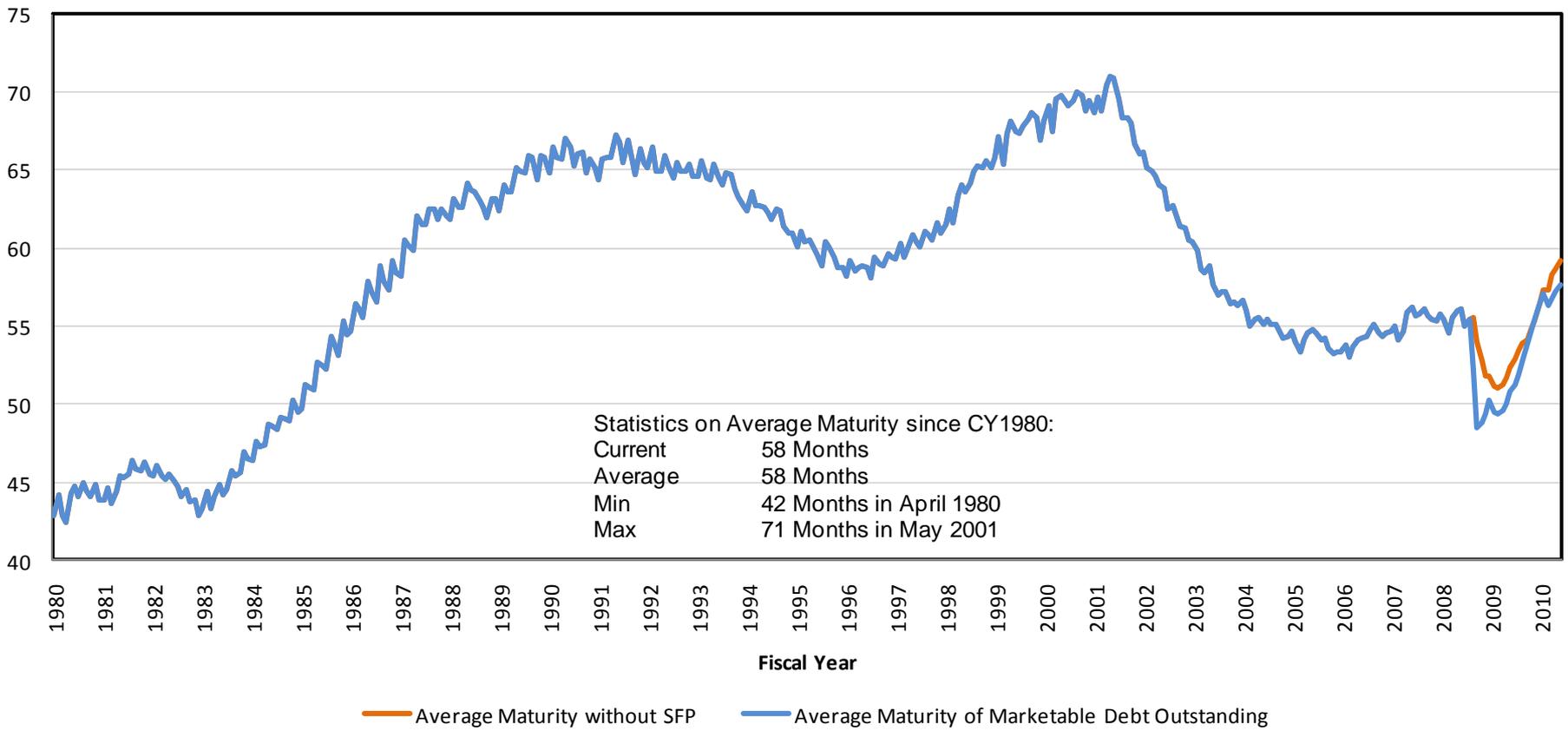
## TIPS Calendar Year Issuance in Billions \$, Percentage of Portfolio





# Average Maturity of the Debt Continues to Lengthen

## Average Maturity Maturity in Months, Percentage of Portfolio



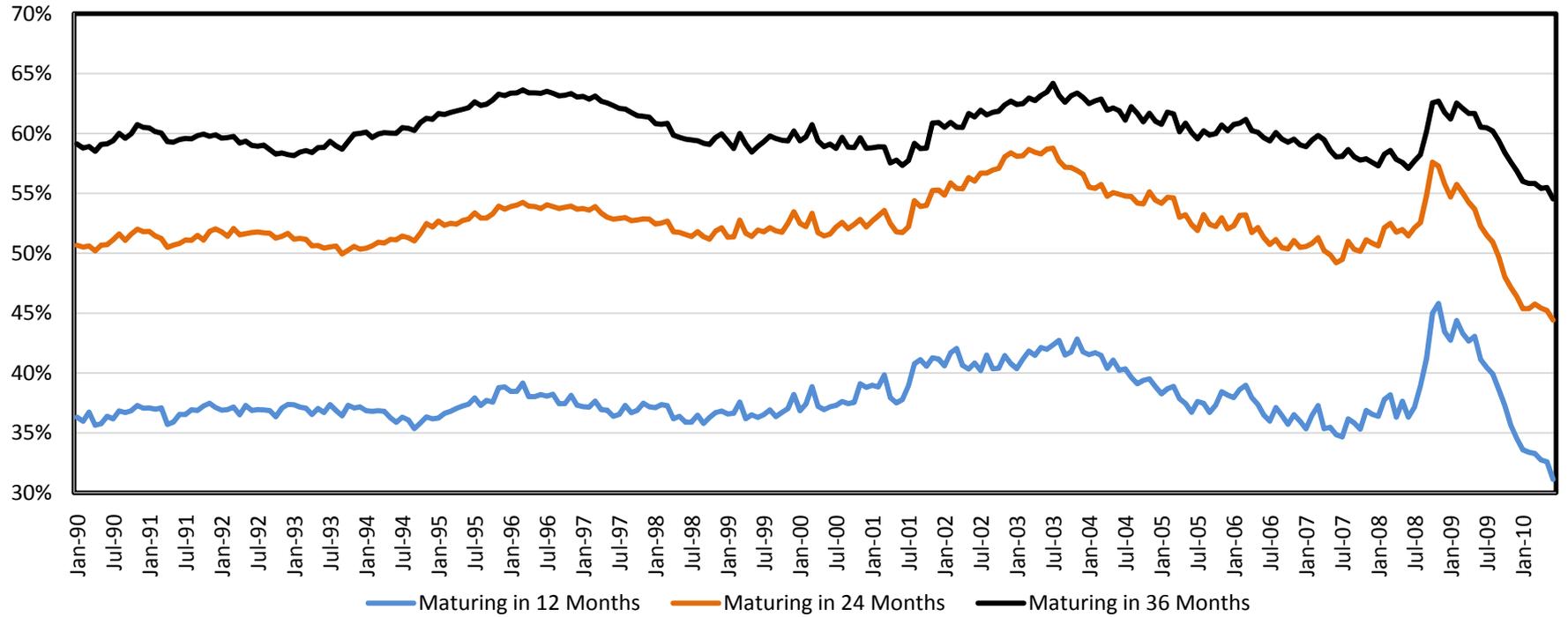
Note: This graph utilizes average maturity to call for callable debt. Previously, average maturity prior to 1998 was calculated to maturity for callable debt rather than to call.





# Percentage of Debt Maturing in the Near-Term is at Historic Lows

## Percentage of Debt Maturing in Next 12 to 36 Months Fiscal Year



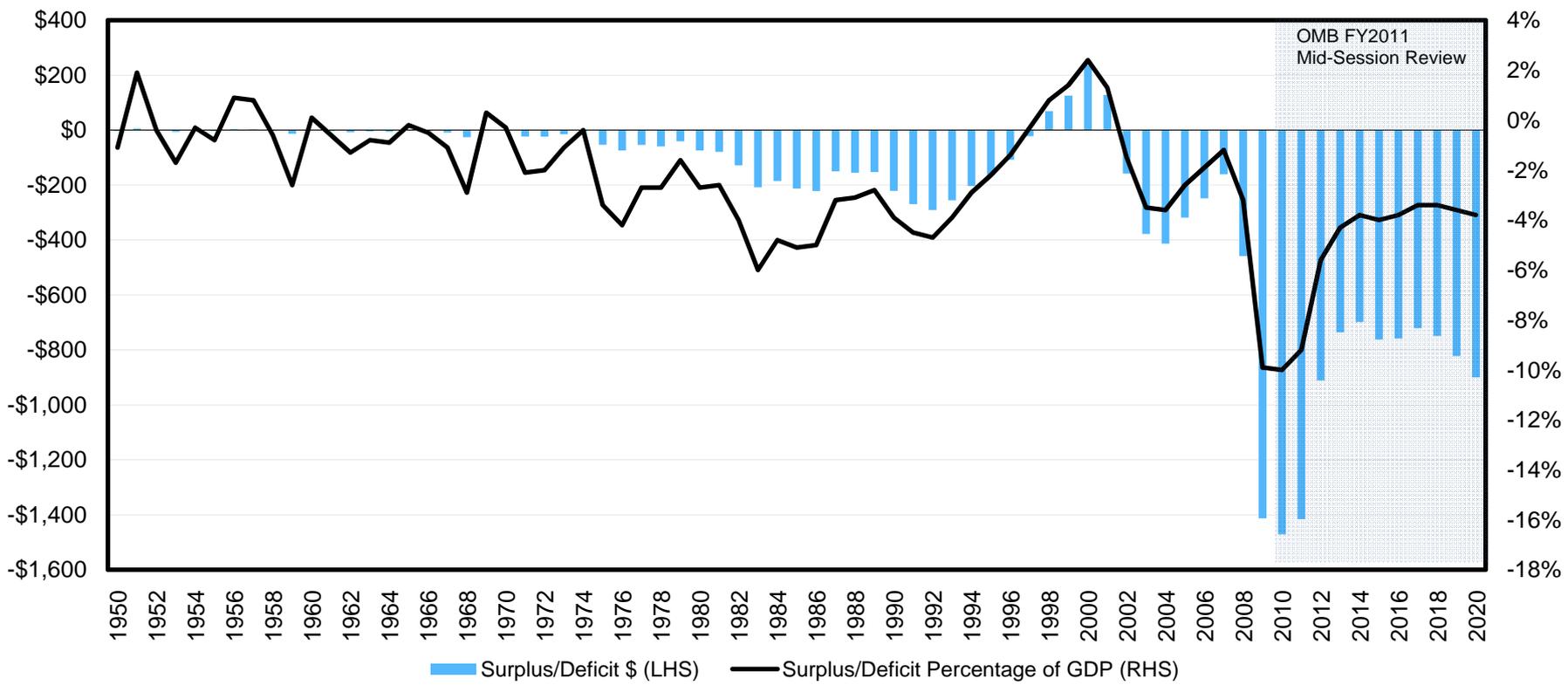
# LONG-TERM CHALLENGES





# OMB FY2011 Mid-Session Review Deficits

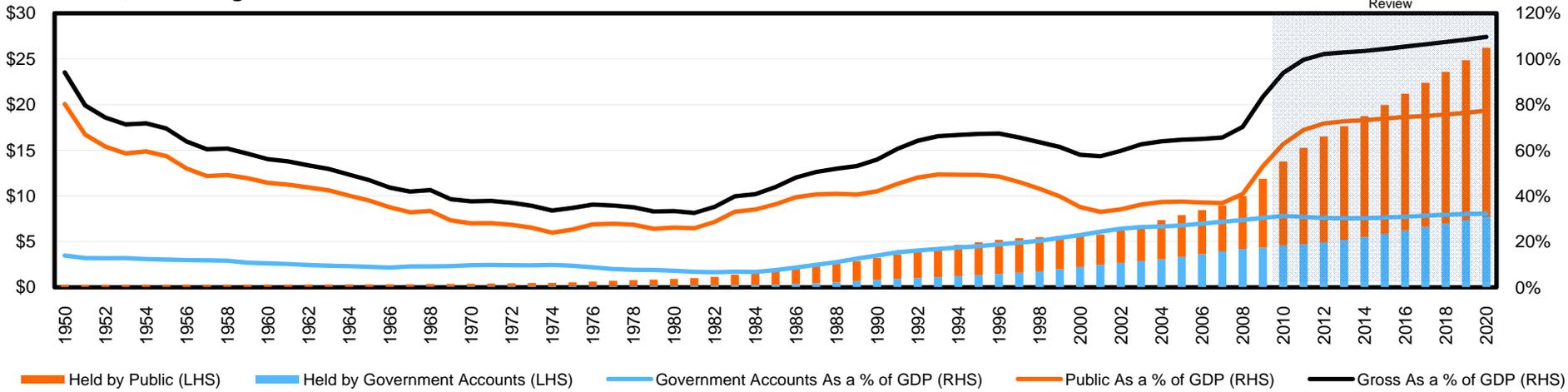
## Budget Surplus/Deficit In Billions \$, Percentage of GDP



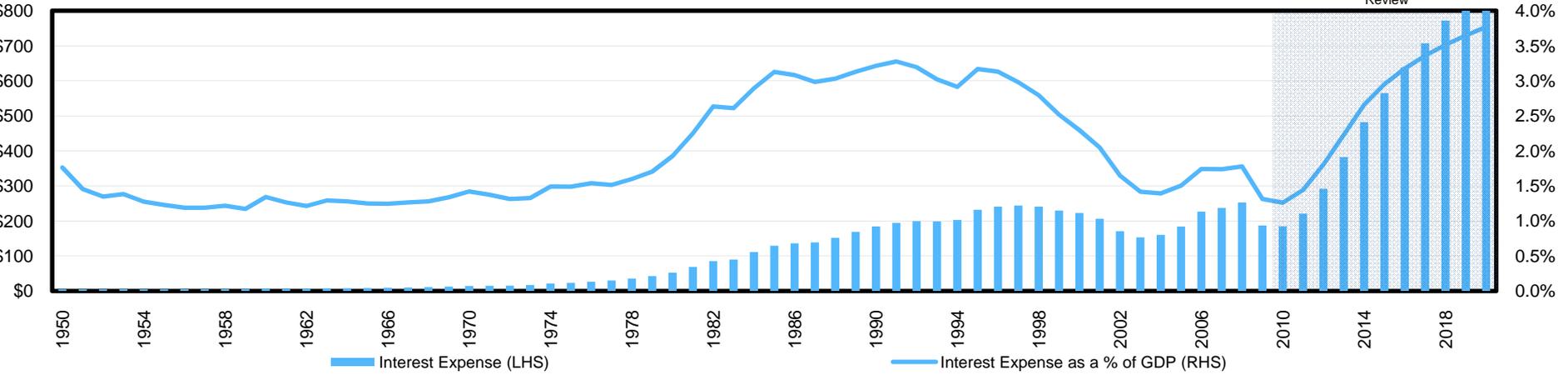


# OMB Long-Term Debt Metrics

## Outstanding Debt In Trillions \$, Percentage of GDP



## Interest Expense In Billions \$, Percentage of GDP



Note: Interest costs based on net interest on Treasury debt minus interest on trust funds and other income.





What adjustments to debt issuance, if any, should Treasury make in consideration of its financing needs in the short, medium, and long term?

	2Y Note	3Y Note	5Y Note	7Y Note	10Y Note	30Y Bond	Sum
April Coupon Issuance	\$44	\$40	\$42	\$32	\$25/\$21/\$21	\$16/\$13/\$13	
July Coupon Issuance	\$38	\$35	\$37	\$29	\$24/\$21/\$21	\$16/\$13/\$13	
% Change April-July	-14%	-13%	-12%	-9%	-2%	0%	
Annualized Cuts From July	\$72	\$60	\$60	\$36	\$4	\$0	\$232

Comparing July and April levels of issuance, Treasury has cut \$232 billion in annualized borrowing capacity.

Treasury Borrowing Advisory Committee  
Presentation to Treasury  
Charge #2

August 3, 2010

# TBAC Charge Number 2

## Municipal Bond Market

We would like the Committee to provide an update on state and municipal debt markets and the ability of municipal issuers to access the capital markets. Please provide detail on current market dynamics, and whether overall financing costs and strategies have changed. How have these dynamics affected the Treasury market, and fixed income markets more broadly?

# Table of Contents

- I. Municipal Bond Market Characteristics
- II. Cash Market Update, Financing Strategies, and Cost Trends
- III. Investor Concerns and Major Risks
- IV. Supplemental Slides

# Municipal Bond Market Characteristics

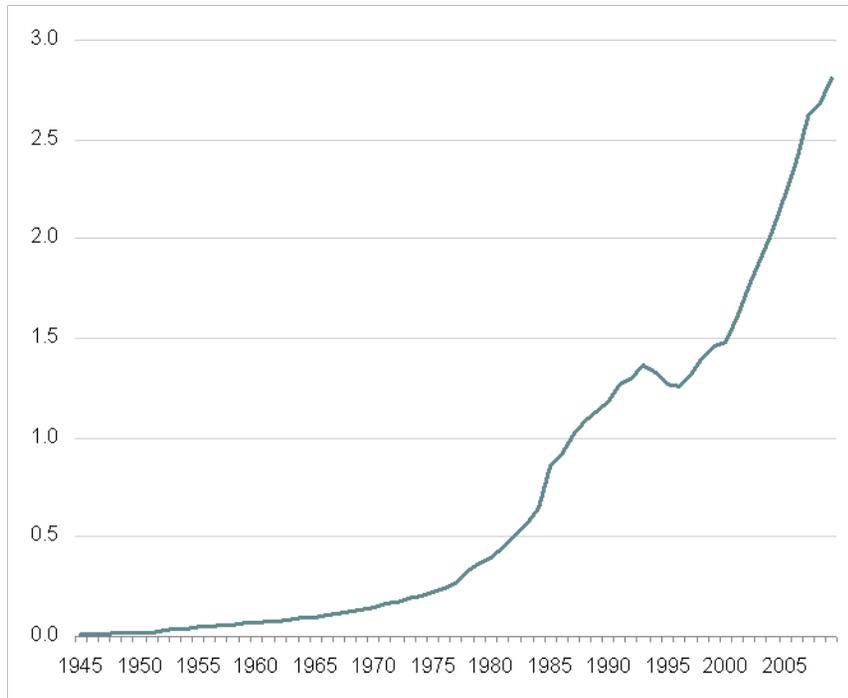
- Diverse Issuers: States, local governments, hospitals, public housing, non-profits, and others
- Size: \$2.8 trillion with annual issuance in the \$400 billion range
- Quality: Generally high with low historical default rates and high recovery
- Bond Security:
  - General Obligation, Revenue, Lease Obligation, Appropriation
  - Credit Enhancement (bond insurance, letters of credit) declining in importance
- Tax Policy: Federal and generally state tax-exempt, BAB issuer subsidy through 2010
- Buyer Base: Long-only, retail dominated. New institutional buyer base due to the BAB program.
- Hedging Vehicles: Very limited

# Size of the Municipal Market

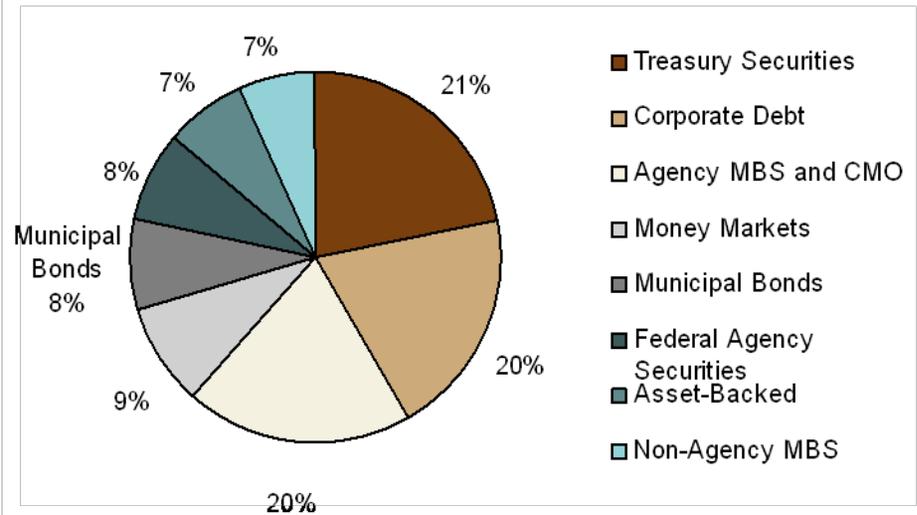
The municipal (tax-exempt) bond market has grown dramatically over the past few decades, totaling \$2.8 trillion as of December 31, 2009.

The market is ~60% smaller than the US corporate debt market and is roughly comparable in size to the amount of Federal Agency debt outstanding.

**Outstanding Municipal Securities (1945 – 2009, \$trn)**



**US Bond Market (\$34.7trn outstanding as of 12/31/2009)**



Note: The \$2.8 trillion of municipal bonds is composed of \$2.3 trillion of debt issued by state and local governments, \$300mm issued by nonprofit organizations, and \$200mm of industrial revenue bonds.

Source: Federal Reserve, SIFMA

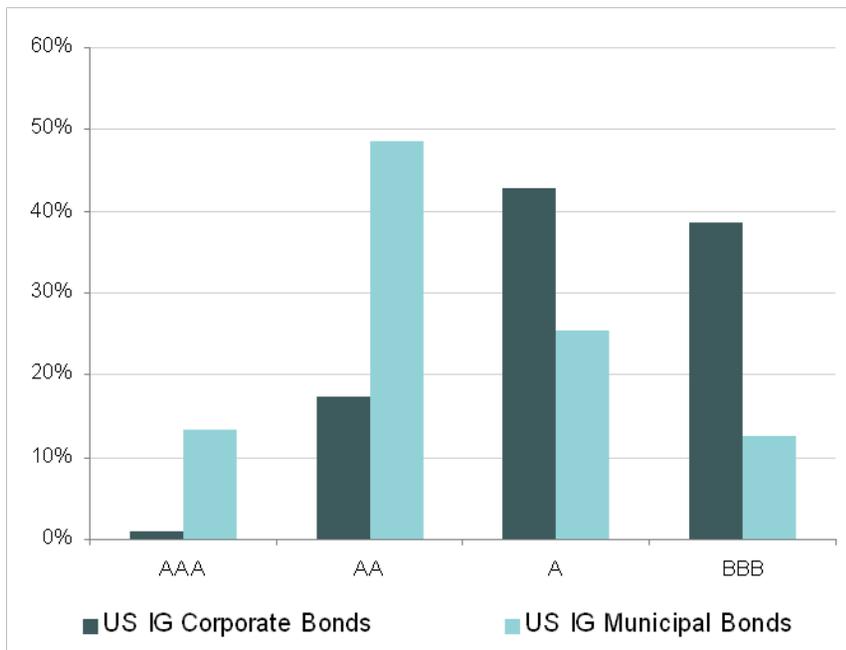
# Quality

The municipal bond market has a higher average credit rating than the corporate bond market

- Taxing authority, secure revenue streams
- Low historical default rate
- Conservative debt profiles

Moody's and Fitch recalibrated municipal bond ratings in April 2010

**Ratings as a % of Corporate / Muni Market (as of July 2010)**



**10-Year Cumulative Default Rates by Moody's Rating**

	<b>10 Year Cumulative Default Rates Moody's (1970 - 2009)</b>	
	<b><u>Municipalities</u></b>	<b><u>Corporates</u></b>
Aaa	0.00%	0.50%
Aa	0.03%	0.54%
A	0.03%	2.05%
Baa	0.16%	4.85%
Ba	2.80%	19.96%
B	12.40%	44.38%
Caa	11.60%	71.38%

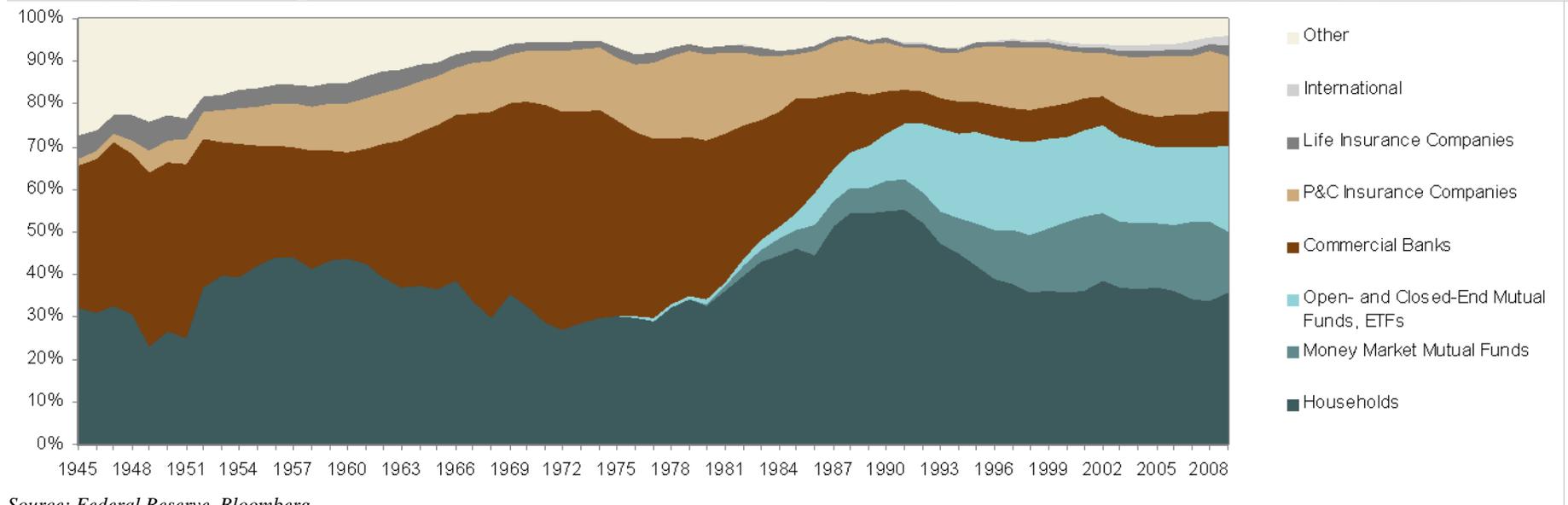
Note: In left chart, Corporate Bond and Municipal Bond markets represented by the BofA Merrill Lynch U.S. Corporate and Municipal Master Index, respectively  
 Source: Bond Buyer, Bank of America, Moody's

# Municipal Bond Investor Base

Investor Type	12/31/2009 Ownership (%)	12/31/2009 Ownership (\$bn)	Comments
Households	36%	999	Includes hedge funds
Mutual Funds & ETFs	20%	568	Municipal mutual fund AUM at an all-time high
Money Market Mutual Funds	14%	401	Experiencing large outflows (as are taxable money market funds)
P&C Insurers	13%	369	Demand varies with underwriting cycle
Commercial Banks	8%	219	Tax Reform Act of 1986 made tax-exempt bonds less attractive
Other	4%	114	Primarily brokers/dealers and GSEs
Life Insurers	3%	73	Large purchaser of BABs (own over 50% of many large BAB deals)
International	2%	61	Gaining comfort with taxable munis (net purchases of ~\$20bn in 2009)

70% Retail / Retail Equiv.

## Ownership of Municipal Securities (1945 – 2009)



Source: Federal Reserve, Bloomberg

# Constraints on Hedging and Shorting the Municipal Market

**The municipal bond investor base has traditionally been long-term real-money investors**

## **Repo Market for Tax-Exempt Municipal Bonds**

- Market makers indicate that borrowing in the repo market to cover short tax-exempt bonds is very rare
- Market structure (large number of small deals) is a roadblock to large-scale repo activity
- Traditional repos are economically impractical because the lender of the security collects tax-free interest from the municipality but owes taxable interest to the repo counterparty

## **Repo Market for Taxable Municipal Bonds**

- The repo market for taxable municipal bonds is immature but growing and is currently limited to only the largest issuers (CA, IL, etc)
- Even for large issuers, market participants are unwilling to short more than \$10-\$25mm of bonds

## **Shorting Municipal Bond Closed-End Funds or ETFs**

- Liquidity is limited
- Short-interest is currently very low

## **Total Return Swaps**

- Can be issued on a single bond or a portfolio of bonds
- Liquidity is limited

## **Municipal CDS**

- Liquidity is limited

# Municipal CDS Market

**The Municipal CDS market is small, illiquid, and has many forces working against its growth as a hedging instrument**

## History of the Market

- Began active trading in 2003; liquidity significantly increased in 2007 and continued to grow in 2008
- Participation diminished in 2009 and remains muted in 2010

## General Characteristics

- Major participants in the market are: hedge funds, counterparty hedging desks, insurance companies, bond funds, dealer desks, and banks
- Only a handful of issuers actively trade (e.g. California, Illinois, NYC) with most liquidity in the 10-year tenor
- Market standard recovery rate is 80%, compared with 40% in corporate CDS
- As of July 23, 2010, only 6 of the top 1,000 CDS reference entities were states or local governments.
- Only \$105mm of single-name muni CDS traded over the past week. For comparison, \$144bn of CDS traded on the top 1,000 reference entities (corporates, sovereigns, and municipals).

## Headwind to Popularity: No Natural Seller of Protection

- Traditional tax-exempt investors are not interested in trading a taxable product
- Real-money taxable-debt investors may favor the higher spread and interest rate duration of BABs
- Basis: Positive basis packages are difficult to implement because it is hard to short cash bonds

Entity	Net		Prior Week	
	Notional (\$MM)	Net Notional as % of GO Debt	Trading Volume (\$MM)	Prior Week # Contracts Traded
State of California	1,303	1.9%	40	3
City of New York	476	1.2%	10	1
State of New Jersey*	409	16.2%	10	2
State of Illinois	335	1.7%	10	1
State of Florida	307	2.3%	35	3
<u>State of Texas</u>	<u>176</u>	<u>1.8%</u>	<u>0</u>	<u>0</u>
<b>Total</b>	<b>3,005</b>	<b>1.9%</b>	<b>105</b>	<b>10</b>

\* The State of New Jersey's debt mix consists of a higher proportion of non-GO bonds than the other states listed above.

Note: GO Debt outstanding as of FY2009 for all issuers.

Source: Conversations with MCDS market markets, DTCC, State financial statements

# MCDX Index

## What is the MCDX?

- Index containing 50 equally weighted constituents launched by Markit in 2008
- State & Local Government and Revenue issuers rated BBB- or above with greater than \$250mm of uninsured bonds outstanding
- 5 or 10-year maturities actively quoted with coupon payments quarterly
- Upon credit events for MCDX constituents, an auction is held and protection buyers are compensated in cash at par less the deemed recovery amount.

## Current Market Statistics as of 7/23/2010

- MCDX net notional outstanding was ~\$3.8bn (vs \$300bn+ for the CDX.IG investment grade corporate indices)
- MCDX is currently pricing in an enormous risk premium. The implied 5-year cumulative default rate (using 80% recovery) is ~42%.

## MCDX Spread in Not a Strong Indicator of Credit Risk

- The MCDX may be a poor indicator of market-perceived credit risk in the muni market.
- Trading in the index is not continuous or reliable due to inconsistent market making and unpredictable investor participation.



Source: JP Morgan, Markit

# Cash Market Update, Financing Strategies, and Cost Trends

# Cash Market Update

**2010 Issuance to Date:** \$232bn (up 13% from 2009)

- Tax-exempt: \$158bn
- Taxable: \$74bn (\$60bn of which are BABs)

**Visible 30-day Supply:** \$7.34bn

**Recent Tax-Exempt Deal:** \$800mm NYC GO (AA) deal was upsized to \$963mm (serial maturities 2011-2030). Shorter maturities demanded more concessions due to very low yields. The 2014 maturity was the widest spread at AAA MMD +62 (1.49%).

**Week of 7/26 Notable BAB Deals (>\$50mm):**

Issuer	Ratings	Size (\$mm)	Maturity	Yield	Spread
Texas Dept of Transportation	Aaa/AAA/AAA	1204	2030	5.18%	115
Texas Dept of Transportation	Aaa/AAA/AAA	296	2026	5.03%	100
Oklahoma Municipal Power	A2/A/NR	52	2045	6.44%	233

Source: Bloomberg

**Top 5 Issuers 2010 Year to Date:**

Rank	Issuer	Amount	Issues
1	Illinois (State)	7,778	10
2	California (State)	6,019	6
3	Puerto Rico Sales Tax Financing Corp.	3,625	4
4	New York State Dormitory Authority	3,094	19
5	California Department of Water Resources	2,993	1

Source: Bond Buyer, Goldman Sachs, Thomson MMD, Bloomberg, Barclays Capital

## 10-year Tax Exempt Yields

Rating	7/30/2010	12/31/2009	12/31/2008
AAA	2.57	3.00	3.52
AA	2.76	3.19	3.65
A	3.37	3.85	4.95
BAA	4.44	5.14	6.69

Source: Thomson MMD

## 10-year Yield Comparison as of 7/30/10

	Tax Exempt	Federal (35%) Taxable Equiv	Corporate*	UST
AAA	2.57	3.95	3.76	2.91
AA	2.76	4.25	3.85	2.91
A	3.37	5.18	4.01	2.91
BAA	4.44	6.83	4.74	2.91

\*Bloomberg US Industrial Corporate Composites

Source: Bloomberg, Thomson MMD

## 30-year Taxable Spread Comparison as of 7/30/10

	California (A1/A-)	Illinois (A1/A+)	BAB Index*	A Corps**	BBB Corps**
Spreads	260	300	190	150	220

\*BAB Index is an equal weighted average of all non-callable BABs with final maturities >20-yr and minimum maturity sizes of at least \$250mm

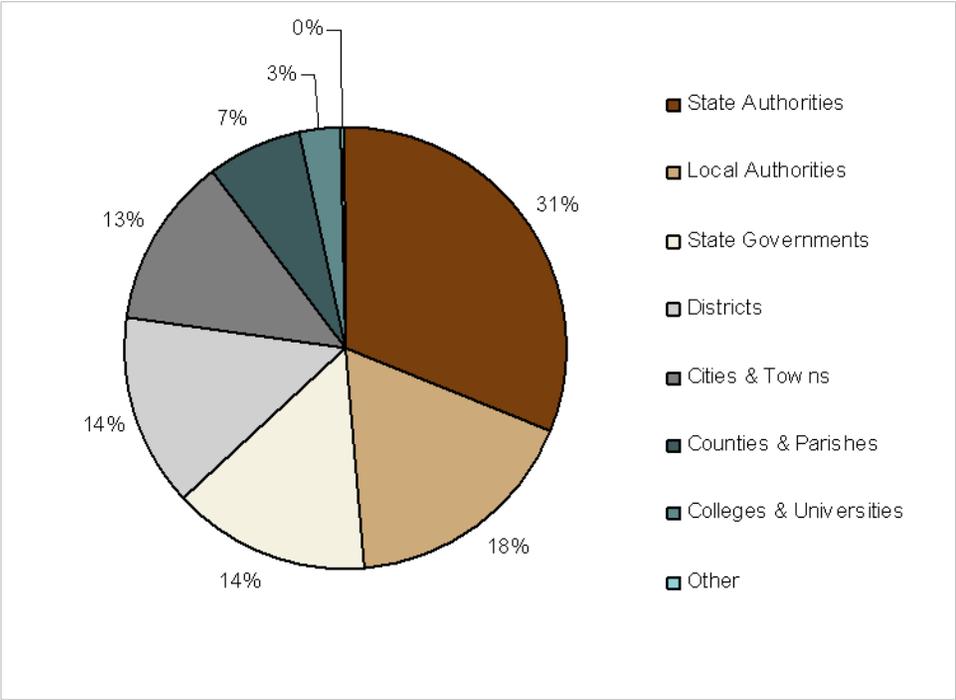
\*\* OAS for >10yr Industrials in Barclays US Credit Index

# Characteristics of Recently Issued Bonds

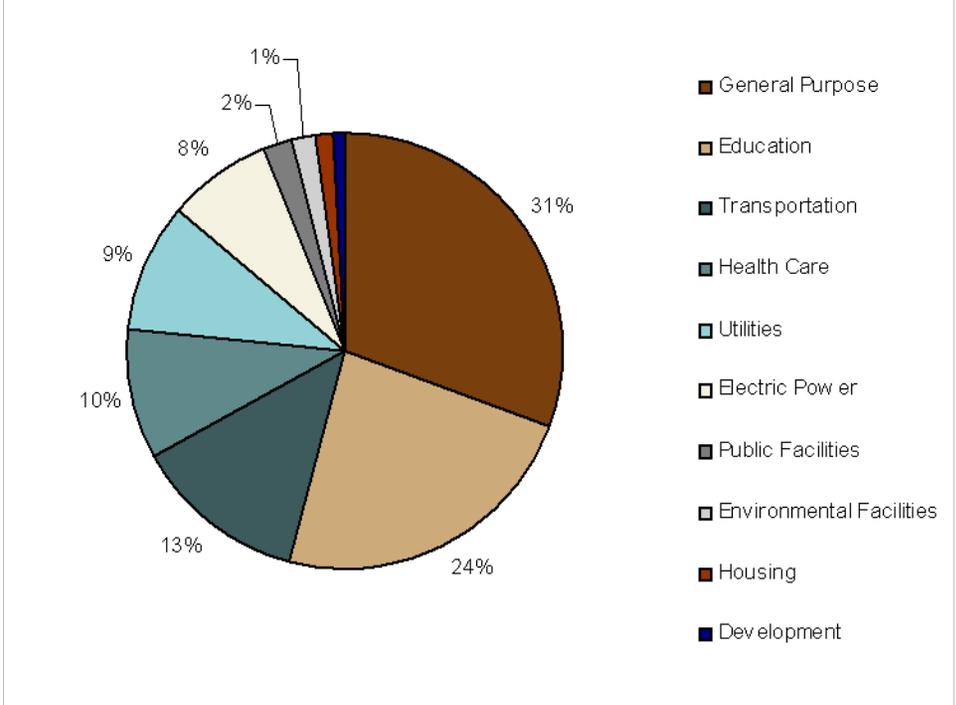
State and local authorities accounted for nearly half of municipal issuance during the first half of 2010.

The largest specified uses of proceeds were education (24%), transportation (13%), and health care (10%).

**Bond Issuance by Issuer Type (1<sup>st</sup> Half of 2010)**



**Use of Bond Proceeds (1<sup>st</sup> Half of 2010)**



Source: Bond Buyer

# Largest Municipal Issuers

**The largest municipal issuers currently have continuous access to the market – loss of that access would certainly create a large disruption and would have follow-on effects in other markets.**

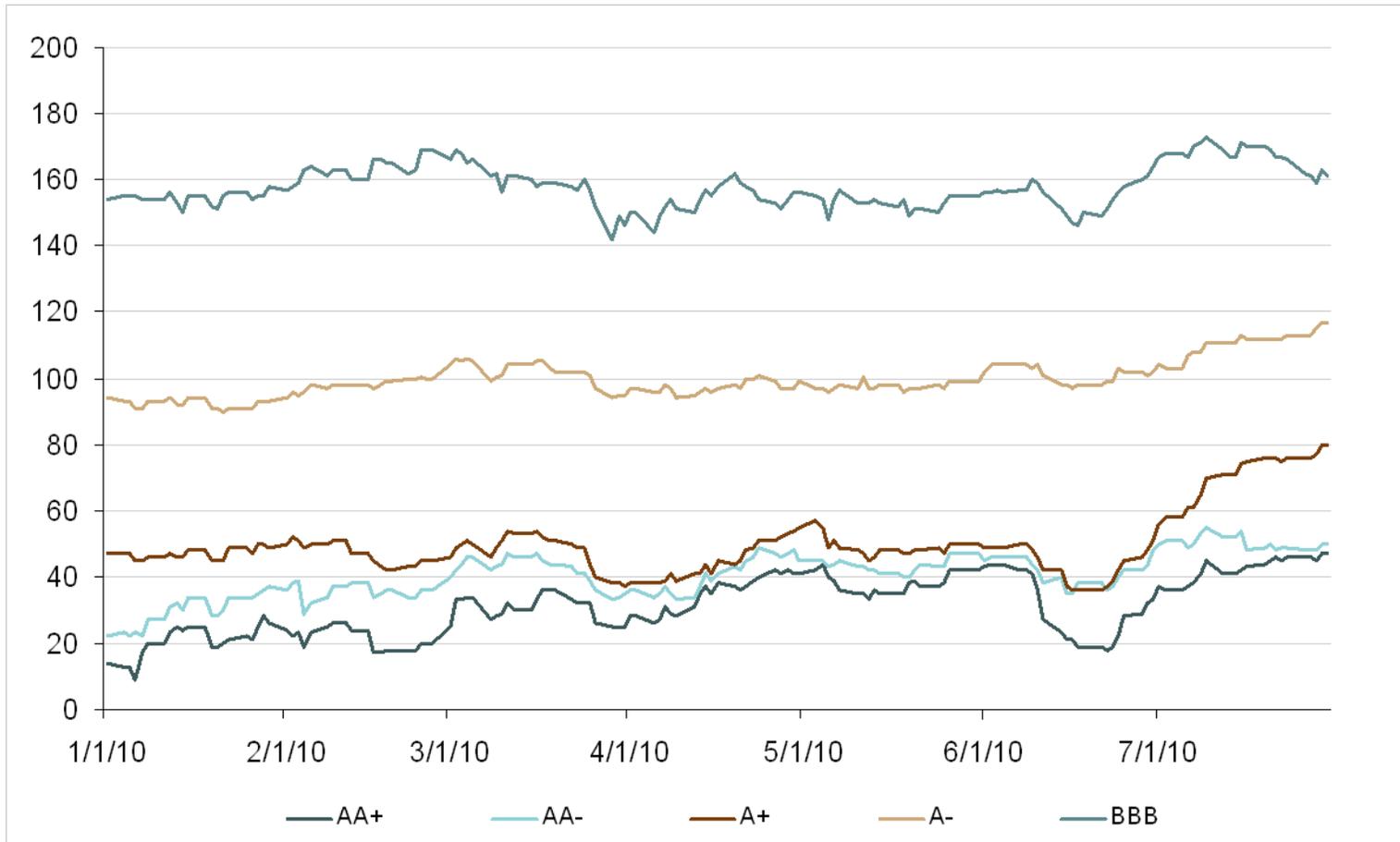
Largest Issuers 2004-2009								
Issuer	Issuance		S&P	GO/Rev	Recent BAB Issue	Maturity	Spread at Issue	Current Spread
	2004-2009	(\$mm)						
State of California	74,200	A1	A-	GO	\$1.25bn - 3/10	2040	270	265
City of New York	28,589	Aa2	AA	GO	\$355mm - 10/09	2031	141	175
New York State Dorm Authority	25,801	Aa3	AA-	REV	\$345mm - 5/10	2040 (c.31)	140	155
Commonwealth of Massachusetts	13,869	Aa1	AA	GO	\$756mm - 12/09	2039	120	115
State of Connecticut	13,563	Aa2	AA	GO	\$250mm - 12/09	2029	110	120
New York State Thruway Authority	12,902	Aa3	AA	REV	\$156mm - 3/10	2030 (c.27)	120	135
New York City Transitional Finance Authority	11,279	Aa1	AAA	REV	\$472bn - 10/09	2036	145	155
New York City Municipal Water	11,098	Aa2	AA+	REV	\$325mm - 6/10	2042	158	155
New Jersey Transportation Trust Fund	9,974	Aa3	AA-	REV	\$500mm - 1/10	2040	188	200
Los Angeles Unified School District	9,956	Aa2	AA-	GO	\$1.25bn - 2/10	2034	200	215

Largest Issuers 2010 YTD								
Issuer	Issuance		S&P	GO/Rev	Recent BAB Issue	Maturity	Spread at Issue	Current Spread
	2010 YTD	(\$mm)						
State of Illinois	7,778	A1	A+	GO	\$468mm - 7/10	2035	325	300
State of California	6,019	A1	A-	GO	\$1.25bn - 3/10	2040	270	265
Puerto Rico Sales Tax Financing Corp.	3,625	A1	A+	REV	Less than \$100mm issue			
New York State Dormitory Authority	3,094	Aa3	AA-	REV	\$345mm - 5/10	2040 (c.31)	140	155
California Department of Water Resources	2,993	Aa3	AA-	REV	No BAB Issuance			
Georgia Municipal Electric Authority	2,796	A2	A+	REV	\$1.22bn - 3/10	2057	205	265
Puerto Rico Electric Power Authority	2,530	A3	BBB+	REV	\$320mm - 4/10	2040	255	320
Los Angeles Unified School District	2,327	Aa2	AA-	GO	\$1.25bn - 2/10	2034	200	215
New York City Transitional Finance Authority	2,069	Aa1	AAA	REV	\$472mm - 10/09	2036	145	155
Chicago, Ill.	2,051	Aa2	AA-	GO	\$133mm - 1/10	2040	155	235

Source: Bloomberg

# 10-Year Tax-Exempt GO Spreads to AAA GOs

Spreads versus AAA-rated GO bonds have widened over the past month



Source: Bloomberg

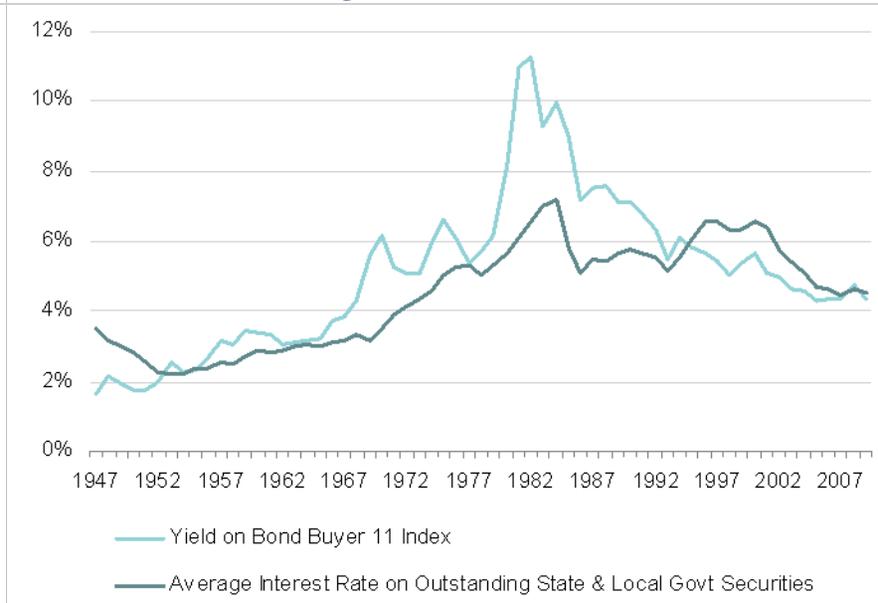
# Financing Costs

In absolute terms, municipal interest rates are at multi-decade lows.

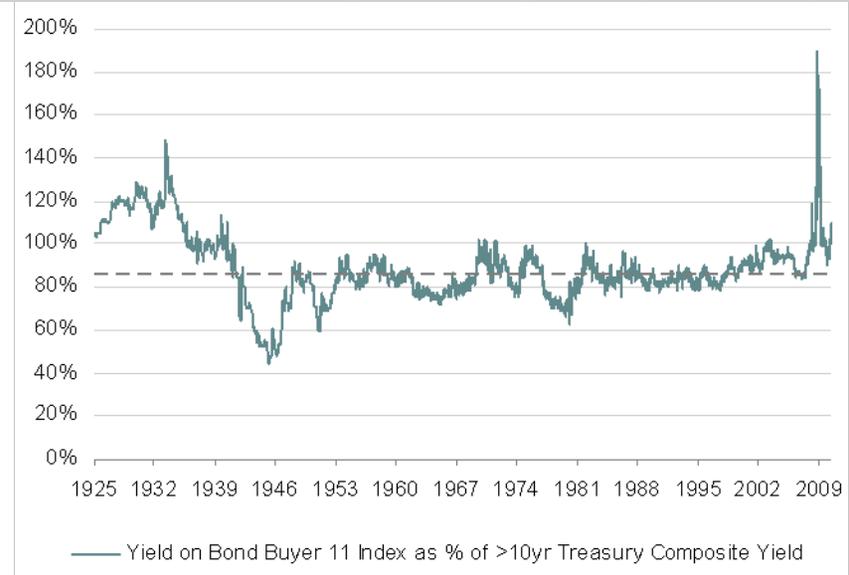
The percentage of revenues spent by state and local governments on interest payments was **5.4%** in 2009, which is in line with historical averages.

However, municipal bond yields remain elevated relative to Treasury yields. The yield on the Bond Buyer 11 index is currently ~110% of Treasuries vs 86% long-term average.

**Bond Yields and Average Interest Rates (1947 – 2010)**



**Bond Yields as Percentage of Treasury Yields (1925 – 2010)**



Note: The Bond Buyer 11 Index consists of 11 20yr GO bonds with a composite rating of approximately AA

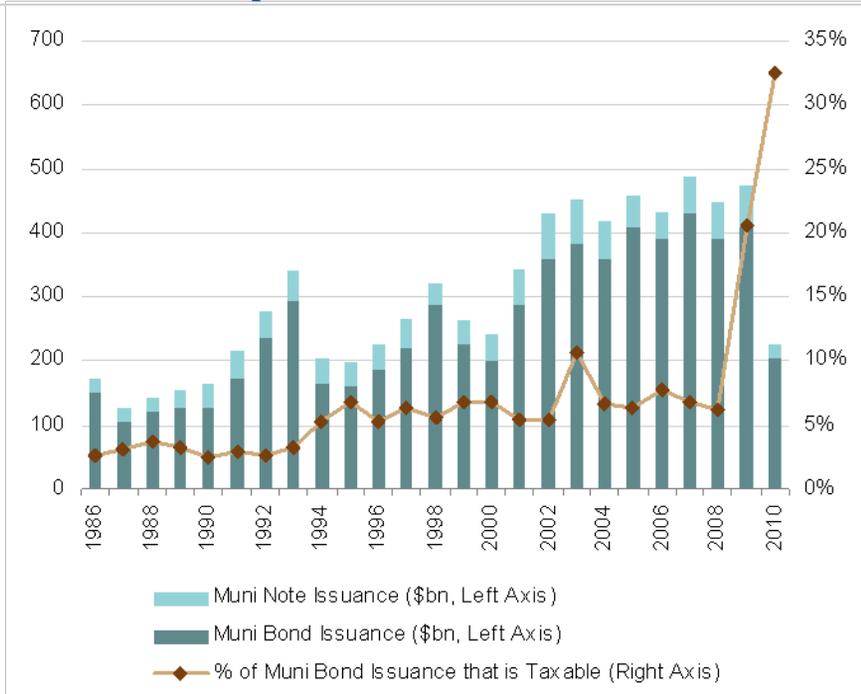
Source: Bond Buyer, Federal Reserve, U.S. Treasury, Barclays Capital

# Market Structure Changes

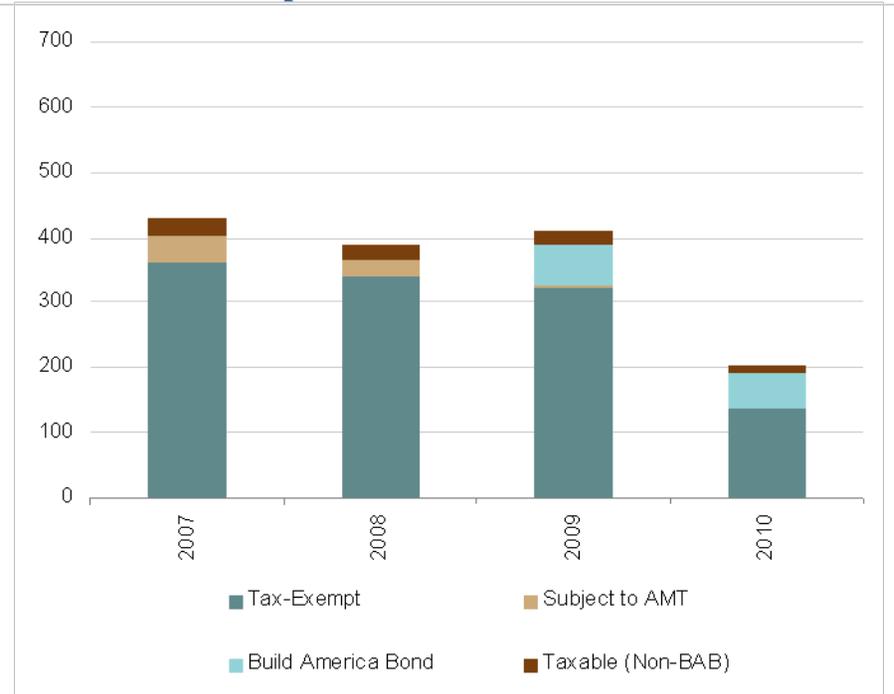
As a result of the Build America Bond (BAB) program's introduction in early 2009, the issuance of taxable municipal bonds has increased dramatically.

To date, over \$120 billion of BABs have been issued, with all of the proceeds (per statute) used for capital expenditures.

**Historical Municipal Issuance (1986 – 2009)**



**Historical Municipal Bond Issuance (2007 – 2010)**



Note: Municipal notes have original maturities of less than 13 months, while bonds have maturities greater than 13 months.

2010 figures are as of 6/30/2010

Source: Bond Buyer

# Credit Enhancement

## Long-term Debt

### **Bond insurance has declined dramatically over the past five years**

- The percentage of bonds issued with bond insurance has declined from over 50% to under 10%
- Assured Guaranty is the only insurer that is writing new business
- Bond insurance is more frequently used by smaller issuers (whose primary investor base is retail)
  - In 2009, 19% of total issues had bond insurance but only 8.5% of total par was insured

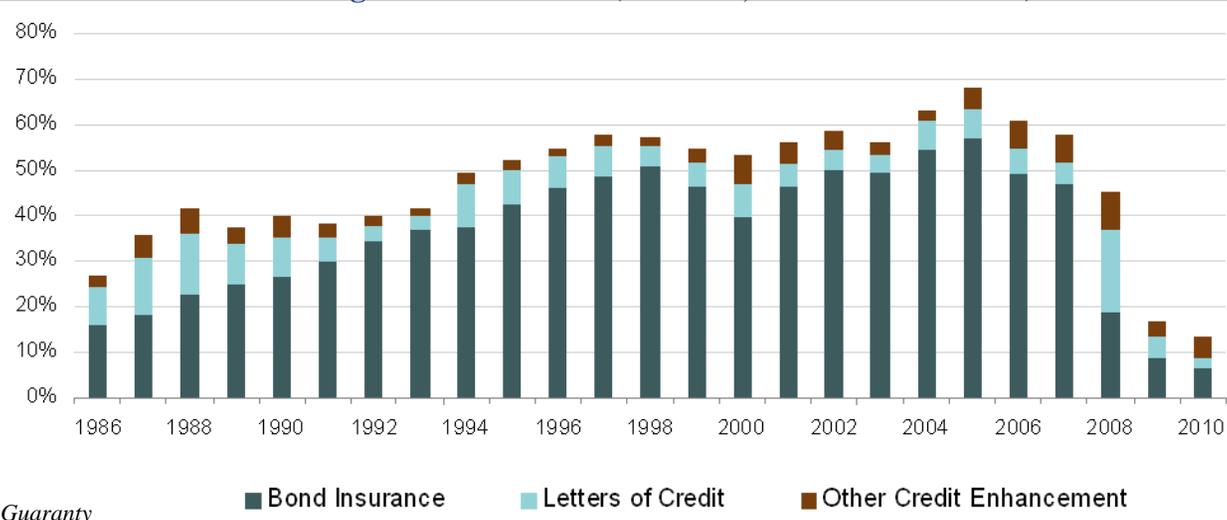
### **Utilization is unlikely to return to previous highs**

- Historically, insurance was important to unify a disparate market – less focus on underlying credit quality
- Bond insurers (and the rating agencies who rated them AAA) have lost credibility among institutional investors
- Number of insurers has declined – one major insurer (Assured Guaranty) remains
- Due to the low cost of obtaining bond insurance prior to the financial crisis, many highly rated deals were wrapped
- Insurers are now charging a higher percentage of the spread savings (>50% now vs 40% in 2007),

## Putable/Re-marketable Debt

Other forms of credit enhancement include letters of credit (irrevocable) and standby purchase agreements (terminated upon certain credit events).

**Credit Enhancement Among New Bond Issues (% of Par, 1986 – 1<sup>st</sup> Half 2010)**



Source: Bond Buyer, Assured Guaranty

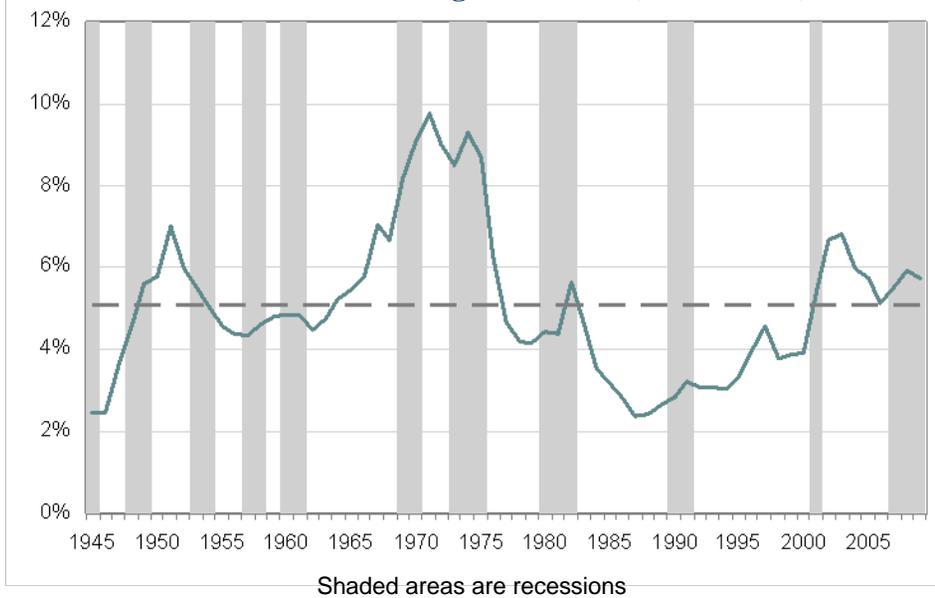
# Usage of Short-Maturity Debt

## Short-term notes play an important role in municipal finance

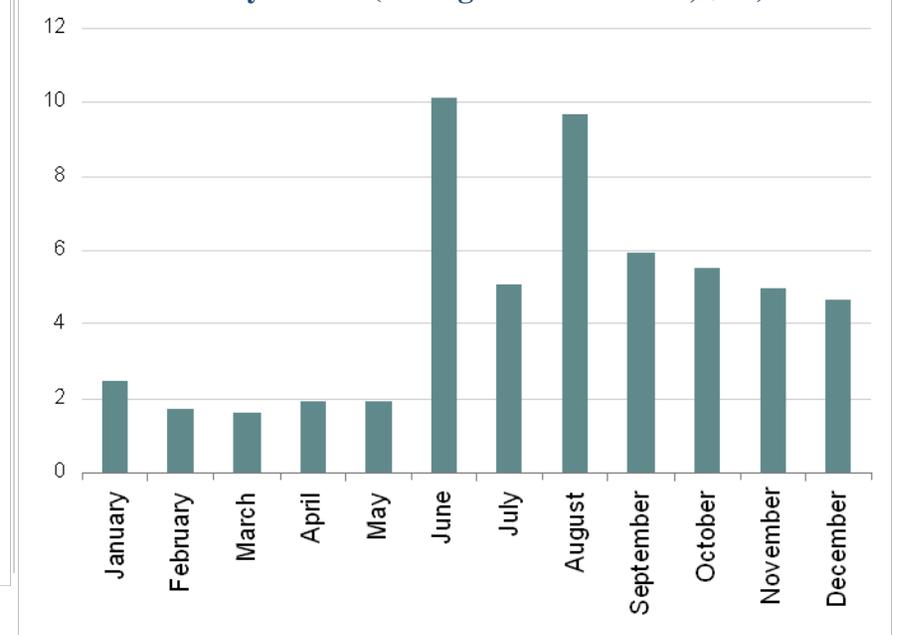
### Characteristics

- Original maturity of 13 months or less
- Generally used to smooth cash flow timing mismatches (Tax and Revenue Anticipation Notes)
  - Timing mismatches frequently exist even if the budget is perfectly balanced on a fiscal-year basis
- Usage typically increases during recessions
  - Increased budget deficits / cash flow mismatches / tax delinquencies
  - Delays in state aid (for local governments)
- Typically issued near the beginning the fiscal year
  - Strong seasonality of issuance could be problematic if investor confidence declines

Notes as % of Total Outstanding Muni Debt (1947 – 2009)



Note Issuance by Month (average of 2004 – 2009, \$bn)



Source: Federal Reserve, NBER, JP Morgan, Bond Buyer

# Investor Concerns and Major Risks

# Current Municipal Investor Concerns

**Municipal investors are concerned about credit fundamentals as well as hot-button news items that can move markets**

**Low yields / low risk adjusted return potential could lower demand as risk appetite increases**

## **Budget Imbalances**

- Although most states have balanced budget requirements, budget solutions are often one-time in nature. Credible revenue and expense solutions are not apparent for the largest GO issuers (IL, CA)
- Finding expenditures to cut becomes more challenging as pressure on extremely cyclical revenues continues

## **Liquidity Access & Management**

- Rollover risk exists in the evolving short-term markets (~\$100bn of letters of credit maturing in 2011 for VRDOs)
- Downgraded issuers may experience diminished access (particularly in the short-term market due to new 2a-7 rules)
- Cash management in the wake of protracted budget negotiations may require extraordinary measures (voucher issuance, delayed payables)

## **Price Volatility Related to Headline Risk**

- Retail-based market leads to greater sensitivity to negative news flow with less regard for underlying fundamentals

## **Uncertainty Surrounding Pensions**

- What is the actual size of the liability? Will states/cities fund their pension obligations as required by actuarial accounting or delay contributions, further decreasing funded status?
- Will issuers continue to rely on the debt markets to finance contributions? If so, at what cost?
- How will the courts rule if pension payments are missed and a “work-out” is the only answer?

# Major Risks to Municipal Issuers

**Risks for municipal issuers can be grouped into two broad categories – market access and new issue pricing**

## Market Access

### **High Profile Default**

- A default by a large municipal issuer could conceivably result in the new issue market shutting down
- A State GO default seems unlikely.
  - Willingness to Pay. High
  - Ability to Pay. Driven by:
    1. Fiscal powers (taxing authority)
    2. Debt profile generally good (low debt/GDP and debt servicing costs, laddered maturities and long average maturity)
    3. High debt payment priority
    4. Expense reductions (layoffs, furloughs, project delays)
    5. Accounting adjustments to balance budget (important for access to ST market)
    6. Alternate source of funding - asset sales, revenue stream securitizations
    7. Rainy day reserve funds

### **Liquidity**

- Closure of the short-term market would be disastrous – access is crucial to smooth cash flow timing gaps

### **Cascading Impact of Smaller Defaults**

- Another path to distress could be the sequential failure of several smaller issuers that causes a ripple effect in the new issue market if the method of resolution is not well received
- Local governments do not possess the same fiscal powers as states – generally more stable tax bases

# Major Risks to Municipal Issuers

**Risks for municipal issuers can be grouped into two broad categories – market access and new issue pricing**

## Pricing / Market Depth

### **Negative Changes in Tax Policy (BABs, Tax Exemption) + Tax Rates**

- The BAB program has been favorably received by taxable buyers worldwide and has been widely used by the largest muni issuers. Failure to extend the program, or renewal for a very short period or at unfavorable rates, could put significant stress on the tax-exempt market in terms of access and funding cost
- The continuation of tax-exempt status for most munis is an essential driver of retail demand (70% of market)
- Offset: Higher marginal tax rates would increase demand for tax-exempt bonds

### **Worsening Credit Quality – Long-term Concern**

- The municipal sector is highly rated (62% rated AA and above vs. 18% for U.S. corporates). Negative news flow and ratings drift affecting the largest municipal issuers would increase funding costs and possibly restrict access. This is a bigger risk for smaller issuers.

### **Regulatory Reform**

- Regulatory reform could reduce the attractiveness to banks of providing letters of credit by subjecting them to higher risk-weighting, which could increase issuers' cost of short-term funds

# What is the Systemic Risk of a Municipal Market Crisis?

## The Follow-On Effects of a Comprehensive Failure of the Municipal Funding Markets Would Be Substantial

### Immediate Effects – Operational

- Funding shortfalls / delayed vendor payments are more likely than a failure to pay debt obligations timely.
- For GO issuers, the failure to fund normal government expenditures to state workers and vendors would contract local economies and create a cash crunch among those who depend on state funds. State and local governments account for 13% of US GDP.
- Needs to be resolved quickly

### Secondary Effects – Increase of Risk Premia for Municipal Bonds and Other Risk Assets

- The market value of municipal bonds would likely decline and the 70% of the municipal market that is owned by individuals would come under pressure. A major unknown is how these holders will react to large declines in the value of the their holdings.
  - **Mitigant: Muni holders are generally unlevered tax exempt investors. Involuntary unwinds of their holdings are unlikely.**
- As we saw during the credit crisis in 2007/08, the widening in spreads for ABS/RMBS quickly spread to all other risk assets. A major disruption of the municipal markets could result in similar spread widening and market dislocations in other risk assets, which could spread into a systemic problem.
  - **Mitigant: The muni market is much smaller than the corporate, Treasury or MBS/ABS markets and less spread throughout the financial system.**

### Secondary Effects – Weakened Economies and Tax Base - Procyclical

- Personal income declines, reduced retail sales and income tax/sales tax receipts and home price declines are predictable results of impaired municipalities. Increased unemployment and loss of essential/valued services may result in population shifts.

# What is the Systemic Risk of a Municipal Market Crisis?

## Secondary Effects – Banking System Exposure

- Banks that hold municipal paper could have their capital levels compromised if the value of municipal debt declined precipitously, increasing capital requirements, reducing appetite for municipal risk and potentially curtailing other lending.
- **Mitigant: Losses on contingent liquidity backstops for municipal debt have been almost nonexistent**

## Government Response

- The Federal Government would likely need to intervene in the municipal markets if the market stopped functioning.
- Emergency support could come in the form of direct purchases, funding facilities and guarantees.

# Conclusion

## **Near term, there is a low probability of a major default / market dislocation**

- Low probability of state level default, but price volatility is likely
- Increasing probability of defaults at local government level, but unlikely to be widespread

## **Market fundamentals in good shape in the near term.**

- Low absolute cost of funding – multi-decade lows
- Access to funding is high / expanded investor base via BAB program
- Demand currently robust: flows into bond funds, direct retail demand
- Tax policy appears stable / BAB extension likely

## **Longer-term deterioration in credit fundamentals / investor preference**

- Deterioration in credit profile likely (economic growth dependent)
- Funding costs likely to increase from a low base (fundamentals / investor risk tolerance)

## **No major change to funding strategies with exception of BABs program**

- BABs provide crucial funding – absence of program would lead to higher funding costs, especially for lower quality issuers
- Lower use of credit enhancement in bond market
- Greater reliance on letters of credit for putable debt

## **Derivatives (CDS) do not currently play a large role in the municipal market and are unlikely to in the future**

## **Systemic risks exist but low probability in near term**

- Large unlevered investor base
- Bank exposure manageable
- The Federal Government would likely need to intervene in the municipal markets if the market stopped functioning

# Supplemental Slides

# Overview of Municipal Bonds

General Obligation	Revenue	Appropriation
Secured by a pledge of full faith, credit & taxing power	Secured by a specific stream of revenues	Secured by a “promise to pay” with legislatively approved appropriations
All sources of revenue available for debt service unless specifically excluded	Issued to finance specific enterprises or projects, and usually secured solely by taxes or fees generated from those projects	No direct recourse to the issuer; usually rated one notch below issuer GO bonds
Primary sources of revenue: States – Income, Sales & Corporate tax Local Governments – Property & Sales tax, as well as state aid	Sectors: Water/Sewer, Public Power/Utilities, Transportation, Higher Education, Health Care, Housing Agencies	Examples: Certificates of Participation (COPs) and Lease Revenue Bonds (LRBs)

## Credit Considerations

### Economy

- Durability and diversification of local tax base (population, income levels, property values)
- Key industries and employers

### Finance

- Cash management flexibility and techniques
- Track record of balancing budgets; history of reserve funds

### Debt

- Growth in debt obligations and structure relative to financed asset’s useful life
- Unfunded pensions and OPEB liabilities

### Management/Governance

- Member selection process and budget process
- Political environment and legal requirements to enact changes

Source: Barclays Capital, Moody’s

# Build America Bonds

In February of 2009, the Build America Bond (BAB) program was established under the American Recovery and Reinvestment Act to provide much-needed funding for state and local governments. Municipal Issuers can issue taxable bonds with a Federal government rebate of 35% of the interest expense resulting in attractive funding cost. The program helps states and localities pursue capital projects, such as infrastructure development and public school construction.

## Impact on the Market – \$124 billion issued to date with the expectation of another \$40-90bn by year end

- BABs have helped expand the “taxable” proportion of municipal issuance to ~30% (YTD from ~6% pre-BAB program)
- Investor’s perceive BABs as a viable alternative to other long duration instruments (Corporate, Agency, Treasury)
- International buyers are becoming more and more comfortable with BAB issuers
- No limit on the amount of bonds that can be issued under the program, but the program is currently set to expire on December 31, 2010 – a 2-year extension seems likely, but at a reduced subsidy %
- Currently 9.4% of Barclays Long Credit Index (projected to grow to 17.3% by year end)

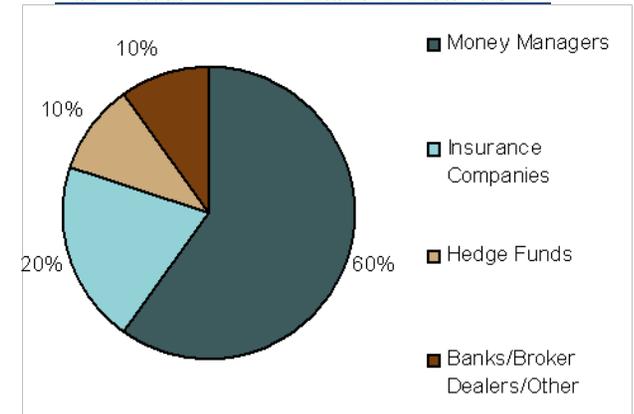
## Issuance has been well-received due to a number of factors including:

- Credit diversification
- Attractive yields
- High issuer credit quality
- Long duration

## Risks and Uncertainty

- Liquidity concerns associated with “Orphan” risk if program is not extended
- Credit Concerns with specific issuers
- Firms hesitant to add research staffing
- IRS netting of payments

## Estimated BAB Investor Breakdown



## Issuers are relying heavily on the BAB program

Total Issuance was \$117bn as of June '10

State	YTD			Jan '09 - Jun '10		
	Total Municipal Issuance	Total BAB Issuance	BAB % of Total Municipal Issuance	Total Municipal Issuance	Total BAB Issuance	BAB % of Total Municipal Issuance
California	29,794	9,867	33%	97,420	25,289	26%
New York	16,936	7,533	44%	57,460	13,323	23%
Texas	14,342	2,509	17%	46,232	9,507	21%
Illinois	15,365	4,896	32%	28,148	8,597	31%
Washington	5,739	2,374	41%	15,173	4,221	28%

Source: U.S. Treasury, Bloomberg, Citigroup, Goldman Sachs

# BAB Issuer Savings

- BAB issuers have generally realized savings of **40-70 bps** at new issue over comparable tenor tax-exempt funding.
- Lower quality issuers realize greater savings
- Post-new issue, relative secondary market trading levels of tax-exempt bonds and BABs have been influenced by the higher credit sensitivity of taxable investors, the lower liquidity of tax-exempt issues, relative size of issues and the changing expectations of tax increases within individual states.

8/11/2009					
Texas (Aa1/AA)		2029 (call '19) - \$60.5mm maturity size			
<u>New Issue</u>	Federal Subsidy	Actual Tax-Exempt			
Yield	@ 35%	Net Issuer Cost	Yield	Issuer Savings	
6.07	2.12	3.95	4.38	43 bps	

7/30/2010									
Texas (Aaa/AA+)		2029 (call '19) - \$60.5mm maturity size				Break-even Subsidy: 33%			
<u>Secondary Market</u>	Federal Subsidy	Notional Issuer	Actual Tax-Exempt	Notional Issuer	Issuer	Issuer	Issuer	Issuer	
Yield	@ 35%	Cost	Yield	Savings	savings @	savings @	savings @	savings @	
5.67	1.98	3.69	3.81	12 bps	-5 bps	-16 bps	-27 bps	-44 bps	

10/8/2009					
California (Baa1/A)		2029 (non-call) - \$1.75bn maturity size			
<u>New Issue</u>	Federal Subsidy	Actual Tax-Exempt			
Yield	@ 35%	Net Issuer Cost	Yield	Issuer Savings	
7.3	2.56	4.75	5.2	46 bps	

7/30/2010									
California (A1/A-)		2029 (non-call) - \$1.75bn maturity size				Break-even Subsidy: 22%			
<u>Secondary Market</u>	Federal Subsidy	Notional Issuer	Actual Tax-Exempt	Notional Issuer	Issuer	Issuer	Issuer	Issuer	
Yield	@ 35%	Cost	Yield	Savings	savings @	savings @	savings @	savings @	
6.63	2.32	4.31	5.17	86 bps	66 bps	53 bps	40 bps	20 bps	

Source: Thomson, Bloomberg

# Drivers of Supply and Demand for Municipal Debt

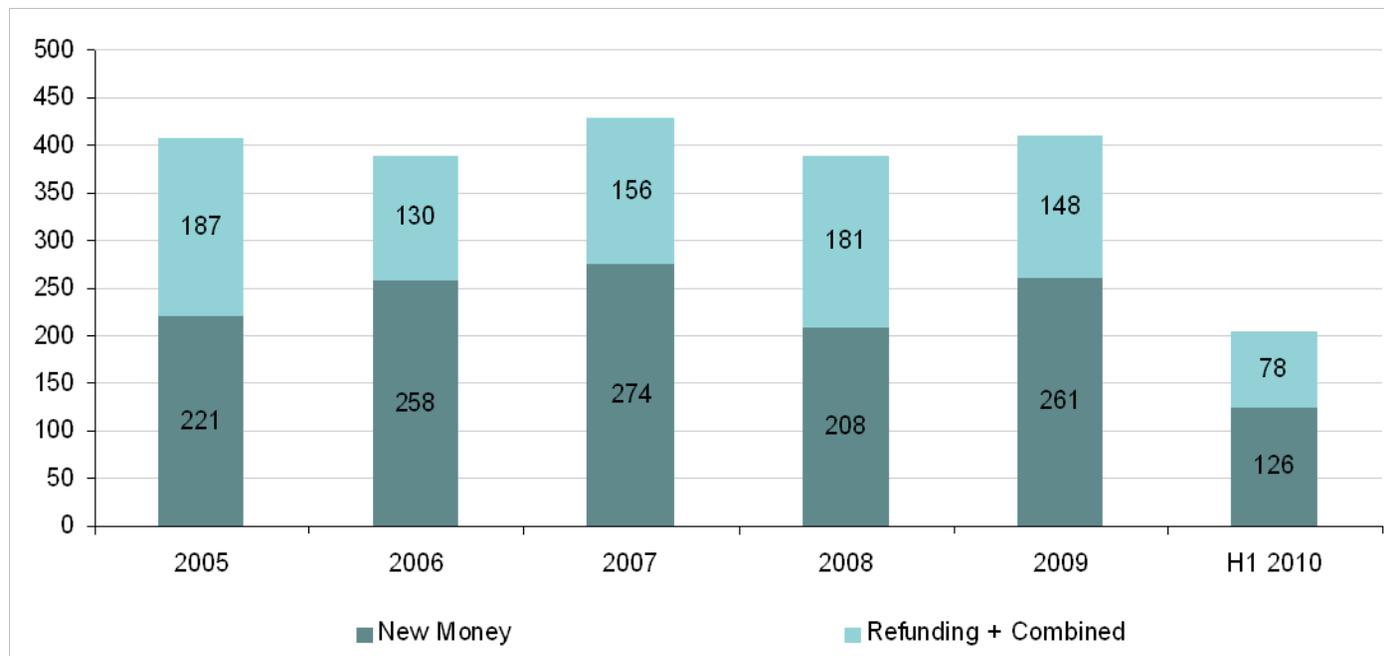
**Municipal issuance has been fairly stable by volume and type for several years. These trends are expected to continue.**

## Drivers of Supply

- Volume of refunding issuance and new capital projects
- Shape of the yield curve (longer-term issuance is avoided in a steep yield curve environment)

## Drivers of Demand

- Market yields / return opportunities
- Perceived volatility and returns of competing asset classes (corporate bonds, MM funds)
- Marginal tax rates for individuals
- Retail demographics (age/income)



Source: Bond Buyer

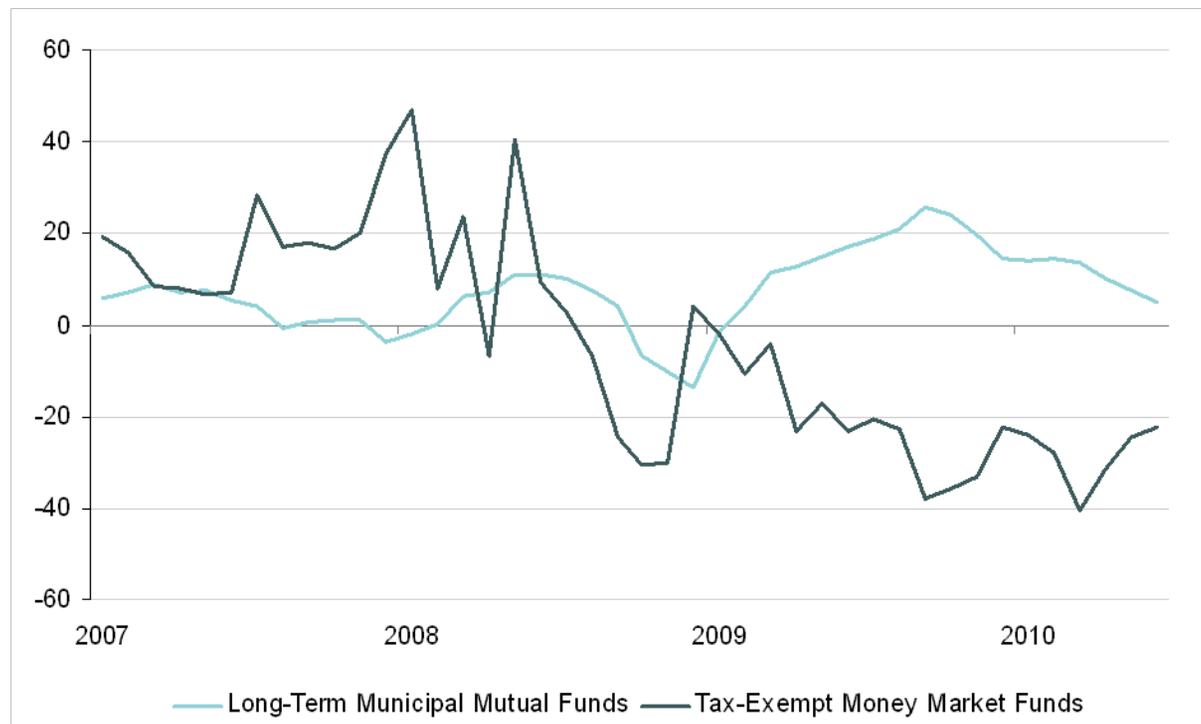
# Municipal Mutual Funds and ETFs

Despite low yields and deteriorating credit fundamentals, long-term municipal mutual funds recently reached an all-time high of assets under management (over \$500 billion). Trends vary by state, with some states (like California) seeing assets decline. The pace of inflows is slowing from record levels in 2009 (~\$70bn in 2009 vs \$21bn YTD).

Tax-Exempt Money Market Funds, meanwhile, have experienced ~\$100 billion of outflows over the past twelve months.

Municipal ETFs are a fast growing segment on the market but remain relatively small (\$5.9bn as of 12/31/09 vs \$2.3bn as of 12/31/08).

## Rolling 3-month Fund Flows (\$bn)



Source: ICI

# Pension Funding

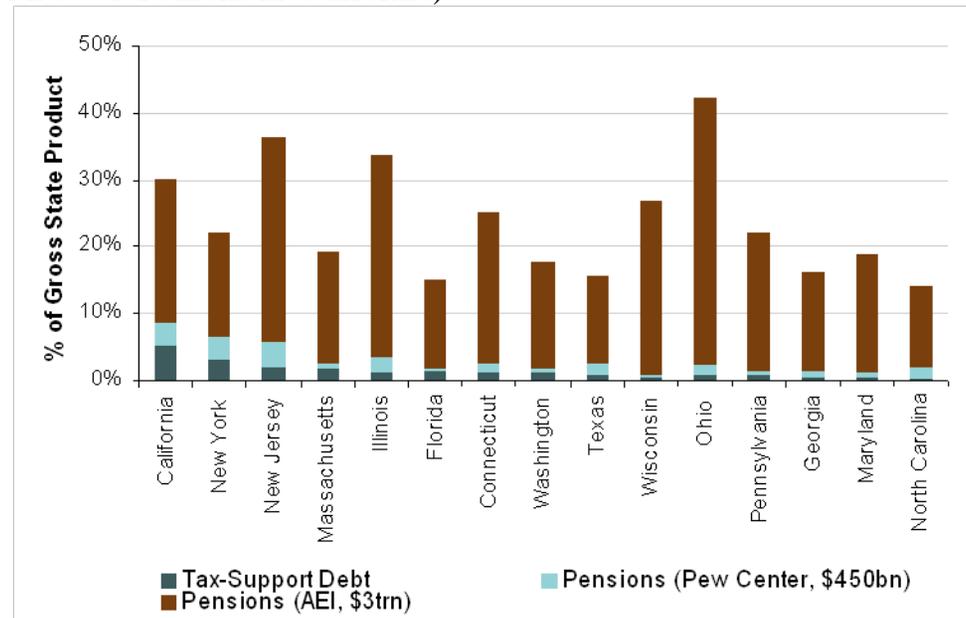
**Pension underfunding will gradually increase in budget impact. At current asset and benefit levels, the system is likely unsustainable. Over the long-term, constructive reform needs to be enacted.**

## Where we are and how we got here?

- Large Unfunded Pension Liability estimates for the states range from ~\$450 billion to over \$3 trillion
- Funding ratios have fallen sharply with equity market declines and lower interest rates leading to lower discount rates
- Budget pressures (failure to make the entire ARC) and asset value declines have contributed to the problem
- Illinois has the lowest funding status: ~50% as of 6/30/09 (~39% using market values rather than smoothing)

## How do we get out?

1. Benefit reductions
  - Several states have recently taken action by increasing retirement ages and adjusting formulas for new hires
  - Many states are seeking concessions from unions that dominate the public sector workforce (Gov. Schwarzenegger recently agreed to new terms with several unions in California)
2. Economic / market recovery
3. Funding increases (contributions to plans from operating budget)
4. Accounting changes
  - The Governmental Accounting Standards Board (GASB) is discussing accounting changes that would create broad standardization for pension fund forecasting



Note: Tax-Supported Debt as of 2009, GDP as of 2008

Source: Moody's, American Enterprise Institute, Pew Center, Barclays Capital, Citi

# Short-Term Variable-Rate Debt

The structure of the short-term variable-rate debt market changed dramatically, particularly during 2008 and 2009

## The Auction Rate Securities market faced well-publicized difficulties

- Despite their long final maturity dates, auction rate securities were viewed by many investors as cash equivalents because of their frequent, historically successful re-marketing/auctions
- When auctions failed, investors were forced to hold the illiquid long-term securities and issuers forced to pay higher interest rates
- Current investor base includes hedge funds and banks

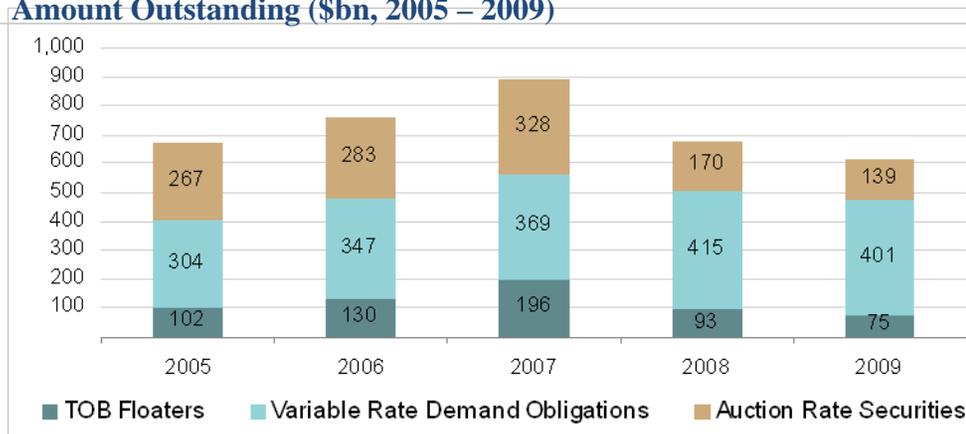
## Auction Rate Securities were refinanced with Variable Rate Demand Obligations (VRDOs)

- Unlike auction rate securities, VRDO's are puttable on a regular basis
- Many issuers (particularly those rated below A-1/P-1) obtained Letters of Credit (LOCs) from banks. These LOCs obligated the banks to purchase bonds if the put option was exercised and to guarantee principal and interest payments
- This shift greatly increased the contingent liquidity risk faced by banks
- Primary investor base is money market funds and short mutual funds

## Tender Option Bond (TOB) programs faced unwinds

- In a TOB structure, a trust issues puttable floating-rate debt and uses the proceeds to purchase long-term municipal bonds
- The holder of the residual (typically a bank or hedge fund) hopes to profit by arbitraging the yield curve
- A bank typically provides a liquidity facility to meet the put obligations and serves as re-marketing agent
- Due to dislocations during the financial crisis, many TOBs were forced to liquidate
- While the TOBs outstanding have declined, the remaining structures typically have lower leverage than pre-crisis levels
- Primary investor base is money market funds and short mutual funds

Amount Outstanding (\$bn, 2005 – 2009)



Source: JP Morgan

# Short-Term Variable Rate Debt - Risk Profile

## **Floating rate debt is an important slice of the U.S. municipal market.**

- At the end of 2009, there was \$615bn of variable rate municipal debt outstanding compared to \$2.8 trillion of aggregate municipal debt. The variable rate market has contracted in size by 31% since 2007.
- Lower rated issuers of variable rate debt use liquidity facilities, in the form of bank-supplied letters of credit (LOCs) and standby purchase agreements, to backstop the put and remarketing features embedded in these securities
- \$200 billion of LOCs are scheduled to expire during 2010/2011 (of which \$30 billion may be difficult to renew in the estimate of JPM).
  - More restrictive terms
  - Higher cost (both for credit reasons and to reflect potentially higher risk weightings)
  - Less availability for lower-rated issuers
- The effect of these changes could be higher budget/liquidity pressure on issuers of variable rate debt and reduced usage of LOCs. LOC-backed debt declined from 18.4% in 2008 to 5% in 2009.
- Issuers may term out more debt if possible, which would increase funding costs and decrease the amount of variable rate debt outstanding
  - Example: Cal Dep't of Water = \$3bn fixed rate issue to redeem \$2.7 billion of VRDOs

# Commercial Bank Holdings of Municipal Debt

Prior to the Tax Reform Act of 1986, commercial banks were major purchasers of tax-exempt bonds. As a result of that act, banks are no longer able to deduct the carrying costs of tax-exempt bonds. The main exception to this rule is that banks may deduct 80% of the carrying costs of bank-qualified bonds. By definition, bank-qualified bonds are issued by small issuers (<\$10mm issuance per year, cap raised to \$30mm by ARRA for 2009 and 2010).

Given their focus on bank-qualified bonds, municipal bond portfolios at banks may behave differently than the broader municipal bond market. Unfortunately, disclosure regarding the contents of these portfolios is limited.

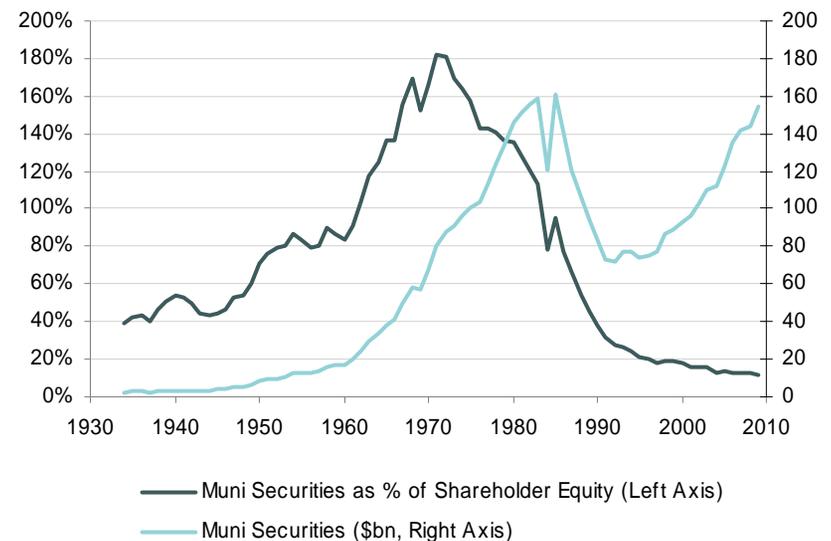
The figures below are based on municipal bonds held in commercial bank investment portfolios. They do not include securities held outside of the bank, trading securities, counterparty exposure, derivatives, or off-balance sheet items (letter of credit commitments, TOB liquidity commitments, etc)

While smaller commercial banks have a higher exposure to municipal securities (as a % of Tier 1 Capital) than larger banks, the majority of municipal letters of credit have been extended by larger banks.

## Commercial Banking Sector (as of 3/31/2010)

	All	<\$100mm Assets	\$100mm - \$1bn Assets	>\$1bn Assets
<b>Municipal Securites (\$bn)</b>	156	8	49	100
<b>RWA (\$bn)</b>	8,504	92	783	7,630
<b>Assets (\$bn)</b>	12,087	139	1,098	10,850
<b>Tier 1 Capital (\$bn)</b>	999	15	102	882
<b>Tier 1 / RWA</b>	11.7%	16.7%	13.0%	11.6%
<b>Municipal Securities as % of Tier 1 Capital</b>	16%	50%	48%	11%

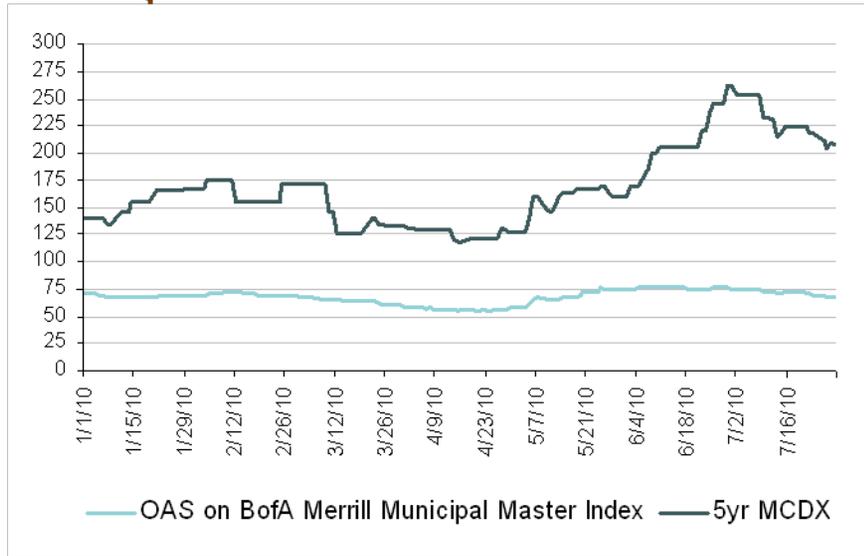
## Historical Muni Exposure (1934 – 2009)



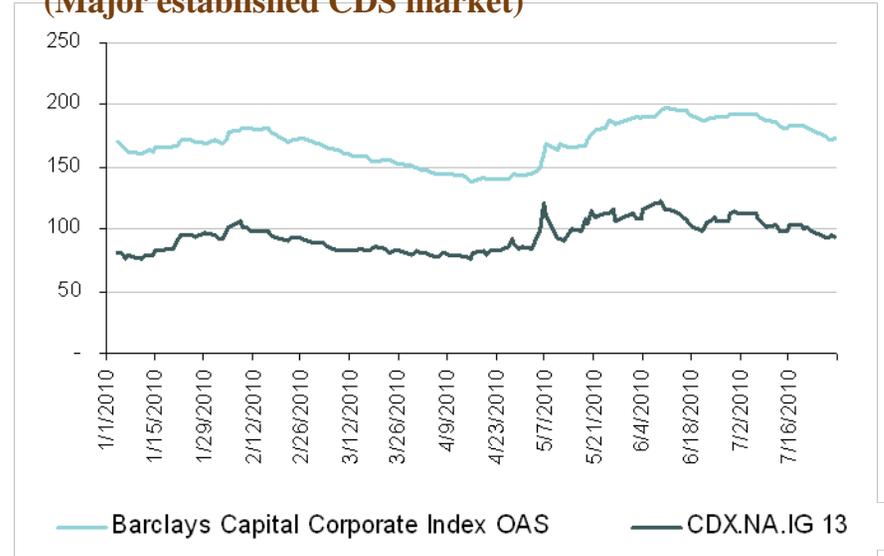
Source: FDIC

# CDS Spreads vs Taxable Cash Spreads

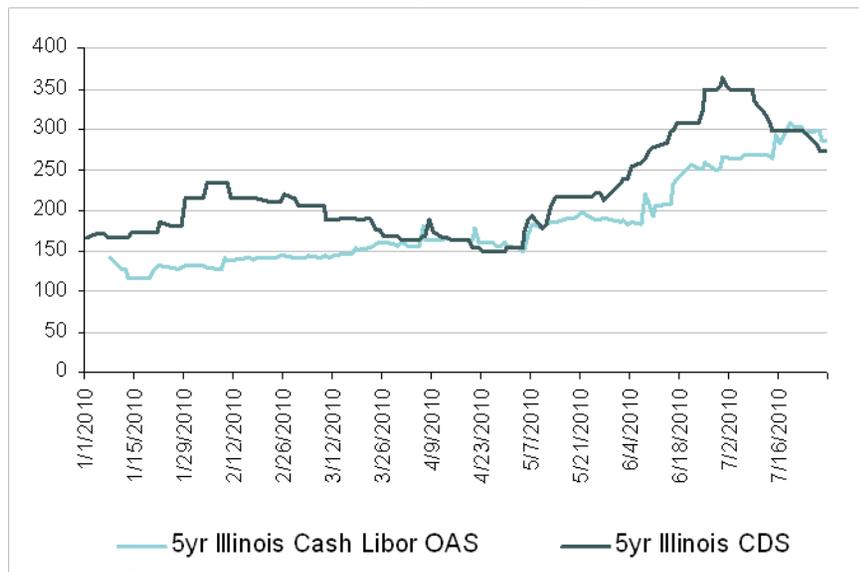
**MCDX has been more volatile than municipal cash**



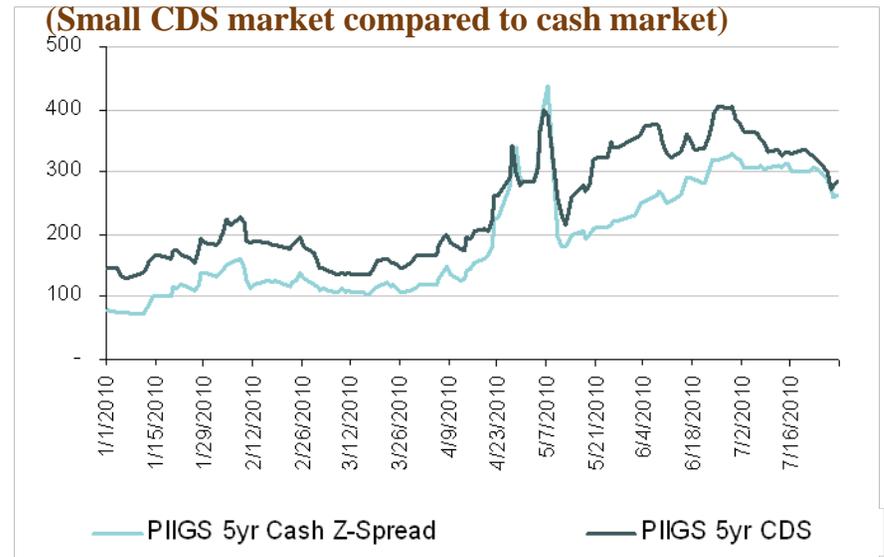
**The IG corporate basis has remained negative (Major established CDS market)**



**The Illinois basis has recently turned negative**



**The average PIIGS basis has usually been positive (Small CDS market compared to cash market)**



Source: Barclays Capital, Bank of America

# Case Study: The State of California

**Being the largest issuer of municipal debt drives intense focus on the state as a bellwether for the Municipal Market as a whole**

The State has failed to enact a budget on time for all but three of the last twenty years and budgetary gridlock is the norm in Sacramento. Delays cause uncertainty and uncertainty provokes investor concern. In addition, unfunded pension and OPEB liabilities are a greater than \$100bn long term problem that doesn't seem to have an imminent solution.

These negatives are counteracted by a large, robust and diverse underlying economy.

## Positives

- Backed by Full Faith and Credit and taxing authority of the biggest economy in the U.S. (GDP=\$1.8 trillion, 38mm citizens, 11% of U.S. exports, diverse revenue sources)
- Constitutionally mandated debt service appropriation , which is a relatively modest 6.75% of expenditures
- Many levers to pull in times of crisis (e.g. tax increases, borrowing, project delays, layoffs/furloughs)
- Reserve funds that can be drawn upon in event of shortfall

## Risks

- Legislative process causes delays in passing a balanced budget which creates uncertainty surrounding cash management
- Long-term unfunded liabilities have grown throughout the current economic downturn
- Highly cyclical revenue stream due to progressive tax system and reliance on capital gains tax
- Subordination risk to GO holders if certain revenue streams are securitized

Although negative headlines continue to pressure state borrowing costs, lawmakers have a history of passing balanced budgets and avoiding complete shutdown or inflicting serious damage to the issuer's reputation.

### State of California Finances:

Priority of payment provision limits default probability

General Fund	2008-09	2009-10
Revenues & Transfers	87,774	88,654
Fund Expenditures	98,231	88,669
Education (Prop 98)	35,254	32,909
Debt Service	4,908	5,984
Other	58,069	49,776
Debt Service %	5.59%	6.75%

Source: California State Controller & Treasurer

# Case Study: The State of Illinois

## Illinois’ recent budgetary and pension funding issues contribute to high relative funding costs

Illinois is a state with challenges similar to those of California, including large and growing pension liabilities, a demonstrated lack of political will to make structural changes and an economy in recession, with less underlying strength & diversity than California’s.

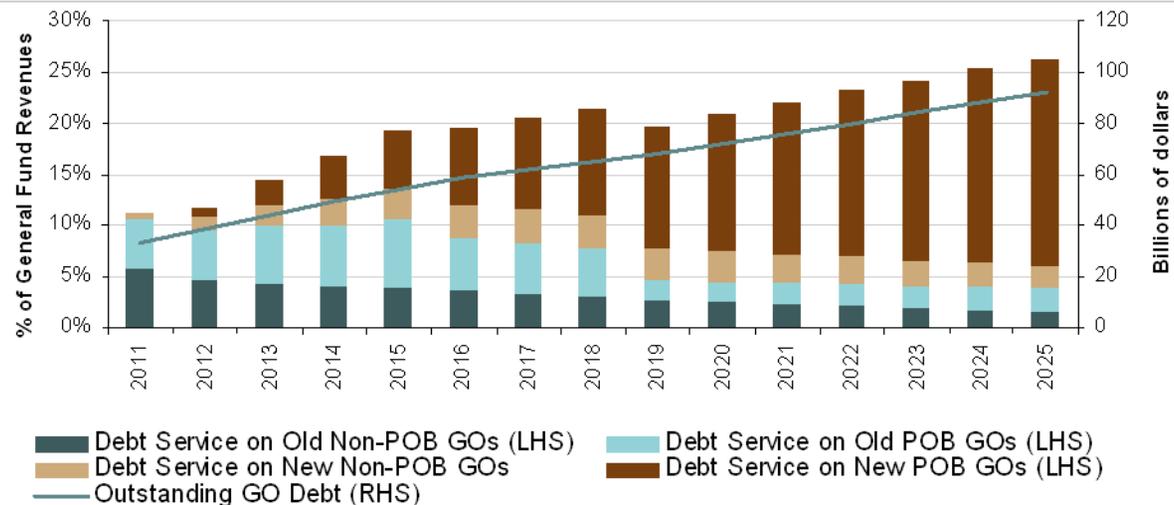
### Positives

- Full, Faith & Credit Issuer – Illinois GO debt service is 1st priority (vs. California where it is 2nd to education)
- Tax base is strong, centered around the major city of Chicago and not likely to migrate
- Tax burden is low (3% flat personal income tax). Potential support for tax increases.

### Risks

- Unlike the State of California, the Illinois legislature considers bridging a budget deficit via external borrowing (both short-term as well as longer-term pension obligation borrowing) as balancing the budget - higher debt burden / debt service costs
- Backlog of unpaid bills and fund transfers stood at \$4.7bn at the end of the 2010 fiscal year and is growing
- Pension Obligations are enormous; the funded ratio fell to 50.6% as of June 30, 2009 (using five year smoothing; 38.5% fair value), and remains the lowest among all states.

**Forecast of Illinois’ GO Debt Burden if All Pension Contribution Are Funded with GO Debt**



Assumptions:: All future pension contributions beyond FY2011 are funded entirely via the issuance of 25-year level-amortization pension obligation bonds at a weighted-average cost of 6%. Since it has already been proposed, the potential \$3.7bn POB this fall is included under “Old POB GOs” and is modeled based on the proposed maturity schedule. The State issues BABs to fund their capital plan based on their 6yr annual issuance forecast (assume 25-year amortization and 6% cost of debt less 35% BAB subsidy). Assume General Fund annual revenue growth of 2.5% after 2011.

Treasury Borrowing Advisory Committee  
Presentation to Treasury  
Charge #3

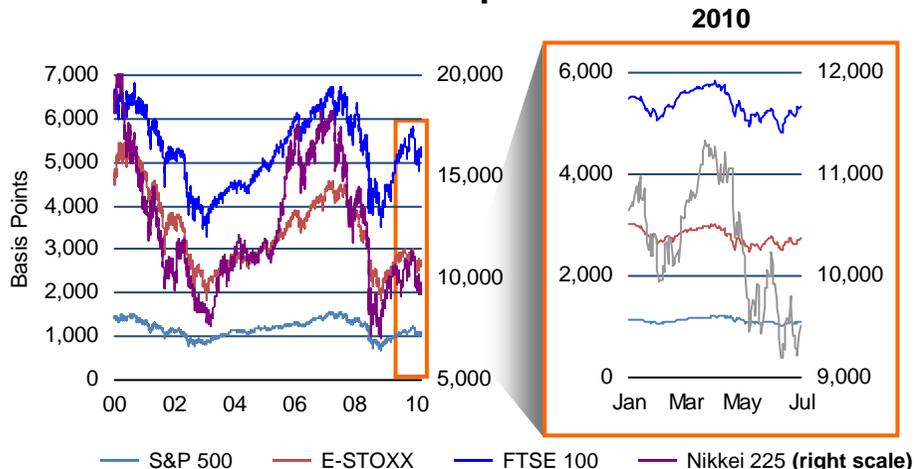
August 3, 2010

## TBAC Charge # 3

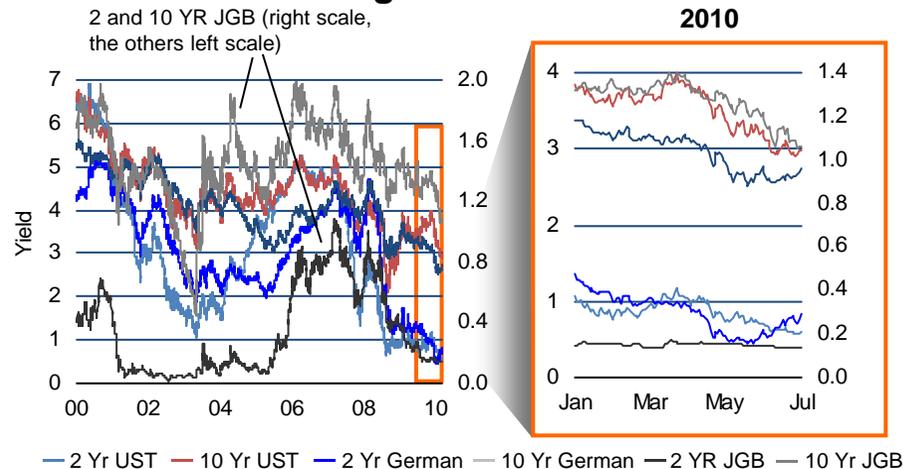
- What are the forces that are underpinning demand for long-duration fixed-income assets?
- What factor should Treasury consider as the average maturity of outstanding debt continues to gradually extend?

# Financial Markets have been Retracing their Moves from the Credit Crisis and the More Recent Sovereign Crisis of 2010

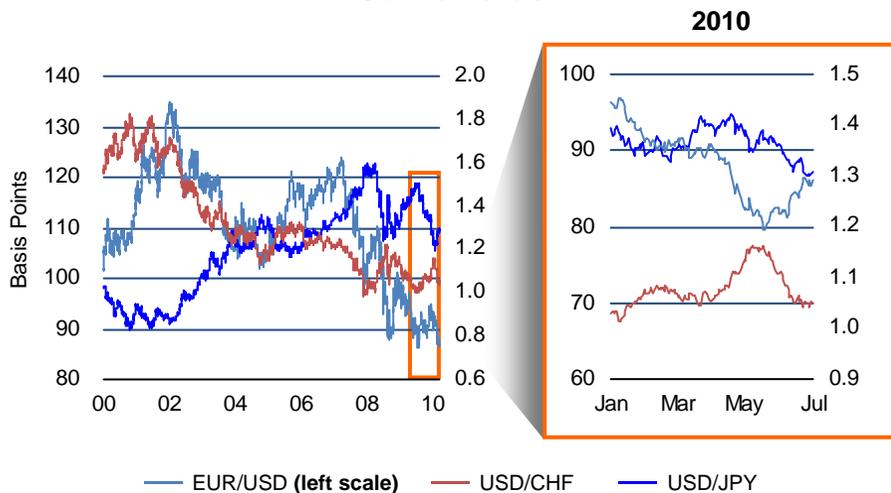
## Global Equities



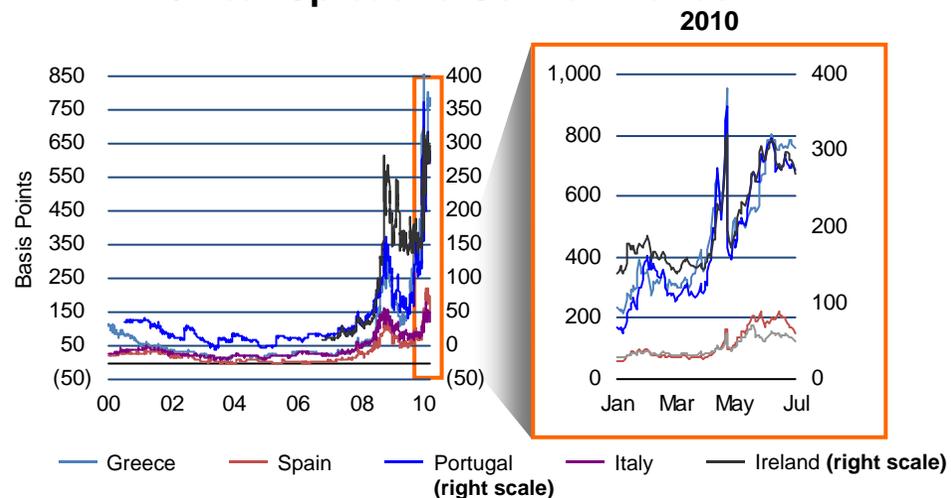
## Sovereign Bond Yields



## Currencies

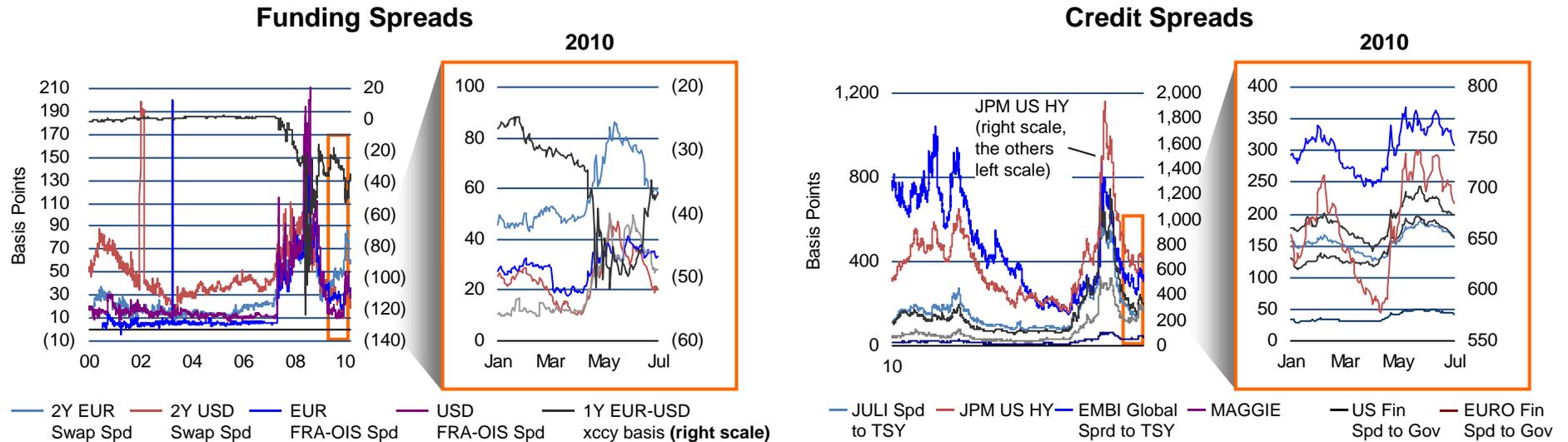


## 10 Year Spread to German Bonds



As of July 23, 2010 Source: Bloomberg, J.P. Morgan and Presenting Member's Firm

# ...Funding and Other Risk Premiums Have Subsequently Retraced Significantly



## Best/Worst Since 12/09 & Retracement from Worst Level

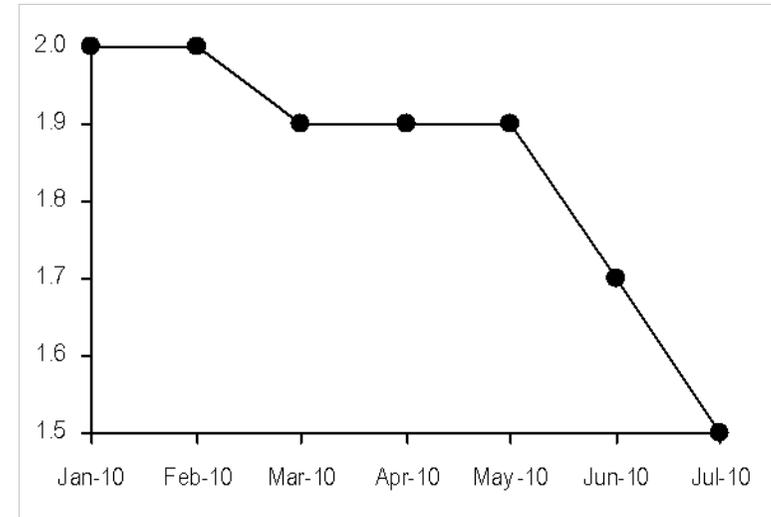
	Current	Best	Worst	% Retrace
S&P 500 (Level)	1,102.7	1,217.3	1,022.6	41%
E-Stoxx (Level)	2,719.1	3,017.8	2,488.5	44%
10Y US Treasury Yield (%)	2.99	3.99	2.89	9%
10Y German Bond Yield (%)	2.7	3.39	2.51	22%
10Y Spain Spread to Germany (b.p.)	165.1	56.6	223.1	35%
2Y USD Swap Spread (b.p.)	21.6	10.2	49.5	71%
2Y EUR Swap Spread (b.p.)	60.1	43.2	86.1	61%
EUR/USD (Level)	1.28	1.47	1.19	32%
JULI Spread to Treasury (b.p.)	167.9	126.6	188.1	33%

# Inflation Expectations Have Steadily Declined

## FOMC Central Tendency Forecasts (%)

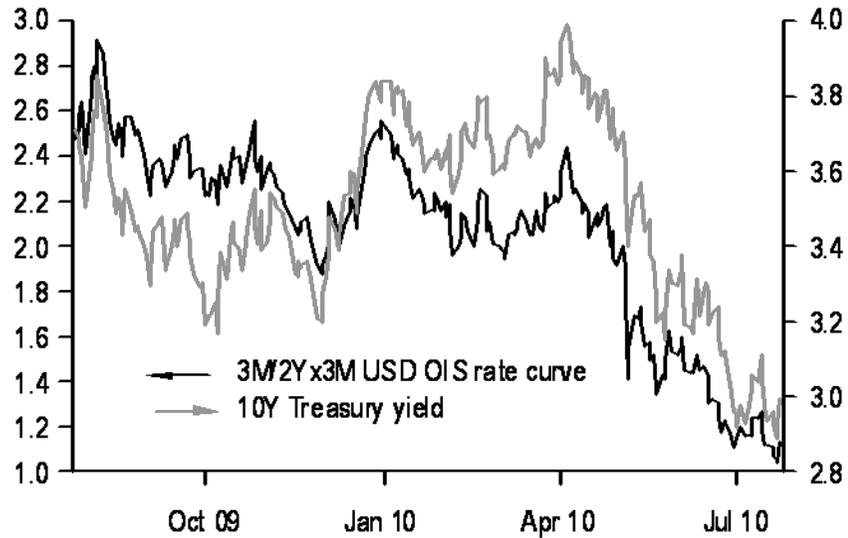
		2010	2011	2012	Longer Run
Real GDP	Jan FOMC	2.8 to 3.5	3.4 to 4.5	3.5 to 4.5	2.5 to 2.8
	Apr FOMC	3.2 to 3.7	3.4 to 4.5	3.5 to 4.5	2.5 to 2.8
	June FOMC	3.0 to 3.5	3.5 to 4.2	3.5 to 4.5	2.5 to 2.8
Unemployment Rate	Jan FOMC	9.5 to 9.7	8.2 to 8.5	6.6 to 7.5	5.0 to 5.2
	Apr FOMC	9.1 to 9.5	8.1 to 8.5	6.6 to 7.5	5.0 to 5.3
	June FOMC	9.2 to 9.5	8.3 to 8.7	7.1 to 7.5	5.0 to 5.3
Core PCE Inflation	Jan FOMC	1.1 to 1.7	1.0 to 1.9	1.2 to 1.9	1.7 to 2.0
	Apr FOMC	0.9 to 1.2	1.0 to 1.5	1.2 to 1.6	1.7 to 2.0
	June FOMC	0.8 to 1.0	0.9 to 1.3	1.0 to 1.5	1.7 to 2.0

## Consensus CPI Forecast for 2011 (%)

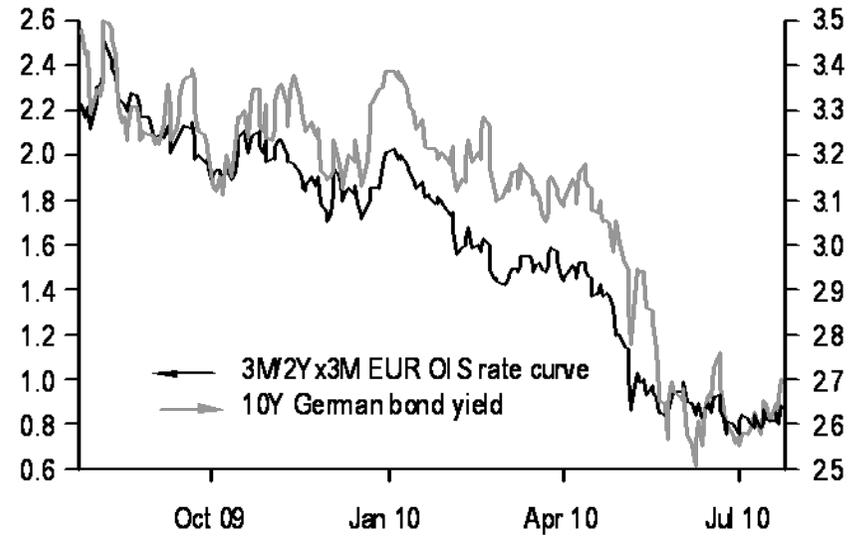


# . . .Driving a Fall in Policy Rate Expectations and Sovereign Yields

**3M/2Yx3M USD OIS Rate Curve versus 10-year Treasury Yield (%)**



**3M/2Yx3M EUR OIS Rate Curve versus 10-year German Bond Yield (%)**

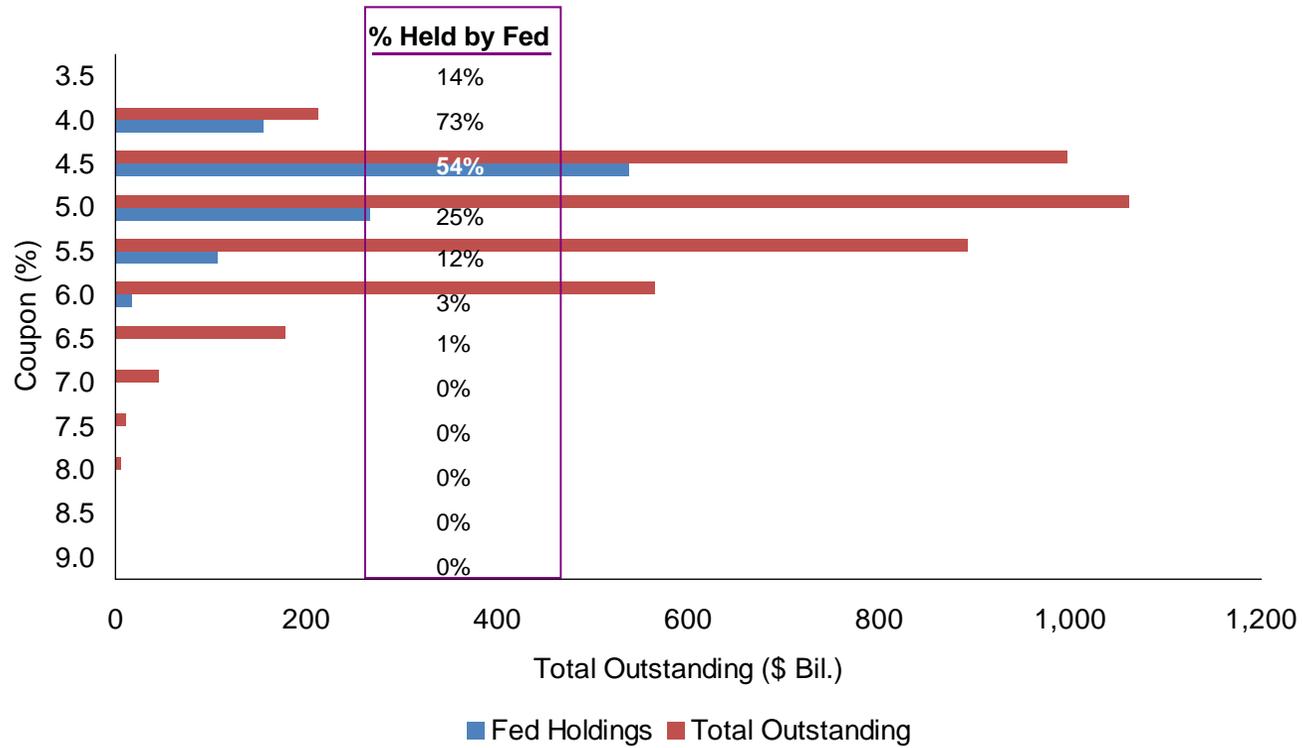


# Several Factors Have Muted the Mortgage Hedging Impact on the Fixed Income Market

- 27% of the outstanding 30-Year Agency MBS Universe is currently held on the Fed's balance sheet
- Capacity constraints of tighter credit standards have reduced payment activity
- Strategic underweight to MBS by real money managers led to contrarian hedging flows

# Fed Purchase Activity of MBS has Changed the Dynamics of Falling Rates and Hedging Activity ...

- 27% of the outstanding 30-year Agency MBS universe first held on the Fed's balance sheet
- The Fed's holdings are concentrated in the lower coupons



# Mortgage Convexity Risk with and without the Fed Holdings

- Hedging Needs are considerably lower while the Fed holds 27% of the outstanding 30yrs with a concentration in lower coupons
- Hedging needs will increase if pay-downs are not re-invested and new issuance (from refis) are purchased by investors who do hedge.
- Actual Hedging needs will also depend on how actively the GSEs hedge their portfolios
- Hedging needs also arise from mortgage servicing rights, but they are unaffected by the Fed's holdings

## Total MBS Universe

Rate Shift (b.p.)	Price (\$)	OAD (Yrs)	10YrEquiv (\$ Bil.)
-300	106.21	0.29	-1004
-200	106.49	-0.05	-1208
-100	107.41	-0.32	-1373
-50	107.5	0.64	-790
-25	107.26	1.29	-394
0	106.82	1.94	0
25	106.22	2.52	342
50	105.48	3.07	660
100	103.61	3.98	1167
200	98.96	4.99	1630
300	93.92	5.36	1682

## MBS Universe Minus Fed Holdings

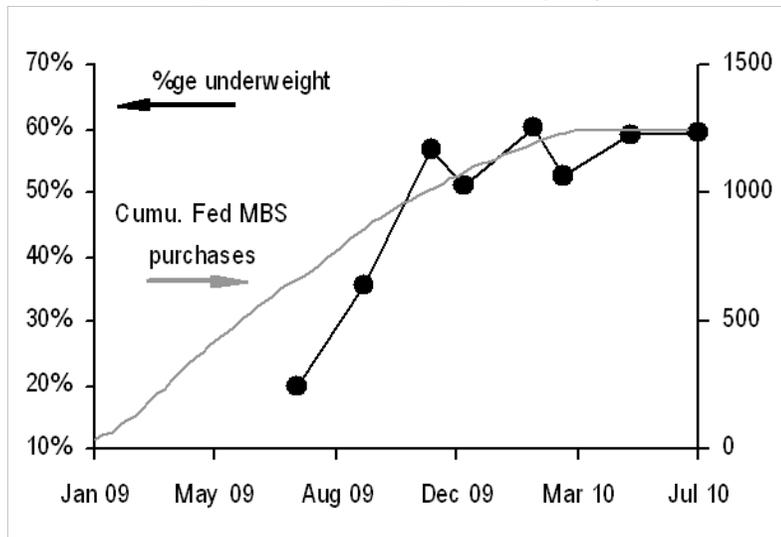
Rate Shift (b.p.)	Price (\$)	OAD (Yrs)	10YrEquiv (\$ Bil.)
-300	106.71	0.31	-615
-200	106.99	-0.02	-766
-100	107.87	-0.27	-881
-50	107.99	0.5	-523
-25	107.8	1.06	-265
0	107.42	1.64	0
25	106.91	2.16	237
50	106.27	2.68	467
100	104.59	3.59	857
200	100.27	4.65	1248
300	95.45	5.08	1327

Source: Barclays Capital; June 2010

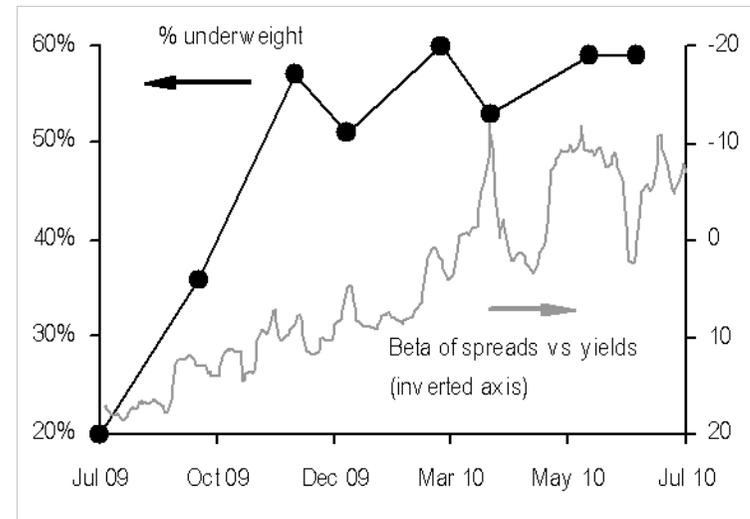
# Traditional Managers Were “Crowded Out” of MBS Resulting in Contrarian Hedging Flows

- A significant underweight on the part of mortgage investors has turned convexity hedging flows upside down, causing underweight investors to receive as rates rise and the duration of the benchmark extends, and to pay as rates fall and the duration of the benchmark shortens.
- These “voodoo” mortgage hedging flows are acting as a strong offset to the traditional convexity hedging of GSEs and servicers that normally cause spreads to be positively correlated with yields

Percentage of investors reporting underweight MBS positions in the J.P. Morgan MBS Investor Survey (%) versus cumulative Fed purchases of Agency MBS (\$bn)



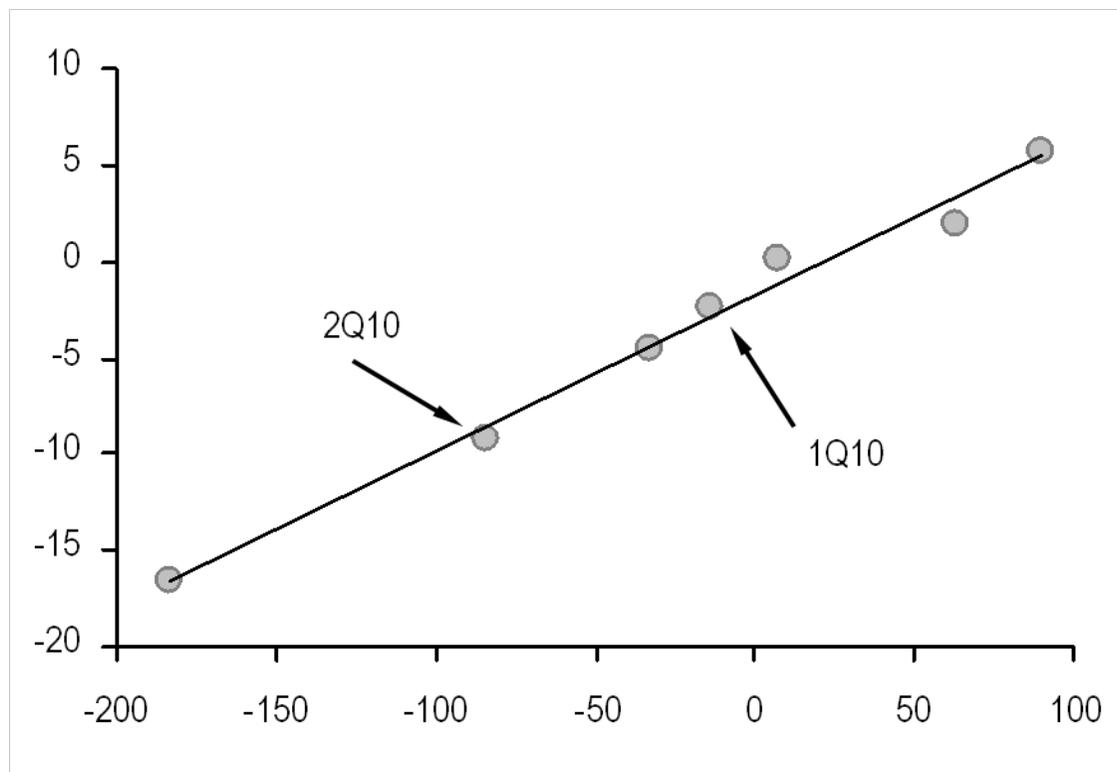
Percentage of investors reporting underweight MBS positions in the J.P. Morgan MBS Investor Survey (%) versus rolling 3-month beta of weekly changes in 5-year swap spreads regressed against weekly changes in 5-year swap yields



Capacity constraints and tight credit conditions have kept prepays relatively slow, and as a result, servicers have a limited need to adjust the size of their duration hedges as yields fall

### Quarterly Change in 10-year Swap Yields (b.p.)

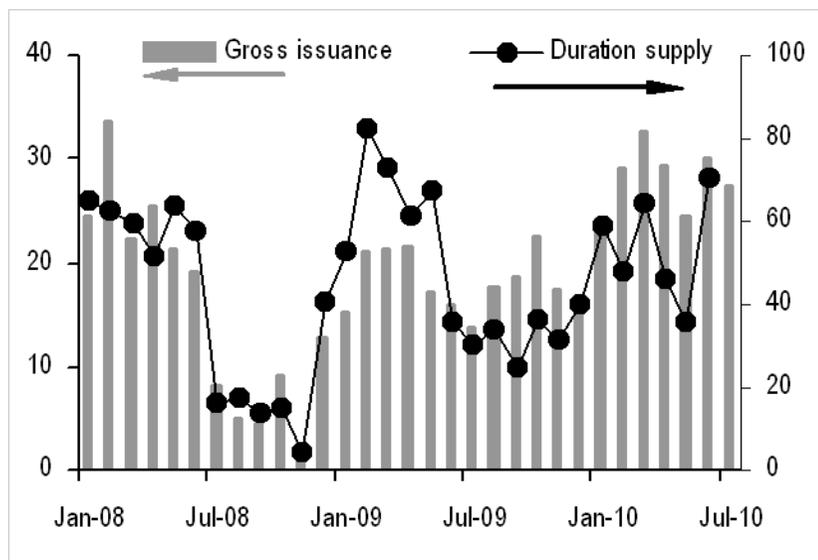
Quarterly aggregate change in the MSR fair value for two of the largest servicers regressed against the quarterly change in 10-year swap yields; (4Q:08–2Q:10) (\$ bil.)



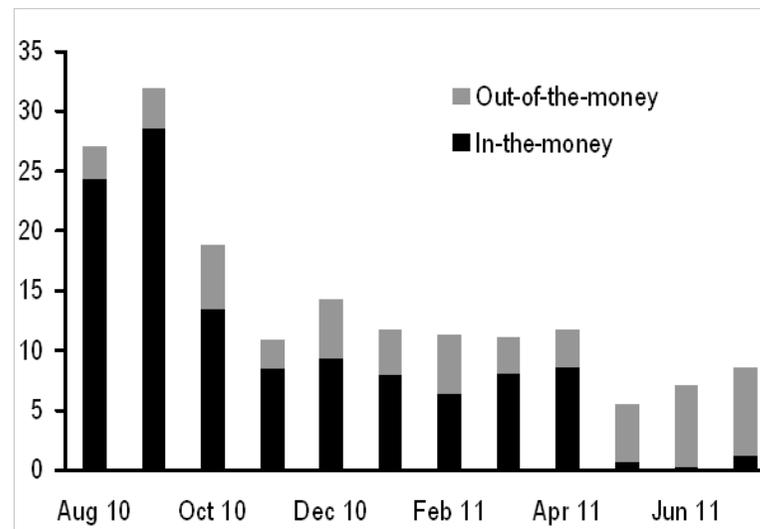
However, callable redemptions have increased on the back of lower yields, resulting higher callable gross issuance and greater duration supply

- If rates remain at current levels, we estimate that 90% of European callables with call dates in the next two months are in-the-money to be called

**Callable Gross Issuance (\$ bil.) and Agency Debt Duration Supply\* (\$ bil. 10-yr equivalents)**

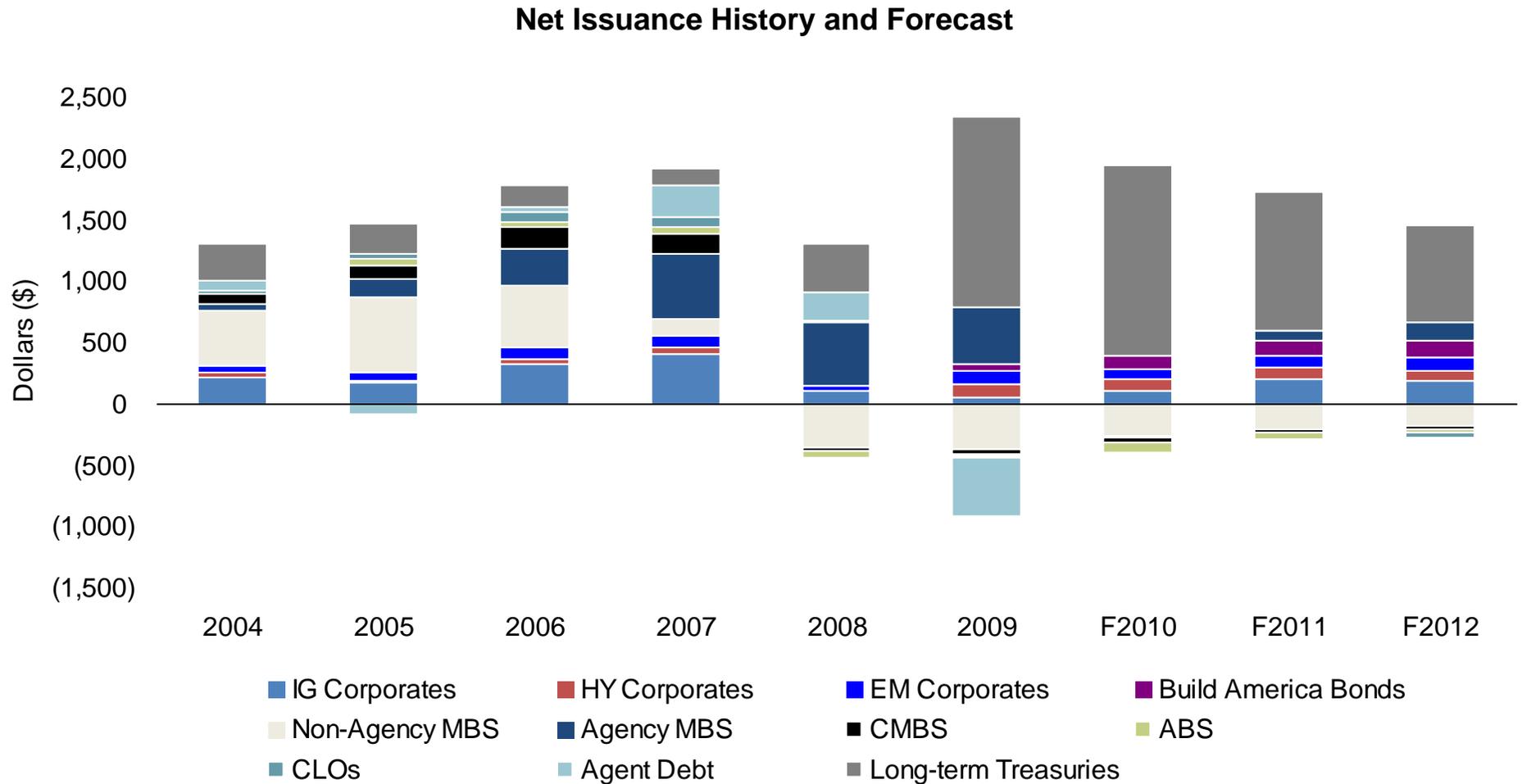


**FNMA, FHLMC, and FHLB European Callables Grouped by Call Date and Moneyness (\$ bil. as of 7/20/10)**



\*July number represents estimates for the entire month, assuming that the pace observed thus far persists for the remainder of the month

# Treasuries will Continue to Dominate the Supply Landscape

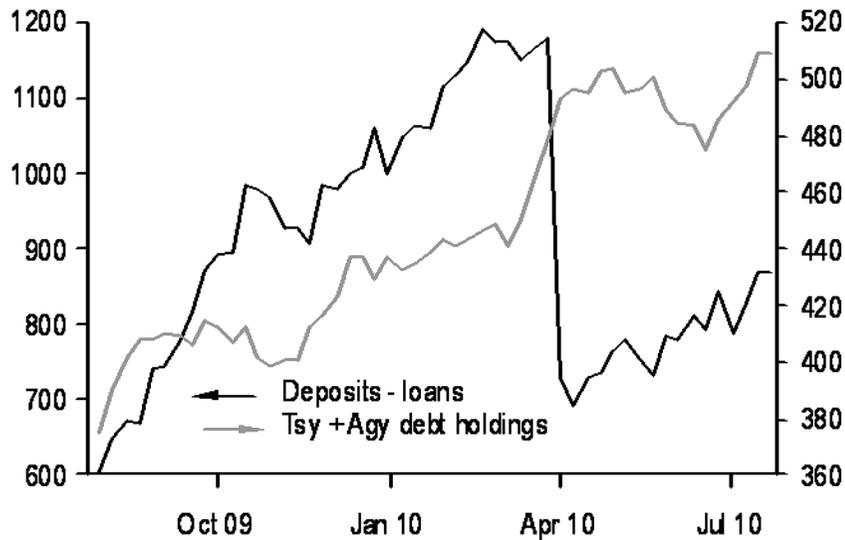


Source: J.P. Morgan North America Credit Research: High Grade Bond and CDS 2H:10 Outlook: June 25, 2010

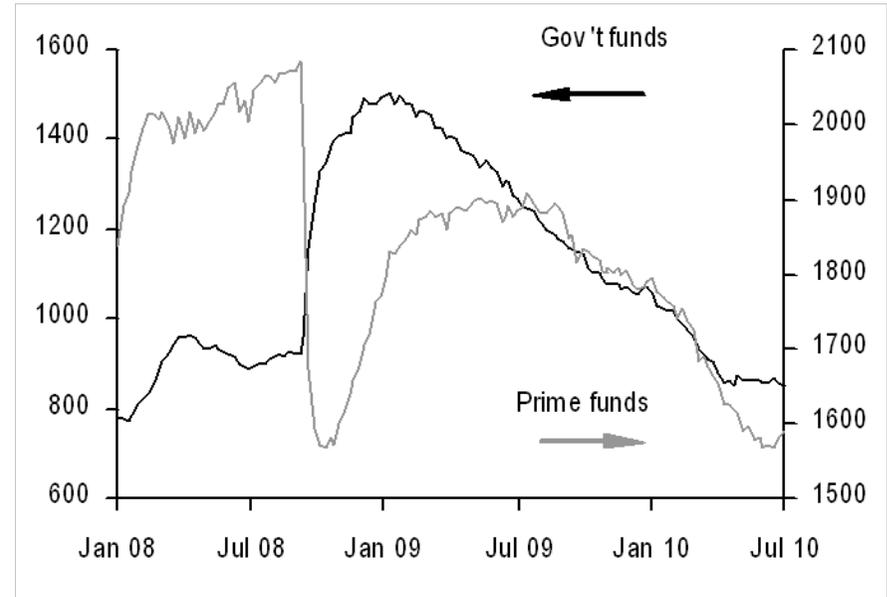
**Where Does The Demand For Fixed Income Persist?**

# Bank Demand For Assets Likely to Stay Strong

**Total deposits—Total Loan vs Holding of Treasury and Agency Debt for US Banks (\$ Bil.)**



**Assets Under Management for Government and Prime Money Market Funds (\$ Bil.)**

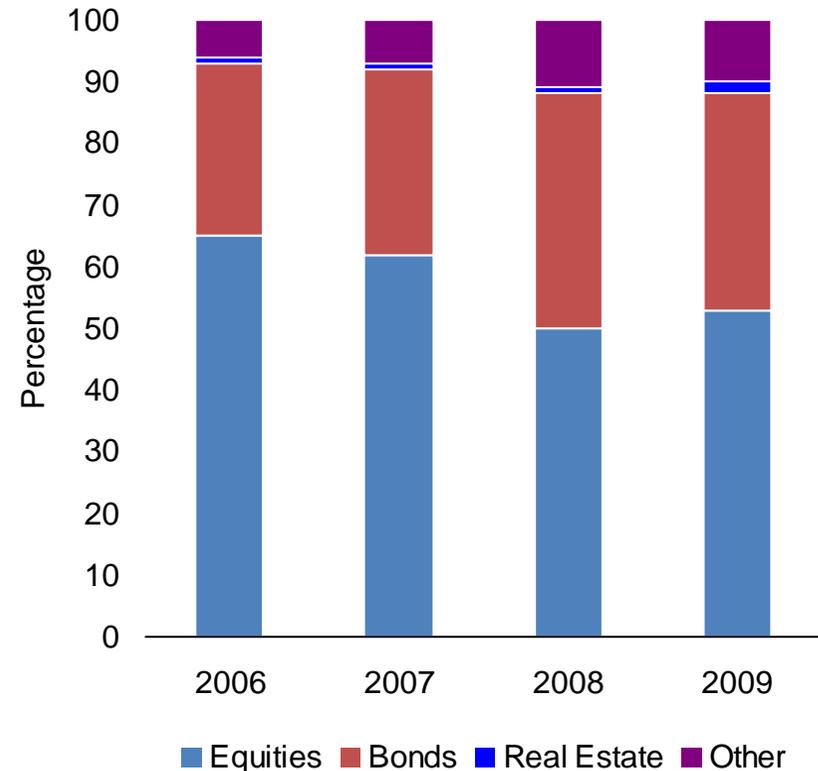


# While the Funding Gap has Improved from the Dire State of 2008, the Current State is Friendly to Fixed Income Demand

## Top 150 US Corporate Pension Plans

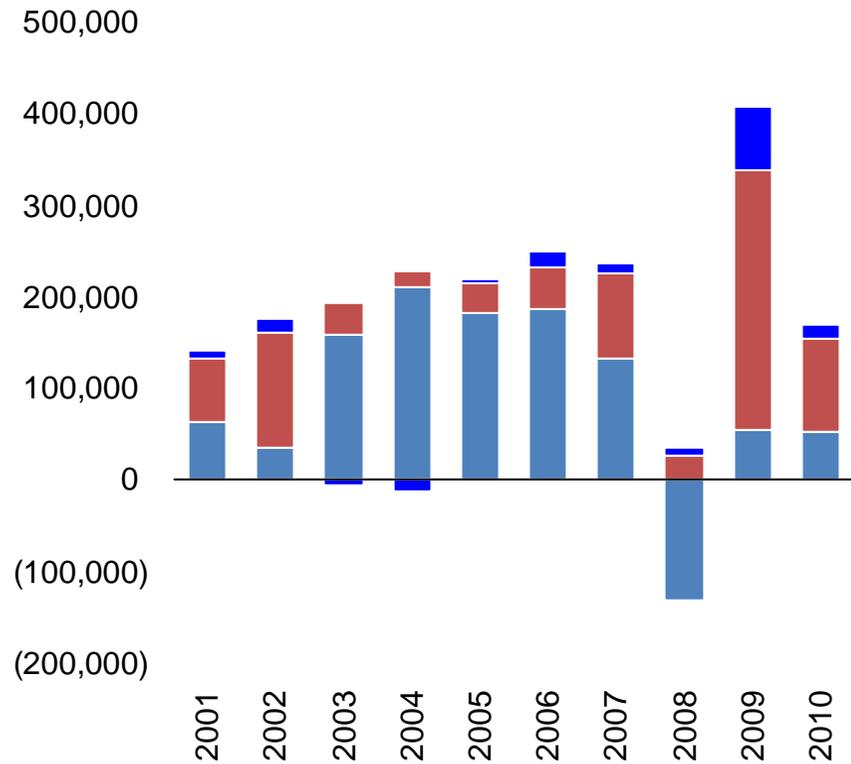
	2006	2007	2008	2009
Total Assets (\$ Mil.)	\$1.236	\$1.319	\$0.963	\$1.103
Total Liabilities (\$ Mil.)	\$1.257	\$1.259	\$1.237	\$1.351
Total Contributions (\$ Mil.)	\$0.386	\$0.279	\$0.292	\$0.556
Contributions/Prior Year's Assets	3.6%	2.0%	1.9%	5.0%
Liabilities/Market Cap	25.0%	29.0%	46.0%	36.0%
Pension Deficit/Cash from Ops	23.0%	17.0%	58.0%	49.0%

## Asset Allocation

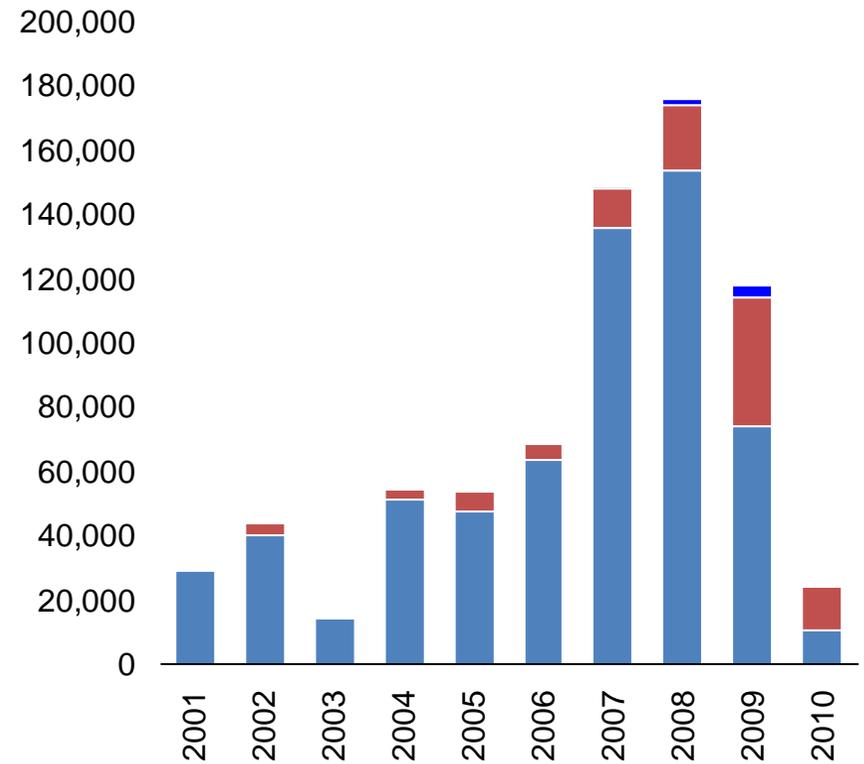


# Fixed Income was the Beneficiary of Retail Flows Throughout the Crisis

**Mutual Funds: Historical Flows**



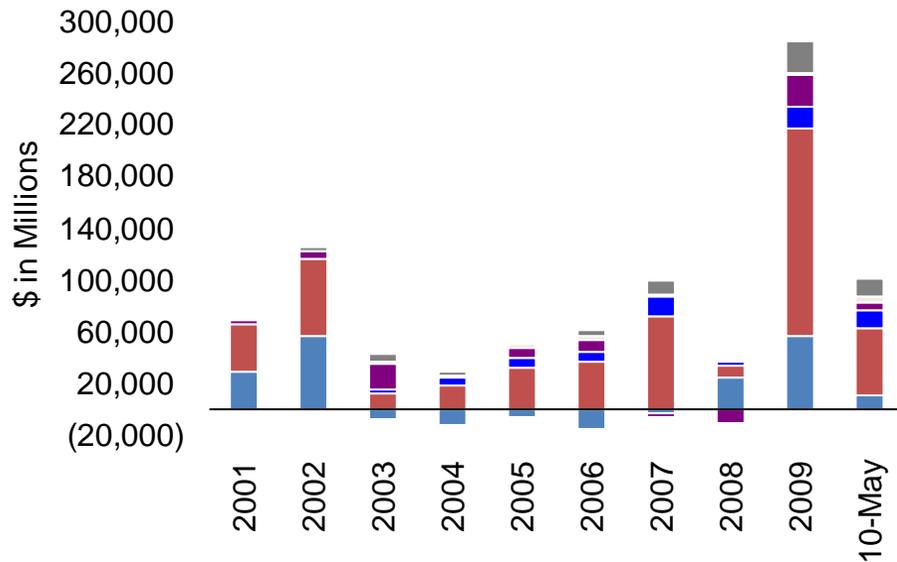
**ETFs: Historical Flows**



■ Equity ■ Taxable Fixed Income ■ Tax-Exempt Fixed Income

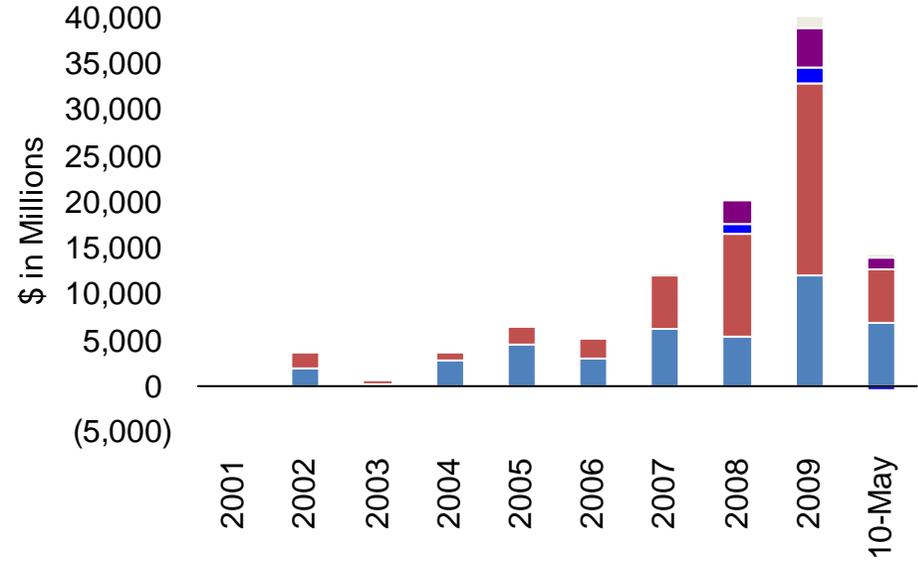
# Low Absolute Yields Have Been Encouraging Incremental Fixed Income Risk-Taking and a Move from Government to High Income Strategies

## Mutual Funds



- Govt/Mortgage
- Global/Int'l
- Emerging Markets
- Investment Grade Corp
- High Yield
- General Bond

## ETFs

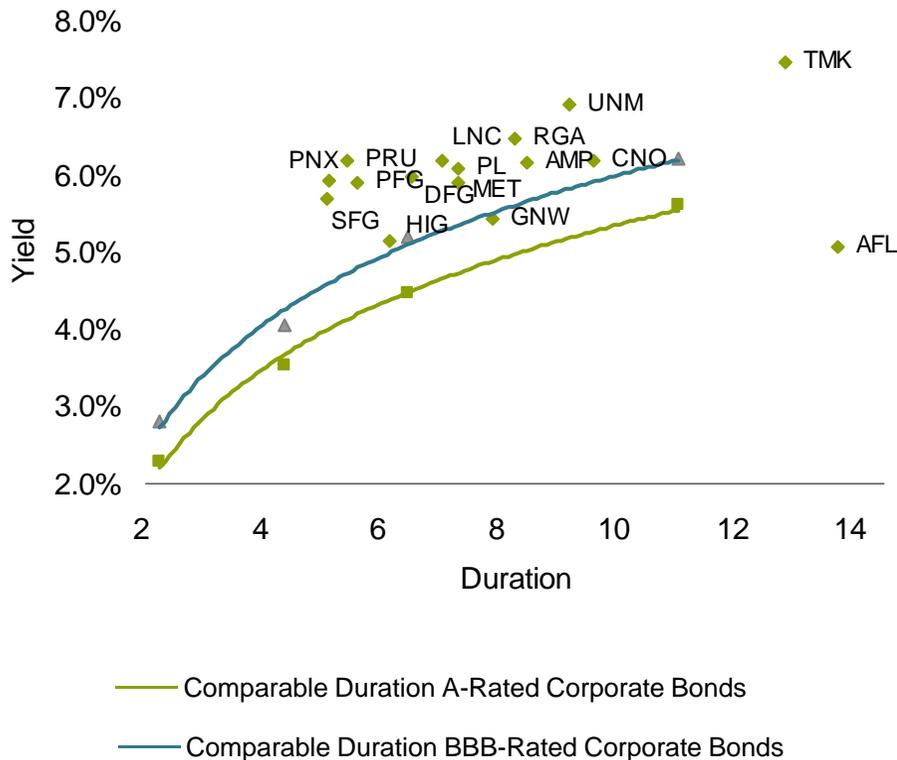


- Govt/Mortgage
- Global/Int'l
- Emerging Markets
- Investment Grade Corp
- High Yield
- General Bond

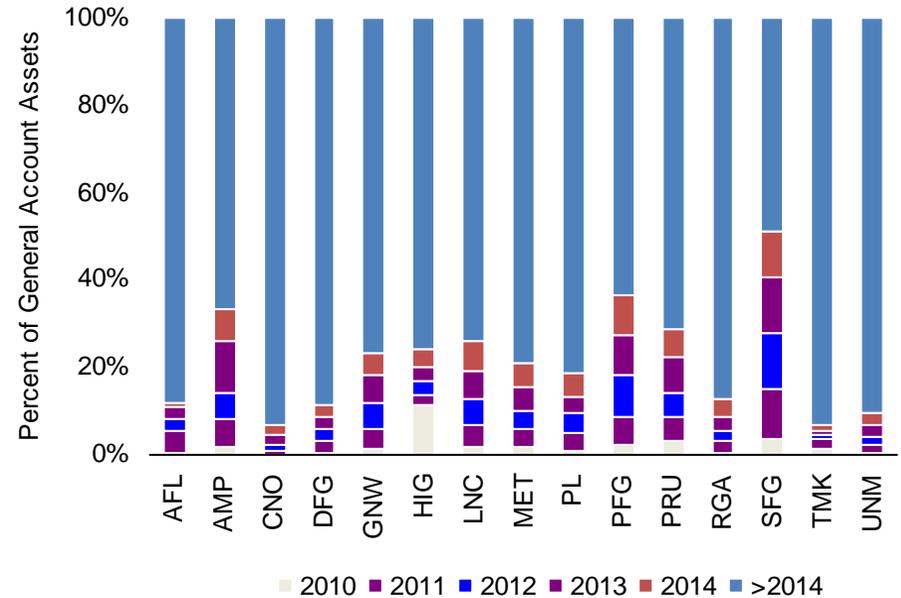
Source: Lipper and Presenting Member's Firm

# The Negative Convexity of Insurance Company Assets vs the Policy Liabilities Has Caused Duration Decay and May be a Catalyst for Further Long-Duration Demand

## Duration and Portfolio Yields

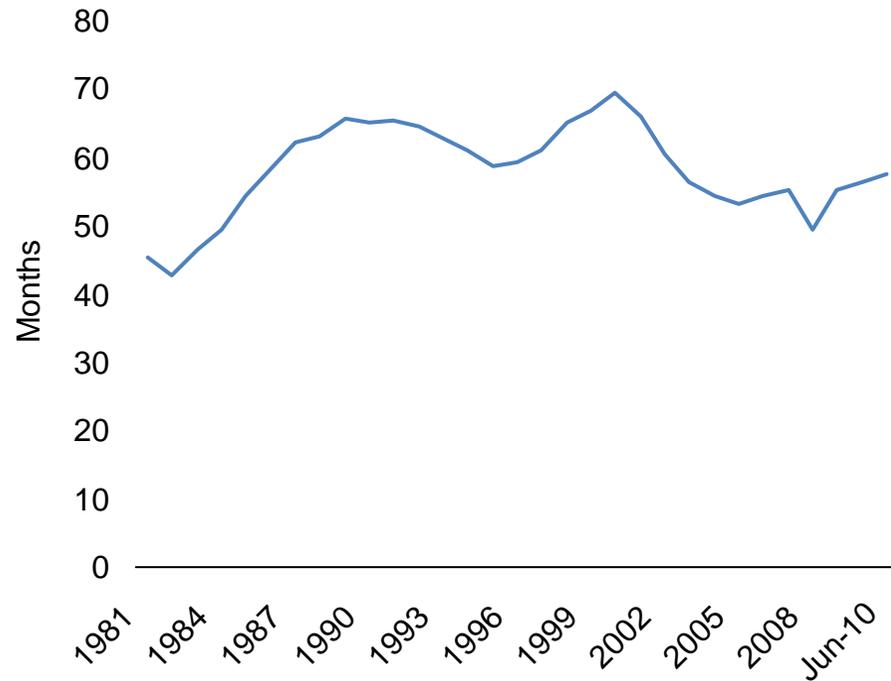


## Maturity Profile of Invested Assets

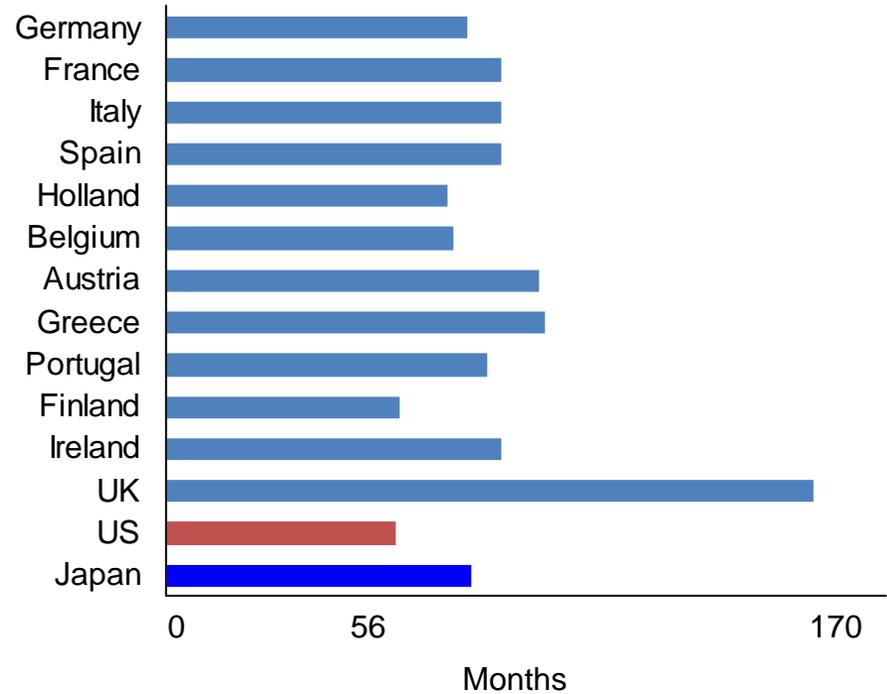


# The Average Maturity of U.S. Treasury Debt has Continued to Extend

Weighted Average Maturity (In Months)\*



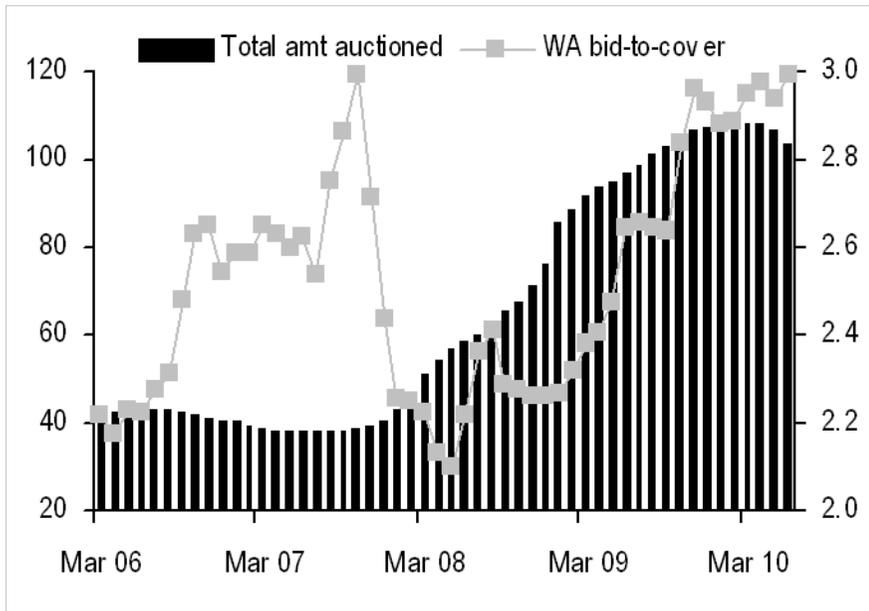
Weighted Average Maturity (In Months)\*



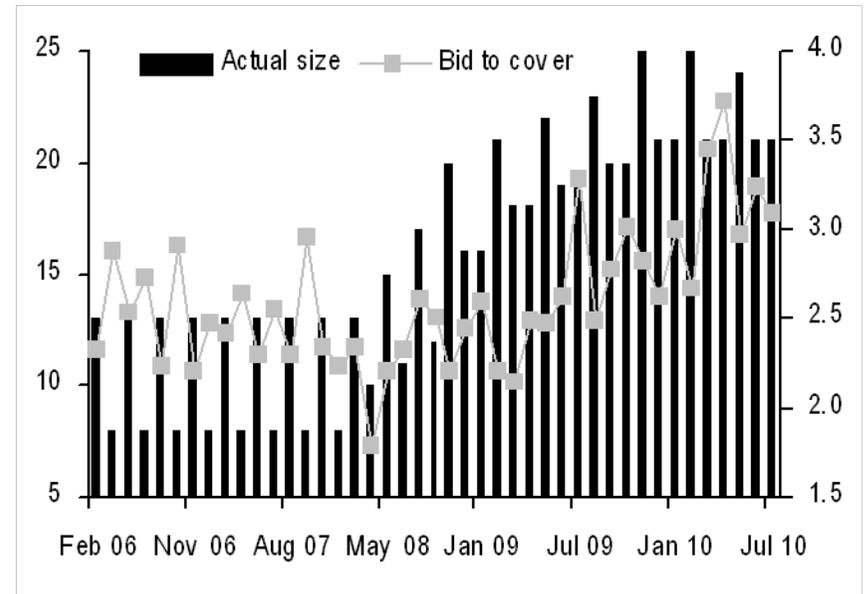
\*All data as of June 30, 2010 except Japan which is as of March 31, 2009  
 Source: US Treasury, J.P. Morgan and Presenting Member's Firm

# Demand for Treasury Debt Has Remained Robust

**3-month average of monthly 2-, 5-, and 10-year notes gross issuance (\$ bil.) versus the 3-month weighted average bid-to-cover ratios**



**The bid-to-cover / size relationship is most observable for the 10-yr sector**



# Summary

- Demand for U.S. Treasury debt has been strong
- Supply from competing fixed income sectors remains low by historic standards
- Relative to other sovereign borrowers US debt profile has room to extend
- That said, longer term structural deficits will influence/drive yield and cost of funding
- From a strategic asset/liability management perspective the trend towards gradual extension should remain in tact