Presentation to the Treasury Borrowing Advisory Committee

U.S. Department of Treasury

Office of Debt Management

August 2, 2011

Agenda

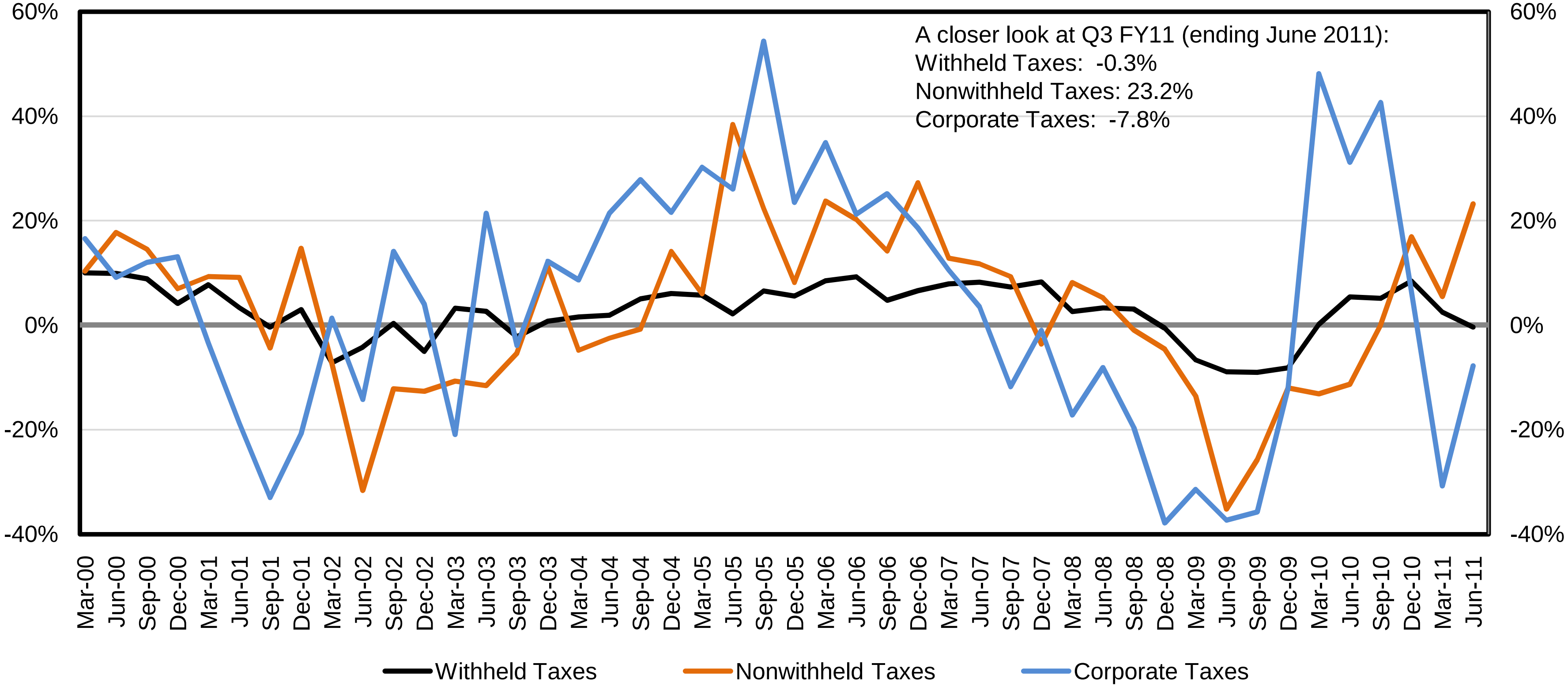
- Fiscal Developments
- Auction Demand & Market Trends
- Portfolio Metrics

FISCAL DEVELOPMENTS

Individual Tax Receipts Slowed in Q3 FY 2011

Quarterly Tax Receipts

Year-over-Year Percentage Change

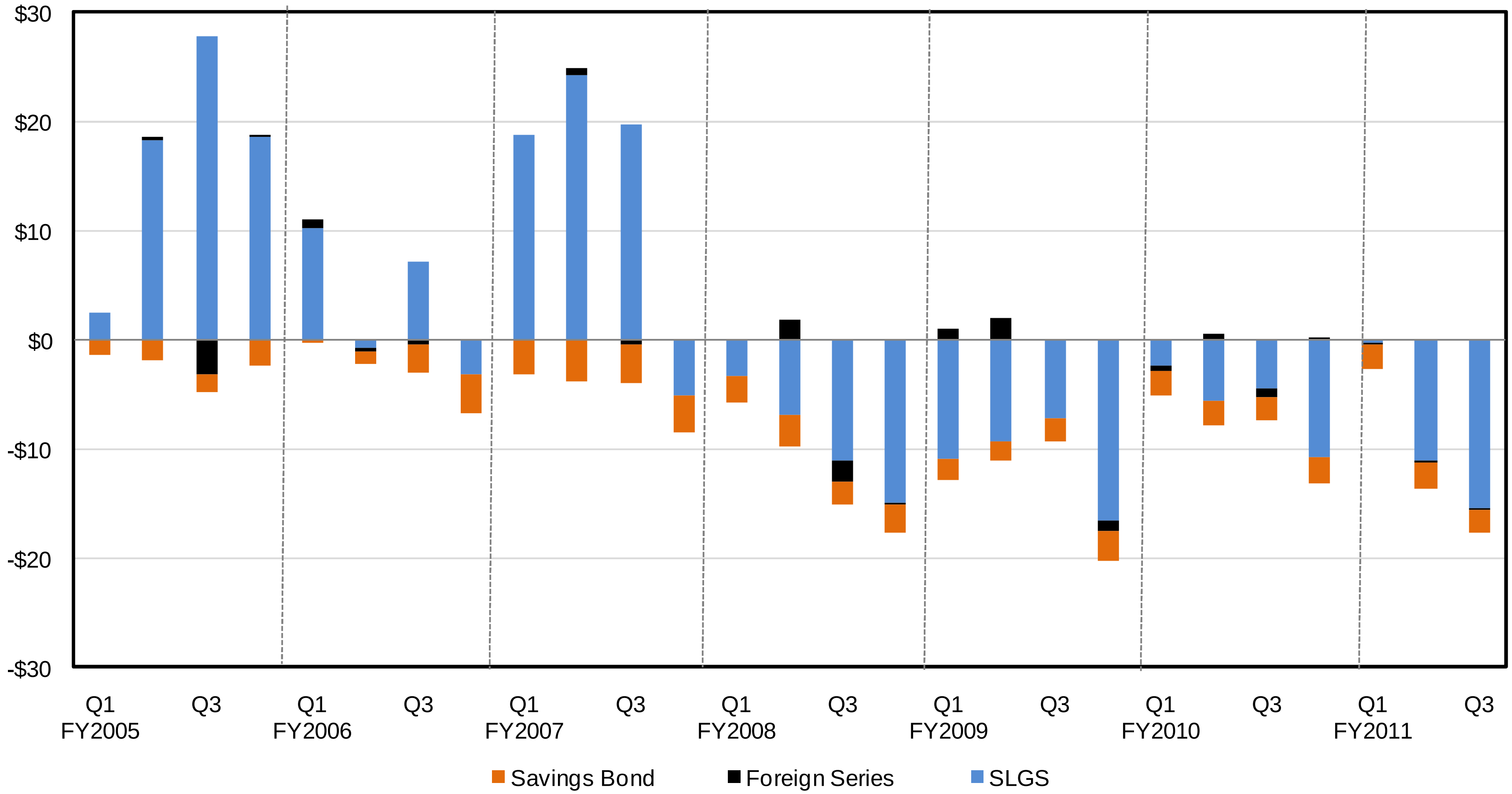


Notes: Adjusted for 9/11/01 Corporate Tax Receipts disruption;
Data plotted is year-over-year changes in quarterly receipts

Source: Monthly Treasury Statement

Public Non-Marketable Redemptions Continued in Q3 FY 2011

Net Non-marketable Issuance
In Billions $



Source: Monthly Treasury Statement

FY2011 Budget Summary through June 2011 (in Billions $)

Budget Category	Current Month				Fiscal Year-to-Date			
	Jun 2010 Act	Jun 2011 Act	Differences: $	Differences: %	FY2010 Act	FYTD2011 Act	Differences: $	Differences: %
Individual								
Withheld & FICA	$142	$135	-$7	-5%	$1,248	$1,300	$52	4%
Other & SECA	$43	$49	$6	14%	$269	$316	$46	17%
Refunds (-)	$6	$4	-$2	-33%	$244	$226	-$18	-7%
Other Social Ins Taxes	$2	$1	-$1	-28%	$42	$51	$10	24%
Corporate								
Corporate Taxes	$57	$51	-$6	-10%	$210	$189	-$21	-10%
Refunds (-)	$5	$2	-$3	-64%	$77	$55	-$22	-29%
Excise, Customs, & Other	$18	$19	$1	3%	$149	$159	$10	7%
Total Budget Receipts	**$251**	**$250**	**-$1**	**-1%**	**$1,597**	**$1,734**	**$137**	**9%**
Defense	$56	$57	$1	2%	$499	$506	$7	1%
Social Security Benefits	$67	$69	$2	3%	$564	$584	$20	4%
Medicaid	$24	$27	$3	14%	$203	$216	$13	6%
Medicare	$43	$51	$8	20%	$380	$403	$22	6%
Interest on Debt	$107	$111	$4	4%	$355	$386	$31	9%
Labor	$14	$9	-$5	-33%	$131	$102	-$29	-22%
Agriculture	$10	$11	$1	14%	$101	$108	$7	7%
Education	$9	-$20	-$29	-334%	$78	$46	-$32	-41%
Veterans Affairs	$9	$10	$1	13%	$81	$91	$10	12%
Federal Deposit Insurance Corp.	$1	$0	-$1	-77%	-$21	-$1	$20	96%
Treasury-EIC/CC/Other Credits	$3	$2	-$1	-43%	$110	$106	-$4	-4%
EESA/HERA	$16	$5	-$11	n/a	-$79	-$28	$51	65%
Other	-$38	-$39	-$1	2%	$197	$185	-$12	-6%
Total Budget Outlays	**$319**	**$293**	**-$27**	**-8%**	**$2,601**	**$2,705**	**$104**	**4%**

Note: Figures may not add due to rounding

Government Deficit and Borrowing Estimates

FY 2011-2013 Deficit and Borrowing Estimates (In Billions $)

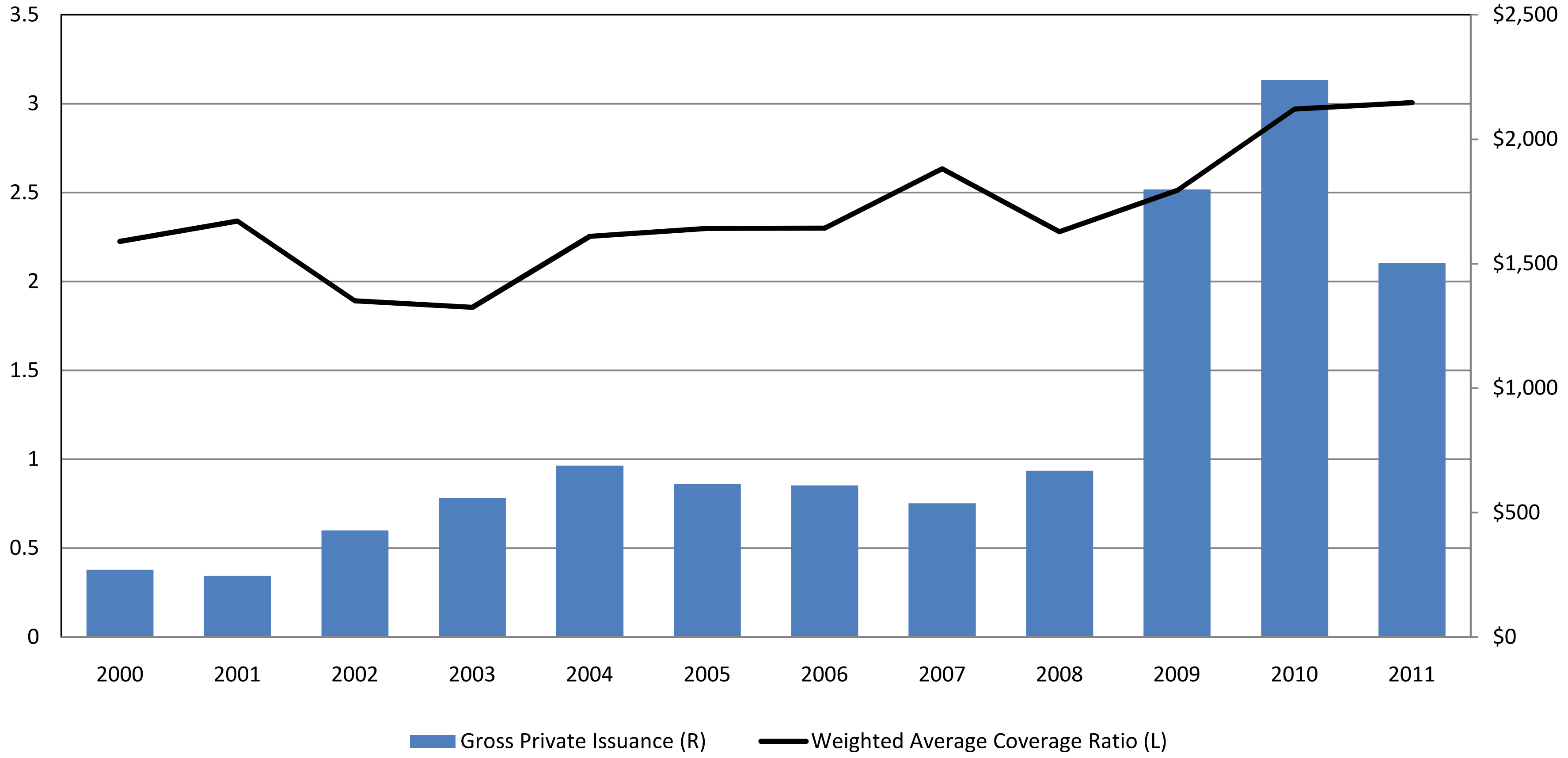
	Primary Dealers*	CBO	OMB
FY 2011 Deficit Estimate	1,358	1,480	1,645
FY 2012 Deficit Estimate	1,131	1,100	1,101
FY 2013 Deficit Estimate	940	704	768
FY 2011 Deficit Range	1,249-1,592		
FY 2012 Deficit Range	950-1,400		
FY 2013 Deficit Range	700-1,300		
FY 2011 Marketable Borrowing Range	980-2,055		
FY 2012 Marketable Borrowing Range	950-2,100		
Estimates as of:	Jul-11	Jan-11	Feb-11

*Based on July 29, 2011 Primary Dealer feedback. Deficit estimates are averages.

AUCTION DEMAND & MARKET TRENDS

Coverage Ratios Have Remained Strong in FY 2011

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

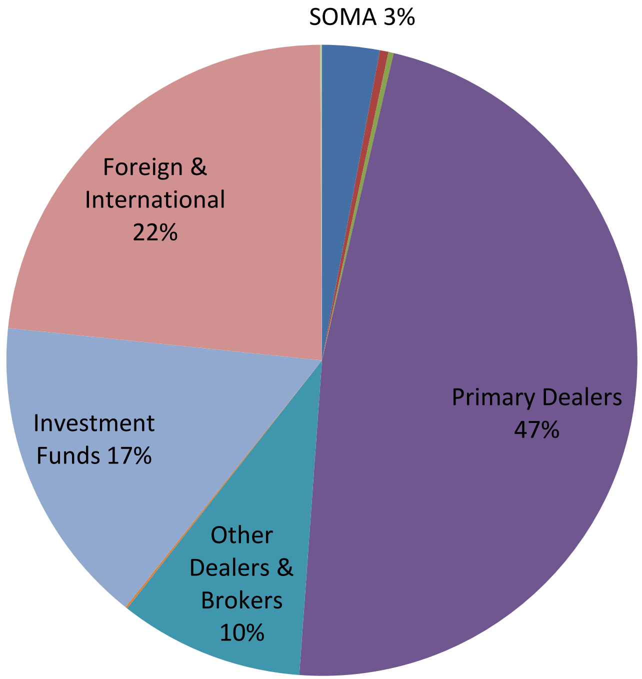


Note: Through 6/30/2011

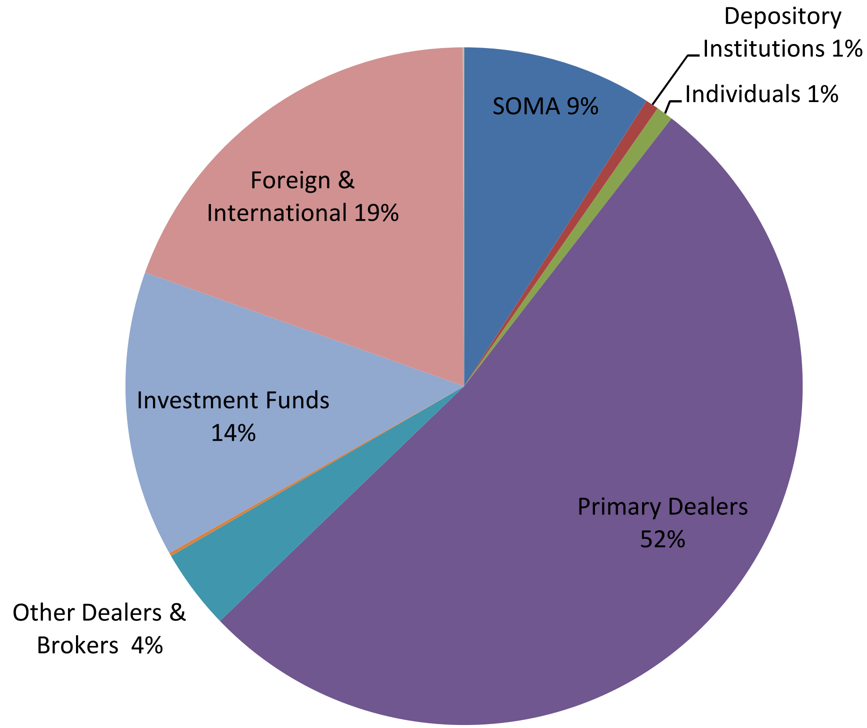
Source: Treasury Auction Data

Foreign Participation in Nominal Coupon Auctions Remains Steady

FY2011 YTD: Average Investor Class Allotments



Five-Year Average of Investor Class Allotments*

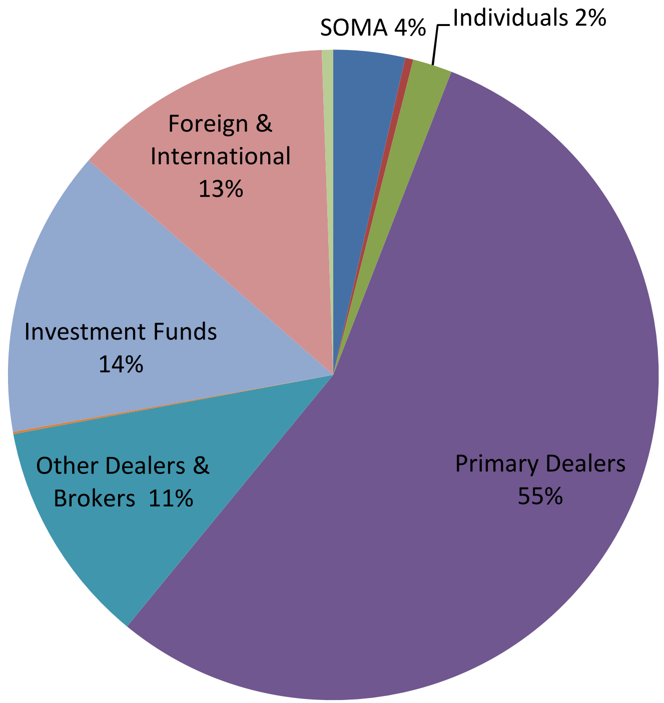


*FY2006 through FY2010

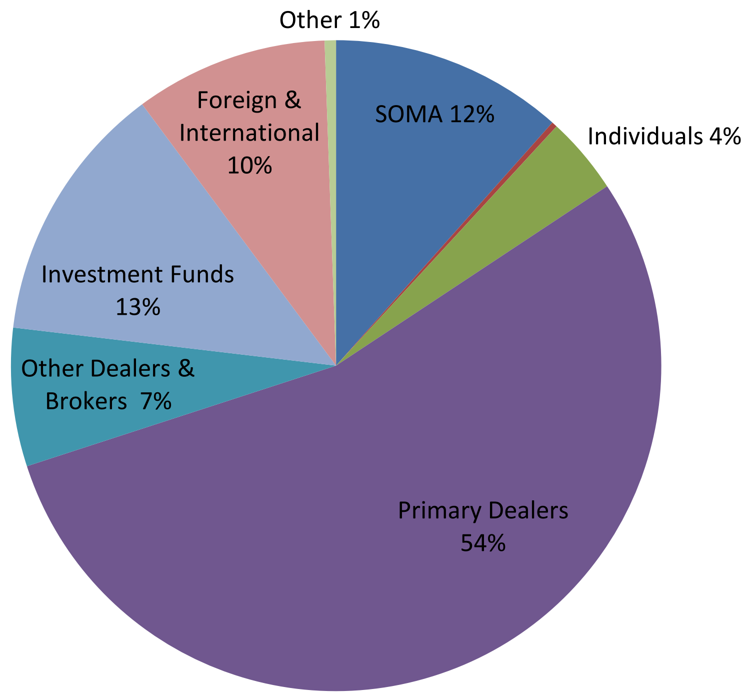
Source: Treasury Investor Class Data; Data through 6/30/2011

Primary Dealers Remain the Largest Purchaser of Treasury Bills

FY2011 YTD: Average Investor Class Allotments



Five-Year Average of Investor Class Allotments*

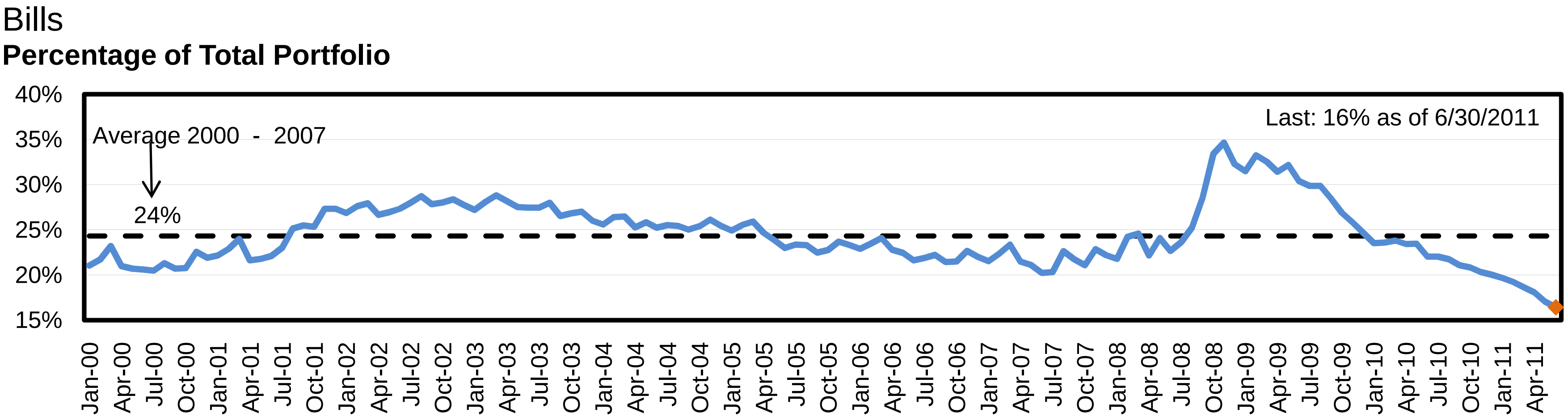


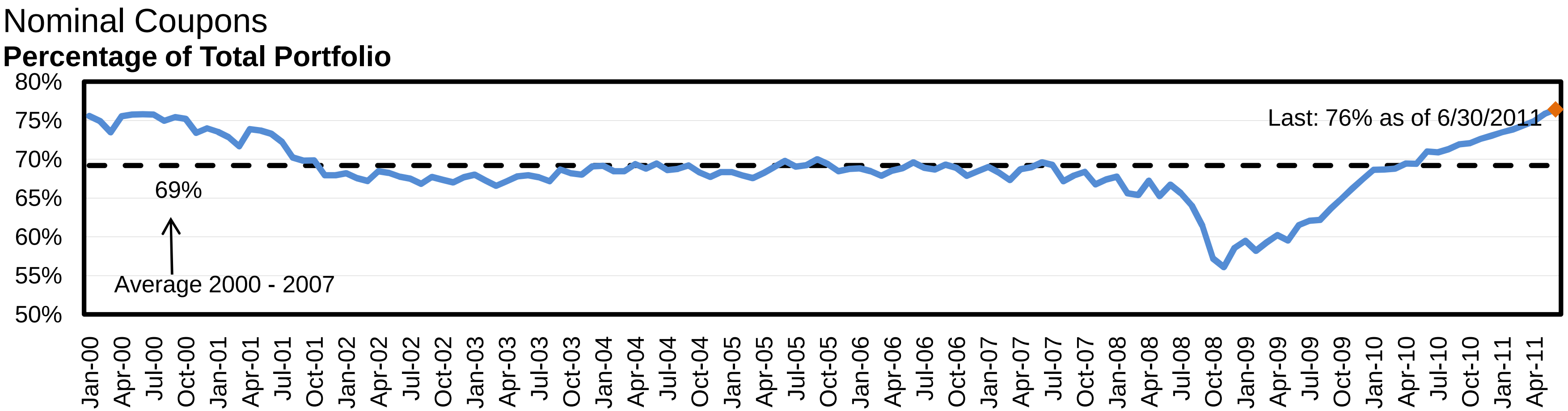
*FY2006 through FY2010

Source: Treasury Investor Class Data; Data through 6/30/2011

PORTFOLIO METRICS

Nominal Coupons and Bills as a Percentage of the Portfolio



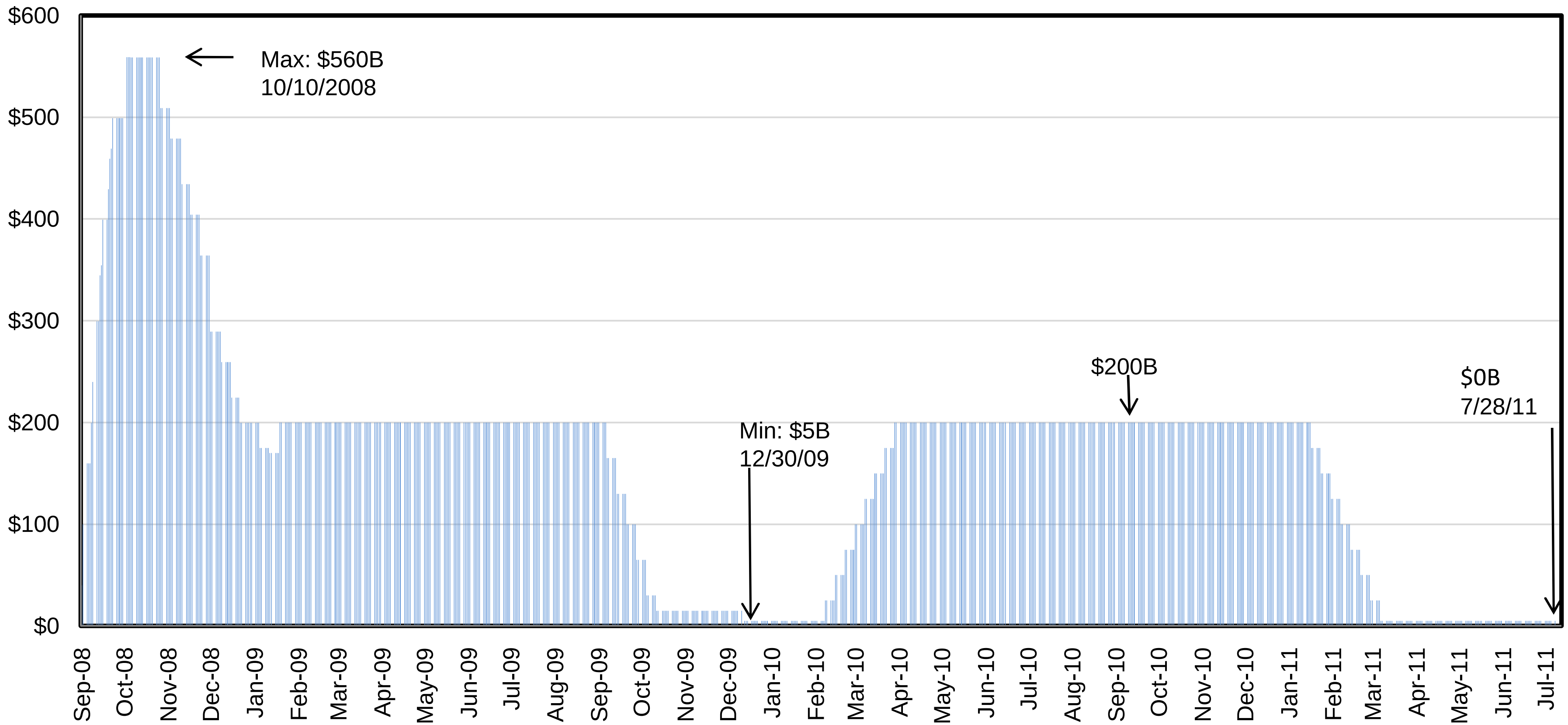


Notes: Bills includes SFP and CMBs; Percentage figures are rounded

Treasury has Suspended the SFP Due to Debt Limit Negotiations

Treasury Supplementary Financing Program Cash Balance

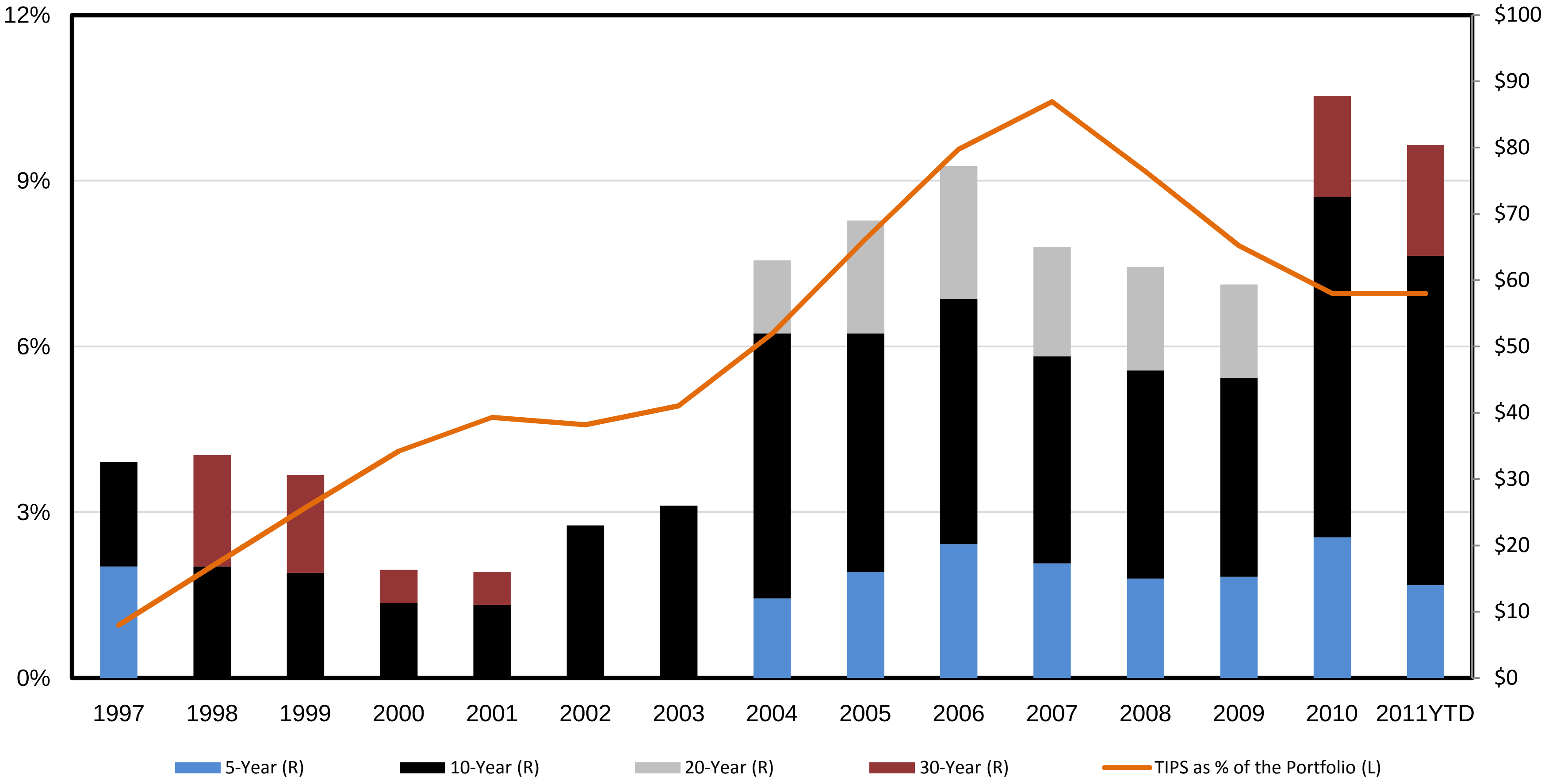
In Billions $



TIPS Issuance Will Continue to Increase

TIPS

Calendar Year Issuance in Billions $, Percentage of Portfolio

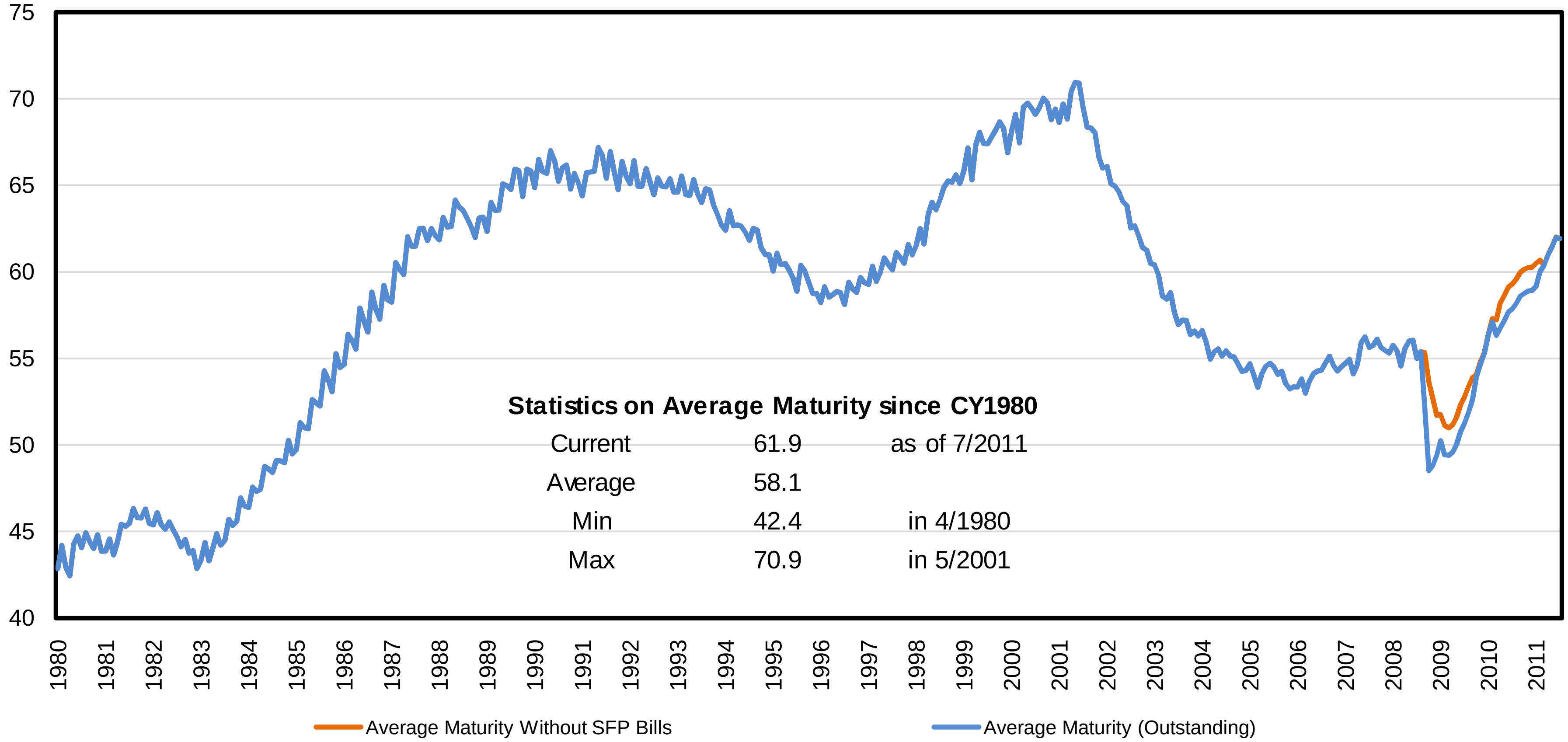


Note: Data through 7/31/2011

Average Maturity of the Debt Continues to Lengthen

Average Maturity of Marketable Debt

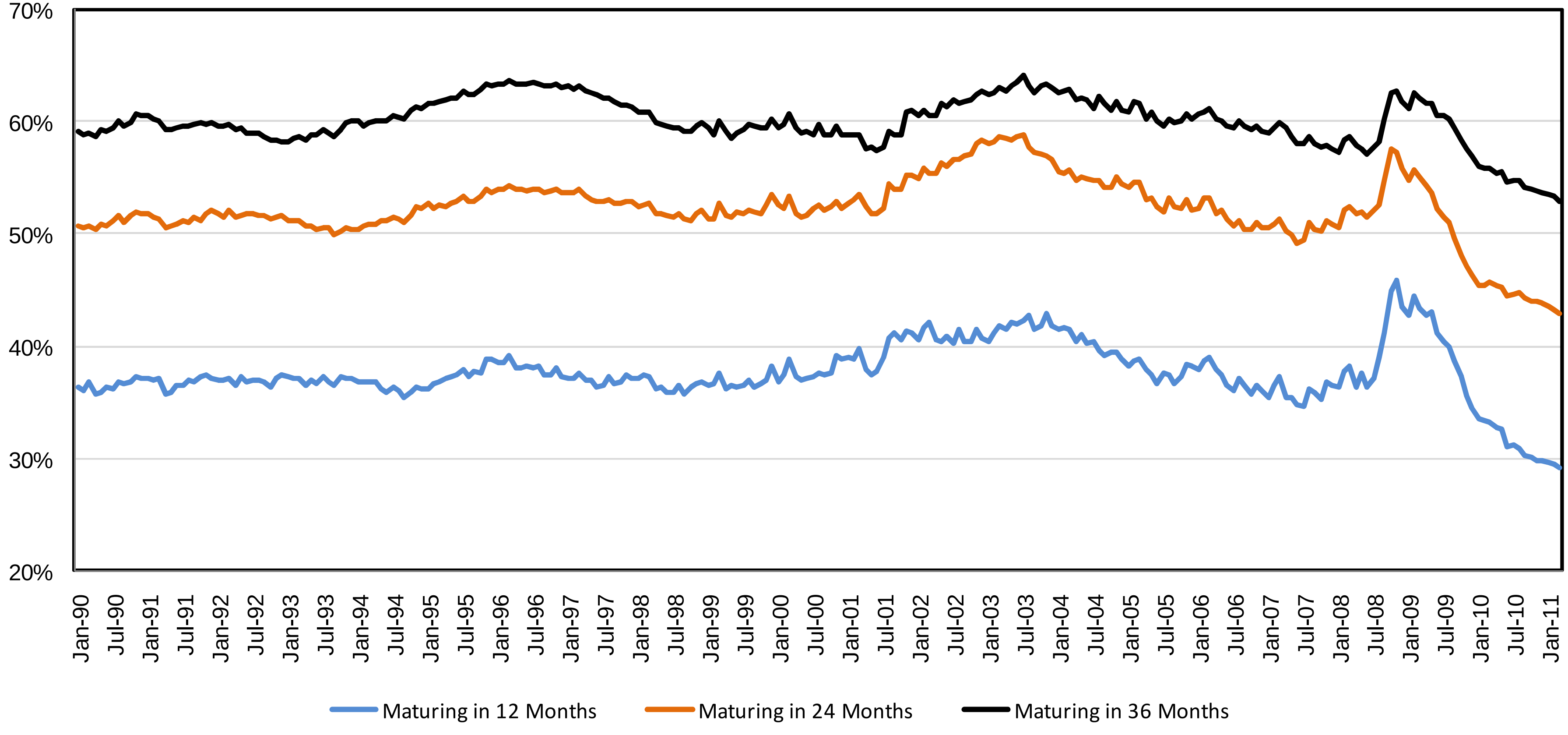
In Months



Note: Data through 7/31/2011

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

Percentage of Debt Maturing in Next 12 to 36 Months

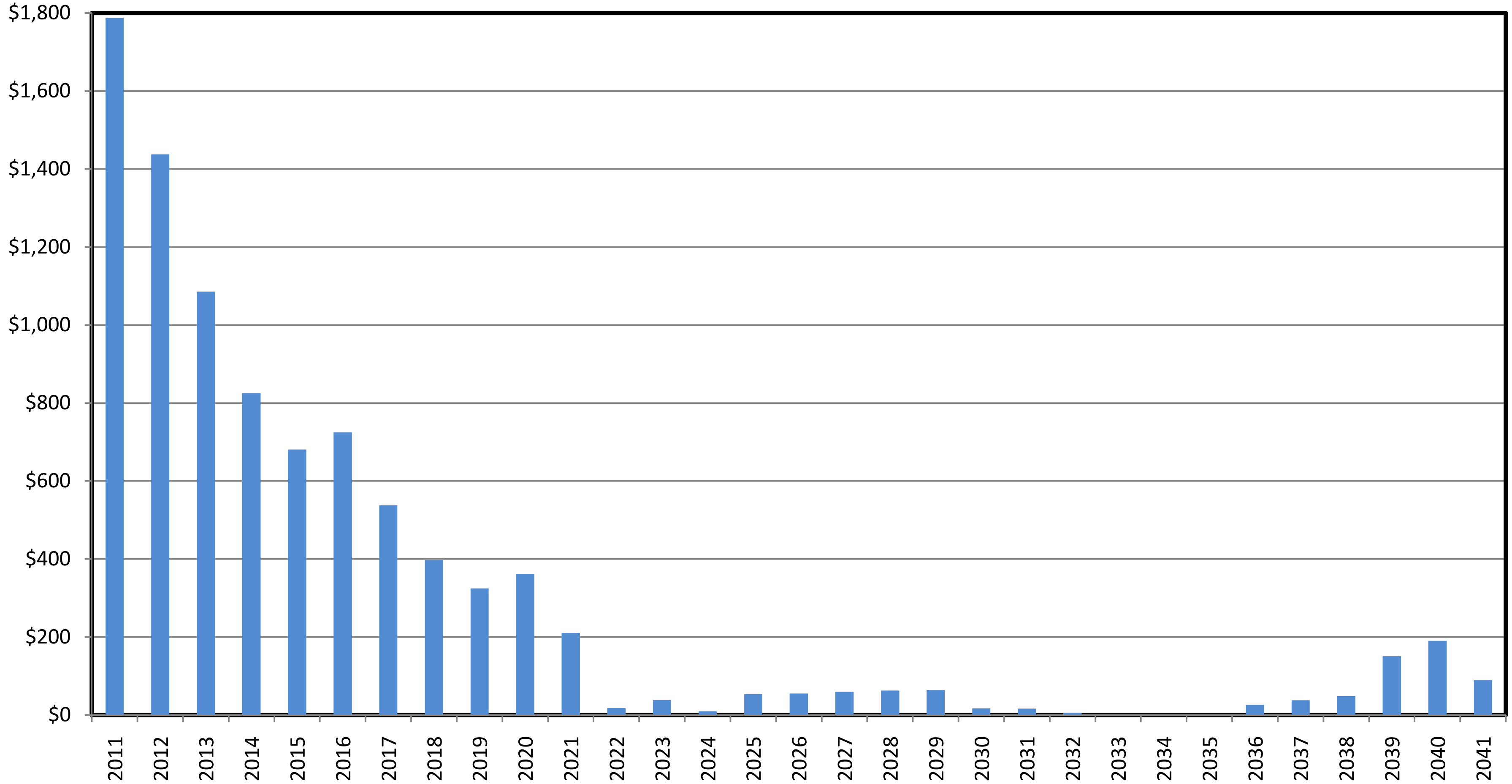


Note: Data through 6/30/2011

Treasury Refinancing Needs will be Elevated in Coming Years

Maturity Profile of Outstanding Debt

Calendar Year in Billions $



Note: Data through 6/30/2011

LONG-TERM CHALLENGES

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

U.S. Treasury Borrowing Advisory Committee Presentation to Treasury

August 2, 2011

Charge:

Cost and Benefits of Extending Average Maturity

In past meetings, the Committee has expressed a desire to Treasury to continue to lengthen the average maturity of debt outstanding. Please discuss the costs and benefits of extending the average maturity and frameworks for quantifying those costs and benefits.

Given a goal of funding the government as efficiently as possible over the long term

Major Considerations are:

- Total of interest expense over time
- Volatility of interest expense through time
- Impact on the real economy
- Rollover/Liquidity Risk

Debt Service is a Function of Many Variables

Debt Service = Outstanding Debt * Average Coupon

This is a function of many variables

Some Treasury controls:

- Past debt issuance
- Current debt issuance strategy
- Debt management communication policy

and many Treasury does not control:

- Outstanding stock of debt
- Current deficit
- Interest rates
- GDP growth
- Inflation

Consider the Following Regression:

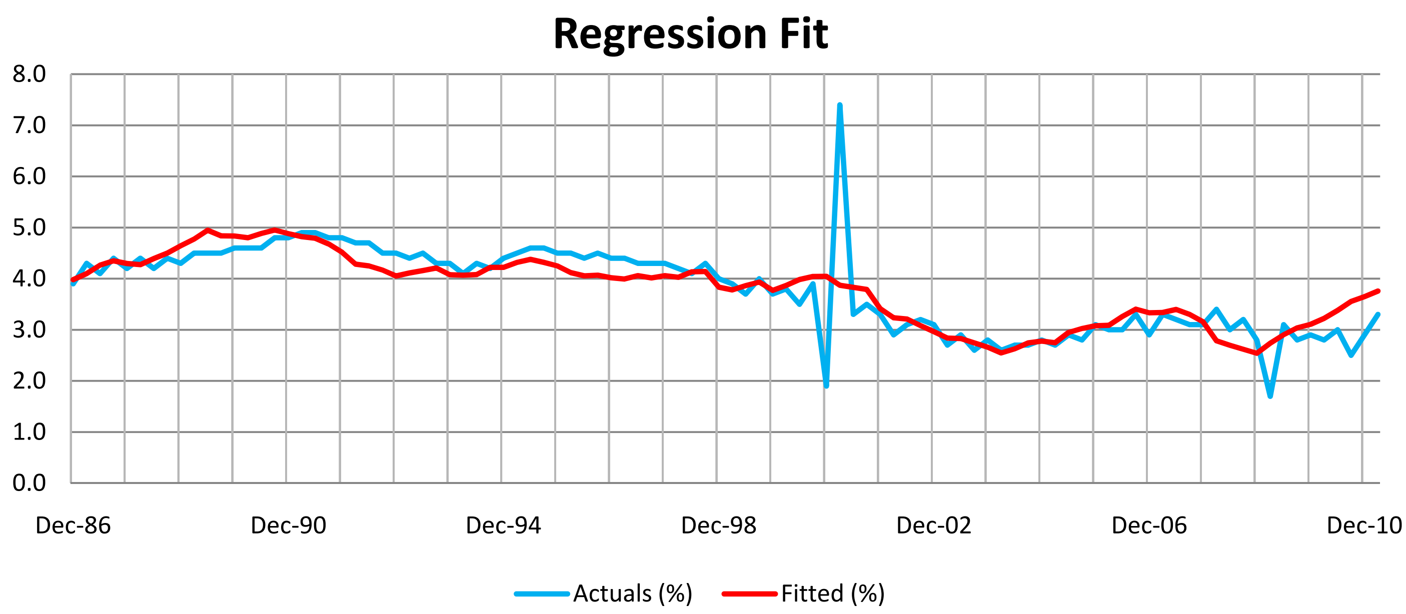
DebtServ_GDP = a + b_1 * GDP_YY + b_2 * FFR + b_3 * Avg_Mat + b_4 * Debt_GDP + e

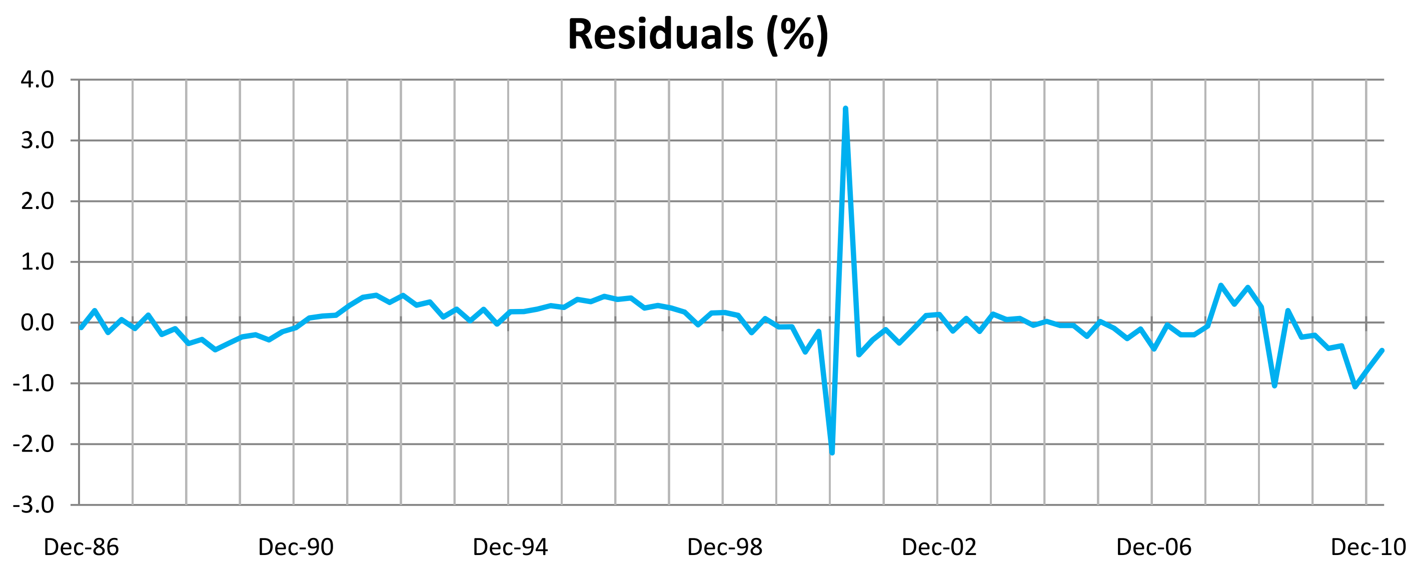
Fig. 1 Definition and Summary Statistics

Variable	Definition	Mean	Std Dev	Min	Max
DebtServ_GDP	Interest payment to nominal GDP Ratio (%)	3.8%	0.9%	1.7%	7.4%
GDP_YY	Real GDP Y/Y Growth (%)	2.7%	1.7%	-4.1%	5.4%
FFR	Effective Fed Funds Rate (%)	4.3%	2.5%	0.1%	9.7%
Avg_Mat	Average Maturity (Months)	64	7	46	73
Debt_GDP	Debt to nominal GDP Ratio (%)	42.2%	7.1%	31.9%	63.8%

Fig. 2 Regression Results & Interpretation

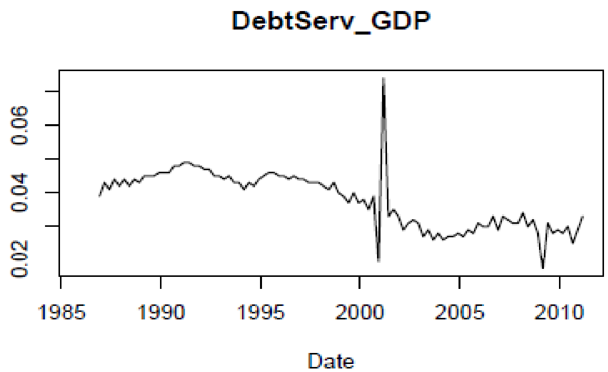
Variable	Beta	p-Value	Interpretation
Intercept	-2.18	< .0001	
GDP_YY	-0.05	0.0185	With 1% rise (fall) in GDP growth from a year ago, debt service costs (DSC), meansured as percent of GDP, will fall (rise) by 0.05%, all else equal
FFR	0.16	< .0001	With 1% rise (fall) in FFR,DSC will rise (fall) by 0.16%, all else equal
Avg_Mat	0.05	< .0001	With average maturity rising (falling) by 1 month, DSC will rise (fall) by 0.05%, all else equal
Debt_GDP	0.04	< .0001	With 1% rise (fall) in debt to GDP ratio, DSC will rise (fall) by 0.04%, all else equal
N=95	Adj.R-sq = 84%		

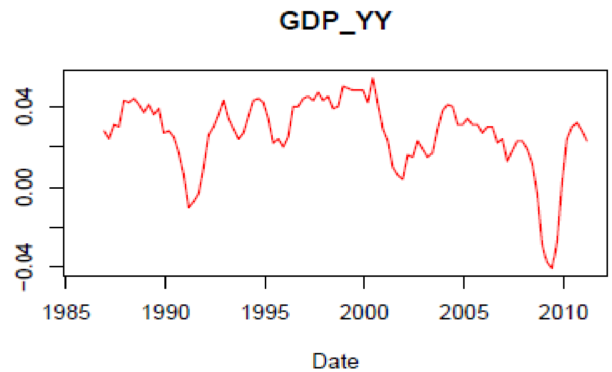




- Spike is caused by calendar effects from year end falling on a weekend which forced interest payments on non-marketable debt to be pushed into January.

Data Series:


DebtServ_GDP
0.02
0.04
0.06
1985
1990
1995
2000
2005
2010
Date


GDP_YY
-0.04
0.00
0.04
1985
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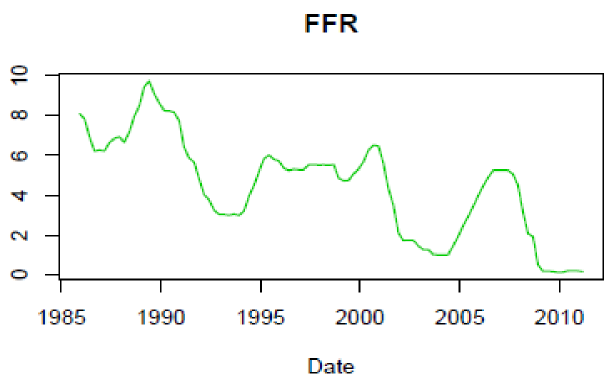
1995
2000
2005
2010
Date


FFR
0
2
4
6
8
10
1985
1990
1995
2000
2005
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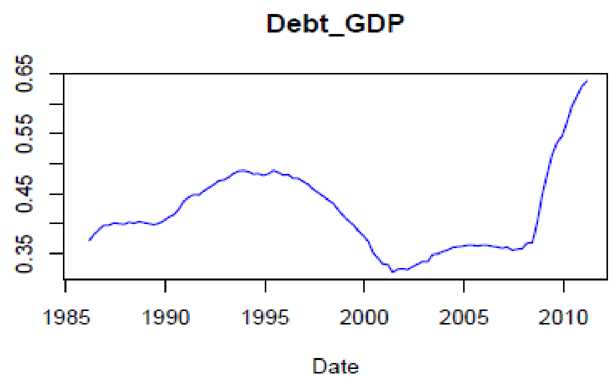
Date


Debt_GDP
0.35
0.45
0.55
0.65
1985
1990
1995
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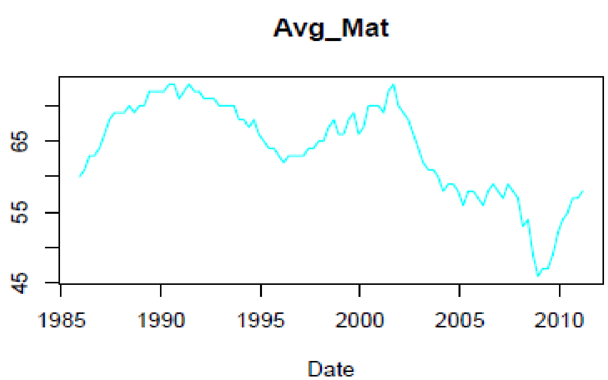
2005
2010
Date


Avg_Mat
45
55
65
1985
1990
1995
2000
2005
2010
Date

Observations from Regression

- Average Maturity is only one of many variables that impacts debt service to GDP

- Increasing Average Maturity increases debt service to GDP

- Increasing Average Maturity can have a potential feedback effect through the real GDP variable via a “reverse LSAP”. The following pages explore the magnitude of this effect during QE2 and under a maturity extension strategy.

Activity During QE2 Period
11/12/10 to 6/30/2011

	Fed's SOMA Portfolio		Stock of Treasury Debt		Treasury Stock - SOMA	
	Change 11/12/10 to 6/30/2011		Change 11/12/10 to 6/30/2011		Change 11/12/10 to 6/30/2011	
Maturity	Face Amt	DV01	Face Amt	DV01	Face Amt	DV01
2Y	52,044	8,699,000	245,000	40,789,000	192,956	32,090,000
3Y	156,082	40,646,000	256,000	67,621,000	99,918	26,975,000
5Y	184,369	83,701,000	280,000	127,362,000	95,631	43,661,000
7Y	196,428	121,372,000	232,000	144,474,000	35,572	23,102,000
10Y	137,149	113,012,000	177,000	155,712,000	39,851	42,700,000
30Y	32,555	52,276,000	113,000	190,549,000	80,445	138,273,000
	758,627	**419,706,000**	**1,303,000**	**726,507,000**	**544,373**	**306,801,000**

Face amount measured in millions, DV01 measured in $/bp at current yield levels

▪Maturity extension during LSAP2 added 75-115 million of longer duration DV01s

▪Based on the OLS approach in Gagnon, J., M. Raskin, J. Remache and B. Sack (2010), this is equivalent to a change in the term premium from 4.0 to 6.1 bp

▪The calculation method is described with a concrete numerical example on page 25 of Gagnon, J., M. Raskin, J. Remache and B. Sack (2010)

"the Federal Reserve will have purchased a total of approximately $850 billion in 10-year equivalents. This is roughly 6 percent of 2009Q4 nominal GDP, which implies that asset purchases reduced the term premium by 38 basis points."

	LSAP2	Lower Bound	Upper Bound
Duration (01s)		75,000,000	115,000,000
01s/ 1million Notional 10y Note		850	850
Notional 10y Note Equivalents	-850,000,000,000	88,250,000,000	135,300,000,000
Nominal GDP (Q4 2009)	14,277,000,000,000	14,277,000,000,000	14,277,000,000,000
10y Notes as Percent of GDP	-5.95%	0.62%	0.95%
OLS Regression Coefficient (From Table 2, p. 34 Gagnon et al.	0.064	0.064	0.064
Change in Term Premium	-38.1bp	4.0bp	6.1bp

▪ Note that Chung, Laforte, Reifschneider and Williams (2011) estimate that there is a roughly 4 to 1 ratio between changes in the term premium and changes in the federal funds rate. Thornton (2011) has questioned the stability of this estimate.

▪Extending the Average Maturity to 70 months would add 375 million to 475 million additional duration to the market

▪Adding this much duration to the private sector would increase term premiums 19 to 24bp

	Lower Bound	Upper Bound
Duration (01s)	375,000,000	475,000,000
01s/ 1million Notional 10y Note	850	850
Notional 10y Note Equivalents	441,200,000,000	558,800,000,000
Nominal GDP (Q1 2011)	15,018,000,000,000	15,018,000,000,000
10y Notes as Percent of GDP	2.94%	3.72%
OLS Regression Coefficient	0.064	0.064
Change in Term Premium	18.8bp	23.8bp

Interest Expense Over Time

- Historical backtest of long vs. short maturity strategies
  - Point-in-Time decision to issue a new 5Y bond or rolling 3M Tbills for 5 years (synthetic floater)
  - Quarterly interest expense for a fixed size portfolio all in a single maturity

- Omits the reverse LSAP feedback on GDP and rates

Lifetime cost of a new 5Y loan

- Assume a one-time funding increase with a 5Y horizon
- Compute average rates over the next 5Y of a 5Y bond vs rolling 3M Tbills
- Costs and vol of lifetime costs are both lower for Tbills!

	CMT05Y	Synthetic5
Mean	6.86	5.70
StdDev	2.68	2.33

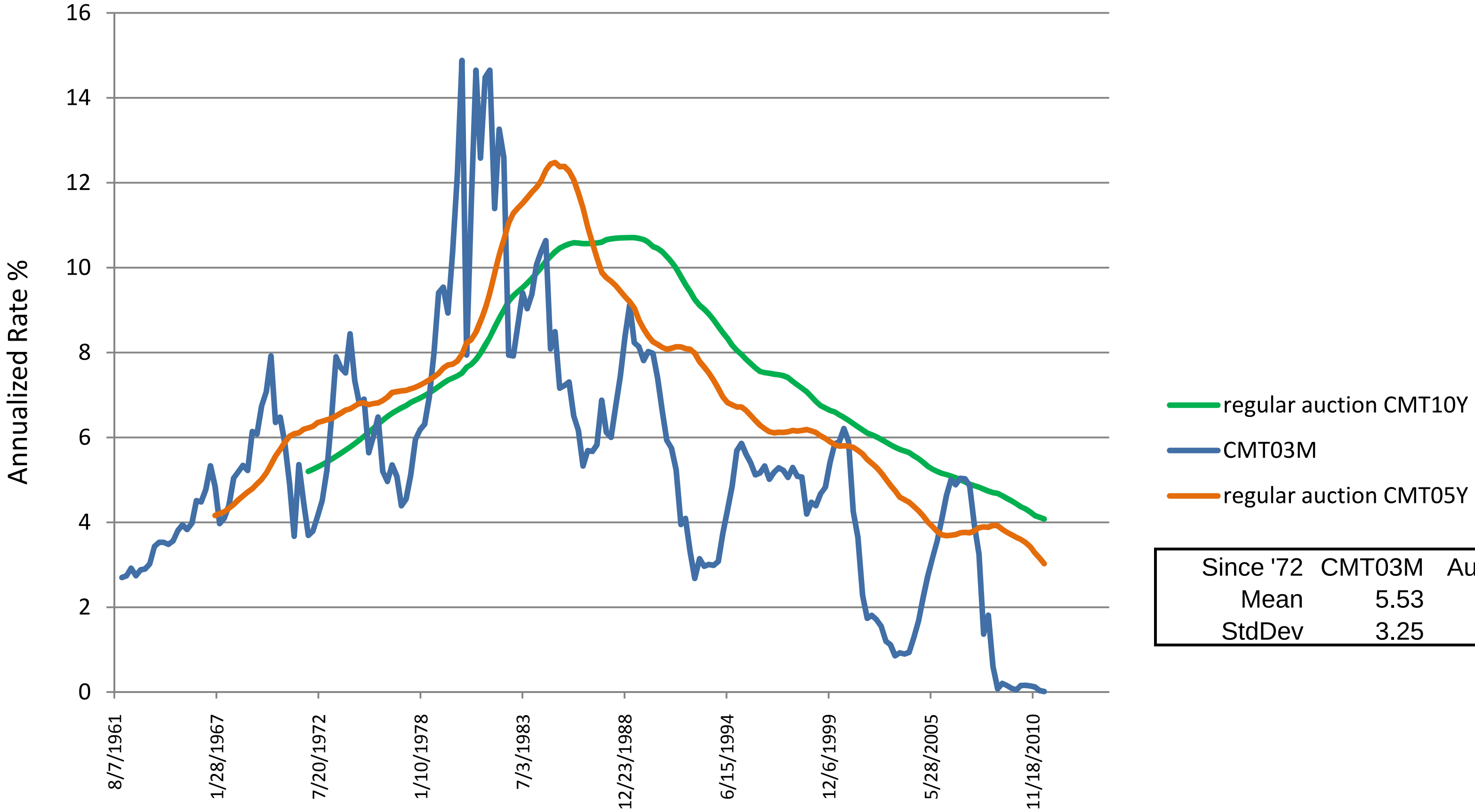
Lifetime cost of a new 10Y

- Same experiment using 10Y bond and using average rates over the 10Y life of the bond

	CMT10Y	Synthetic10
Mean	7.08	5.96
StdDev	2.57	2.02

Quarterly Cost of Long-Term Debt

- Quarterly interest expense for a constant-size debt funded with a single maturity
- Tbills, 5Y with 5% auctioned each quarter, or 10Y with 2.5% auctioned each quarter
- Pay Now or Pay Later – the late 70's spike affects Tbills first, but it affects 5's and 10's more over time

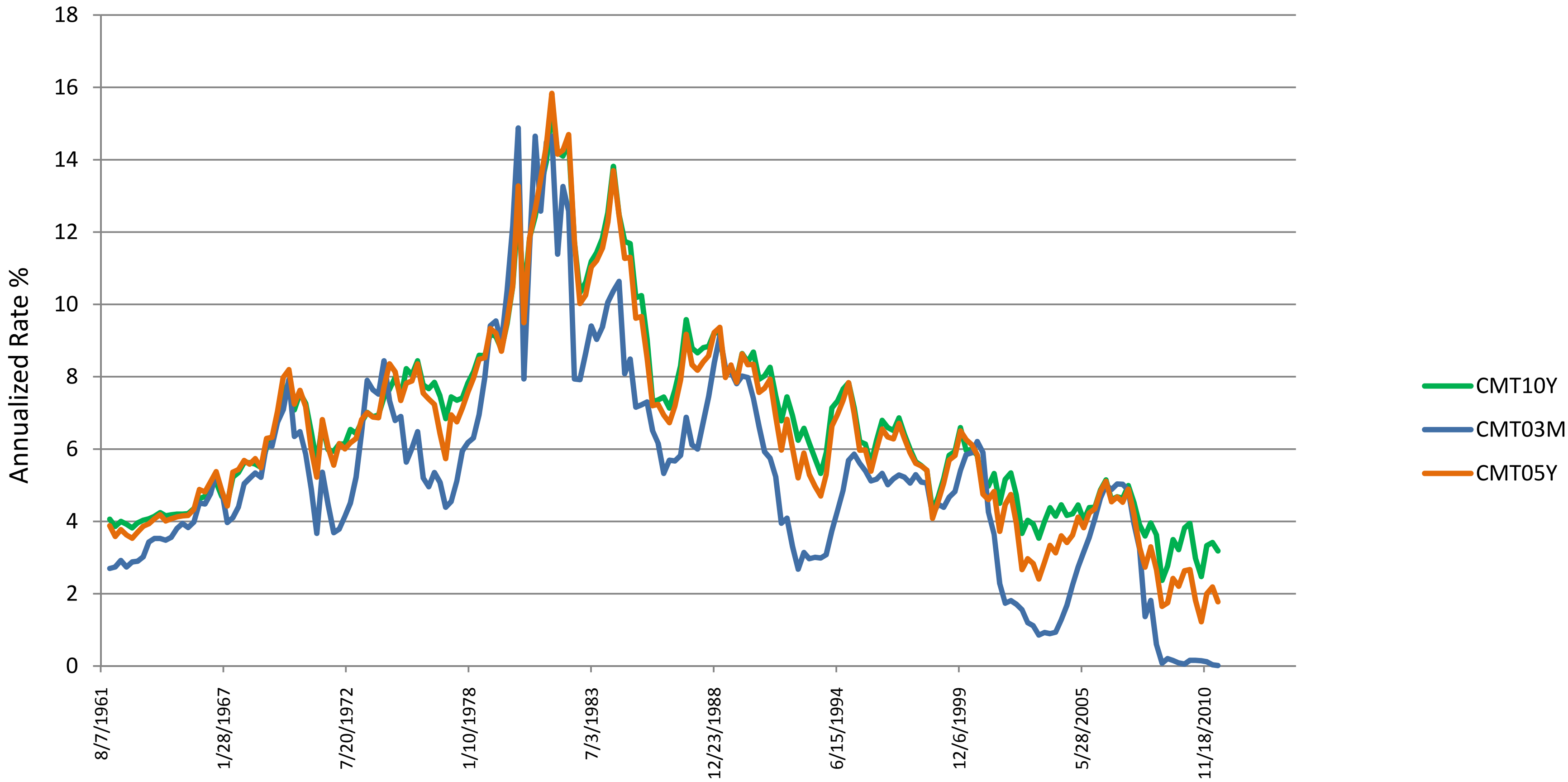


Since '72	CMT03M	Auction5	Auction10
Mean	5.53	7.05	7.38
StdDev	3.25	2.47	2.04

Historical Rates

- Tenor extension has small effect on spot rate vol
- The advantage of longer tenors is in staggering maturities to average out the impact of each auction

Since '62	CMT03M	CMT05Y	CMT10Y
Mean	5.33	6.47	6.75
StdDev	2.99	2.84	2.65



What Strategy is Optimal Today?

- Since ‘62, issuing a synthetic floater beats issuing a 5Y 72% of the time and a 10Y 60%
- Locking in long rates only reduces cost when rates rise by more than the term premium
- We can’t anticipate rate changes but we can measure the term premium now to decide which product is more favorable

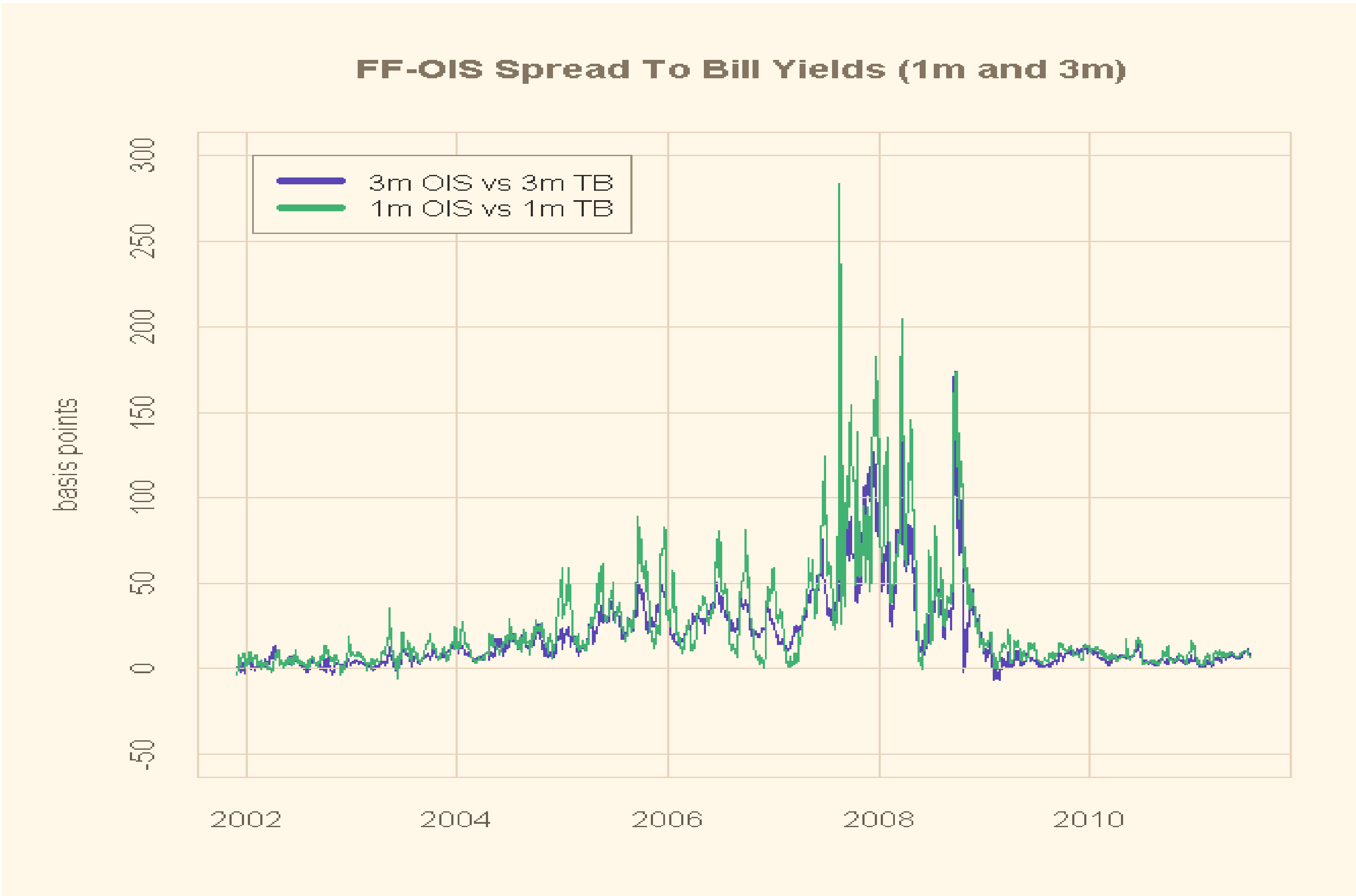
Estimating the Term Premium

From Gagnon et al.

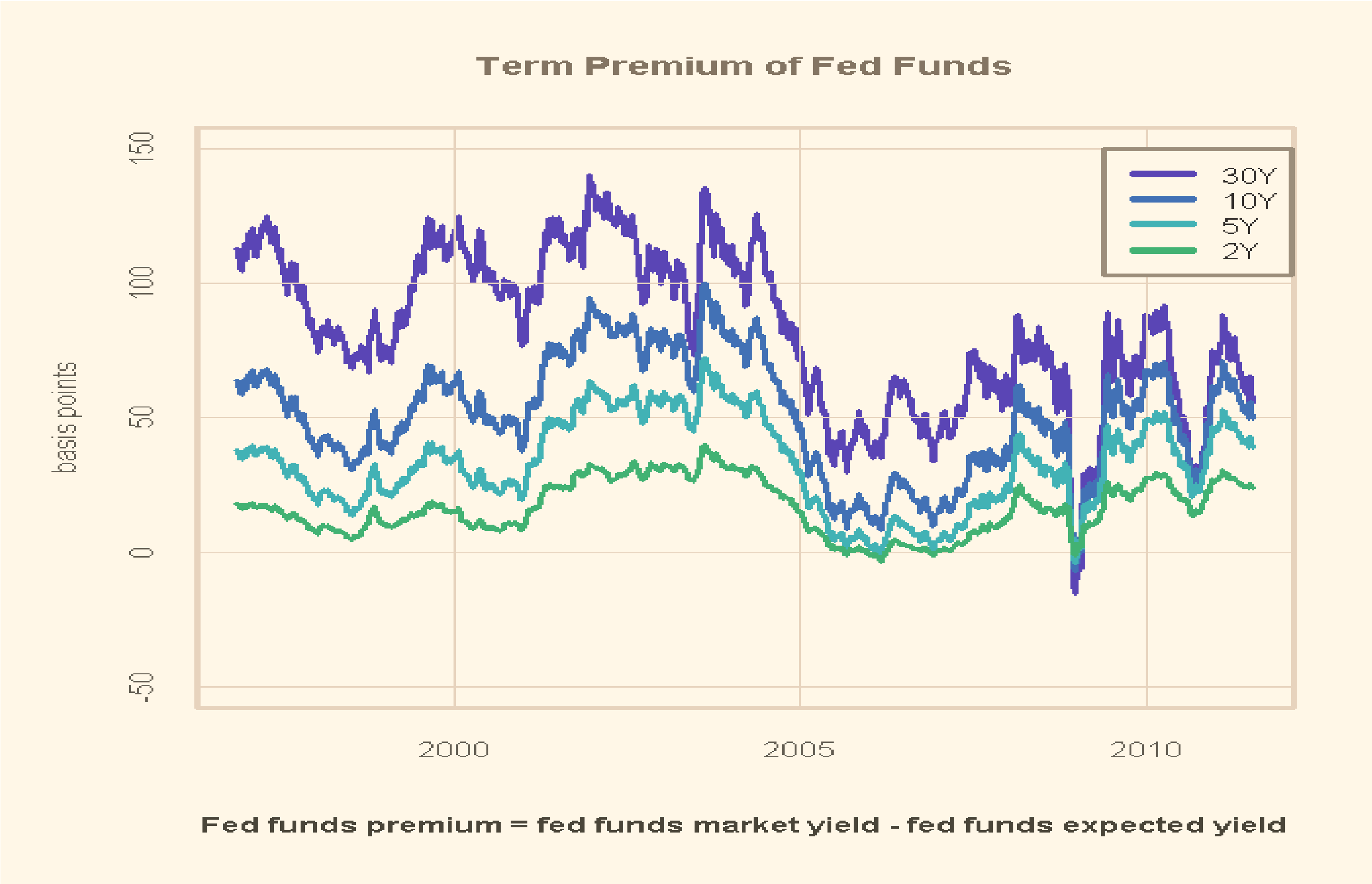
“For Treasury securities, the most important component of the risk premium is referred to as the ‘term premium,’ and it reflects the reluctance of investors to bear the interest rate risk associated with holding an asset that has a long duration. The term premium is the additional return investors require, over and above the average of expected future short-term interest rates, for accepting a fixed long-term yield.”

- T-bills represent Treasury’s short term borrowing rates but their future expected values are unobservable quantities.
- Forward Fed funds OIS (FF-OIS) swap rates are the best proxy.
- FF-OIS term premium can then be calculated as the difference between quoted long term FF-OIS swap rates and their equivalent calculated with estimated future expected FF-OIS rates.
- Fixed long term UST issuance requires an additional term premium over and above what is present in the long term Fed funds OIS swaps.
- For any particular bond, we define the total term premium to be the sum of the FF-OIS term premium and the bond’s FF-OIS asset swap spread.

This calculation should represent a lower bound on the term premium because Tbill yields are typically below comparable FF-OIS rates

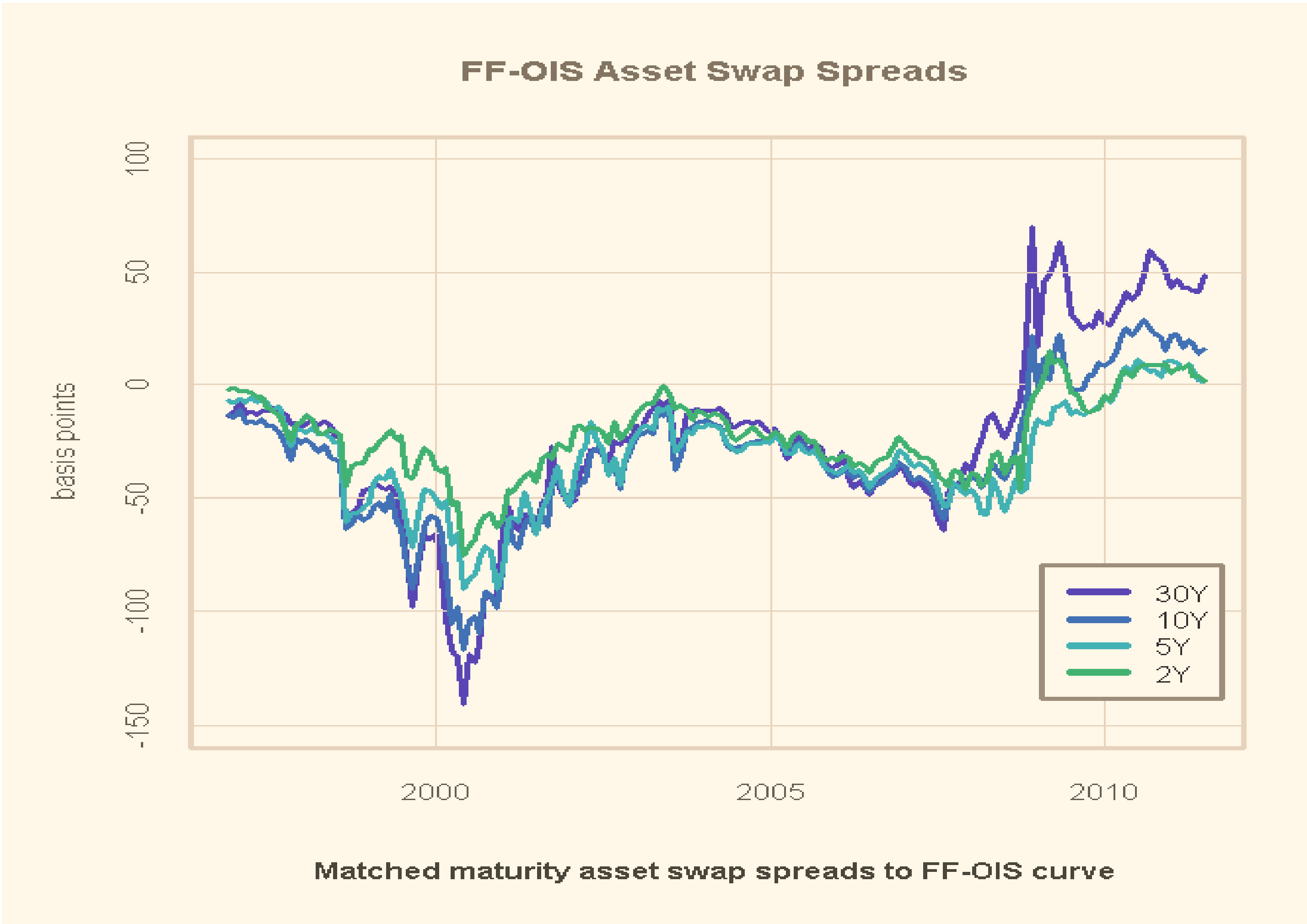


Estimates of the Term Premium Using a Variation of Kim-Orphanides Affine Term Structure Model



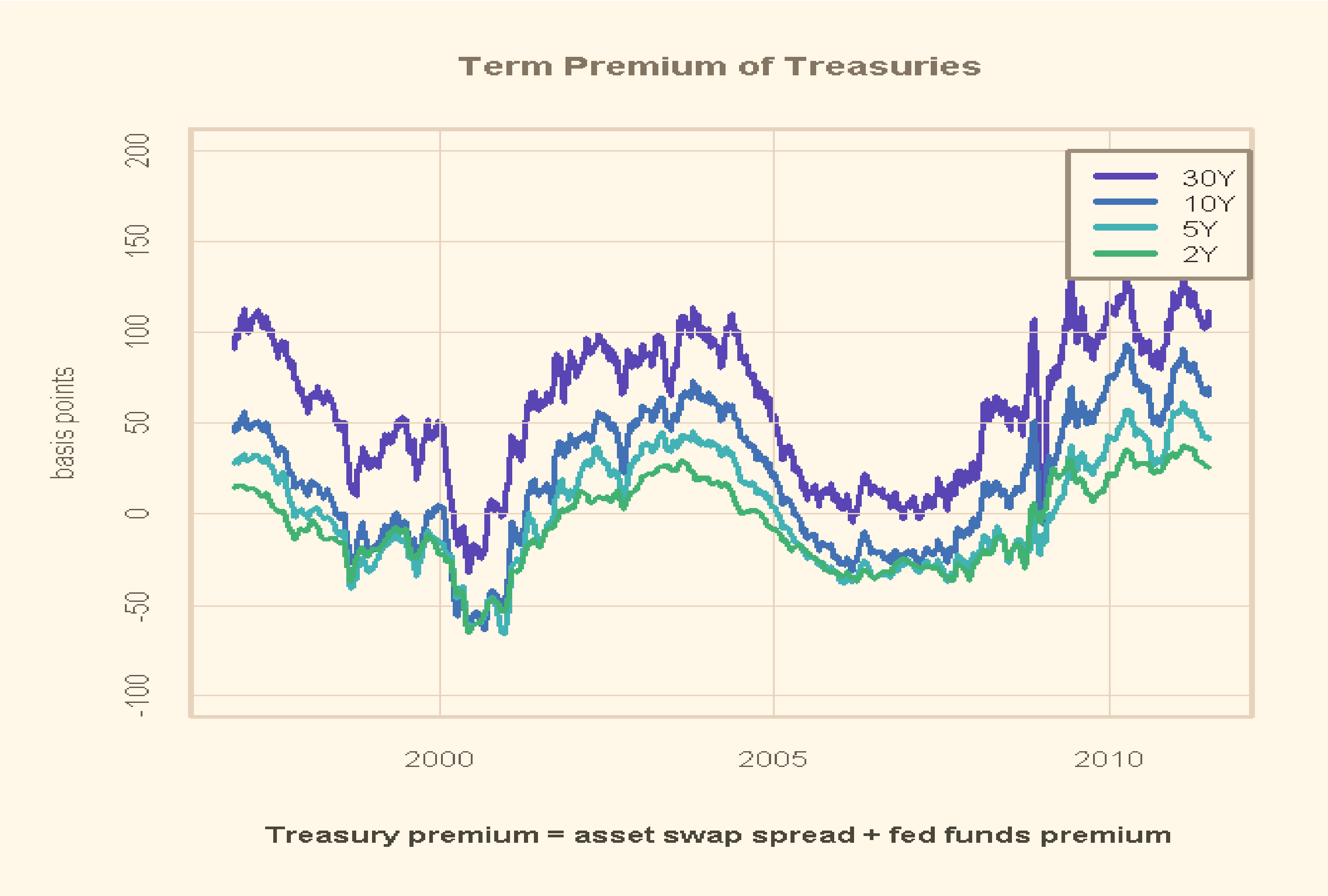
Note: Results are heavily dependent on model structure and parameter values

Matched Maturity Asset Swap Spreads to FF-OIS Curve



Total Term Premium

(FF-OIS term premium + FF-OIS asset swap spread)



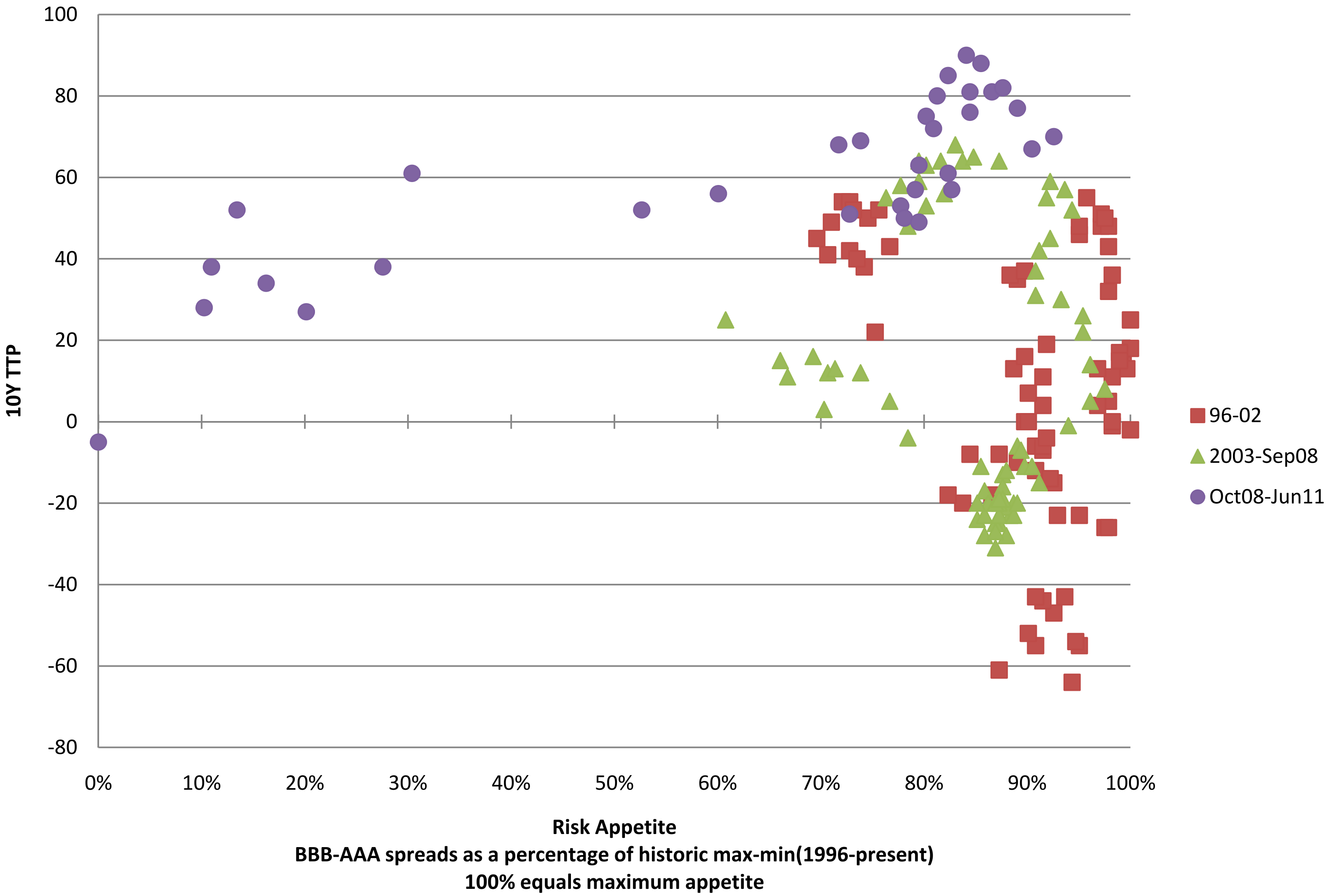
Longer Dated Term Premiums Appear Elevated

Asset swaps confirm premiums are high. Are high premiums due to macro factors or to supply/demand?

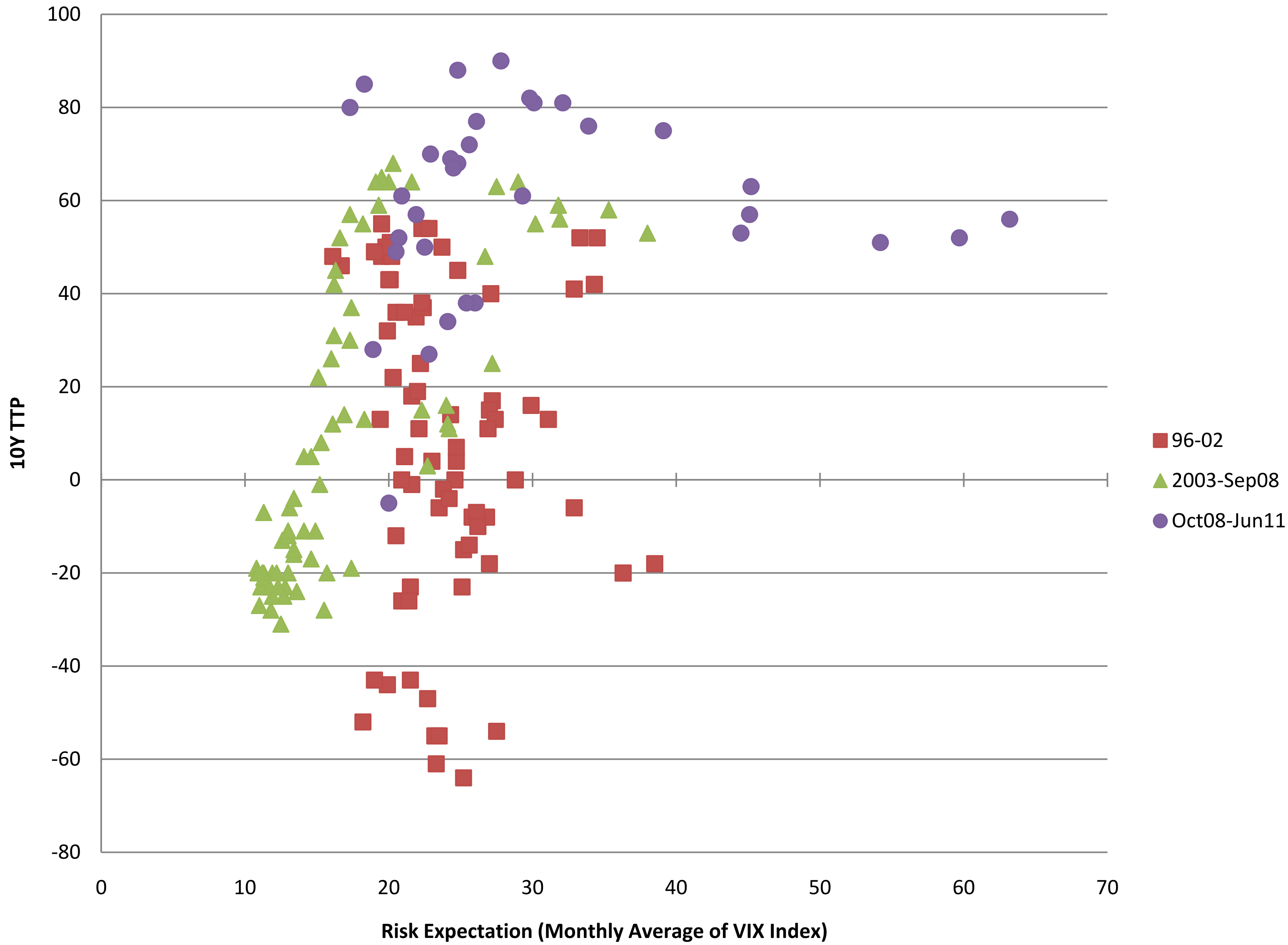
The following charts consider potential drivers such as

- Risk Appetite
- Risk Expectation
- Inflation Expectation
- Public Debt DV01
- Issuance DV01

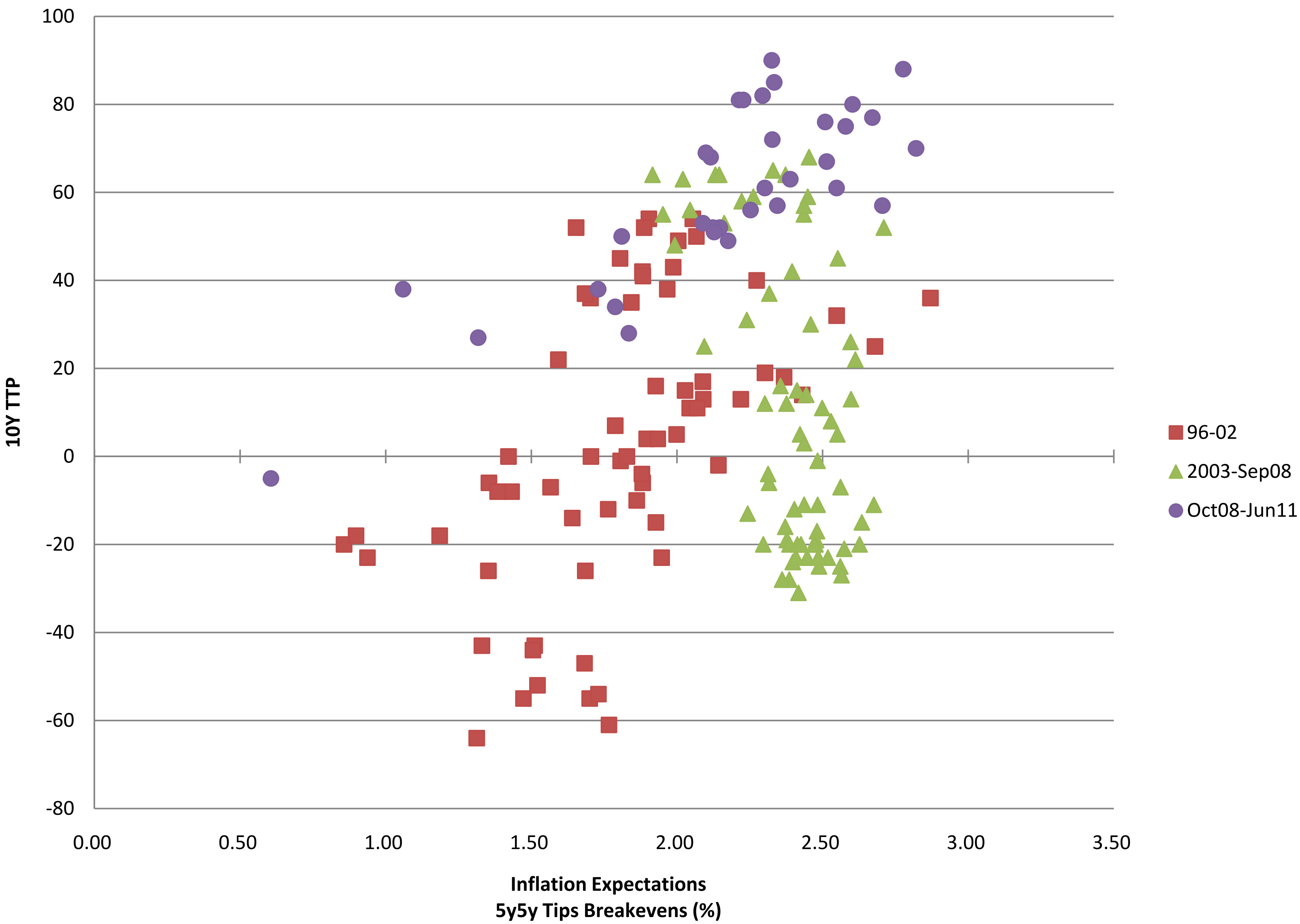
10Y Total Term Premium vs. Risk Appetite

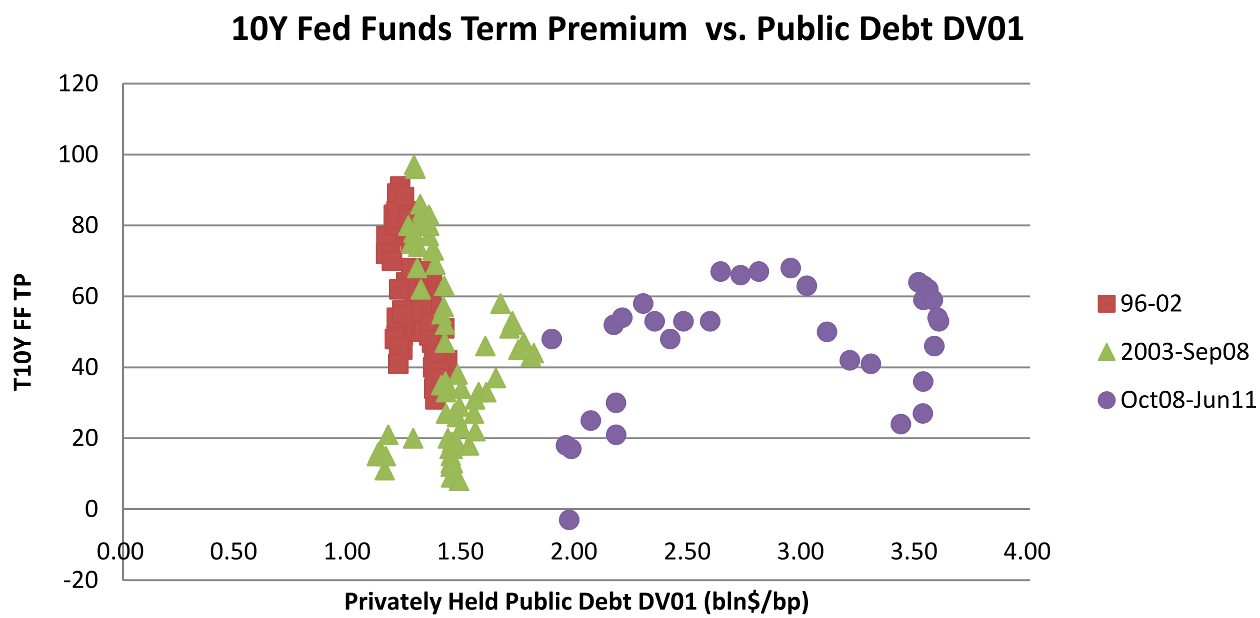


10Y Total Term Premium vs. Risk Expectation

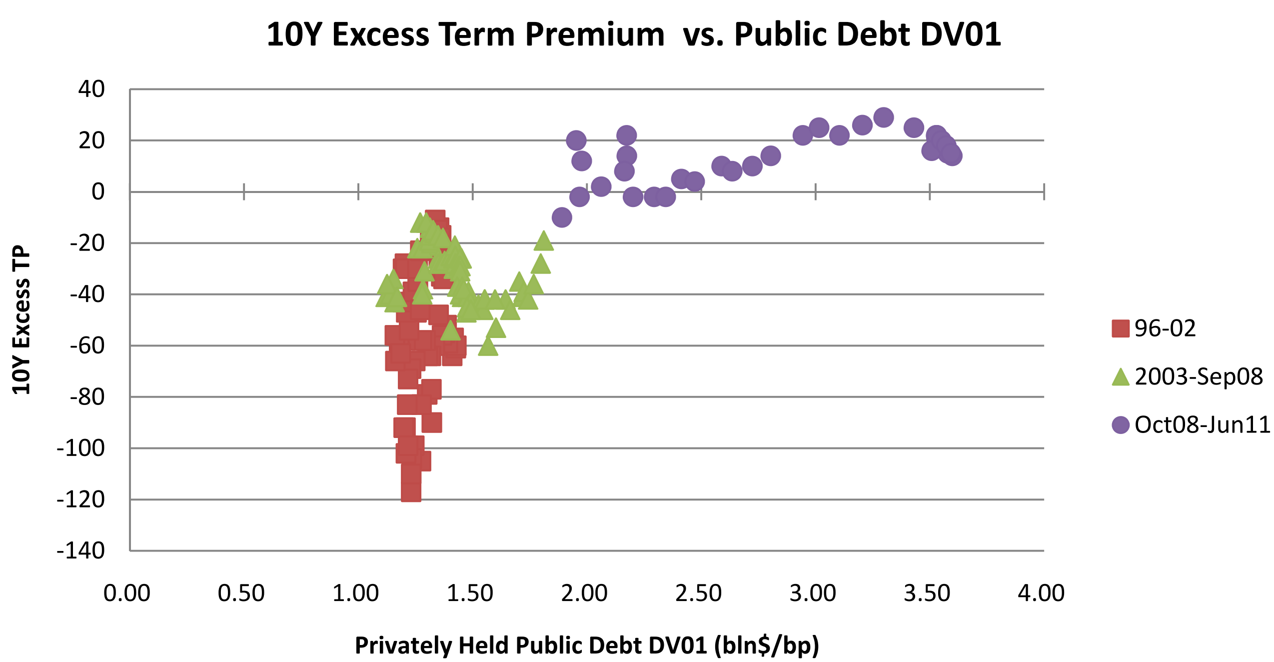


10Y Total Term Premium vs. Inflation Expectations

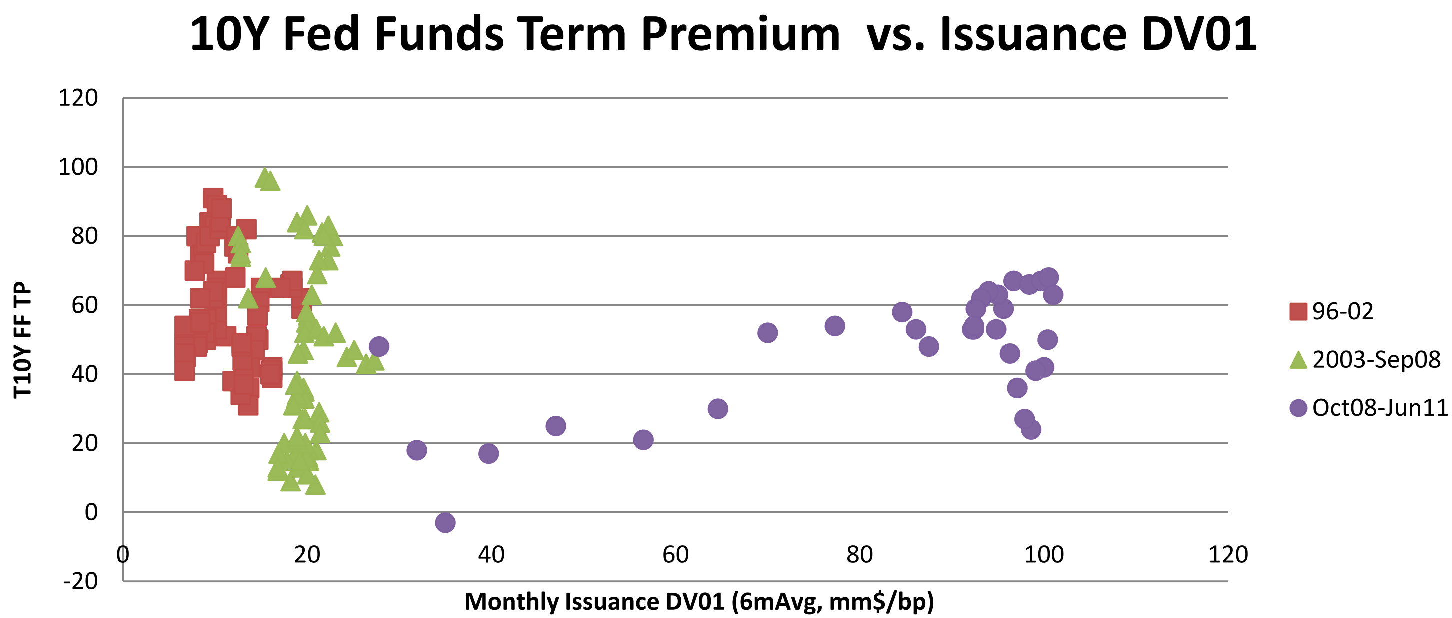


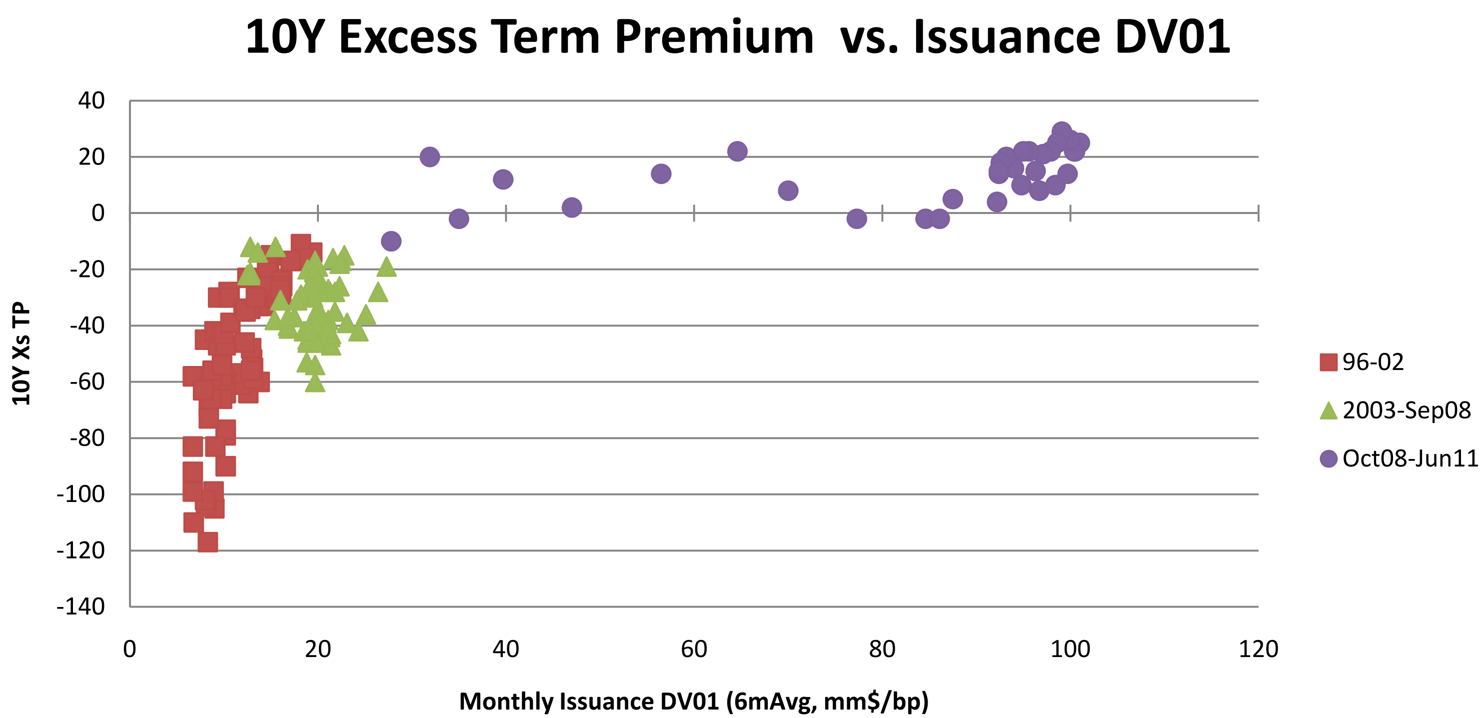


10Y Fed Funds Term Premium vs. Public Debt DV01
120
100
80
60
40
20
0
-20
0.00
0.50
1.00
1.50
2.00
2.50
3.00
3.50
4.00
T10Y FF TP
Privately Held Public Debt DV01 (bln$/bp)
96-02
2003-Sep08
Oct08-Jun11



10Y Excess Term Premium vs. Public Debt DV01
40
20
0
-20
-40
-60
-80
-100
-120
-140
0.00
0.50
1.00
1.50
2.00
2.50
3.00
3.50
4.00
10Y Excess TP
Privately Held Public Debt DV01 (bln$/bp)
96-02
2003-Sep08
Oct08-Jun11

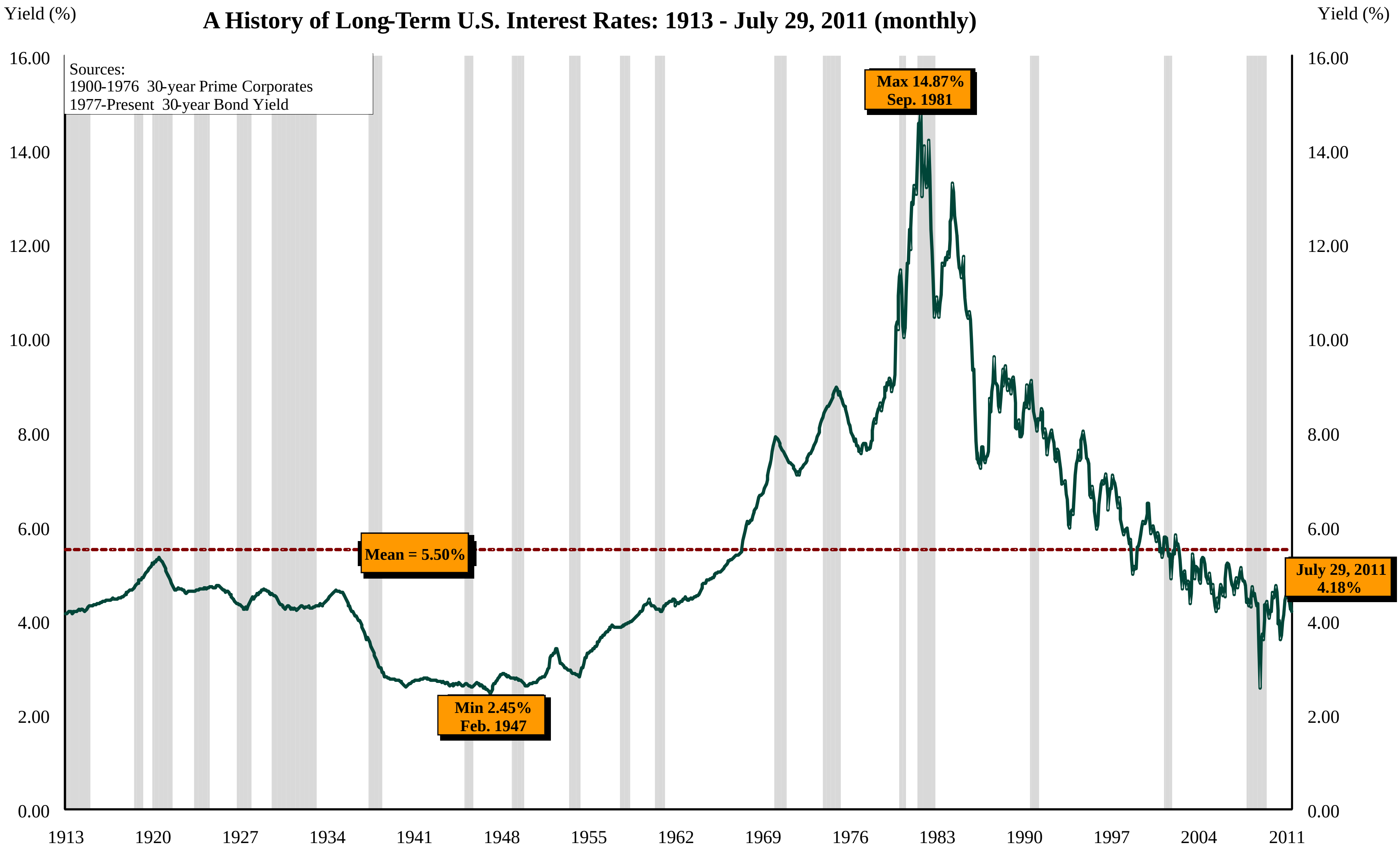

10Y Fed Funds Term Premium vs. Issuance DV01
120
100
80
60
40
20
0
-20
0
20
40
60
80
100
120
T10Y FF TP
Monthly Issuance DV01 (6mAvg, mm$/bp)
96-02
2003-Sep08
Oct08-Jun11


10Y Excess Term Premium vs. Issuance DV01
40
20
0
-20
-40
-60
-80
-100
-120
-140
0
20
40
60
80
100
120
10Y Xs TP
Monthly Issuance DV01 (6mAvg, mm$/bp)
96-02
2003-Sep08
Oct08-Jun11

Preceding Analysis Illustrates Costs of Extension, What are the Benefits?

- **Macro**
  - Nominal rates are low (even if term premium is high)
  - Higher debt levels imply greater exposure to rising interest rates
  - Risk of a rising nominal rate/low growth environment
- **Will reserve currency status continue?**
  - Large, Concentrated Foreign Ownership of Debt
    - Foreign holders would like to diversify
    - May view short-term funding as less stable
  - Other large sovereigns are also increasing debt and competing for capital
  - Other sovereigns have longer average maturities
- **Rollover risk**
  - Traditional rollover risk is likely low since debt is denominated in dollars
  - Combination of high debt service and increasing rollover needs could trigger a funding crisis followed by a decline in currency
  - Floating rate notes could reduce rollover risk by decoupling the maturity and interest rate risk decisions

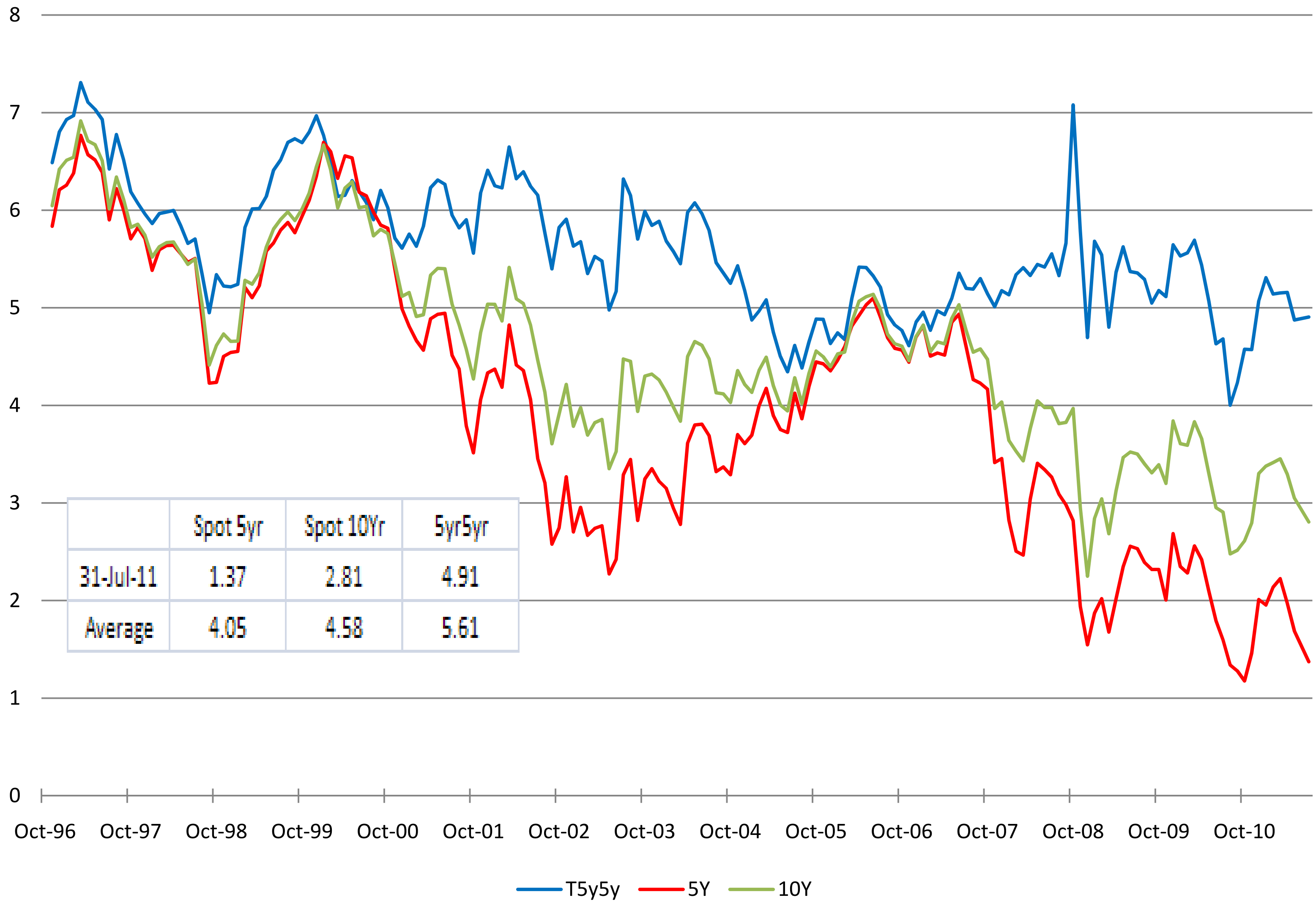
Low Interest Rates Offer Attractive Longer Term Funding on an Absolute Basis



Shaded areas: U.S. Recessions

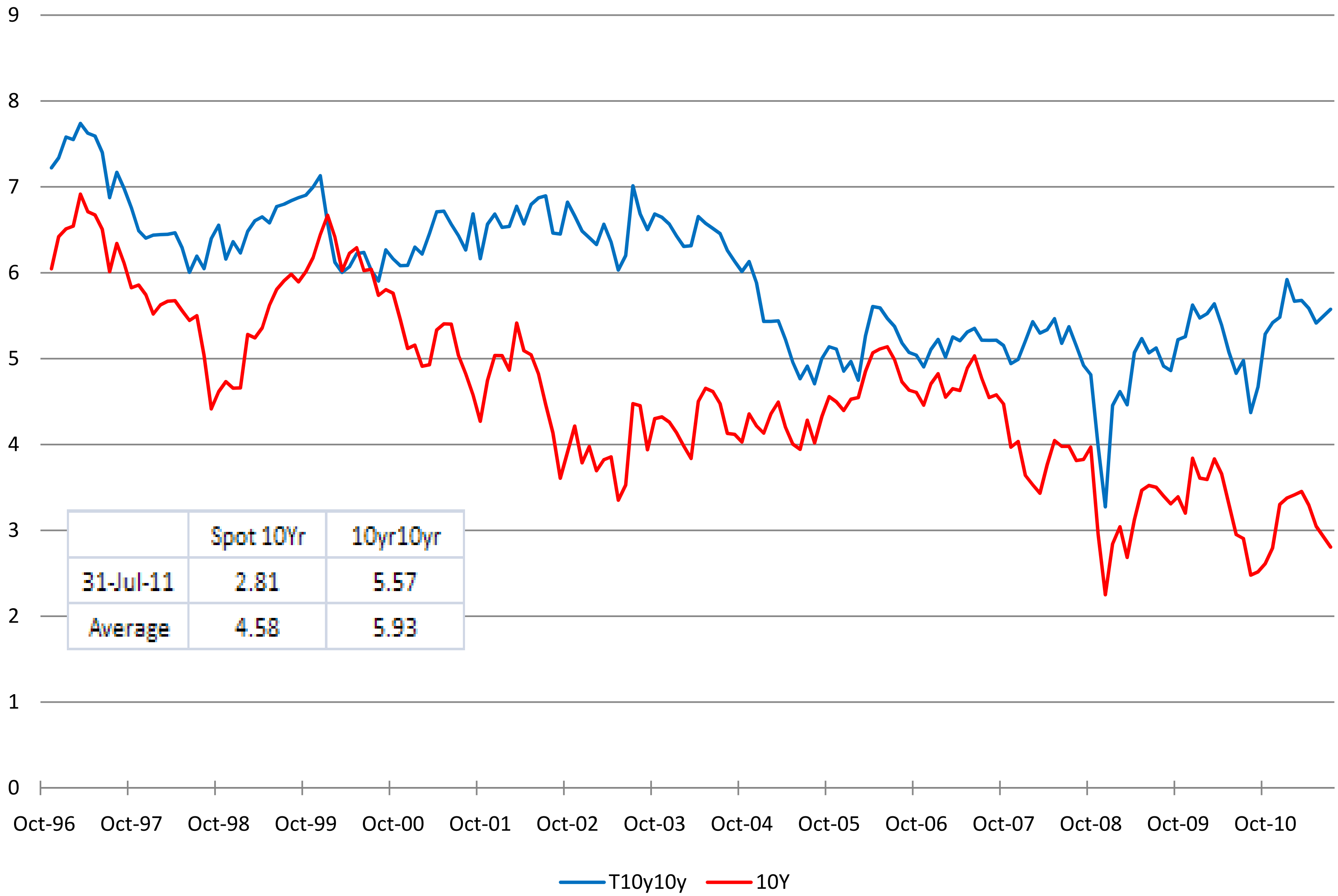
Source: BNY Mellon; Bloomberg; Global Financial Data; NBER

Treasury 5yr5yr vs. Spot 5yr & 10yr



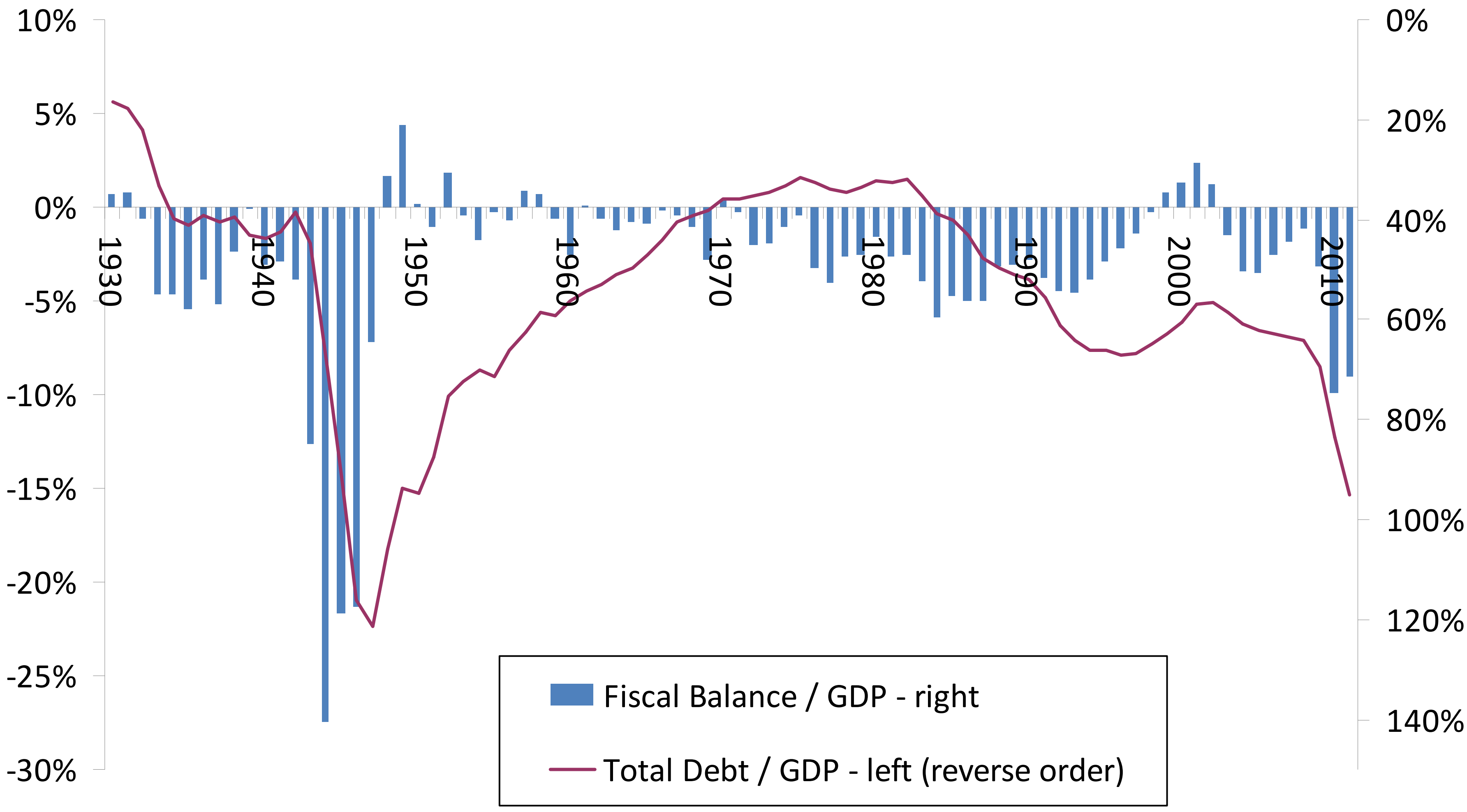
	Spot 5yr	Spot 10Yr	5yr5yr
31-Jul-11	1.37	2.81	4.91
Average	4.05	4.58	5.61

Treasury 10yr10yr vs. Spot 10yr



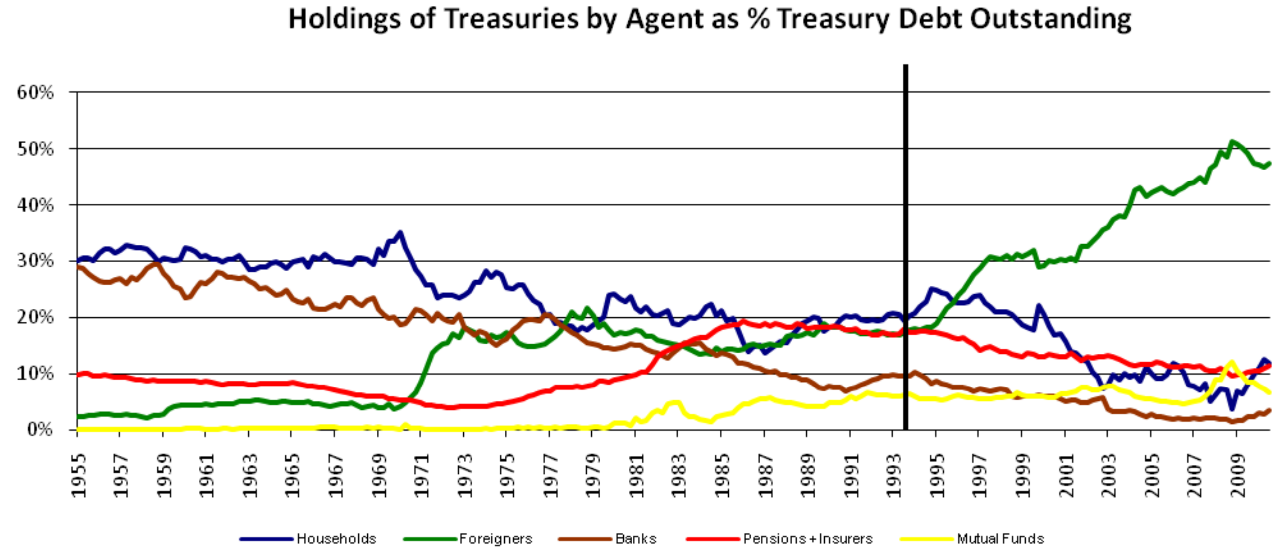
	Spot 10Yr	10yr10yr
31-Jul-11	2.81	5.57
Average	4.58	5.93

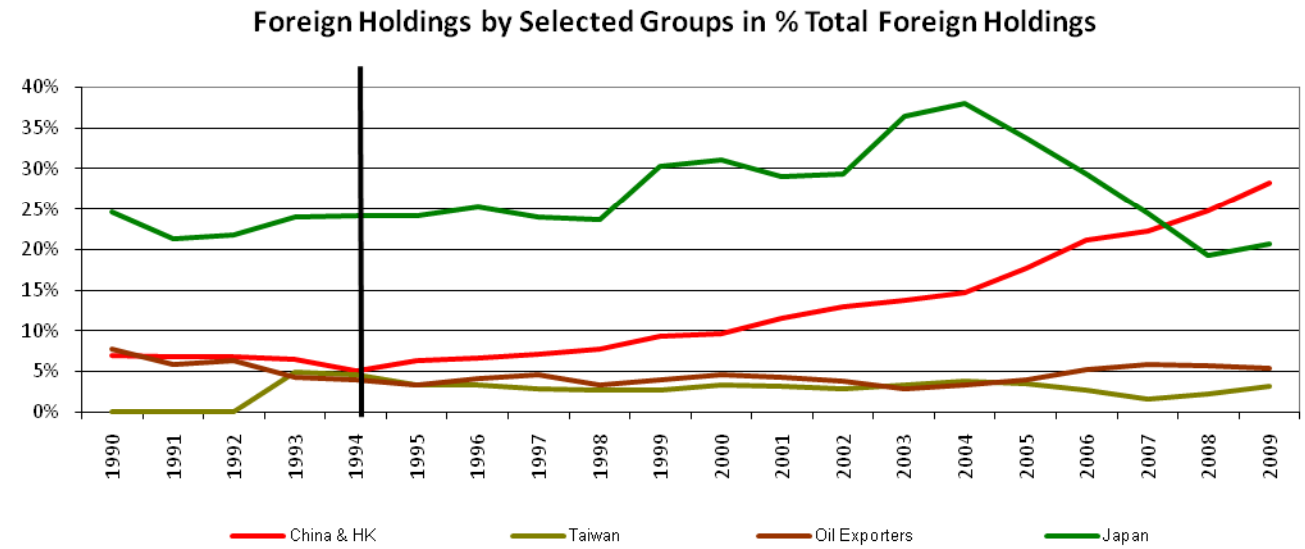
Debt and Deficit Levels



Source: OMB, Center for Financial Stability

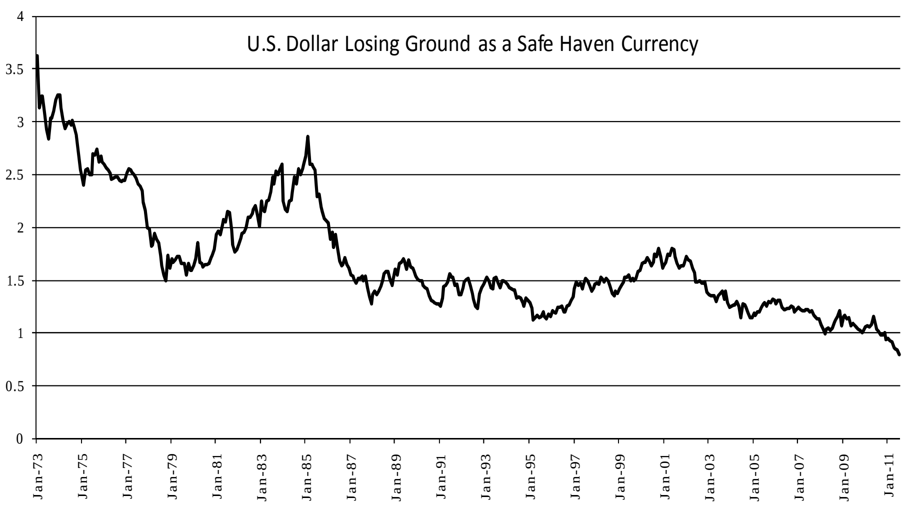
Foreign Ownership Has Risen, Is Concentrated, and Is Likely Linked to Reserve Currency Status





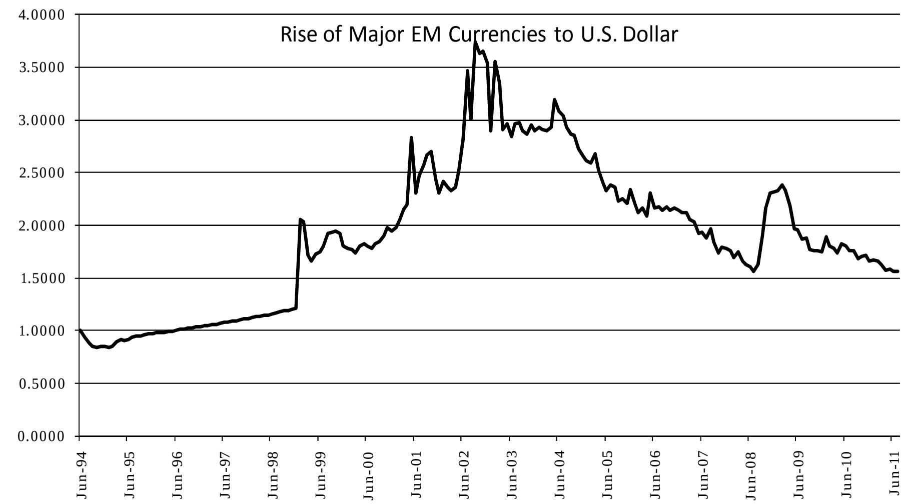
What is Outlook for Reserve Currency Status

Swiss Franc/USD: January 1973 to July 2011



Source: BNY Mellon Global Markets

U.S. Dollar/Brazilian Real: June 1994 to July 2011



Source: BNY Mellon Global Markets

- As both safe haven and EM currencies outperform, the dollar’s status as the global reserve currency appears to be slipping
- The idea of a reserve currency is that it is built on strength, not typically that it is “best among poor choices”. The fact that there are not currently viable alternatives to the US dollar is a hollow victory and perhaps portends a deteriorating fate

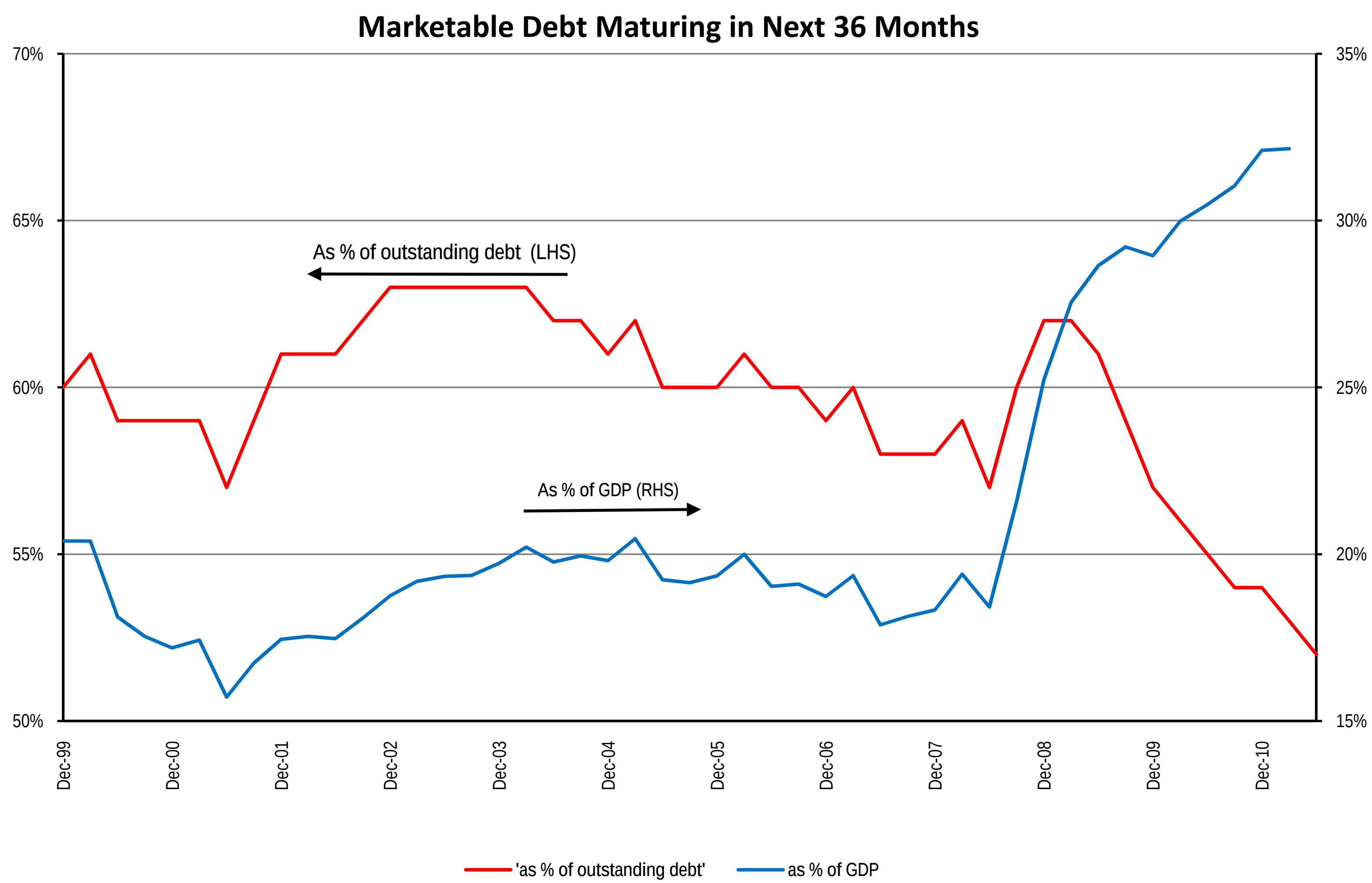
US Debt Mix is Most Short-Term Funded Among OECD Nations

	< 5 yrs	5-10 yrs	> 10 yrs
U.S. (2010)	**71%**	**20%**	**9%**
Spain	66%	3%	31%
Germany	59%	25%	16%
Netherlands	54%	27%	19%
Finland	53%	38%	9%
Belgium	51%	30%	18%
France	49%	29%	23%
Greece	46%	27%	26%
Italy	45%	26%	29%
U.S. (1946)	**41%**	**24%**	**35%**
Austria	40%	36%	23%
Portugal	39%	41%	21%
Ireland	36%	47%	19%
Average	**49%**	**31%**	**21%**

Sources: U.S. Treasury, Bloomberg, Center for Financial Stability Inc.

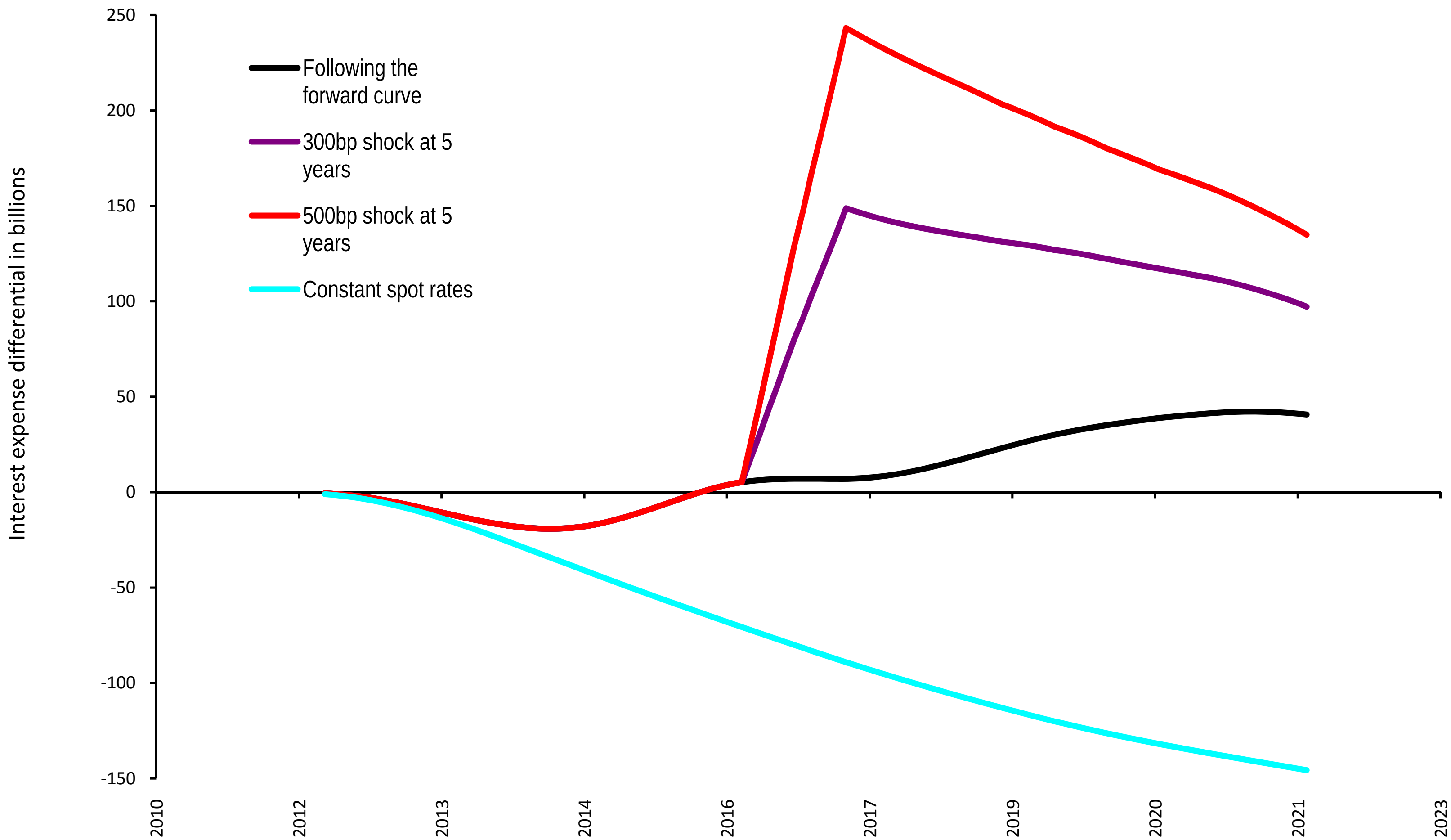
- Many cite mid-1940s high debt levels as proof that U.S. can withstand large funding needs, however the maturity mix was markedly different than today.

While PERCENTAGE of total debt maturing is shrinking, the SIZE of total debt maturing / GDP is rising rapidly



Projected Interest Expense Differentials

Current bill/coupon mix vs. moving to 50/50 mix over 2 years



Conclusion

- The benefits of extension do not come for free. Historical analysis suggests that shorter term funding has at many times been both cheaper and the volatility costs have not been high

- Recent cycles of rising rates have not lasted long enough for maturity extension to pay off

- It is possible, however, that "this time is different" because
  - Nominal rates are much closer to the zero bound than previous periods
  - Deficits are very high historically and rising interest expense less acceptable
  - Concentrated foreign ownership creates less reliable demand
  - The benefits of funding attributable to being the reserve currency may be fading

- While this presentation has focused exclusively on average maturity, a topic for future study is the impact of the distribution of maturities on total interest expense