



# Presentation to the Treasury Borrowing Advisory Committee

U.S. Department of the Treasury  
Office of Debt Management  
May 4, 2010



# Agenda

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

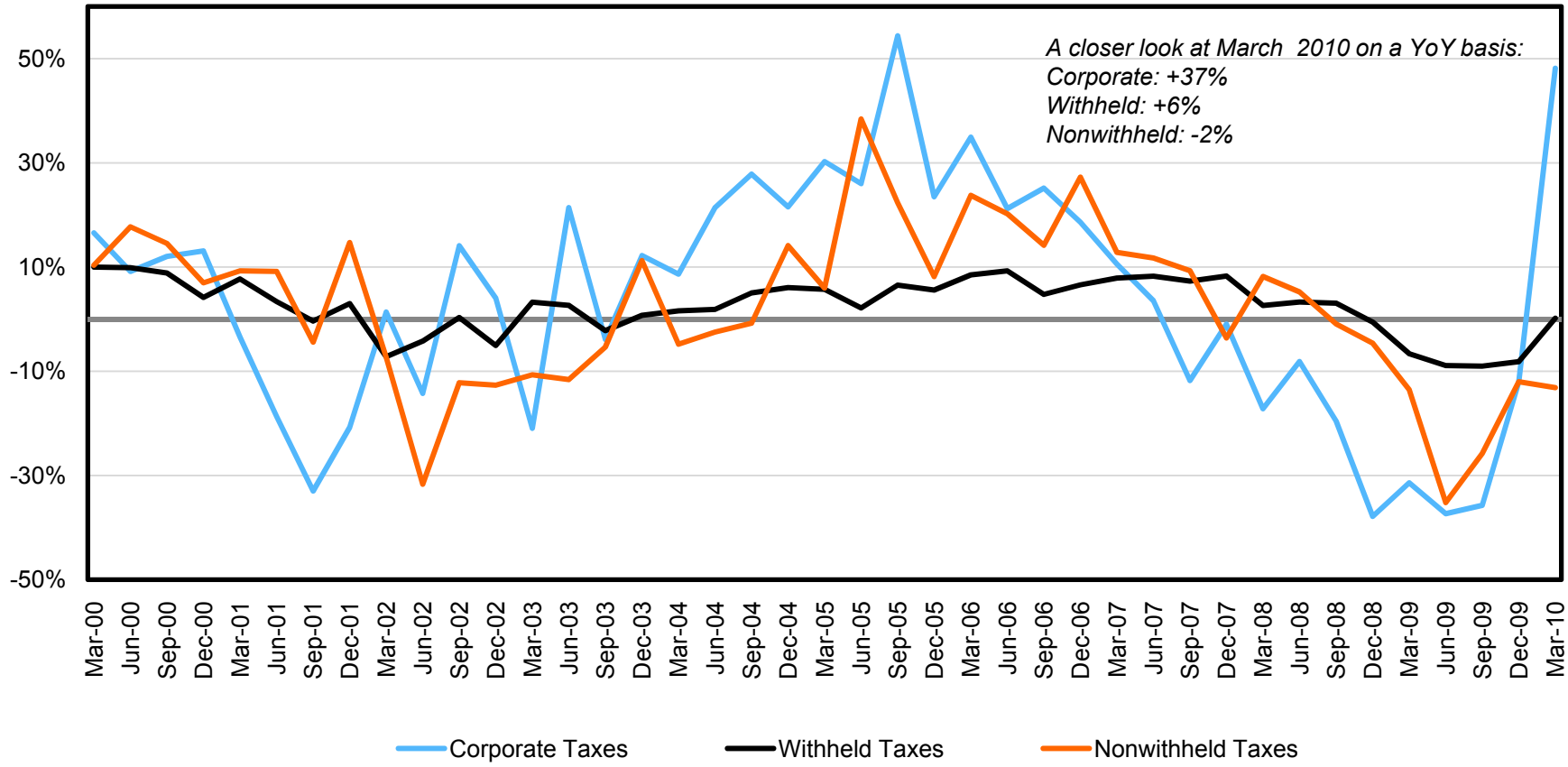
# FISCAL DEVELOPMENTS





# Tax Receipts Are Showing Signs of Improvement

## Quarterly Tax Receipts Year over Year Percentage Change



Note: Adjusted for 9/11 Corporate Tax Receipts disruption

Note: Data plotted is the year over year changes in quarterly receipts





# April Tax Receipts Breakout

## 5-Year Average Receipt Composition

Receipt Category	As % of Annual Receipts	As % of April Receipts
Withheld	68%	39%
Corporate	14%	11%
Nonwithheld	18%	50%

## A Closer Look at April 2010

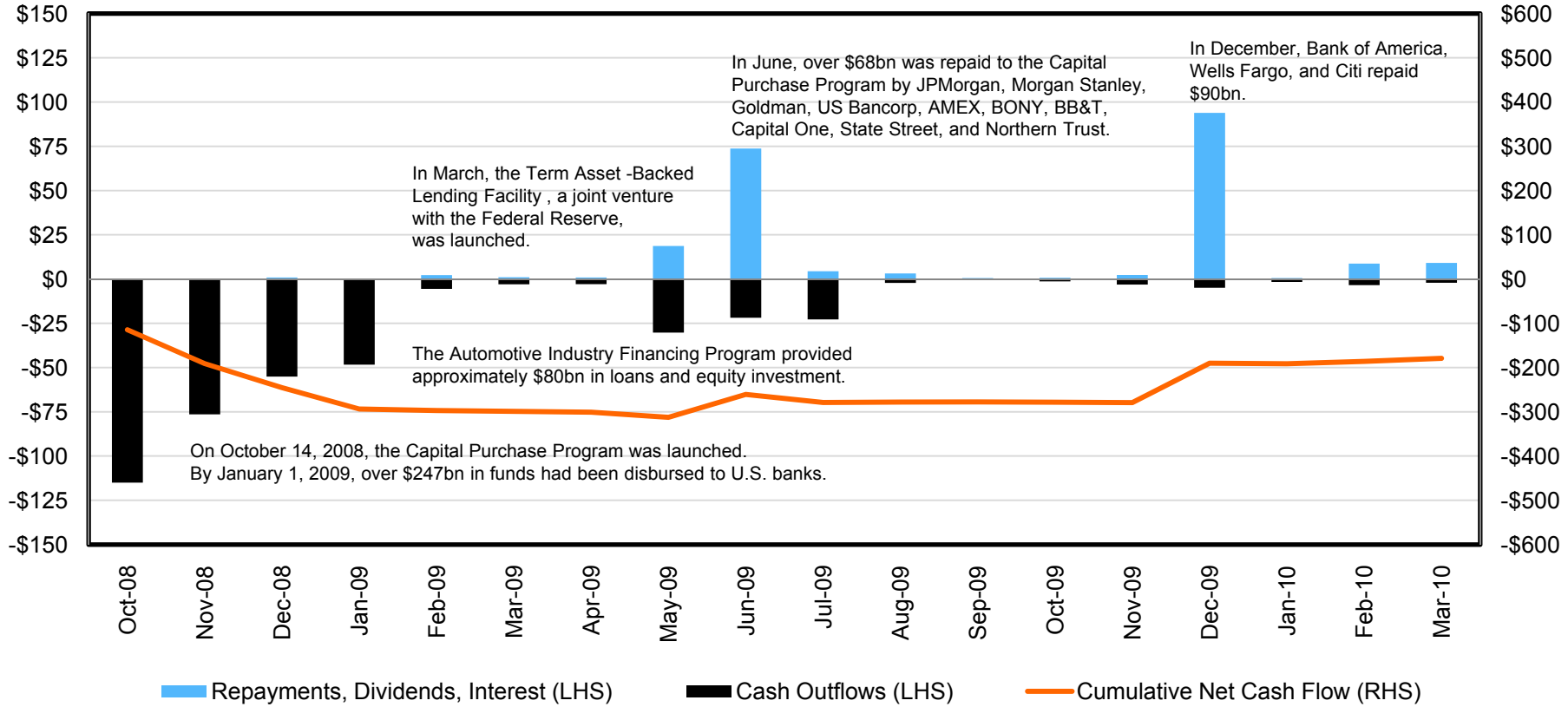
Receipt Category	Composition	Y/Y % Change	Y/Y Change \$Billions
Withheld	46%	5%	\$7
Corporate	11%	17%	\$5
Nonwithheld	43%	-17%	-\$25





# TARP Repayments

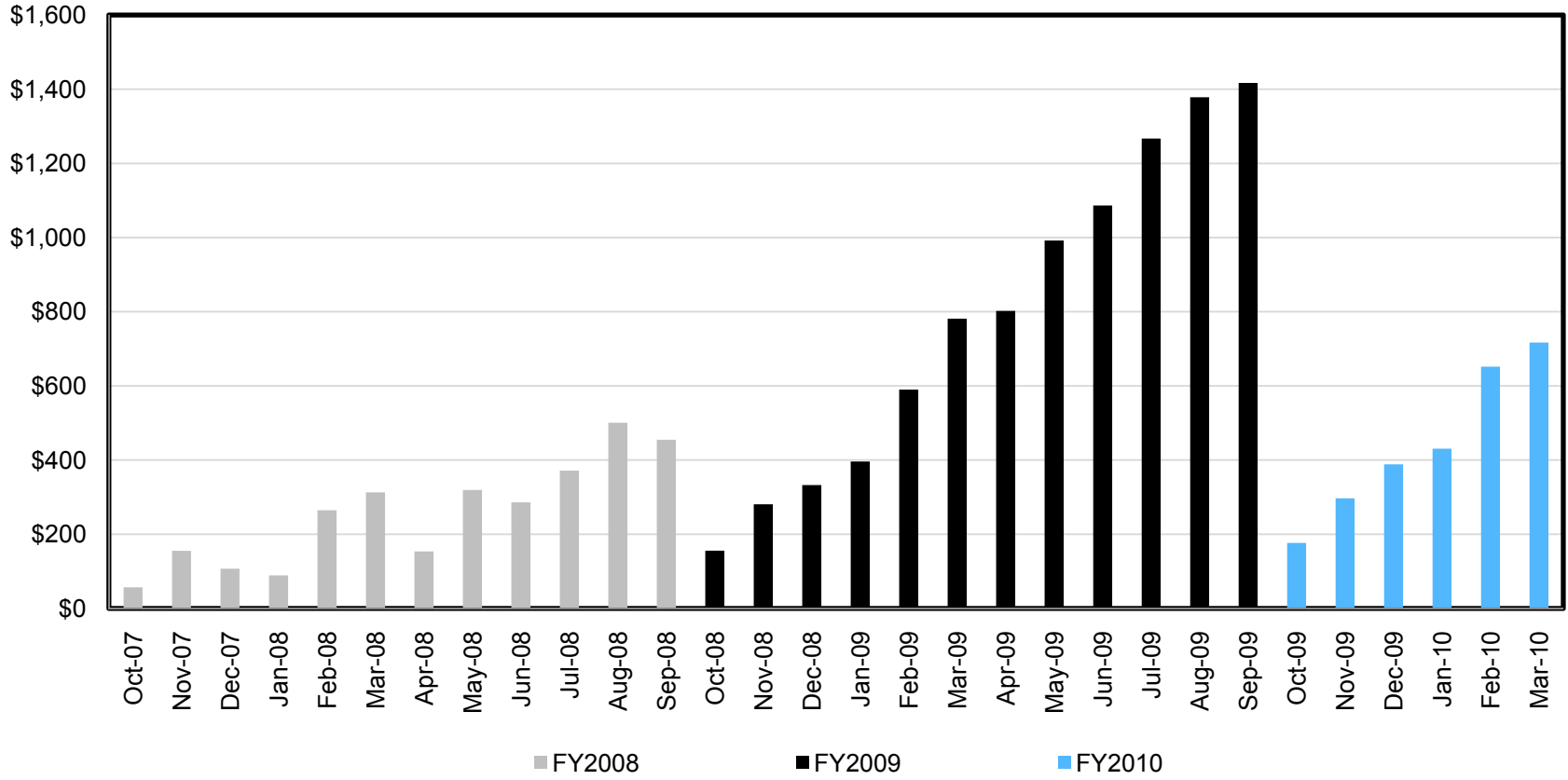
## TARP Cash Flows In Billions \$





# Cumulative Fiscal Budget Deficits Year-to-Date

In Billions \$





# Primary Dealer and Government Deficit Estimates

FY 2010-2012 Deficit and Borrowing Estimates		\$ Billions		
	Primary Dealers*	CBO	OMB	
FY 2010 Deficit Estimate	1,380	1,349	1,556	
FY 2011 Deficit Estimate	1,183	980	1,267	
FY 2012 Deficit Estimate	991	650	828	
FY 2010 Deficit Range	1,200-1,600			
FY 2011 Deficit Range	1,000-1,396			
FY 2012 Deficit Range	800-1,200			
FY 2010 Marketable Borrowing Range	1,190-2,330			
FY 2011 Marketable Borrowing Range	900-1,990			
Estimates as of:	Apr 2010	Jan 2010	Feb 2010	

\*Based on Primary Dealer feedback on April 30, 2010. Deficit estimates are averages.





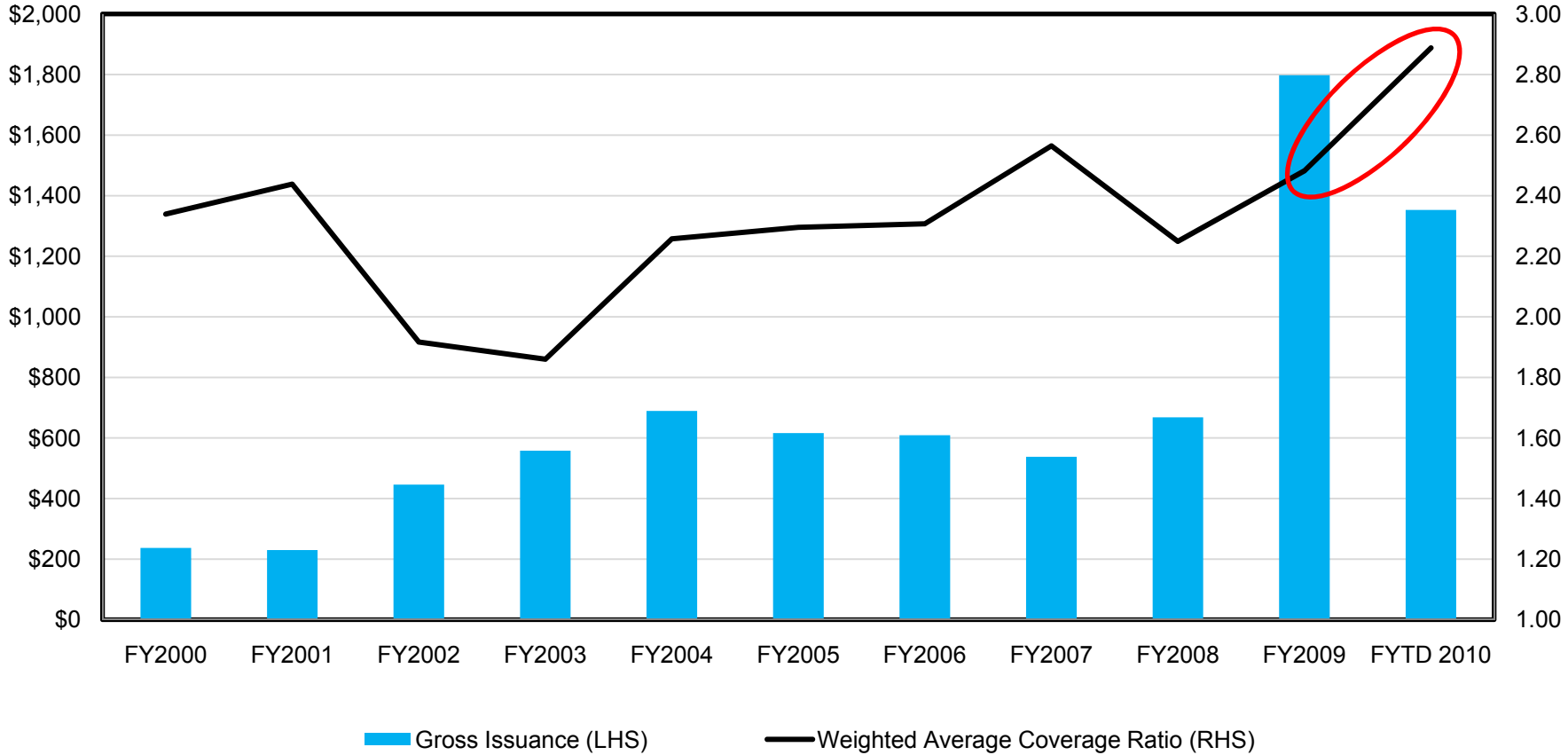
# AUCTION DEMAND





# Auctions Have Exhibited Strong Coverage over the Past 24 Months

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



Note: Excludes TIPS and Bills issuance.

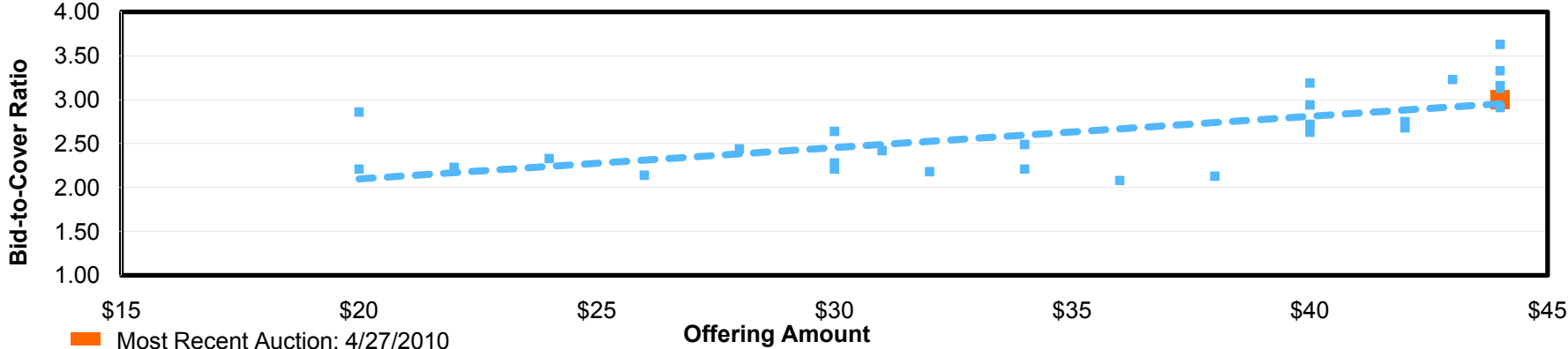




# Auctions Have Exhibited Strong Coverage over the Past 24 Months Cont'd

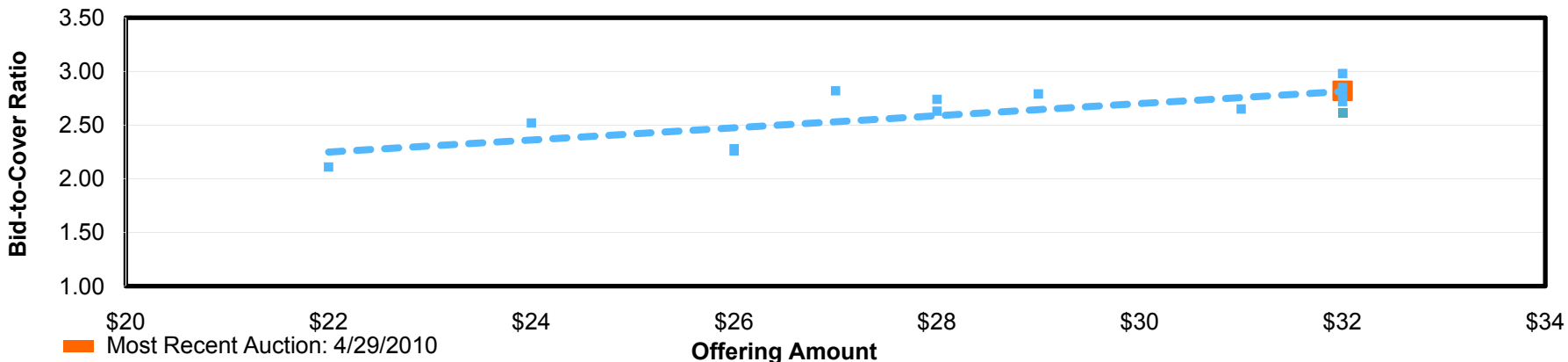
## Coverage Ratios: 2-Year Securities FY2008-FY2010

Coverage Ratio by Offering Amount in Billions \$



## Coverage Ratios: 7-Year Securities FY2009-FY2010

Coverage Ratio by Offering Amount in Billions \$



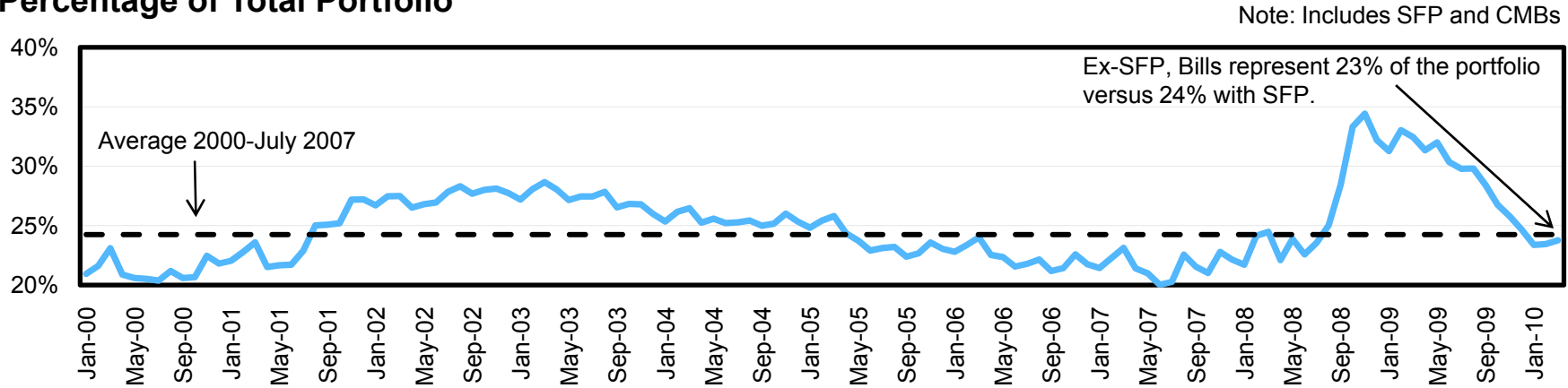
# PORTFOLIO METRICS UPDATE



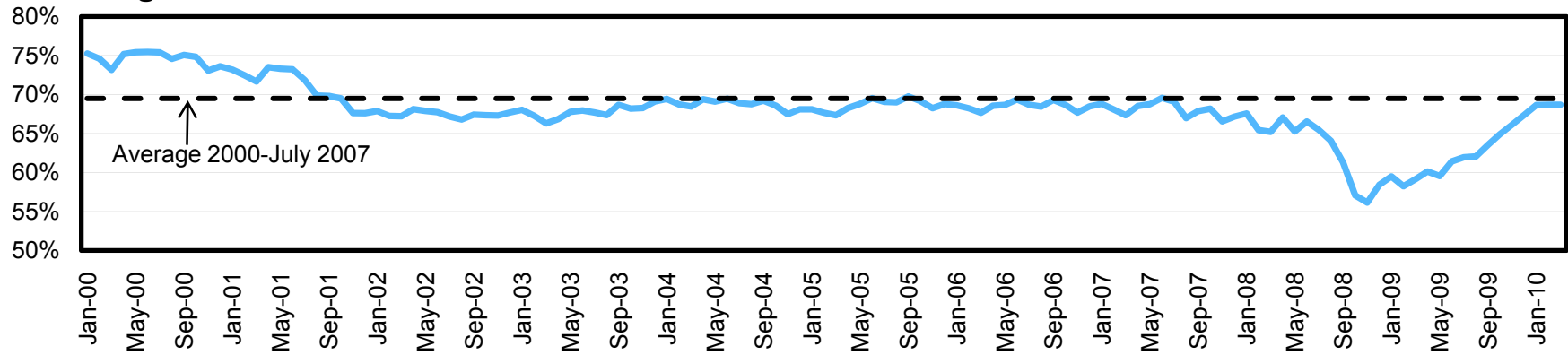


# Bills and Nominal Coupons Trending Back to Normal Levels

## Bills Percentage of Total Portfolio



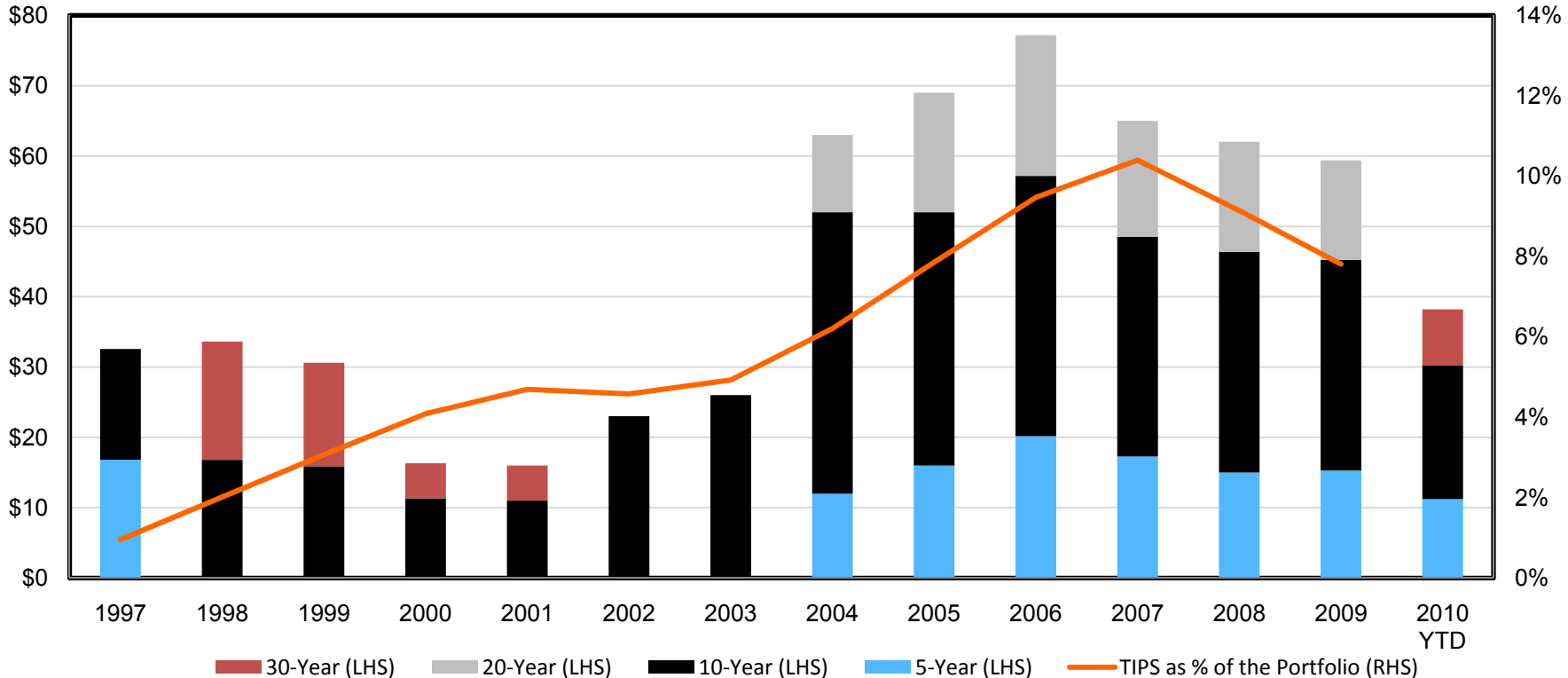
## Nominal Coupons Percentage of Total Portfolio





# TIPS Issuance Will Continue to Increase

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



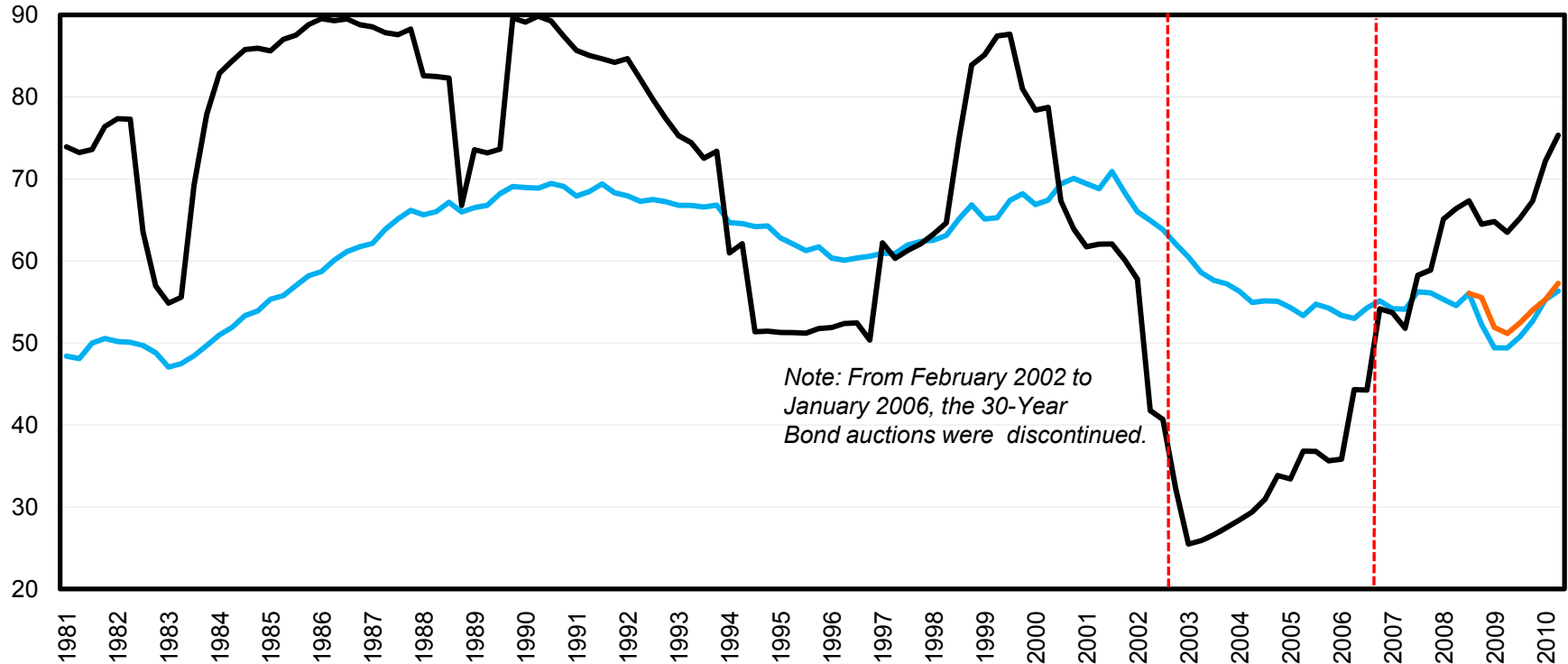
Note: The 20-Year TIPS was suspended in November 2009 in favor of a 30-Year offering.





# Average Maturity of the Debt Continues to Lengthen

## Average Maturity and Issuance of Marketable Debt Outstanding Maturity in Months, Fiscal Year



*Note: From February 2002 to January 2006, the 30-Year Bond auctions were discontinued.*

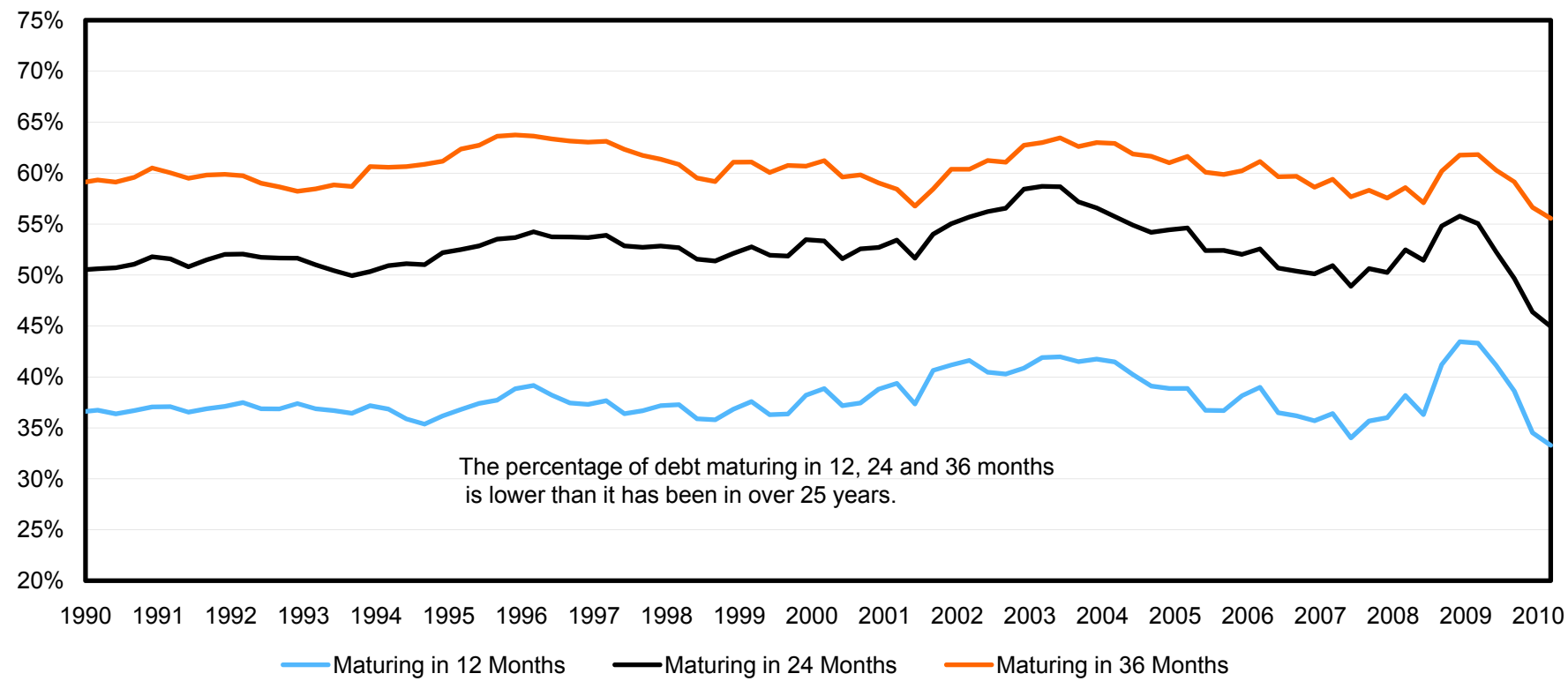
— Average Maturity of Marketable Debt Outstanding — Average Maturity of Issuance (4Q Moving Average) — Average Maturity without SFP





# 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

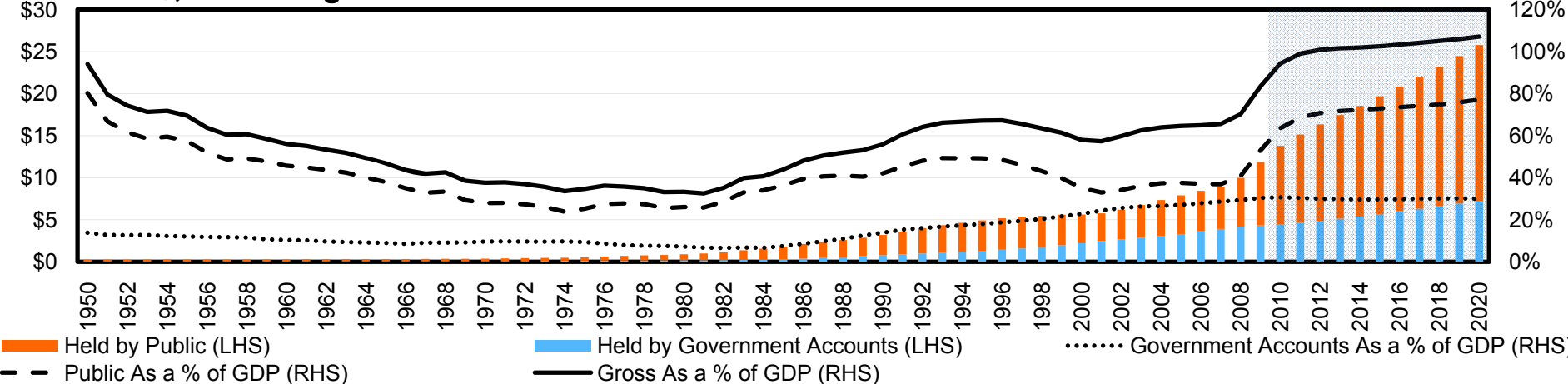




# OMB Long-Term Debt Metrics

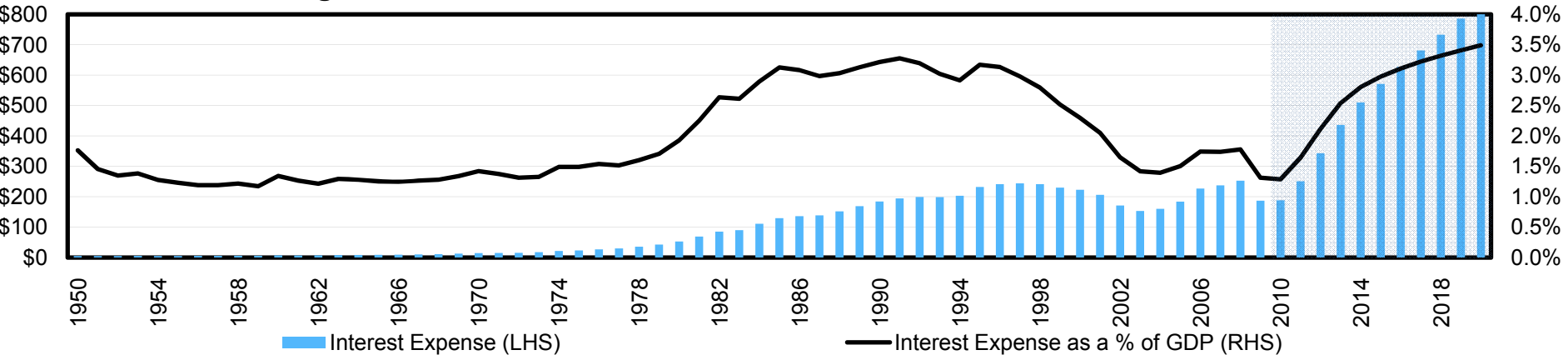
## Outstanding Debt

In Trillions \$, Percentage of GDP



## Interest Expense

In Billions \$, Percentage of GDP



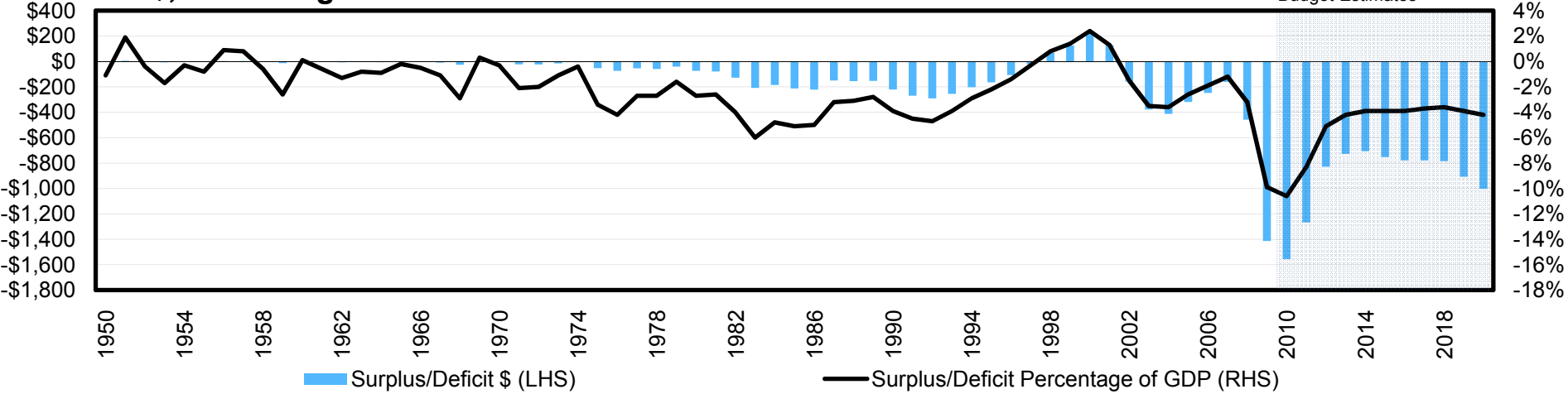
Note: Interest costs based on interest on Treasury debt minus interest on trust funds and other income.





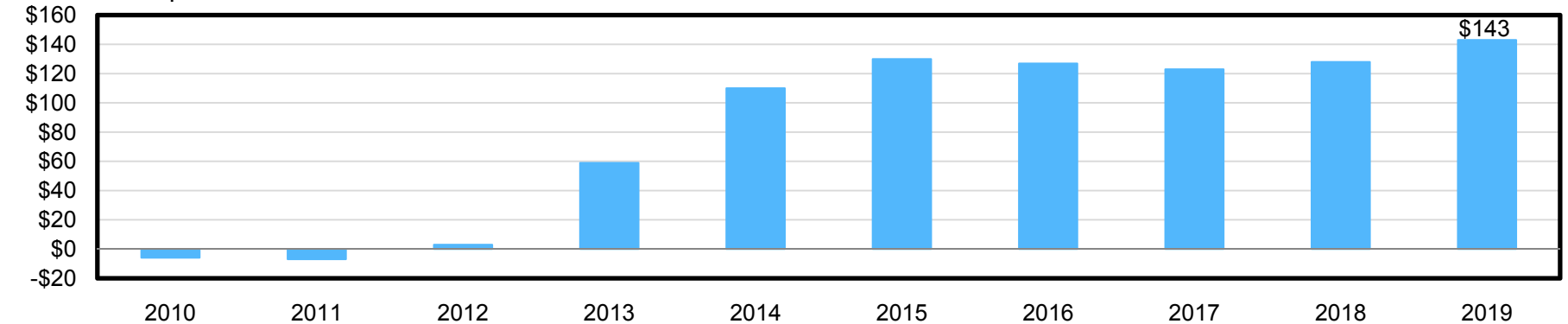
# Long-Term Deficits and Healthcare Reform

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



## Cumulative Reduction In Deficit From Health Care Reform

### In Billions \$



Source: CBO

Note: Deficit impact based on CBO deficit estimates.





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

### Projected Borrowing Needs Imply Treasury Needs to Reduce Issuance

In Billions \$		Less	Equals	Less	Equals
	Current Issuance Path <sup>1</sup>	Coupon Maturities <sup>2</sup>	Net Cash Raised	Projected Net Issuance Needs <sup>3</sup>	Excess Financing
<b>FY2010</b>	<b>2,285</b>	<b>626</b>	<b>1,659</b>	<b>1,459</b>	<b>200</b>
<b>FY2011</b>	<b>2,400</b>	<b>709</b>	<b>1,691</b>	<b>1,201</b>	<b>490</b>

<sup>1</sup>Gross issuance values for Coupons and net issuance values for Bills. Issuance sizes for Nominal and TIPS coupons equal current levels. Bills are assumed to remain at March 31, 2010 level (without SFP).

<sup>2</sup>SOMA is assumed to rollover its holdings.

<sup>3</sup>Projected net financing needs for FY2010 match the May 2010 Office of Fiscal Projections borrowing estimates. FY2011 projections equal the net marketable borrowing figure from OMB's FY2011 Budget.

Treasury Borrowing Advisory Committee  
Presentation to Treasury  
Charge #2

May 4, 2010

# The Charge

*Given the recent focus on global sovereign credit risk by market participants, we would like the Committee to comment on the use of sovereign credit default swaps (CDS). Please describe the characteristics of the sovereign CDS market, including the liquidity of the product, the major participants, and the factors driving spreads. What are the implications for Treasury, and sovereign issuers more generally?*

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# Overview of Sovereign Credit Default Swaps

Characteristic	Description
Reference Entity	<ul style="list-style-type: none"> <li>▪ May be a single name (e.g. Greece) or an index (e.g. iTraxx SovX Western Europe)</li> <li>▪ Western European countries are most commonly traded, particularly the PIIGS (Portugal, Ireland, Italy, Greece, and Spain)</li> </ul>
Maturity	<ul style="list-style-type: none"> <li>▪ 5-year is most common (estimated to account for ~70% of trades)</li> <li>▪ The 10-year tenor is the second most active maturity</li> <li>▪ Bank counterparty desks sometimes seek shorter maturities (e.g. 1-year) but liquidity is thin</li> </ul>
Spread	Quoted on an annual basis but payments are made quarterly
Contractual Foundation	Terms between counterparties are dictated by ISDA agreements
Standard Credit Events	<ul style="list-style-type: none"> <li>▪ Failure to Pay, Restructuring, and Repudiation/Moratorium</li> <li>▪ A voluntary bond exchange would not necessarily trigger a Credit Event</li> </ul>
Currency	While CDS on many European sovereigns is quoted in both US Dollars and Euros, the vast majority of trades (estimated at over 85%) are denominated in Dollars
Reporting	DTCC began publishing statistics on positions starting in October 2008
Recent Changes to CDS Markets in U.S.	<ul style="list-style-type: none"> <li>▪ Coupon and maturity standardization (April 2009) make it easier to net positions and create operational efficiencies</li> <li>▪ Move toward central clearing facilitates netting, increases transparency, and provides more information for regulators</li> <li>▪ Potential next step is moving toward exchanges (from OTC)</li> </ul>

Source: Sovereign CDS market makers

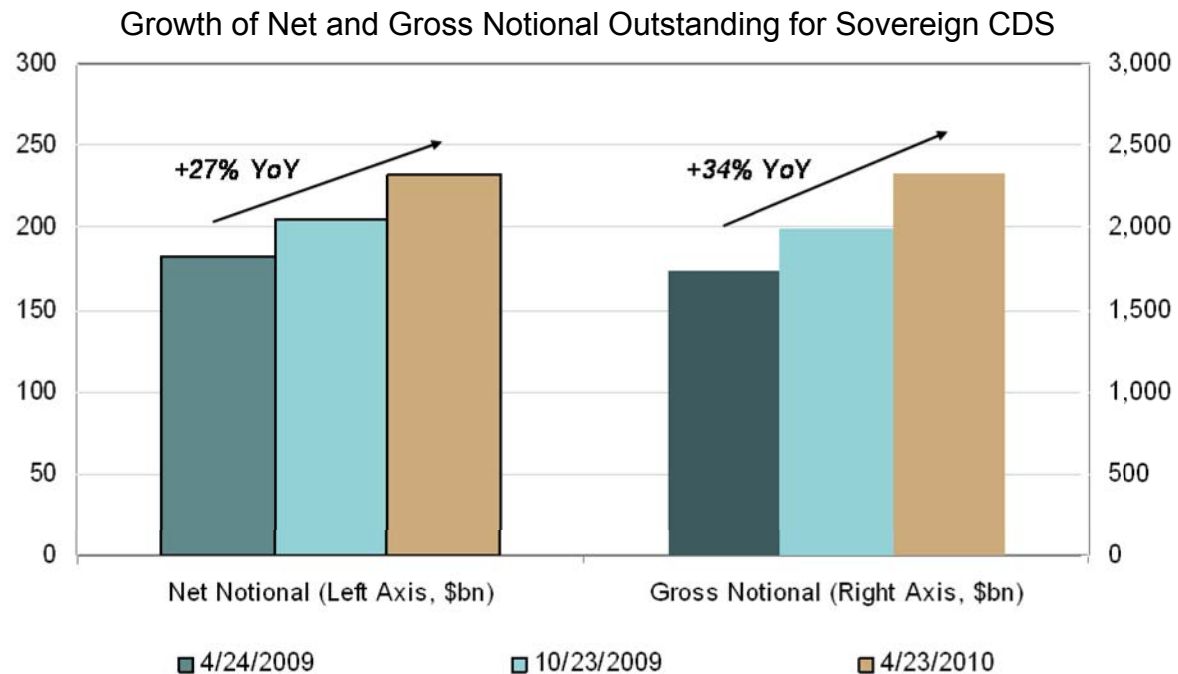


# What is the Size of the Sovereign CDS Market?

As of April 23, 2010, there was approximately \$230 billion of sovereign CDS net notional and approximately \$2.3 trillion gross notional outstanding. While the media frequently focuses on the gross notional outstanding, net notional is a more appropriate measure.

- Gross Notional Outstanding = Total notional of all trades outstanding
- Net Notional Outstanding = Maximum amount of money that would change hands if the reference entity defaults

As sovereign risk has garnered more attention over the past year, the market has grown rapidly



Note: Notional amounts listed above include both single-name and index CDS on sovereigns  
Source: Barclays Capital, DTCC

# What is the Size of the Sovereign CDS Market? (continued)

Despite its recent growth, the sovereign CDS market is small relative to the corporate CDS market

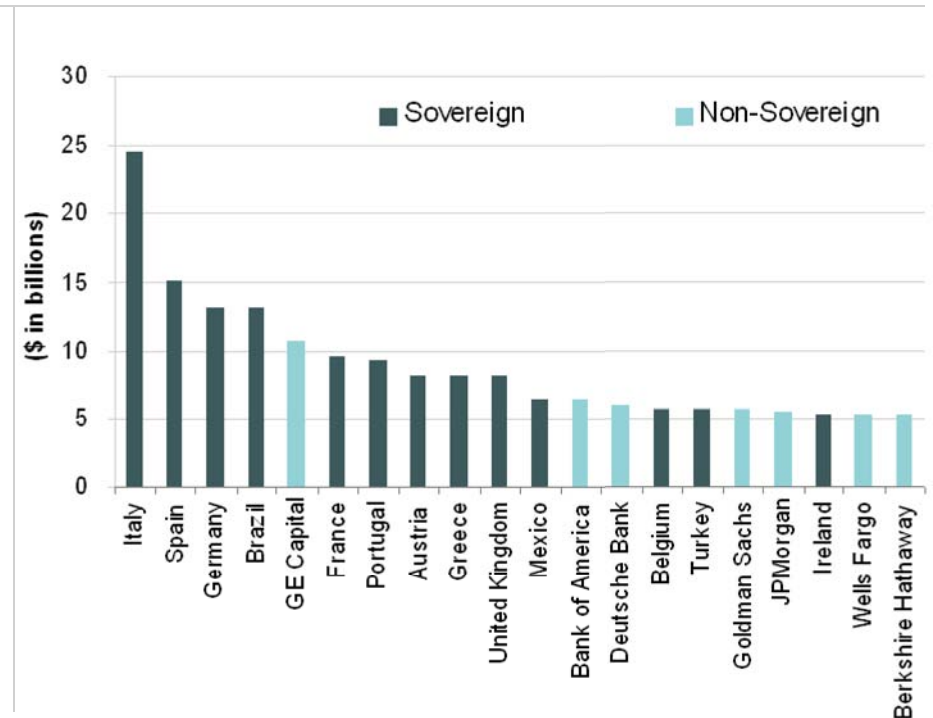
- The corporate CDS market is over eight times as large as the sovereign CDS market on a net notional basis
- The corporate CDS market has over 1000 reference entities, while the sovereign market has less than 100

However, sovereigns represent 13 of the top 20 single-name reference entities as measured by net notional outstanding

Net and Gross Notional Outstanding as of 4/23/2010 (\$bn)

Type of CDS Contract	Net Notional		Gross Notional	
	\$bn	% of total	\$bn	% of total
<b>Single-Name CDS</b>				
Corporate	906	43%	12,226	53%
Developed Sovereign	132	6%	868	4%
EM Sovereign	73	3%	1,234	5%
<b>Subtotal Single-Name</b>	<b>1,111</b>	<b>53%</b>	<b>14,327</b>	<b>62%</b>
<b>CDS Indices</b>				
Corporate	956	46%	8,721	37%
Developed Sovereign	11	1%	110	0%
EM Sovereign	16	1%	116	0%
<b>Subtotal CDS Indices</b>	<b>983</b>	<b>47%</b>	<b>8,946</b>	<b>38%</b>
<b>Single-Name + Indices</b>				
Corporate	1,862	89%	20,946	90%
Dev Sovereign	143	7%	977	4%
EM Sovereign	89	4%	1,349	6%
<b>Total</b>	<b>2,094</b>	<b>100%</b>	<b>23,273</b>	<b>100%</b>

Net Notional Outstanding as of 4/23/2010 (\$bn)



Source: J.P. Morgan, DTCC

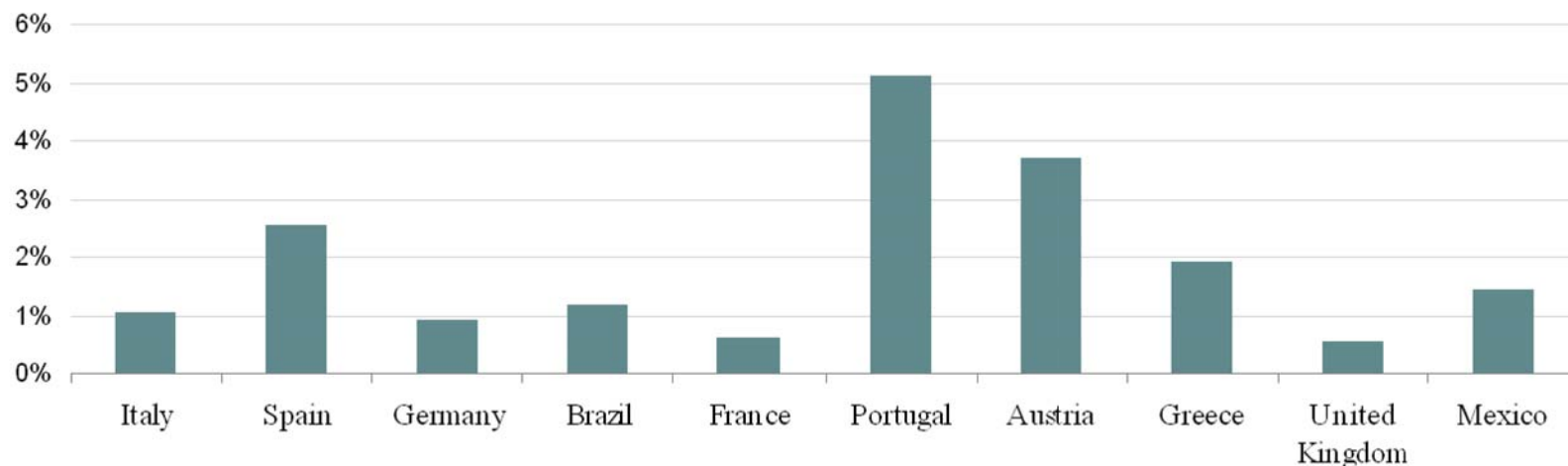
# What is the Size of the Sovereign CDS Market? (continued)

Today, sovereign CDS markets are a fraction of the size of the sovereign cash markets

- The opposite is true for many corporate issuers (i.e. net notional of CDS is larger than cash bonds outstanding)

This fact may limit the impact that the sovereign CDS markets can have on cash bond yields

CDS Net Notional Outstanding as Percentage of Central Government Debt (for countries with 10 largest net notional outstanding)



CDS Net Notional (\$bn)	24.5	15.0	13.2	13.1	9.7	9.3	8.3	8.2	8.2	6.4
Central Govt Debt (\$bn)	2,363	585	1,457	1,098	1,586	182	222	428	1,468	445
CDS Net Notional as % of Central Govt Debt	1.0%	2.6%	0.9%	1.2%	0.6%	5.1%	3.7%	1.9%	0.6%	1.4%

Note: CDS Net Notional Outstanding is as of April 23, 2010. Government debt outstanding is based on the most recently available figures.  
Source: International Monetary Fund, Bloomberg, government websites

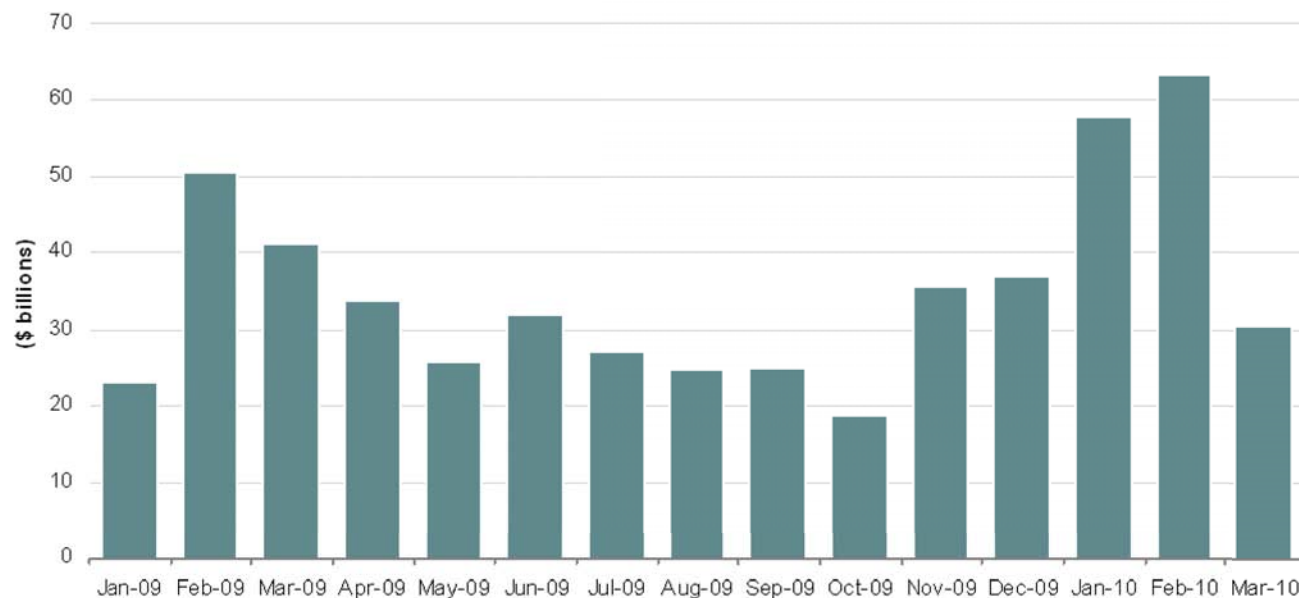
# What is the Liquidity of the Sovereign CDS Market?

Average monthly trading volume over the past year for single-name Western European sovereigns (the most active sector of the market) is conservatively estimated to be \$34 billion\*

While liquidity varies by reference entity, trades of \$25 to \$50 million notional are common

Bid-ask spreads for tighter sovereigns (e.g. Germany, United Kingdom) are typically less than five basis points, but the bid-ask spread for Greece CDS was recently as wide as 100 basis points

Estimated Monthly Trading Activity in Single-Name Western European Sovereign CDS, including UK\*



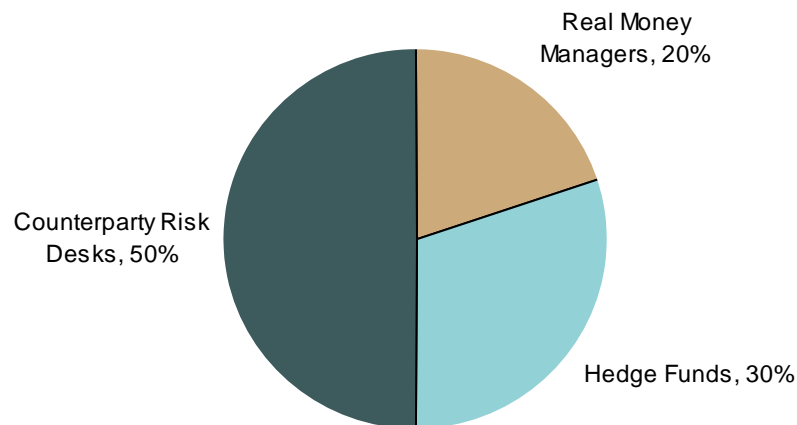
\*Monthly trading volumes are estimated by Barclays Capital. According to Barclays, these estimates likely understate actual trading volumes but are qualitatively consistent with their own flows. Although the DTCC publishes some information on trading activity for each reference entity, that data likely overestimates trading volumes because trade compressions and trades re-booked through a central clearinghouse are included.

Source: Barclays Capital, Citigroup Global Markets, Goldman Sachs

# Who are the Major Market Participants?

Natural Buyers	Buyer & Sellers	Natural Sellers
<ul style="list-style-type: none"> <li>▪ <u>Bank Counterparty Hedging Desks</u>: Purchase CDS to hedge government exposure that results from mark-to-market derivative exposures (e.g. fixed-floating swaps)</li> <li>▪ In many cases, hedging is driven by regulatory constraints, which results in price insensitivity</li> <li>▪ Hedging via CDS is essential because sovereigns have historically been considered risk-free and have never been required to post collateral to counterparties</li> </ul>	<ul style="list-style-type: none"> <li>▪ <u>Hedge Funds &amp; Prop Trading Desks</u>: Macro-driven, inter-region relative value, and basis trades</li> <li>▪ <u>Real Money Investors</u>: Hedge cash bond positions, use as cash bond substitutes, put on directional, basis, and relative value trades</li> <li>▪ <u>Emerging Markets Funds</u>: Increasingly active in directional and relative value trades given recent widening in European sovereign spreads</li> </ul>	<ul style="list-style-type: none"> <li>▪ Not clear</li> <li>▪ The lack of natural sellers of sovereign CDS has been one contributor to the limited liquidity of sovereign CDS relative to sovereign cash markets</li> </ul>

## Relative Market Share Estimates\*



- Prior to the credit crisis, bank counterparty hedging desks played a much smaller role in the sovereign CDS market

\* The DTCC does not report trading activity at this level of detail. Market share estimates are based on discussions with sovereign CDS market makers.

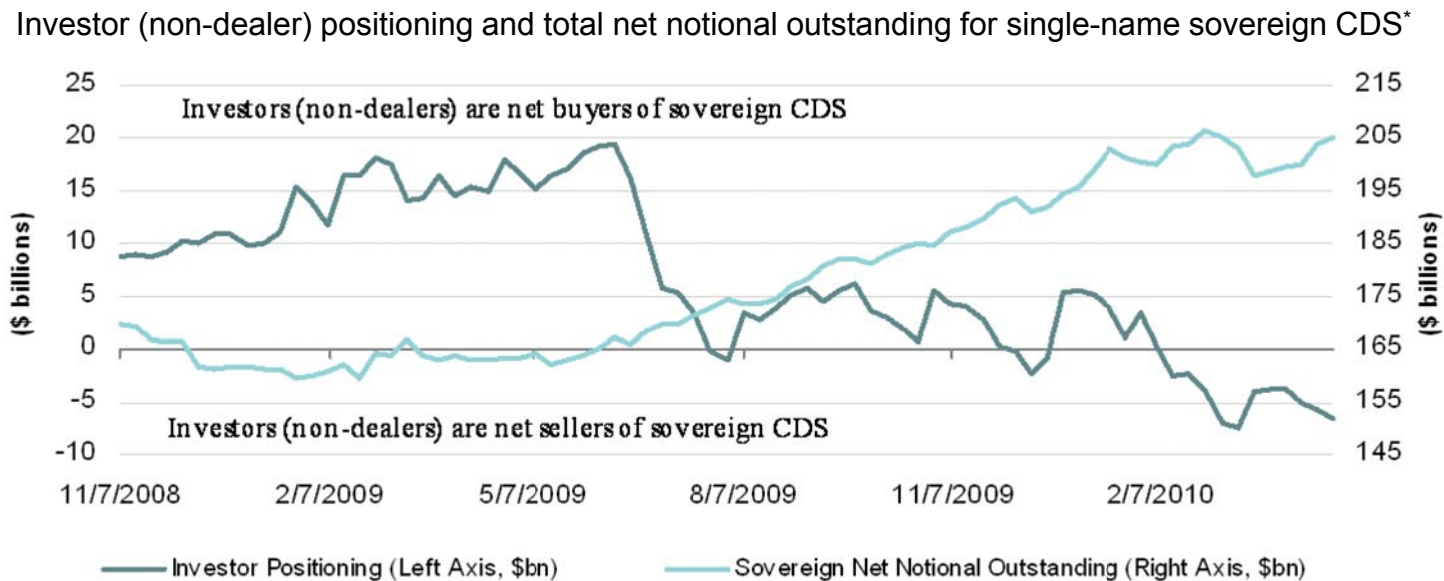
Source: Barclays Capital, Citigroup Global Markets, discussions with sovereign CDS market makers

# How are Investors Positioned?

Investor positioning in sovereign CDS has shifted over the past 18 months from a net short position to a net long position

During this period, net notional outstanding has increased markedly

The wider spreads in recent month likely attracted more investors willing to sell protection, i.e. take a long position in sovereign credits



\*This chart shows aggregate investor positioning across all sovereigns. DTCC does not provide data to view positioning on single countries, which undoubtedly varies

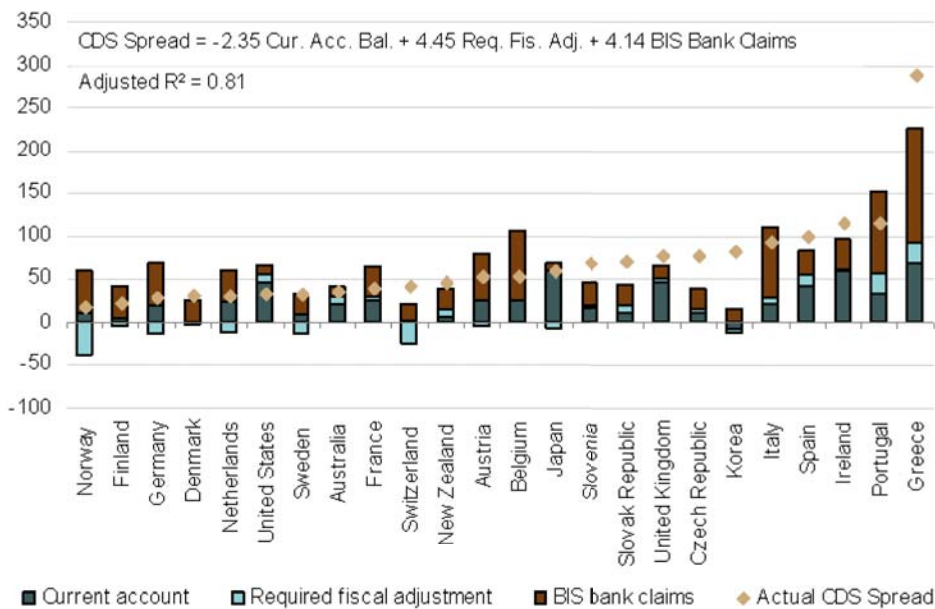
Source: Barclays Capital, DTCC, sovereign CDS market makers

# What are the Drivers of CDS Spreads?

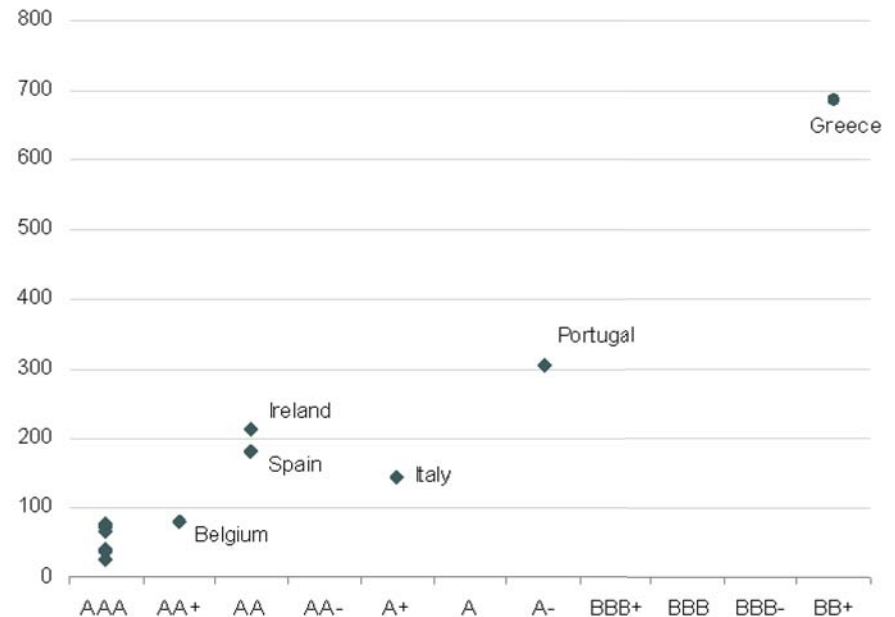
## 1. Macro Fundamentals

- CDS spreads are an indicator of default risk, which is driven by a range of macroeconomic factors, such as the current account balance, fiscal balance, debt/GDP, liquidity, refinancing needs and the stability and credibility of government policies
- A recent study by the IMF found current account balance, required fiscal adjustment, and cross-border bank claims on the public sector to be correlated with CDS spreads
- Credit ratings (which incorporate macroeconomic and other indicators) bear some relation to CDS spreads, but are not continuously adjusted and can be a lagging indicator of default risk

IMF Decomposition of 5 Year CDS Spreads (as of Spring 2010)



Western Europe CDS Spreads vs. S&P Ratings (as of 4/28/2010)

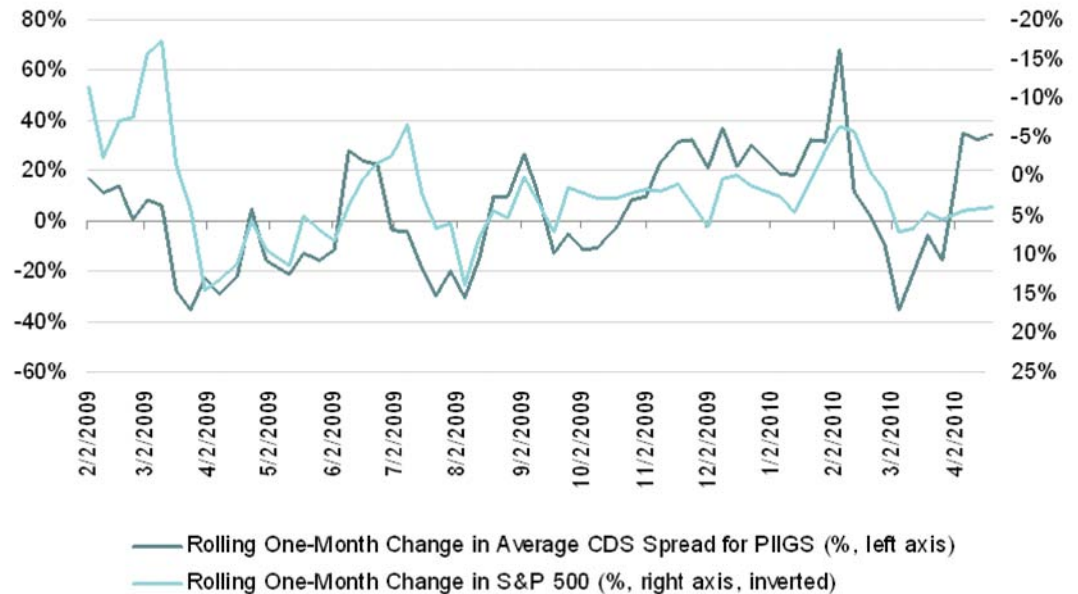


Source: International Monetary Fund, Standard & Poor's

# What are the Drivers of CDS Spreads? (continued)

## 2. Market Sentiment / Risk Tolerance

- CDS spreads tend to widen and narrow in tandem with other risky assets
- The graph shows the strong relationship between the average CDS spread of the PIIGS countries and the S&P 500 (as equities fall, CDS spreads widen)
- The relatively high correlations among the PIIGS further illustrate that market sentiment is a driver of CDS spreads



## 3. Counterparty Risk

- CDS spreads may widen as counterparty risk increases
- Mitigated by central clearing, collateral posting and the potential move to exchanges

Correlation of Weekly Spread Changes (Jan 2009 – Present)

	Portugal	Italy	Ireland	Greece	Spain
Portugal	100%				
Italy	86%	100%			
Ireland	83%	80%	100%		
Greece	85%	84%	81%	100%	
Spain	91%	94%	86%	88%	100%

## 4. Currency Risk

- CDS spreads can vary depending on the currency of denomination
- Given the belief that the Euro will weaken if a European sovereign defaults, investors are willing to pay a premium for USD-denominated CDS
- For example, USD-denominated CDS on Greece trades ~40bps wider than EUR-denominated CDS
- CDS on European sovereigns is predominantly denominated in US Dollars (85% or more)



# What are the Drivers of CDS Spreads? (continued)

## 5. Cash/CDS Basis

- The basis refers to the difference between CDS spreads and cash spreads
- Many factors contribute to the basis including differences in maturity, liquidity, funding costs, investor preferences, expectations about restructuring format (e.g. bond exchange), and market technicals
- Bond market participants sometimes put on “basis trades” to try and arbitrage the basis

Status of Basis	CDS vs Cash	Trade to Perform	Theoretical Impact on Cash Bonds	Practical Considerations
Positive Basis	CDS wider than cash	Sell CDS Protection Short Cash Bonds	Wider	Hard to short bonds thus traded infrequently
Negative Basis	Cash wider than CDS	Buy CDS Protection Buy Cash Bonds	Tighter	Trades typically put on only if basis is large (e.g. 100bps)

- According to market makers, few investors are putting on sovereign CDS basis trades (i.e. hedging, directional and relative value trades more common), thus the basis is not currently a major driver of sovereign CDS spreads
- Basis trades are unlikely to drive cash spreads wider because the CDS market is small relative to the cash market and, practically speaking, it is hard to short cash bonds

Source: J.P. Morgan, Barclays Capital, sovereign CDS market makers

# Do Sovereign CDS Spreads Drive Cash Spreads Wider?

**There is no evidence that sovereign CDS is driving cash spreads and borrowing costs for sovereigns higher**

- A recent study by the IMF concluded that Greek CDS spreads are not a leading indicator, but rather a coincident indicator
- PIIGS CDS and cash spreads are highly correlated
  - This is consistent with work done by J.P. Morgan and Barclays Capital on various currency pairs

Correlations of weekly spread changes from January 2009 to present\*

	<b>CDS Leading Cash By 1 Week</b>	<b>CDS Coincident With Cash</b>	<b>CDS Lagging Cash By 1 Week</b>
<b>Portugal</b>	11%	71%	7%
<b>Italy</b>	-7%	51%	-7%
<b>Ireland</b>	-8%	69%	0%
<b>Greece</b>	-4%	83%	-4%
<b>Spain</b>	-8%	58%	-13%

- Bill Lockyer, California State Treasurer, recently concluded that CDS is not affecting California's funding costs
  - As of April 23, 2010, the net notional amount of outstanding California CDS was approximately \$1 billion, which is less than 1.5% of the State's outstanding general obligation bonds

*\*Spreads are computed versus German Bunds. Correlations higher than 26% or lower than -26% are statistically significant at the 5% level*

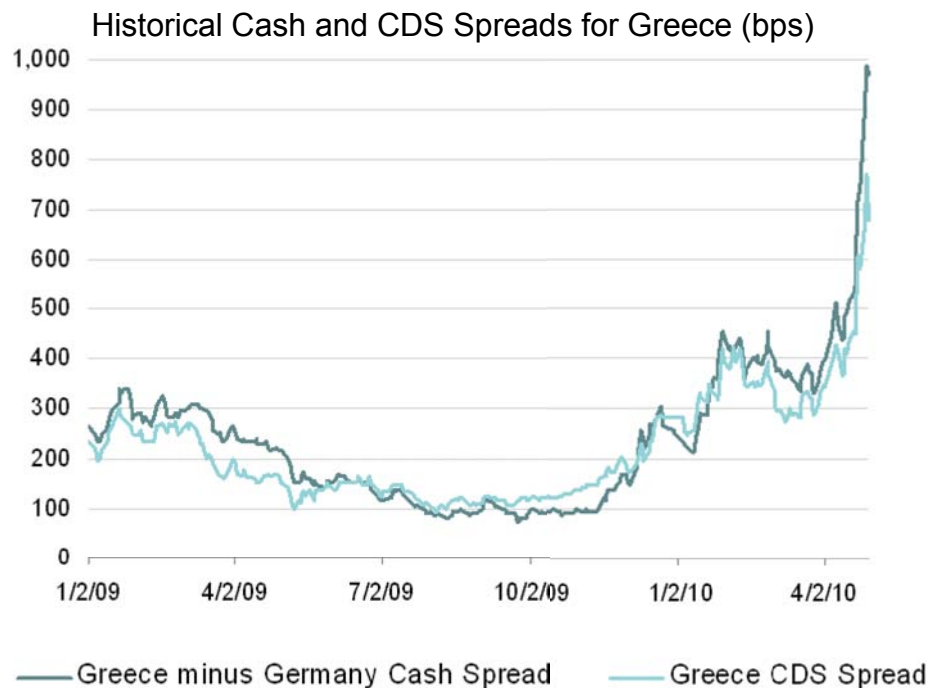
*Source: International Monetary Fund, State of California, J.P. Morgan, DTCC*

# Greece: Interaction between Cash and CDS Markets

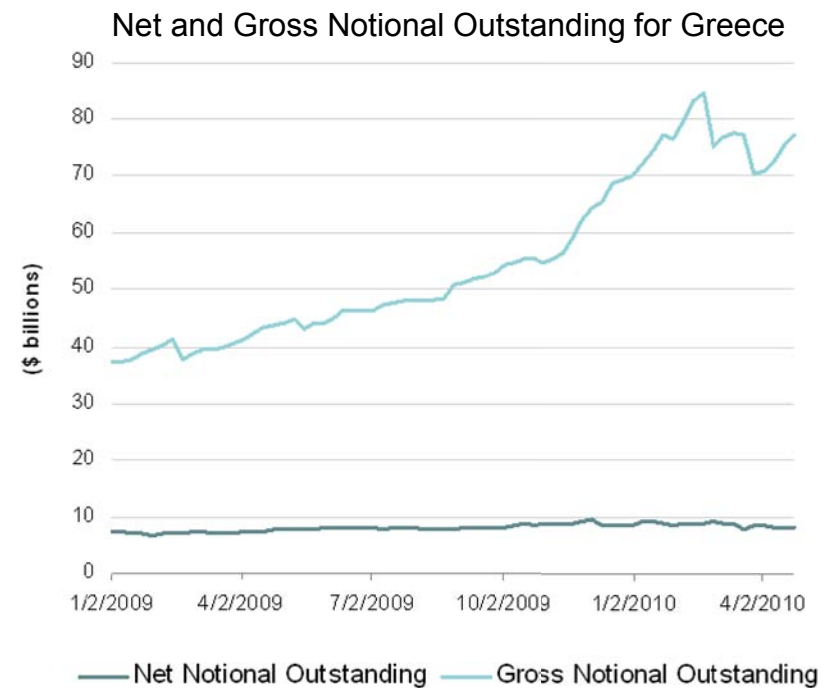
The net notional outstanding of Greece CDS contracts has increased only 10% since the beginning of 2009. As of April 23, 2010, the net notional outstanding was \$8.2 billion, which is less than 2% of outstanding Greece debt.

There is no statistical evidence that Greek CDS spreads lead cash spreads

Furthermore, CDS spreads were not more volatile than cash spreads during that period



Cash and CDS spreads updated as of April 29, 2010  
Source: Barclays Capital, J.P. Morgan, DTCC



# Benefits and Risks of Sovereign CDS

## Benefits of Sovereign CDS

- Risk management tool for wide range of participants
- Efficient, low-cost way to gain or reduce exposure to a given sovereign or index
- Allows the market to 'short' more efficiently, because shorting cash bonds can be difficult
- Improves the price discovery process and alerts the market to perceived risks

## Risks of Sovereign CDS

- Defaults could lead to contagion if transparency on positions is low and/or counterparty risk is high
  - Mitigated by recent moves to standardize contracts and implement central clearing
- Primary concern is that CDS spreads lead to unnecessarily higher funding costs for sovereign issuers under a scenario such as the following:
  - As spreads widen and become more volatile, the market may become skewed toward players who want to go short (i.e. buy CDS protection)
  - This could lead to further volatility and CDS spread widening, which may ultimately spill over into the cash bond market and lead to decreased liquidity and higher bond yields
  - Thus far, there is no evidence that this risk is materializing

# What are the Implications for Sovereign Issuers?

CDS spreads are a readily-available indicator of sovereign default risk that should be monitored and used to inform policies and actions

- Sovereign issuers should take prompt and decisive action with regard to sovereign risk because it can quickly spill over into the financial/banking sector, creating a dangerous spiral
- Widening of cash or CDS spreads is typically accompanied by increases in bank wholesale funding costs and also leads to markdowns for banks that own portfolios of government bonds

Unless CDS volumes increase dramatically relative to cash, CDS is unlikely to be a major driver of funding costs for sovereigns

Continued regulation and efforts to improve transparency should reduce contagion risk

# What are the Implications for the U.S. Treasury?

## CDS on the U.S. is not very actively traded and is viewed as somewhat theoretical

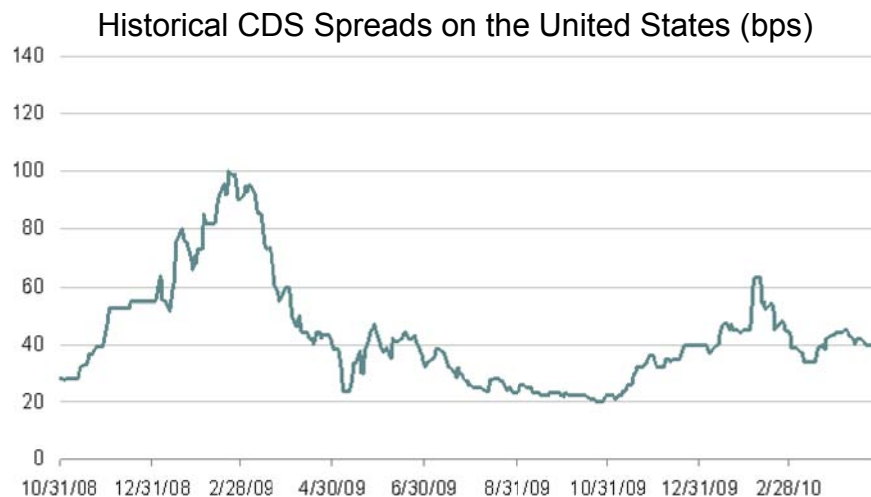
- Currency depreciation through an increase in the money supply is considered a more likely scenario than default
- The financial meltdown that would likely accompany a U.S. default could make it unlikely that protection sellers (e.g. banks) would remain able and willing to pay principal to protection buyers

## As of April 23, 2010, the U.S. CDS market has \$2.3 billion in net notional outstanding, which is less than 0.03% of U.S. debt held by the public

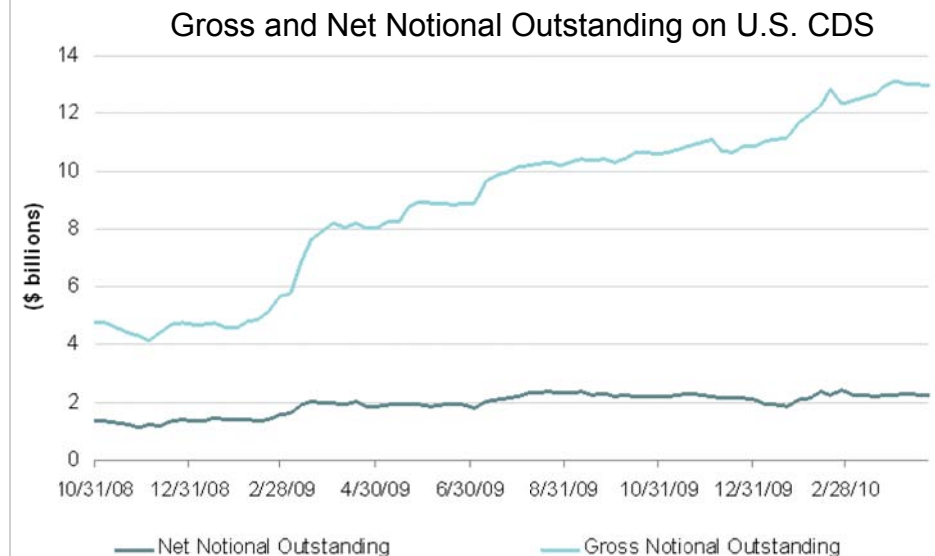
- Net notional has been very stable in recent years
- Given the relatively small size of the CDS market, it is unlikely to have any significant implications for the U.S. Treasury

## However, there is potential for more volatility or widening of U.S. CDS spreads due to macroeconomic concerns such as:

- Rising or unsustainable fiscal deficits
- Increasing debt/GDP and/or cost of debt (higher interest rates)
- Rising or unsustainable current account deficit / inability to attract sufficient foreign capital
- Concerns about status of USD as reserve currency and/or currency depreciation
- Deflation or high inflation



Source: Barclays Capital, DTCC



# Recommendations

## **Proposals to ban “naked shorts” should not be adopted**

- The definition of “naked” is unclear, which could make regulation difficult
- No evidence that “naked” CDS is leading to higher funding costs
- Banning “naked” positions will likely reduce liquidity and limit price discovery
- Investors will likely find a way to circumvent the restrictions by selling or shorting cash bonds or expressing their views through other markets (e.g. equities, currencies)

## **Regulators should focus on solutions that prevent contagion without reducing market liquidity**

- Continue efforts to implement central clearing and minimize counterparty risk
- Enhance required disclosure of holdings by banks and other financial institutions
- Require more consistent collateralization practices, including for sovereigns
- Strengthen operational infrastructure

## **Continue efforts to improve the amount and quality of data about sovereign CDS**

- The DTCC began publishing CDS market statistics in October 2008. These statistics are much improved from what was being reported previously but still have several shortcomings.
- The DTCC does not capture 100% of market positions
- There is no “clean” way to view trading volumes
- Data is aggregated across maturities
- Trades involving different desks within the same counterparty are not reflected in net notional because net notional is defined as net buying/selling of protection between counterparties
- Several reports exclude reference entities with less than 50 transactions in the last week

# Appendix



# Overview of Sovereign CDS Indices

**CDS indices are contracts that reference a standardized portfolio of entities rather than a single entity**

The main sovereign CDS indices are:

- CDX EM
- SovX Western Europe
- SovX CEEMEA
- SovX Asia Pacific, which will start trading on May 4, 2010

Trading applications of sovereign CDS indices:

- Hedging regional risk
- Relative value – either index vs single-name or index vs a different index
- Liquidity – lower bid-offer than certain single-name CDS entities

Potential implications of sovereign CDS indices:

- Increased correlation between constituents of the same index
- Increased correlation between regions because investors may express macro views using multiple indices

As of April 23, 2010, the net notional outstanding of sovereign CDS indices was ~\$27 billion versus ~\$205 billion for single-name sovereign CDS

# Pros/Cons of Moving CDS to an Exchange

## Pros

- More pricing transparency may lower bid-ask spreads
- Lower systemic risk
- Less counterparty risk
- May increase liquidity as new participants enter the market (i.e. those concerned about counterparty risk)
- Higher collateral requirements and guarantee funds mitigate gap risk

## Cons

- Increased transparency may disadvantage dealers as bid-ask spreads may narrow
- If the market becomes sufficiently unattractive for dealers, they may not support the market, lowering liquidity
- Potential for higher costs due to stricter margin and collateral requirements, transaction/processing fees and contributions to guarantee funds at the clearing houses (could be offset by lower bid-asks)
- Makes sense only for more standardized derivatives so not everything will be covered
- The failure of the exchange would likely lead to a crisis

# Publicly Available Information from the DTCC

The following data are available from the Depository Trust & Clearing Corporation (DTCC) on a weekly basis

## **Section 1: Data on all live positions in the Trade Information Warehouse**

Aggregate Gross and Net Notional and Number of Contracts for:

All Credit Products

Top 1000 Reference Entities

All Indices and Index Tranches

Gross Notional and Number of Contracts Broken out between Dealers and Non-dealers for:

Single-Name Reference Entity Type (e.g. Sovereign, Financials) by Buyer of Protection

Single-Name Reference Entity Type by Seller of Protection

On-the-run/Off-the-run Index/Index Tranche by Buyer of

On-the-run/Off-the-run Index/Index Tranche by Seller of Protection

Gross Notional & Number of Contracts for Aggregate Single-Name Contracts by Year of Scheduled Termination Date

## **Section 2: Change in Weekly Activity for Trade Information Warehouse Positions**

All Reference Entities Gross Notional, Net Notional and number of contracts

All Indices and Index Tranches Gross Notional, Net Notional and number of contracts

Credit Products by Customer Type and Breakout by Product Type – Dealers vs. Non-Dealers

Gross Notional & Number of Contracts for Aggregate Single-Name Contracts by Year of Scheduled Termination Date

Gross Notional and Number of Contracts Broken out between Dealers and Non-dealers for:

Single-Name Reference Entity Type (e.g. Sovereign, Financials) by Buyer of Protection

Single-Name Reference Entity Type by Seller of Protection

On-the-run/Off-the-run Index/Index Tranche by Buyer of

On-the-run/Off-the-run Index/Index Tranche by Seller of Protection

## **Section 3: Weekly transaction activity in the Trade Information Warehouse**

Summary of Weekly Transaction Activity – New Trades, Other Increase Activity, Terminations, Other Reduction Activity, Assignments

New Trades, Full Assignments, Partial Assignments for:

All Indices and Index Tranches by Transaction Type with > 50 contracts (Position Increases)

Single-Name Reference Entities with > 50 contracts (Position Increases)

Single-Name Reference Entity Type (e.g. Sovereign, Financials) by Transaction Type (Position Increases)

Partial Terminations Full Terminations, Exits for:

All Indices and Index Tranches by Transaction Type with > 50 contracts (Position Reduced)

Single-Name Reference Entities with > 50 contracts (Position Reduced)

Single-Name Reference Entity Type (e.g. Sovereign, Financials) by Transaction Type (Position Reduced)

# Credit Events for Sovereign CDS

- Contract is triggered on the CDS when a credit event occurs on an obligation
- Any debt explicitly guaranteed by a sovereign can trigger a default of that sovereign
- Standard ISDA defined credit events for sovereign CDS
  - Failure to pay
  - Restructuring (may be triggered by a change in currency, if the bonds were not issued under domestic law)
  - Repudiation/moratorium: authorised government authority (or reference entity) repudiates or imposes moratorium and failure to pay or restructuring occurs. Generally only used for EM reference entities
  - Obligation acceleration: one or more obligations due and payable as a result of the occurrence of a default or other conditions or events described, other than a failure to make any required payment. Generally only used for emerging market reference entities
- “Deliverable obligations” limit which obligations can be delivered upon a credit event
  - Deliverable obligations are limited to government-level debt,...
  - ...even if the failure of other sovereign-guaranteed debt triggered the default
- Obligations are typically limited to borrowed money
  - Bonds/loans
  - Not derivative contracts or trade receivables

# Cash Settlement of CDS Following an Event of Default

## Relevance of CDS Auctions to Cash Bonds

- At present, the net notional outstanding of sovereign contracts is very small compared to the amount of government debt outstanding. As a result, cash settlement for sovereign CDS contracts is not particularly relevant at the moment.
- However, if the sovereign CDS market were to become large relative to the cash market, CDS settlement could trigger a squeeze on cash bonds and therefore alter bond yields

## Auction Mechanics

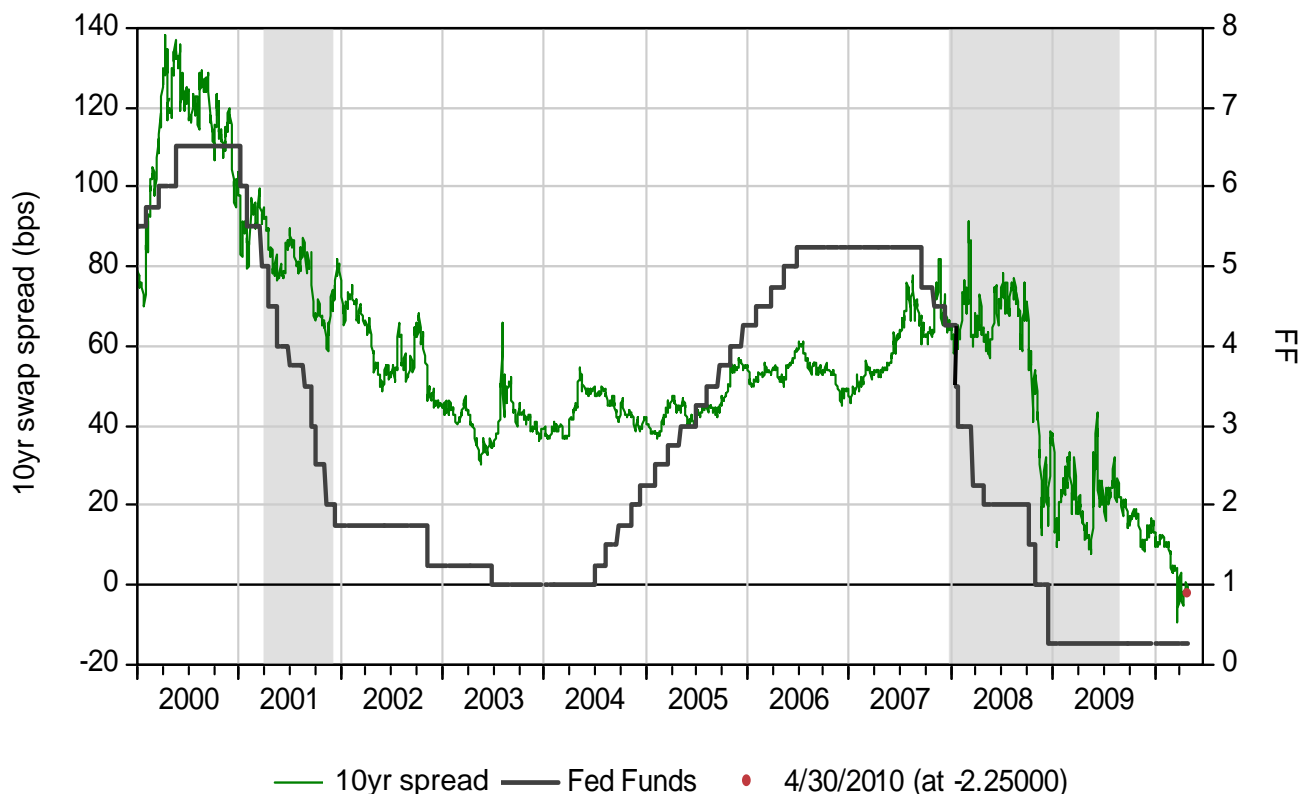
- In an event of default, the standard CDS contract calls for physical settlement of the underlying contract. The protection buyer delivers the notional worth of bonds to the seller of protection in exchange for the par amount. Cash settlement is an option, but not market standard.
- Given the large amount of CDS positions outstanding, the ISDA auction protocol has been developed as a means of netting and cash settling CDS contracts. The auction process aims to facilitate cash settlement and preserve the economics of physical settlement, by enabling investors to settle all contracts at the same recovery rate.
- The auction mechanism is a two-step process. Marketmakers submit a bid and offer price for the bonds in a predetermined size. These levels are not traded in the first step of the auction, but may be in the second step.
- The auction administrator will then order the bids they receive from the highest to lowest and the offers they receive from lowest to highest. Any market that crosses is deemed a tradable market and excluded from the price determination. The indicative price is then calculated using the best half of the remaining valid markets. The IMM (Inside Market Midpoint) is the average of these best markets.
- At the same time that the marketmakers submit their bids and offers to determine the IMM, they also submit the net amount of bonds that they wish to buy or sell in the form of Market Orders
- We now have the indicative price of the auction as well as the net open interests, both of which are published on the website. Market participants can now enter Limit Orders to Hoover up the open interests.

Treasury Borrowing Advisory Committee  
Presentation to Treasury  
Charge #3

May 4, 2010

# Treasury Borrowing Advisory Committee Quarterly Meeting Committee Charge #3 – May 4, 2010

“Since late 2008, interest-rate swap spreads relative to U.S. Treasuries have tightened substantially. In the recent weeks, the spread tightening has accelerated, with 10yr swap spreads at times trading at negative levels. We would like the Committee’s views on factors that have contributed to the persistent narrowing of swap spreads to Treasuries. What are the implications for Treasury?”



# Supply and Demand Dynamics Can Be Independent for the Swap Rate Curve and the Treasury Curve

## **Swap Spread Drivers**

- Supply of government debt
- Balance sheet / funding and FRA-OIS
- Corporate issuance hedging
- Pension fund and insurance liability demand
- Mortgage convexity hedging pre and post Fed mortgage buying program
- Declining use of derivatives
- Artificial notion of the zero-barrier
- Hedging of currency-linked and curve-linked notes
- Quarter-end dynamics

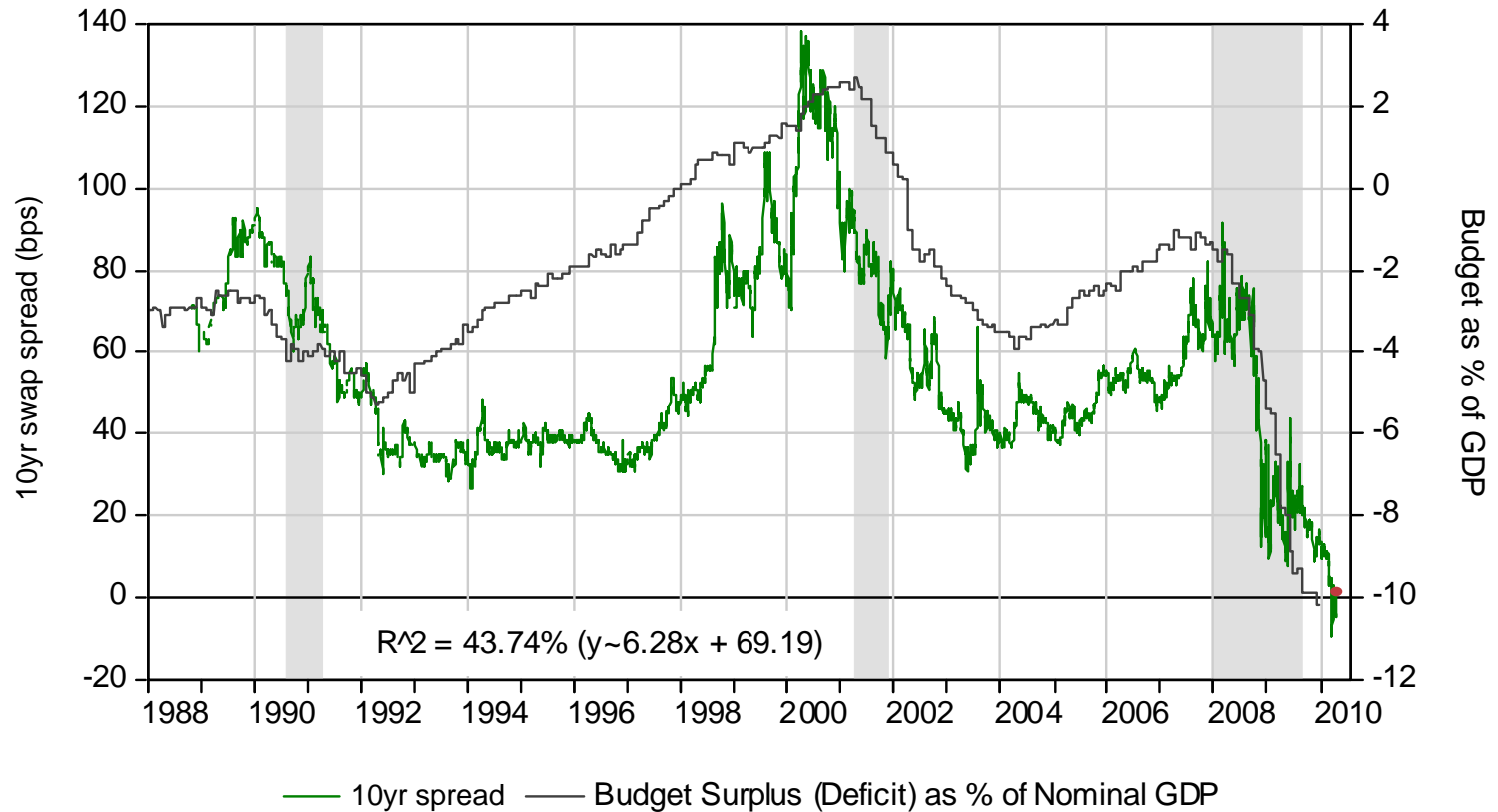


# Primary Drivers of Swap Spread Narrowing Since Late 2008

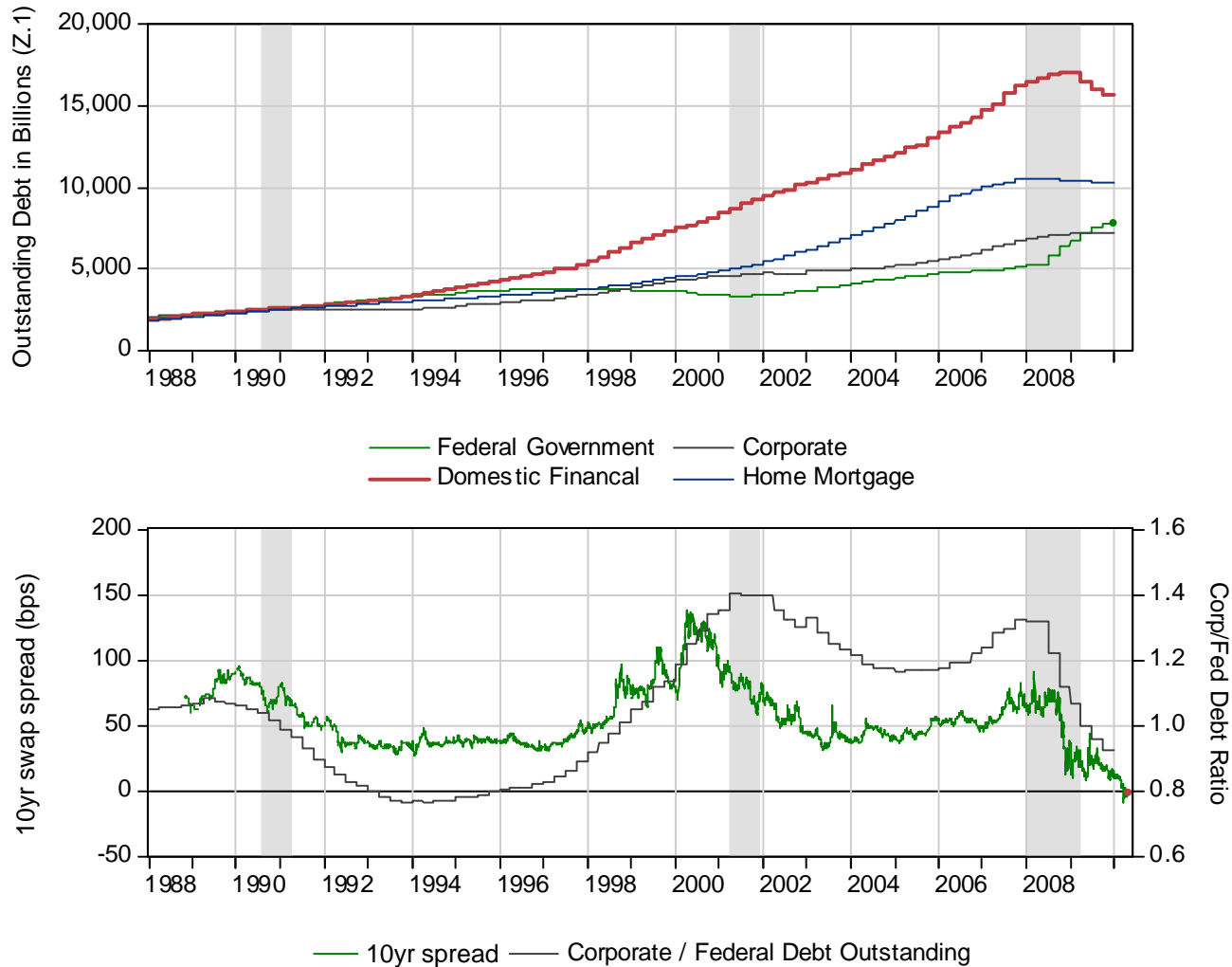
**The collapse in swap spreads since the fall of 2008 was likely precipitated by two factors that struck nearly simultaneously:**

- 3m Libor/OIS hit its all-time peak of 361bps on October 10, 2008, following the Lehman collapse, before declining sharply and steadily from there. The repair of the Libor market (thanks to Fed programs instituted at the time) was a major driver behind the compression and repair of spreads. In conjunction, 10yr swap spreads hit a minor peak at 75bp in late September and spreads have narrowed steadily since then.
- Treasury began to dramatically ratchet up supply (leading to the known "Denominator Effect" on spreads) in October and November of 2008 as well. Until October 2008, Treasury had been adding incrementally to coupon auction sizes. Then in October 2008, Treasury surprised the market with a \$40B "Tap" of 2015/18 issues. In the November Refunding the following month, Treasury brought back 3yr notes (as a monthly issue) and hiked 10yrs by \$3B and 30yrs by \$4B. Here began the RAPID rise in coupon issuance that continued unabated for another year.

# The Denominator: Supply



# The Numerator: Rapid Decline in Private Sector Debt Versus Public Sector Debt



# Significant Supply Shock

Long term trends in swap spreads are highly correlated to changes in Treasury and Corporate Issuance

Average GROSS daily issuance per trading day

	Mortgage origination / day	Treasury issuance /day	Corporate debt /day	Agency debt /day	Asset-backed /day	Municipal origination/ day	Mortgage /Treasury	Corporate / Treasury	Average 10yr Swap Spread
1996	1.96	2.44	1.37	1.11	0.67	2.44	80%	56%	36.6
1997	2.41	2.15	1.86	1.29	0.89	2.15	112%	86%	40.1
1998	4.56	1.75	2.43	2.38	1.14	1.75	261%	139%	62.9
1999	4.09	1.45	2.51	2.18	1.14	1.45	281%	173%	83.7
2000	2.73	1.24	2.34	1.78	1.12	1.24	219%	188%	113.3
2001	6.66	1.52	3.09	3.75	1.30	1.52	439%	204%	81.2
2002	8.96	2.28	2.54	4.15	1.49	2.28	394%	111%	58.6
2003	12.24	2.97	3.09	5.05	1.84	2.97	412%	104%	41.3
2004	7.09	3.40	3.11	3.51	2.60	3.40	208%	91%	43.6
2005	7.84	2.97	3.00	2.67	3.00	2.97	264%	101%	45.2
2006	7.92	3.14	4.22	2.98	3.00	3.14	252%	134%	53.5
2007	8.17	3.00	4.49	3.75	2.03	3.00	273%	150%	61.0
2008	5.35	4.13	2.82	3.92	0.56	4.13	130%	68%	60.3
2009	7.77	8.36	3.49	4.45	0.58	8.36	93%	42%	19.7
<b>Correlation to spreads</b>	<b>-32%</b>	<b>-66%</b>	<b>-8%</b>	<b>-24%</b>	<b>-8%</b>	<b>-66%</b>	<b>37%</b>	<b>86%</b>	

<sup>1</sup> Interest bearing marketable coupon on public debt.

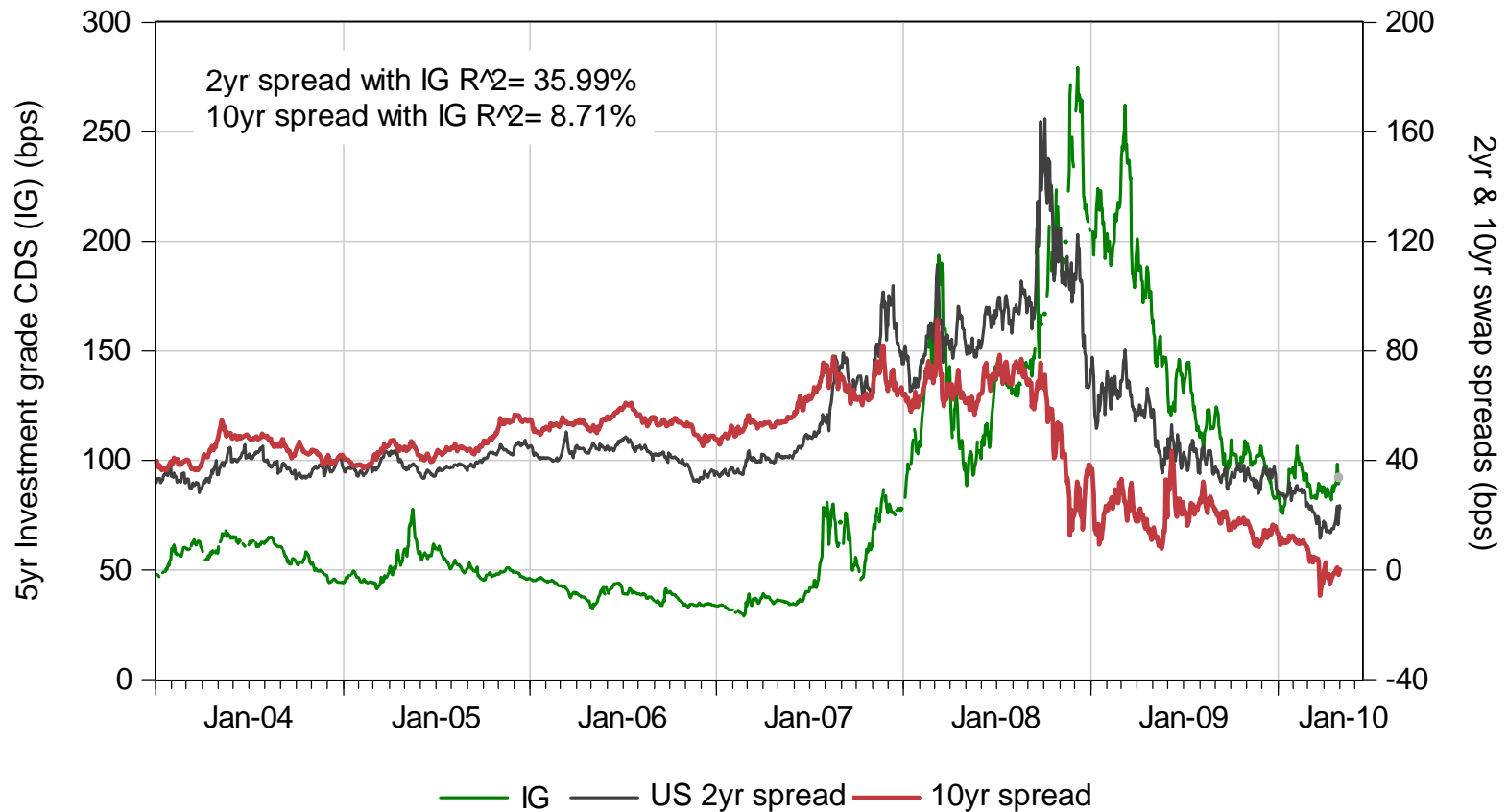
<sup>2</sup> Includes GNMA, FNMA, and FHLMC mortgage-backed securities and CMOs and private-label MBS/CMOs.

<sup>3</sup> Includes all non-convertible debt, MTNs and Yankee bonds, but excludes CDs and federal agency debt.

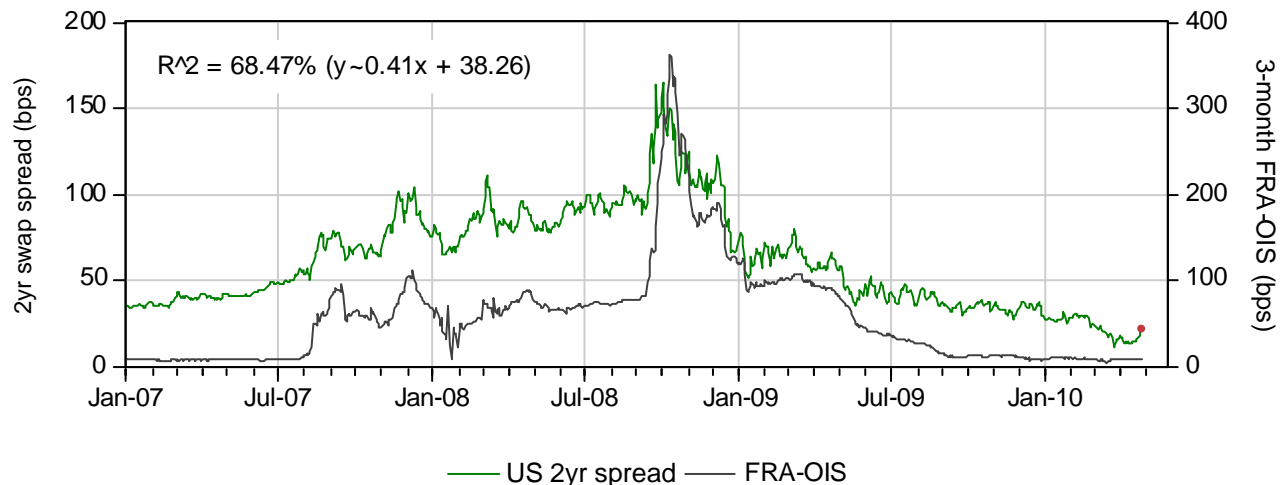
<sup>4</sup> Beginning with 2004, Sallie Mae has been excluded due to privatization.

Sources: U.S. Department of Treasury, Federal Agencies, Thomson Reuters, SIMFA

# Credit Risk Stays Correlated to 2yr Spreads, But *Duration Demand* Caused a Collapse in 10yr Swap Spreads after Lehman



# Swap Spreads in 2008 – Exotic Hedging Affects 30yr Spreads and Funding/Balance Sheet Pressures Influence 2yr Spreads

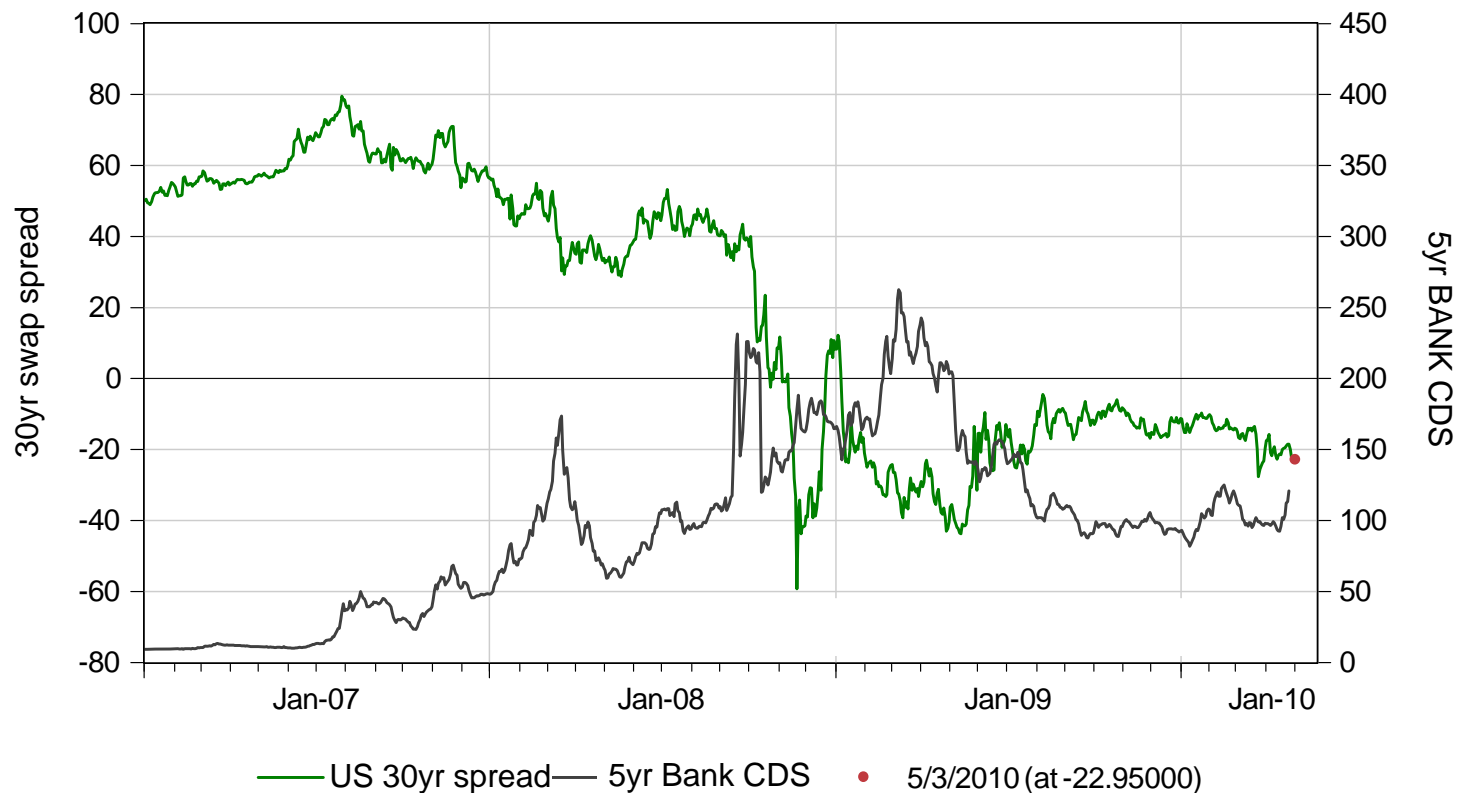


# 30yr Swap Spreads: Technical Not Fundamental

Implied AA bank credit could not have been more valued than sovereign credit during the height of the financial crisis

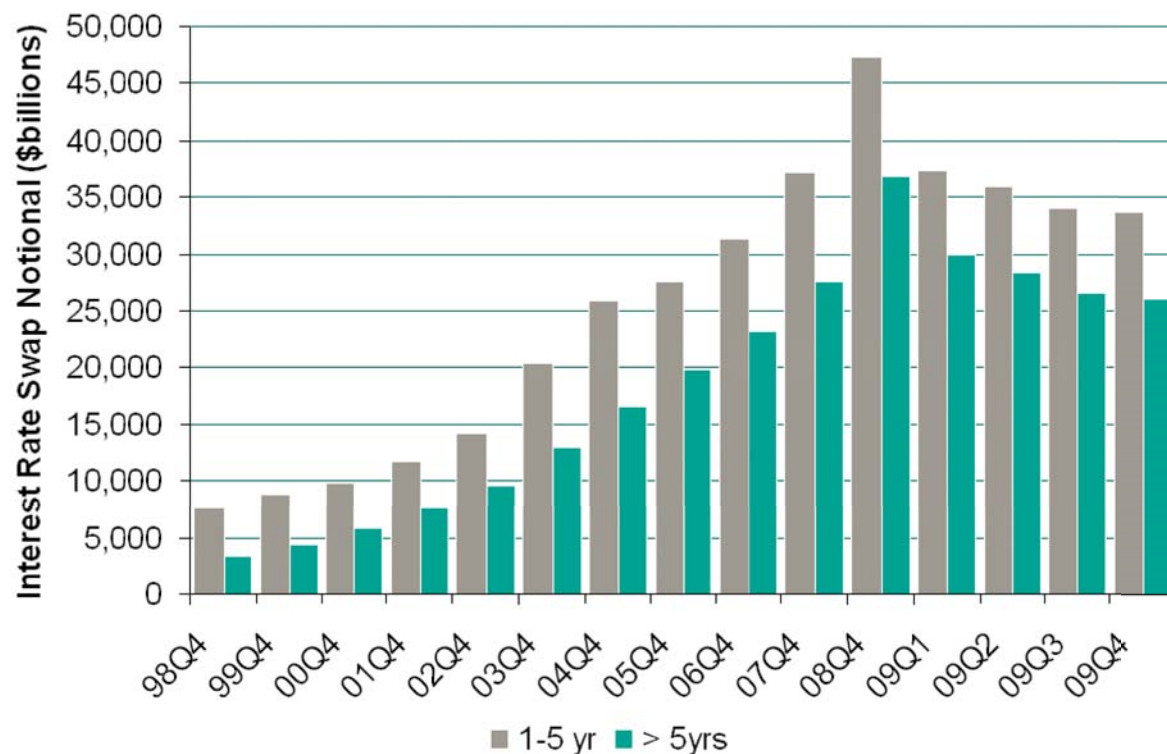


# Bank CDS: No Correlation to 30yr Spreads





# Interest Rate Swaps Outstanding: Declining Since 2008 While Outstanding Treasurys Rise



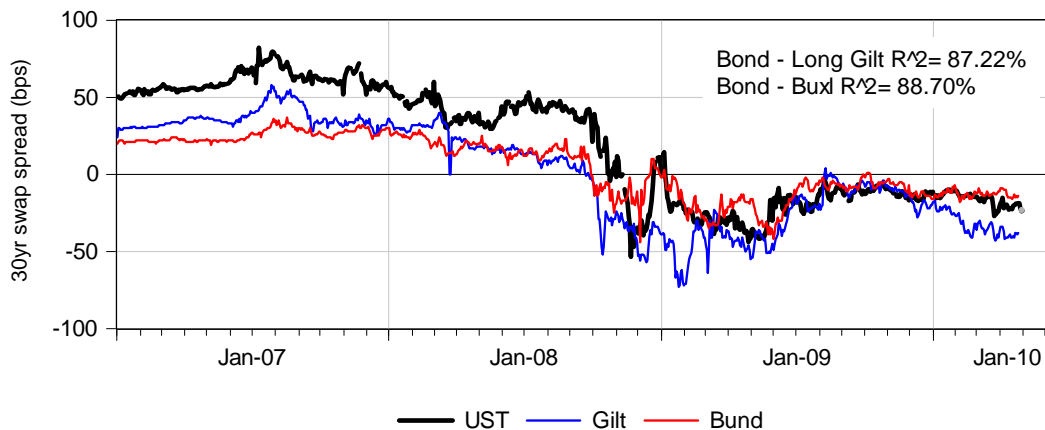
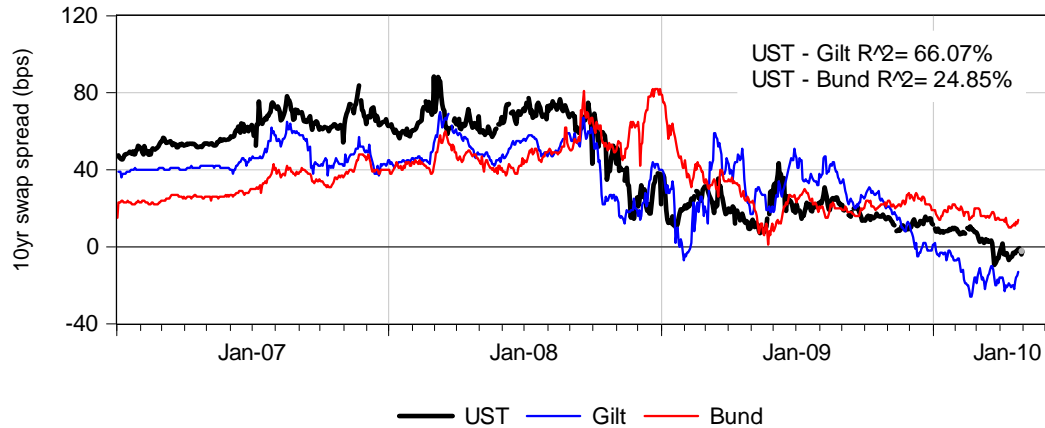
**Notional Amounts: Interest Rate and Foreign Exchange Contracts by Maturity (\$ Billions)\***

	98Q4	99Q4	00Q4	01Q4	02Q4	03Q4	04Q4	05Q4	06Q4	07Q4	08Q4	09Q1	09Q2	09Q3	09Q4
IR: <1yr	6,923	8,072	9,702	10,357	12,972	13,573	15,914	18,482	29,546	39,083	47,147	68,432	72,454	74,551	80,976
IR: 1-5 yr	7,594	8,730	9,919	11,809	14,327	20,400	25,890	27,677	31,378	37,215	47,289	37,286	35,915	33,971	33,632
IR: > 5yrs	3,376	4,485	5,843	7,523	9,733	13,114	16,489	19,824	23,270	27,720	36,780	29,982	28,354	26,618	26,144

Source: OCC Call Reports

# The Myth of the Zero Barrier?

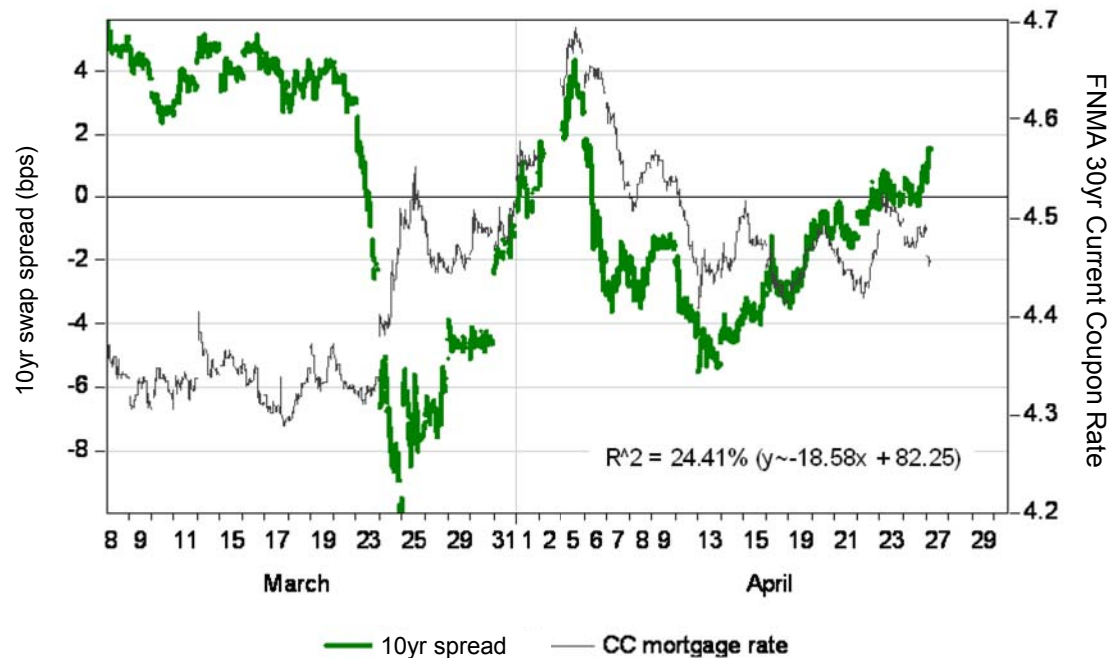
- Gilts broke through 0 before UST (30yr in '08 and 10yr in '09)
- JGB asset swaps (not shown) broke through 0 in 2001
- Long swap spreads have historically traded tighter in the U.K. and Germany primarily due to inverted 10yr vs. 30 yr curves
- The theoretical positive arbitrage of inverted government asset-swap spreads is impractical due to mark-to-market necessities.



# Swap Spreads Collapse into March 2010 Quarter-End

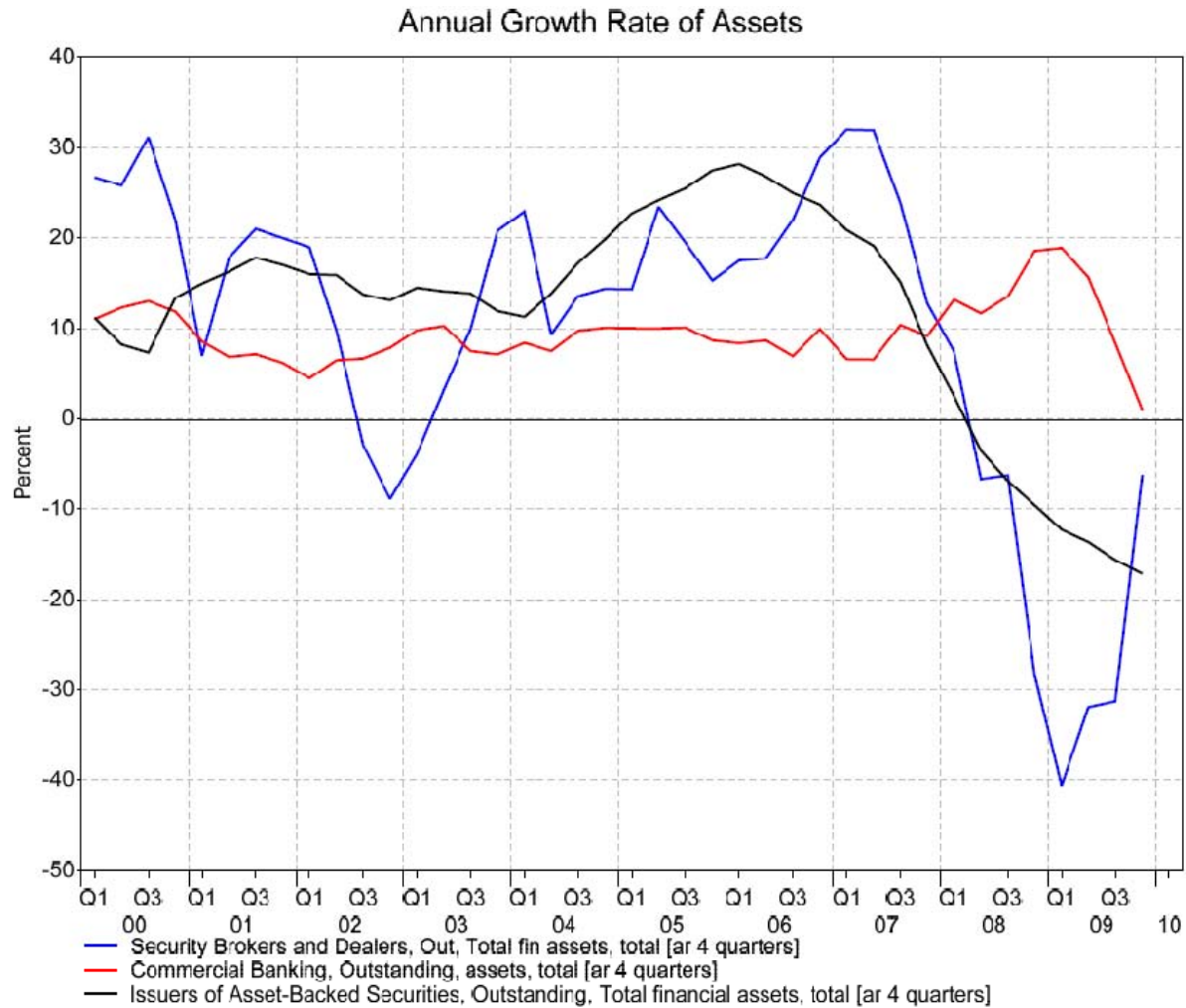
## Cause for March 2010 10yr swap spread Collapse

- The primary driver for the recent collapse in 10yr swap spreads was a technical capitulation catalyzed by quarter-end balance-sheet reduction pressure. Financial institutions pared down securities holdings, particularly U.S. Treasuries, and replaced duration with longer dated off-balance sheet swaps due to increasing downward pressure on leverage ratios.



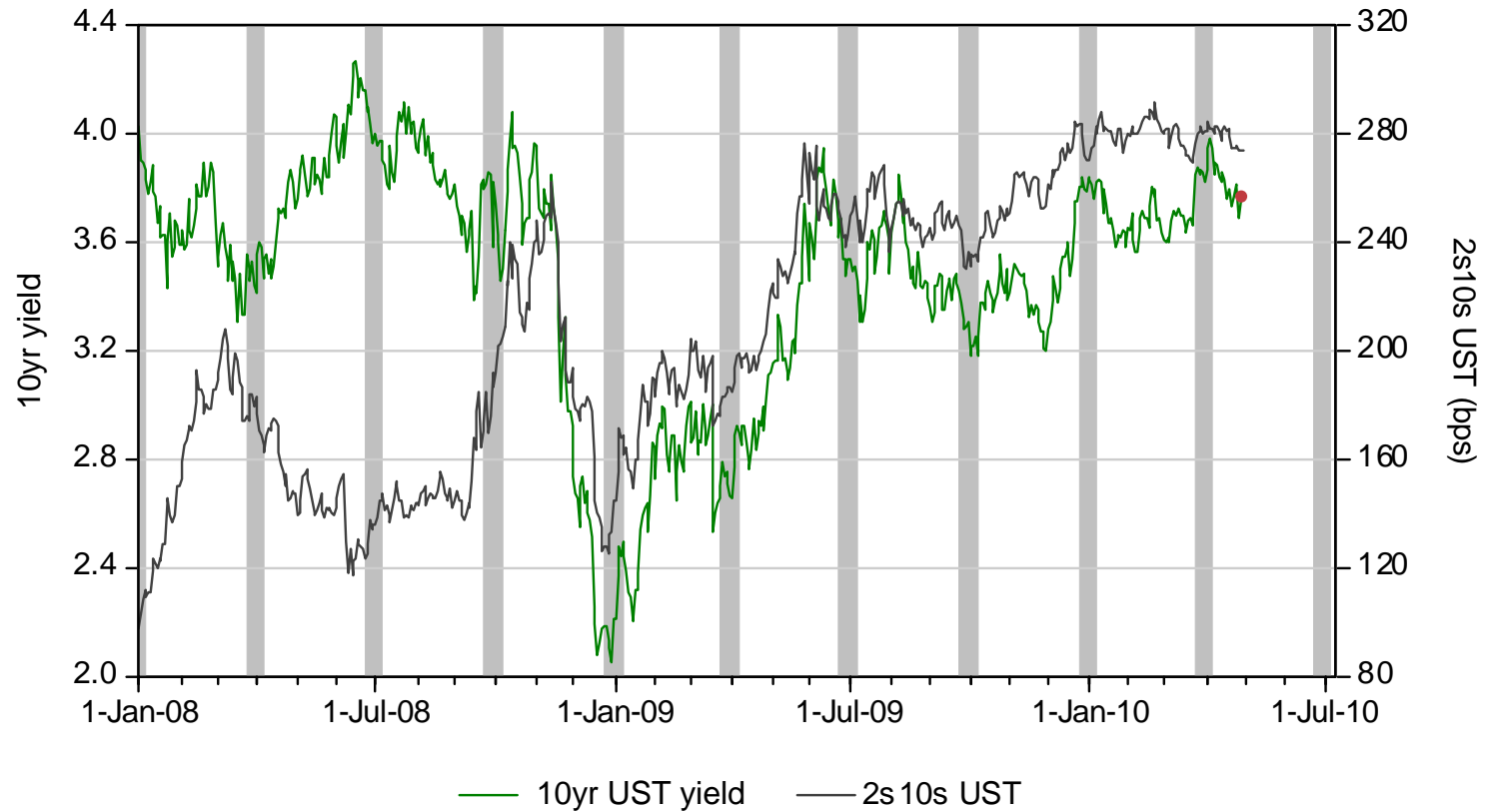
- A rare string of weak Treasury coupon auctions in late March (that produced an average tail of 2.8bps) highlighted the quarter-end pressures on the Treasury market, pressures which helped to fuel the collapse in swap spreads.

# Sharp Decline in Bank Leverage

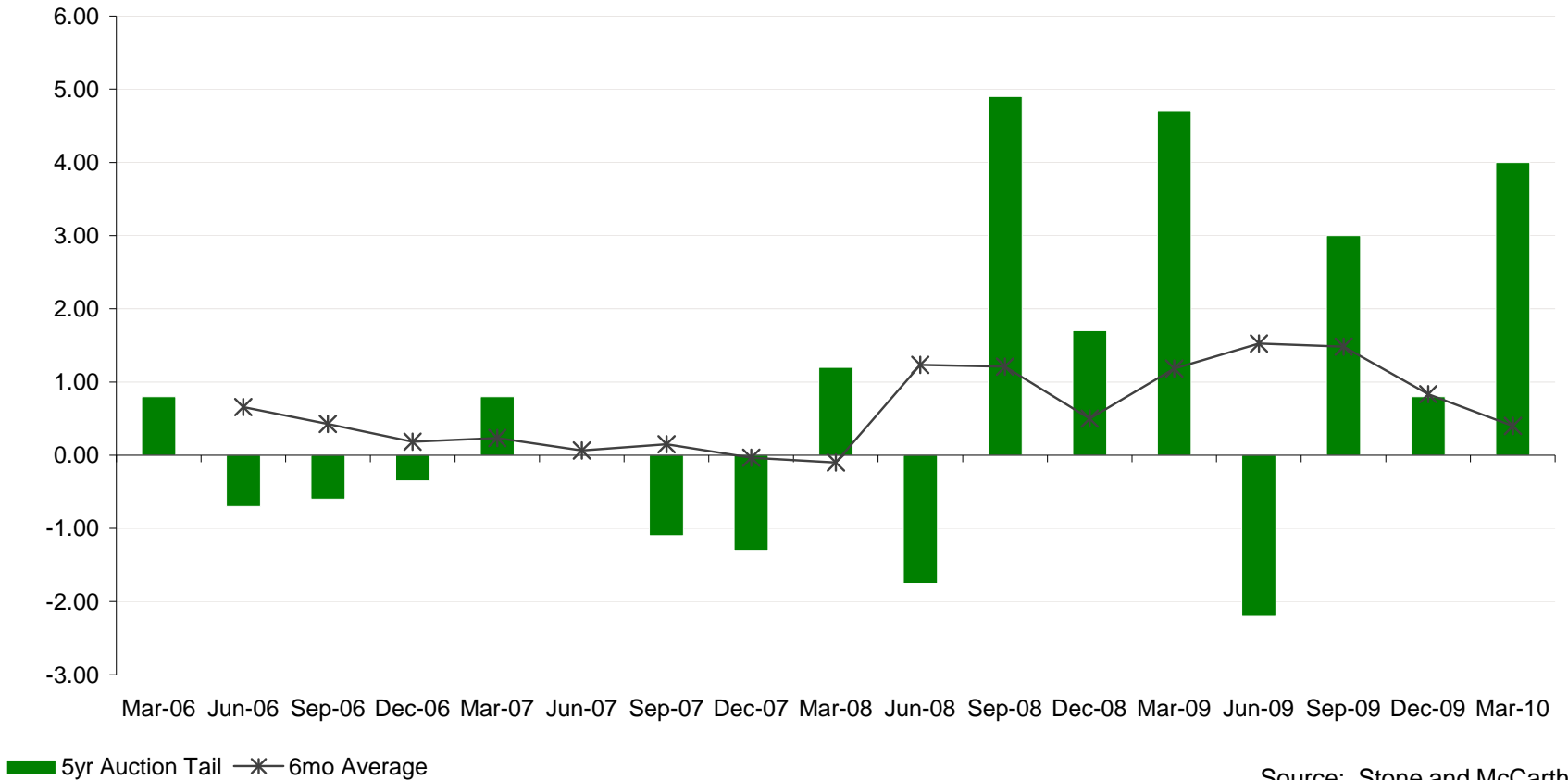


Source: Reuters EcoWin

# Quarter-Ends: Impact on 2s10s and 10yr yield

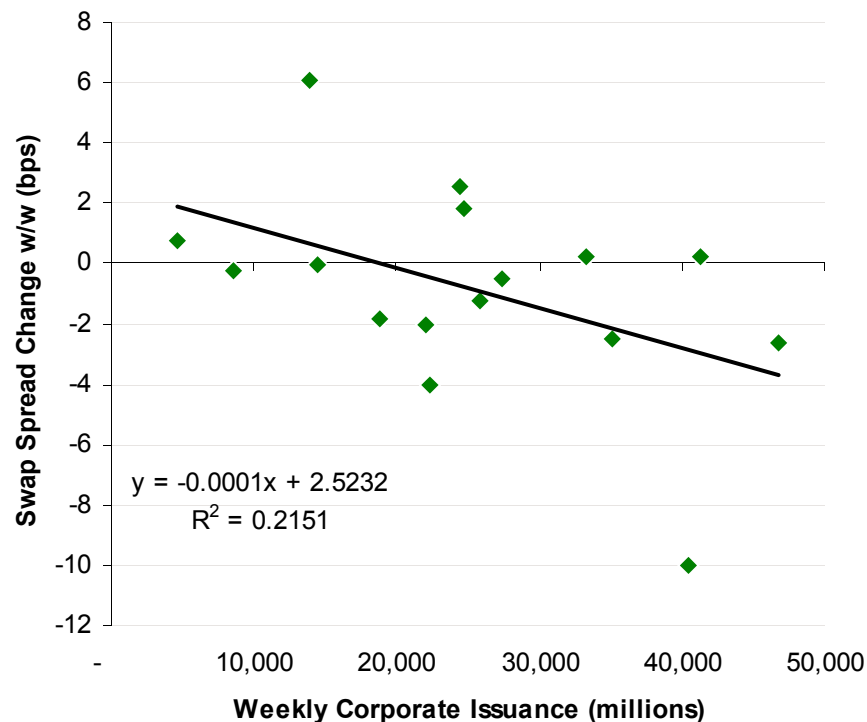


# Quarter End 5yr Auction Tails versus 6-Auction Averages



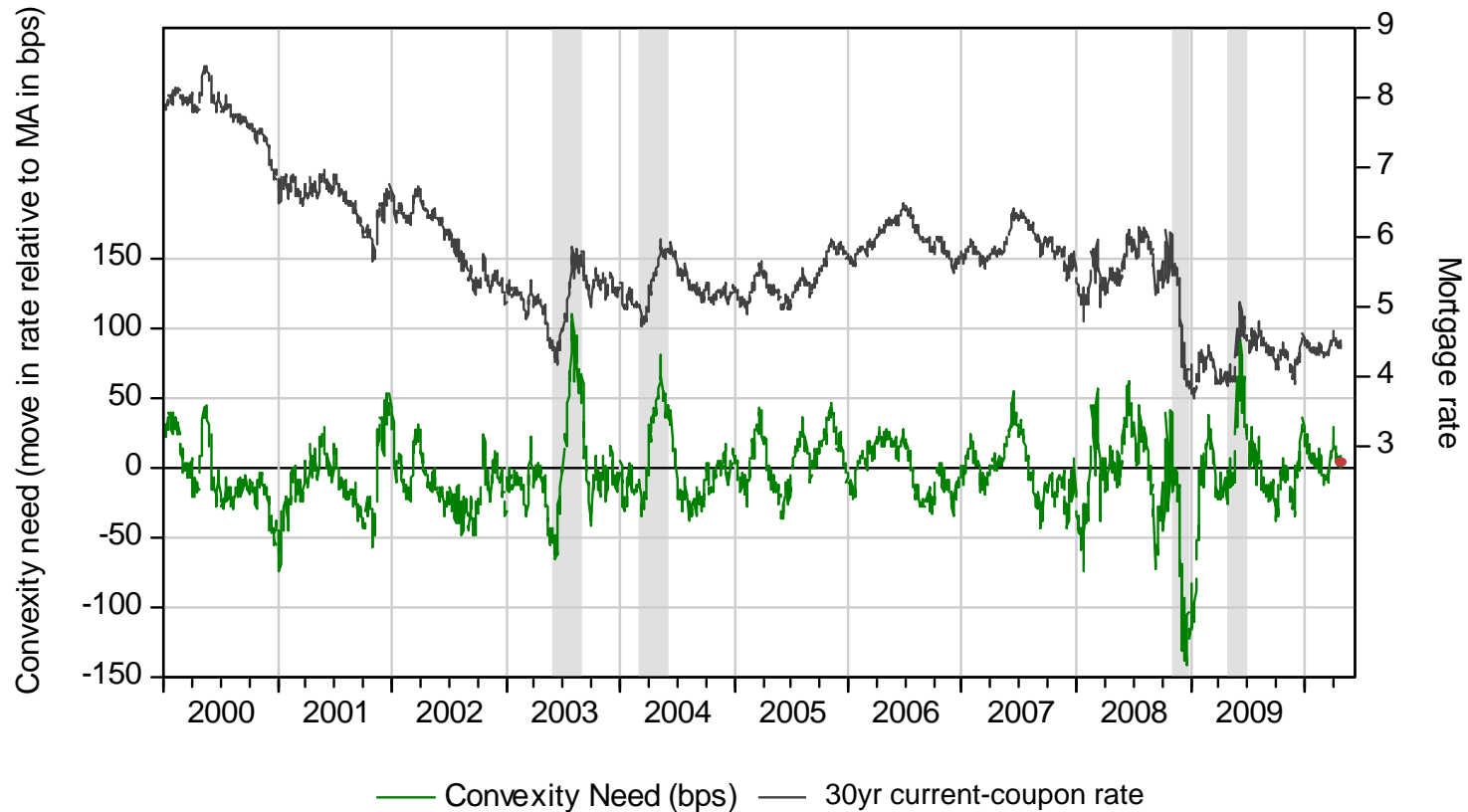
# Deal Flow: Corporate Pipelines and Deal-related Hedging Helped Push Swap Spreads Lower in Late March

Week ending	Corporate Issuance (Millions/wk)	Swap Spread at end of Week (bps)	Average Spread (bps)	Ending-Average (bps)	Change on week of average spread (bps)
1/8/2010	46,762	10.6	10.5	0.1	-2.7
1/15/2010	33,292	10.15	10.75	-0.6	0.3
1/22/2010	24,722	10.375	12.56	-2.185	1.8
1/29/2010	14,510	11.888	12.5	-0.612	-0.1
2/5/2010	35,078	11.124	10	1.124	-2.5
2/12/2010	8,554	9.912	9.75	0.162	-0.3
2/19/2010	4,624	10	10.5	-0.5	0.8
2/26/2010	22,116	8.8	8.5	0.3	-2.0
3/5/2010	22,366	5.15	4.5	0.65	-4.0
3/12/2010	41,262	4	4.75	-0.75	0.3
3/19/2010	27,368	3.926	4.25	-0.324	-0.5
<b>3/26/2010</b>	<b>40,477</b>	<b>-4.326</b>	<b>-5.75</b>	<b>1.424</b>	<b>-10.0</b>
4/1/2010	13,913	-2.79	0.31	-3.1	6.1
4/9/2010	18,815	-1.1	-1.5	0.4	-1.8
4/16/2010	25,844	-3.826	-2.75	-1.076	-1.3
4/23/2010	24,418	-0.988	-0.19	-0.798	2.6



# Convexity Hedging Episodes

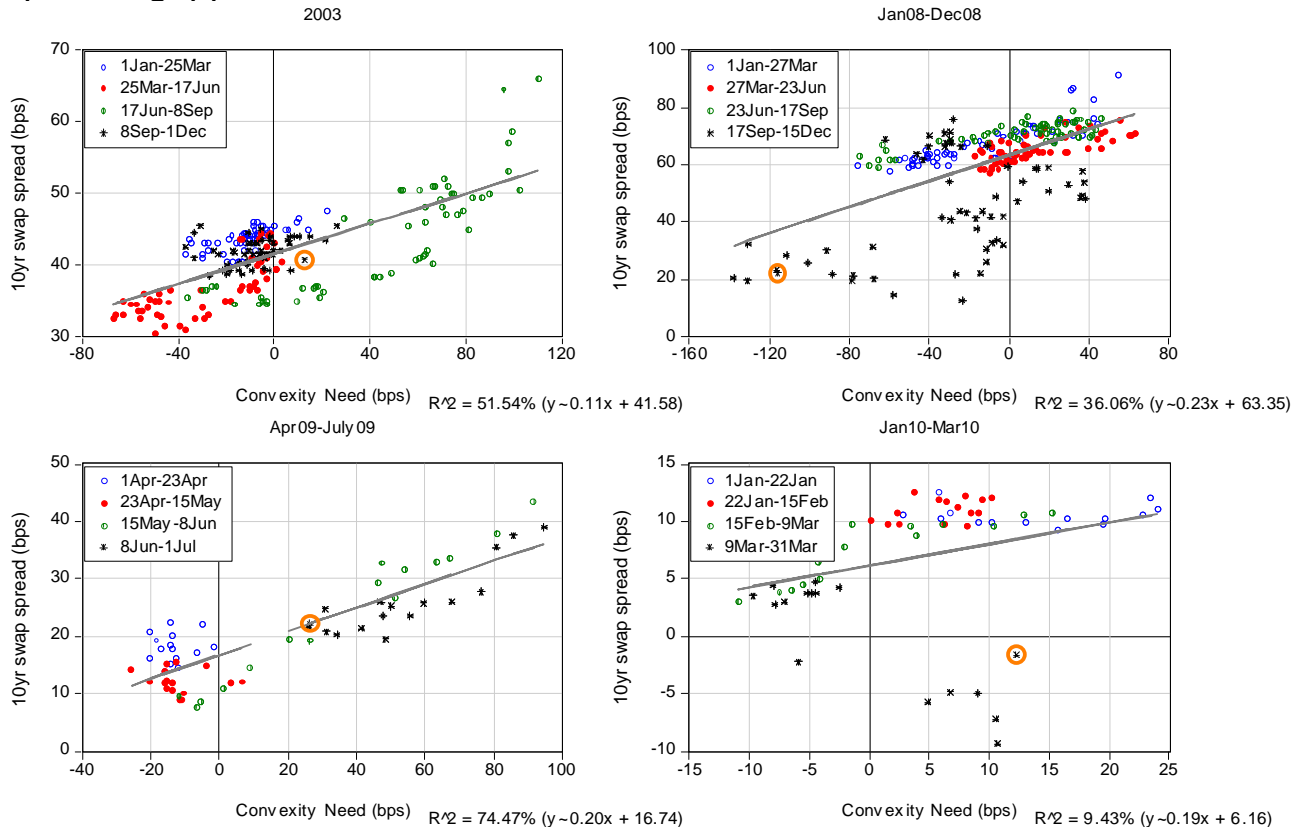
Convexity need modeled as CC mortgage rate *minus* 90-day MA  
Highlighted episodes shown in more detail on following page





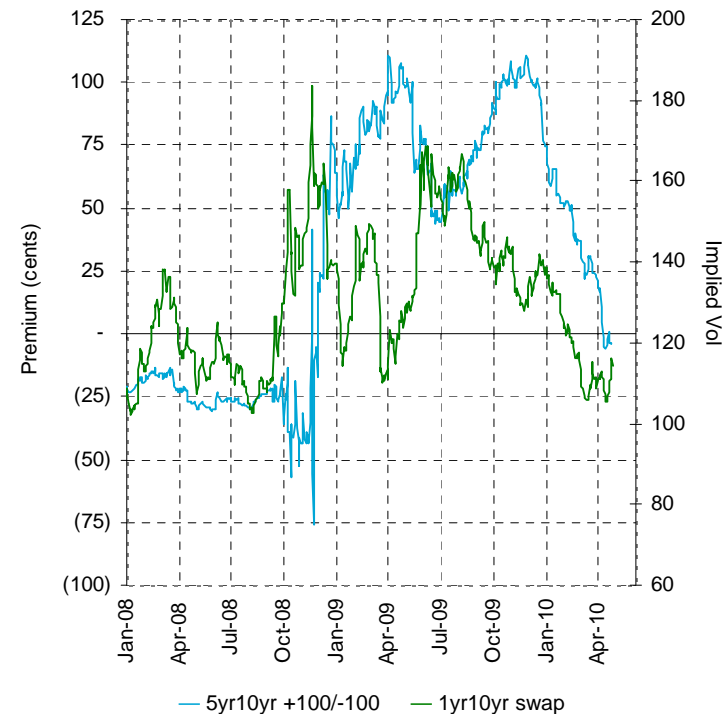
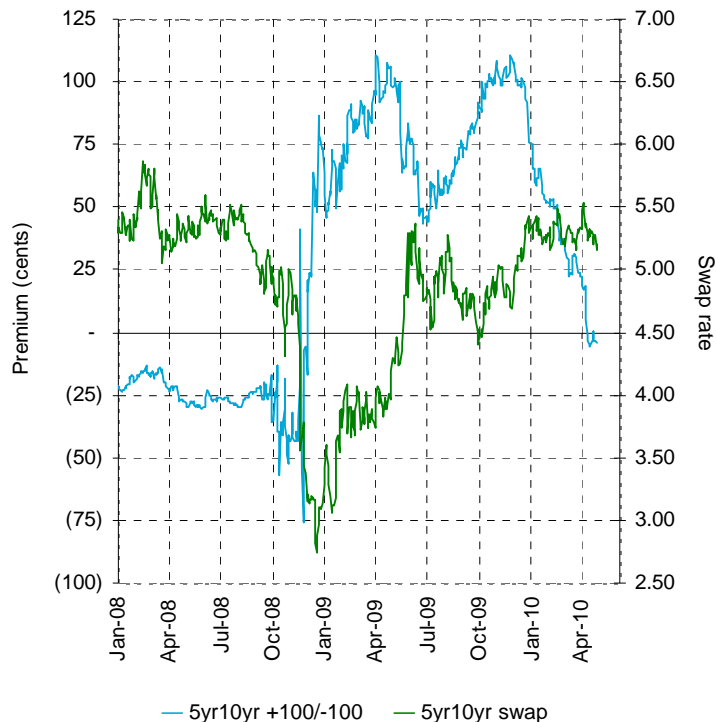
# Dynamics: Convexity Hedging

- Mortgage convexity needs typically correlate to swap spread moves i.e. higher yields lead to wider swap spreads and vice versa.
- This was exemplified in July 2003 when 10yr swap rates rose 130bps in one month.
- In late March 2010, the correlation completely broke down when yields and convexity needs rose while 10yr swap spreads gapped to new lows.



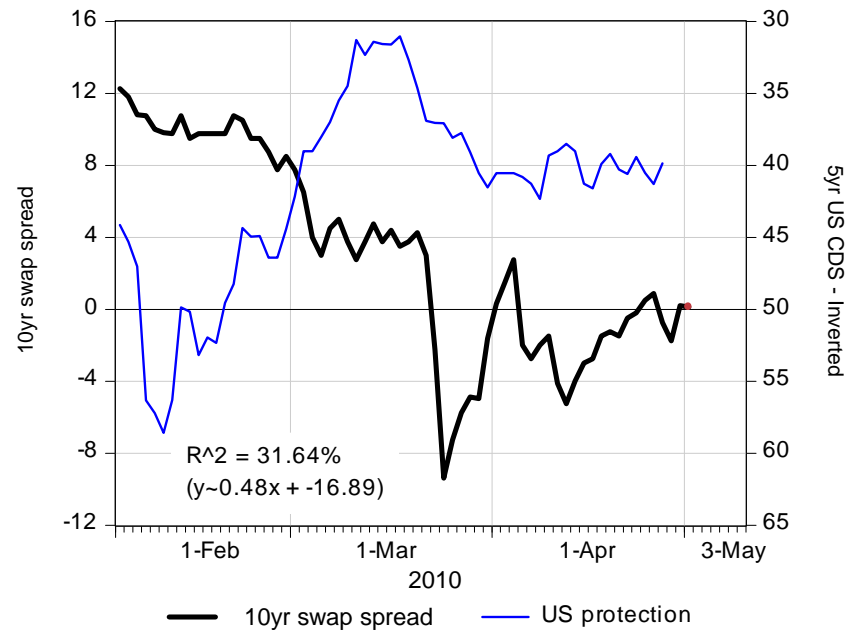
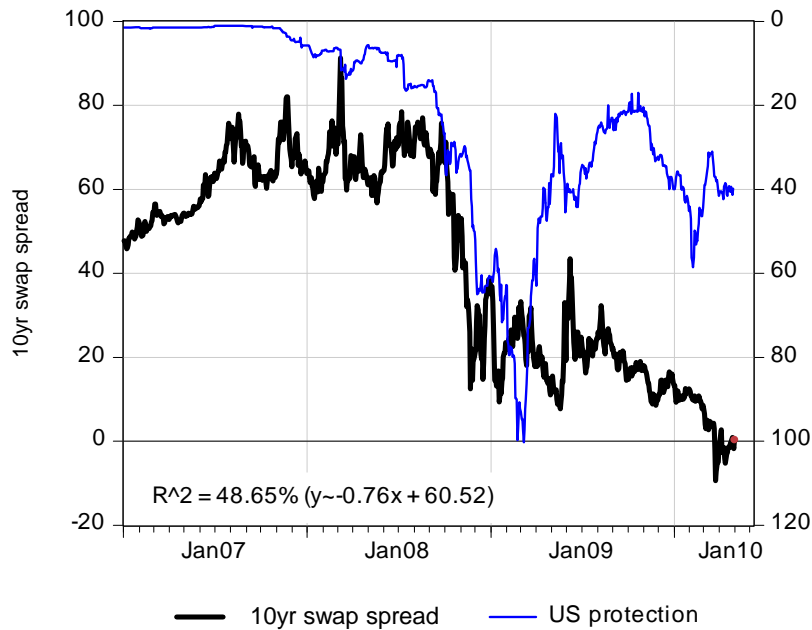
# Swaption Skew: Risk Reversals Show a Sharp Change in the Convexity Profile of the Market

- Due to the change in composition of the largest mortgage holders (namely the Federal Reserve) who do not hedge negative convexity, bank dealers are now structurally long volatility as opposed to chronically short.
- This long volatility profile forces bank dealers to delta hedge and receive swaps on a sell-off and pay swaps on a rally – exactly the opposite of historical convexity hedging dynamics.



# 5yr CDS on US Government Debt and 10yr Swap Spreads

There is only a loose correlation between US sovereign CDS and swap spreads.



# Structural Changes

## Fiscal Shifts

- We may have seen the peak in Treasury coupon issuance.
- Total Treasury funding is outpacing deficit estimates.
- We expect significant coupon supply reductions going forward.
- This will have a direct affect on swap spreads and normalize the spread curve over time.

## Regulatory Changes

- Separation of banks from derivative dealers – Potential sharp change in liquidity, volumes, margin requirements.
- Clearing of virtually all swaps – subtle direct effects, centralization of counter-party risks and margin management, hedge treatments.
- Exchange pricing of swaps – difficult to handle customization and already existing interest rate swap futures are illiquid.
- Affect on corporate liability hedging of fixed-rate bond issuance.

## Treasury Pay Fixed on 30yr Swap Spreads?

In order to take advantage of the positive arbitrage and lower funding costs, perhaps the U.S. Treasury should pay fixed on 30yr swap spreads.