A5: Low Interest Environment and Year end Projections

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Smaller Insurance Company Section

- Deals with unique concerns of smallcos
- Need for public experience information
- Saving costs
- Low Interest Team: year long focus on aspects of this
- Timely distribution of information (blast mails, webinars, etc.)

Low Interest Environment and Year End Projections

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The Actuarial Opinion and Memorandum Regulation

- First applied in 1992
- The standard was New York 7 scenarios including level, 3 up,3 down
- 3 month Treasury was 3.29%
- 5 year Treasury was 6.08%
- 30 year Treasury was 7.44%
- Up and down 3% was reasonable

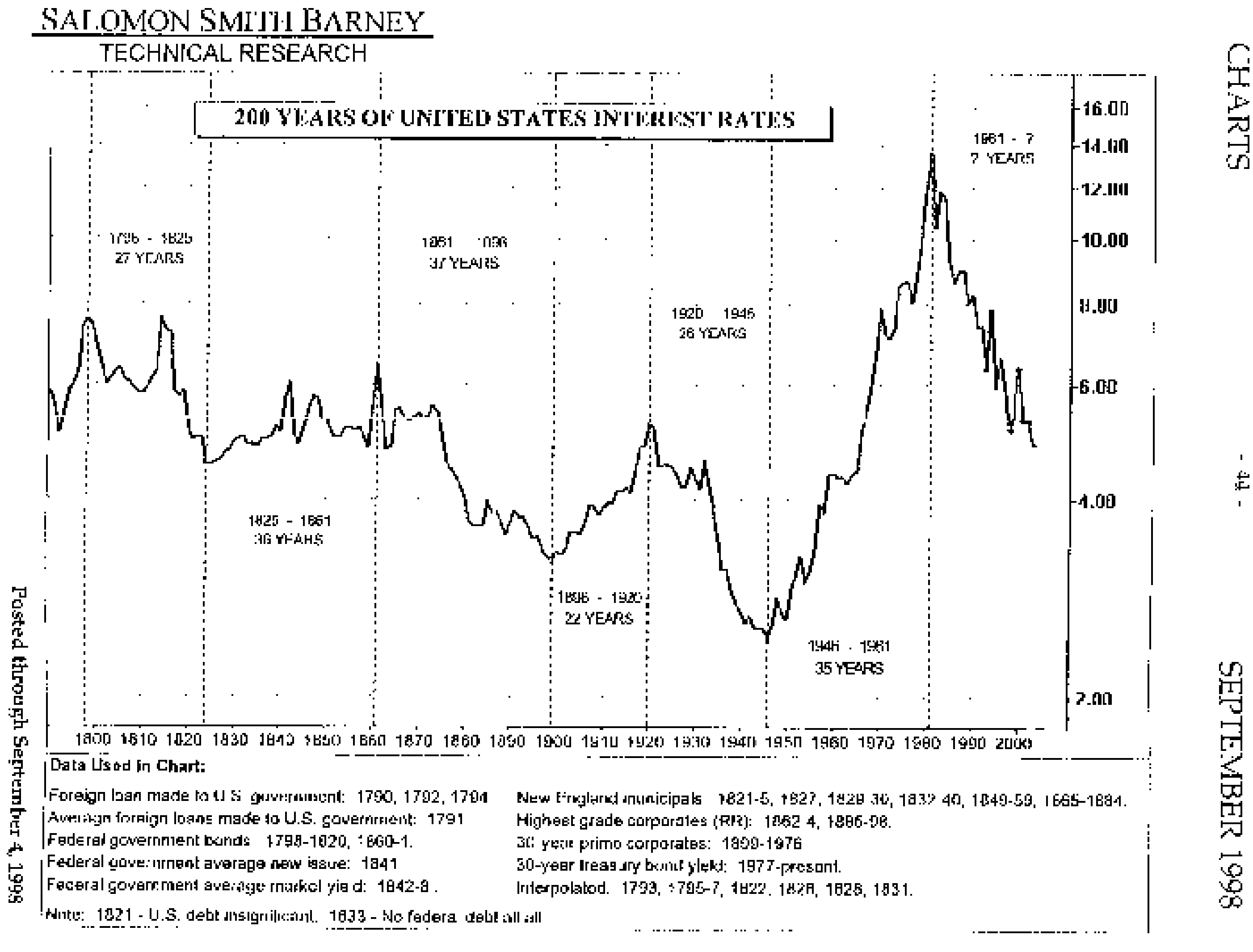
Consider 2011 Rates compared to 1992

- New York 7 scenarios including level, 3 up, 3 down are often used
- 3 month Treasury was 0.01%
- 5 year Treasury was 0.89%
- 30 year Treasury was 2.98%
- Up and down 3% is not reasonable

How Did We Get to This?

- From 1992 to 2011, interest rates have drifted down
- Since 2001, appointed actuaries have had more freedom to select scenarios
- The concepts of the NY 7 are still widely used and understood in spite of these changes
- Jim will say more about this later

History of Interest Rates



Lessons from History

- Rates rise and fall in long periods that last about a generation
- History repeats but in not quite the same way
- Rates have fallen for so long that we might expect rising rates within a decade
- Rates will likely rise for a long time

What is the actuarial issue here?

- For the appointed actuary, ASOP 22 is the controlling guidance
- ASOP No. 22 discusses the need to test moderately adverse conditions, as "Conditions that include one or more unfavorable, but not extreme, events that have a reasonable probability of occurring during the testing period" (ASOP No. 22, section 2.15).

The Actuarial Conundrum

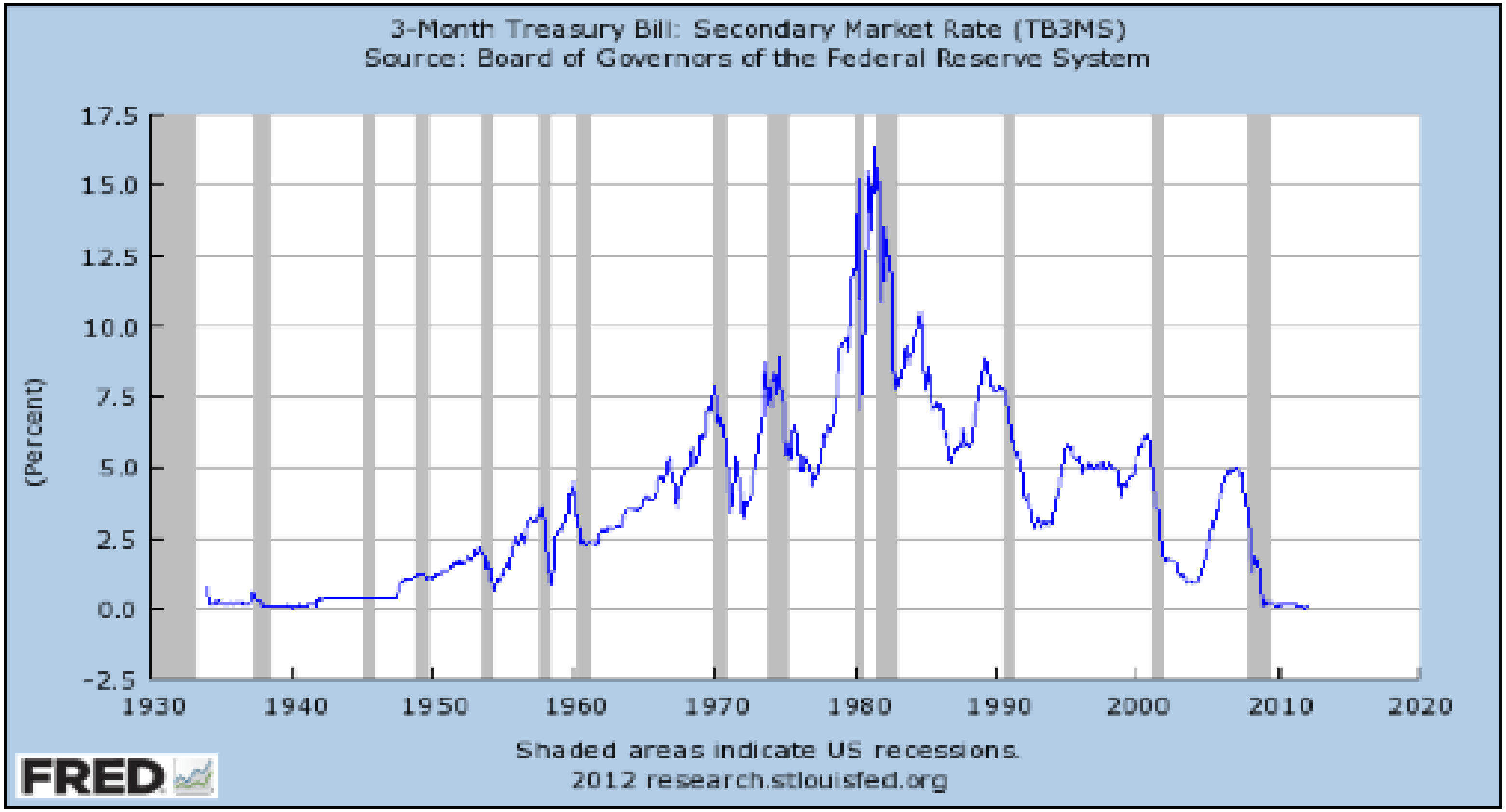
- Which scenarios are extreme and thus not moderately adverse?
- Which scenarios are adverse and have a reasonable probability of occurring in the testing period?
- How long is the testing period? This depends on the product mix. It might be short or up to 50 years.

When were rates last this low?

- Rate history from FRED2
- http://research.stlouisfed.org/fred2/
- Go to Money Banking and Finance,
- Then Interest Rates, Treasury Bills,
- Series TB3MS from 1934

3 Month Treasuries from 1934

http://research.stlouisfed.org/fred2/graph/?id=TB3MS&printgraph&load_default_graph



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Three-month T Bills at market

0.15% in summer 1934

0.04% November 1938 = July 2011

Not 1.00% until February 1948

2.09% by December 1952

3.21% by December 1956

4.04% by September 1959

5.37% by September 1966

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Conclusion from these rates

- In the Great Depression, 3-month rates took a full 10 years to recover to even 1.00%.
- That is 9 years from 1929 to the low point, and 10 years to rise back to 1%
- The last time rates were as low as 2011, that is what happened.
- History often repeats differently.

More Rate History from FRED2

- http://research.stlouisfed.org/fred2/
- Go to Money Banking and Finance,
- Then Interest Rates,
- Then Treasury Constant Maturity,
- Series GS3M, GS1, GS5, GS10, GS30 to see monthly average CMT rates

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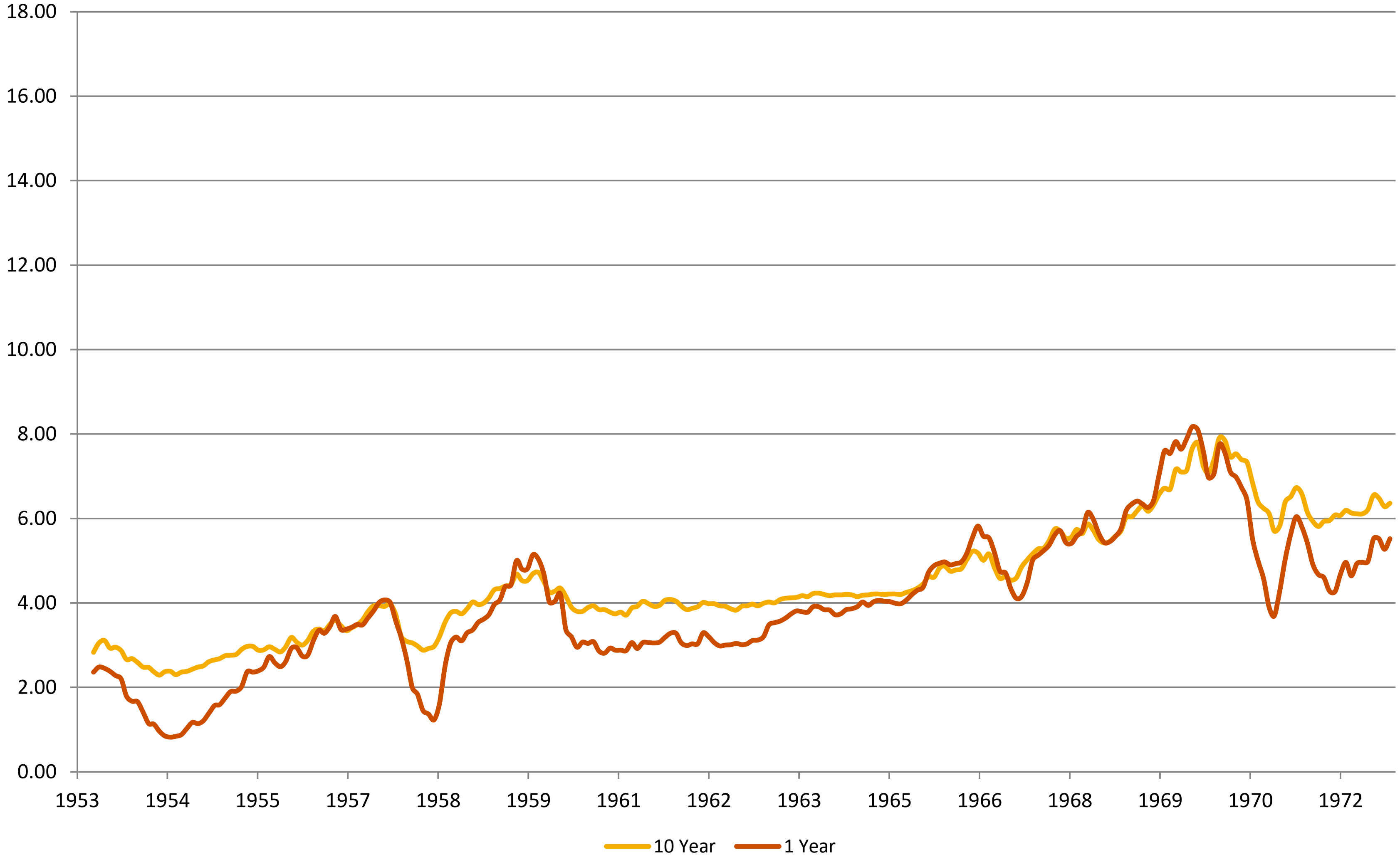
1 & 10 Year Treasuries: 1953 - 1972



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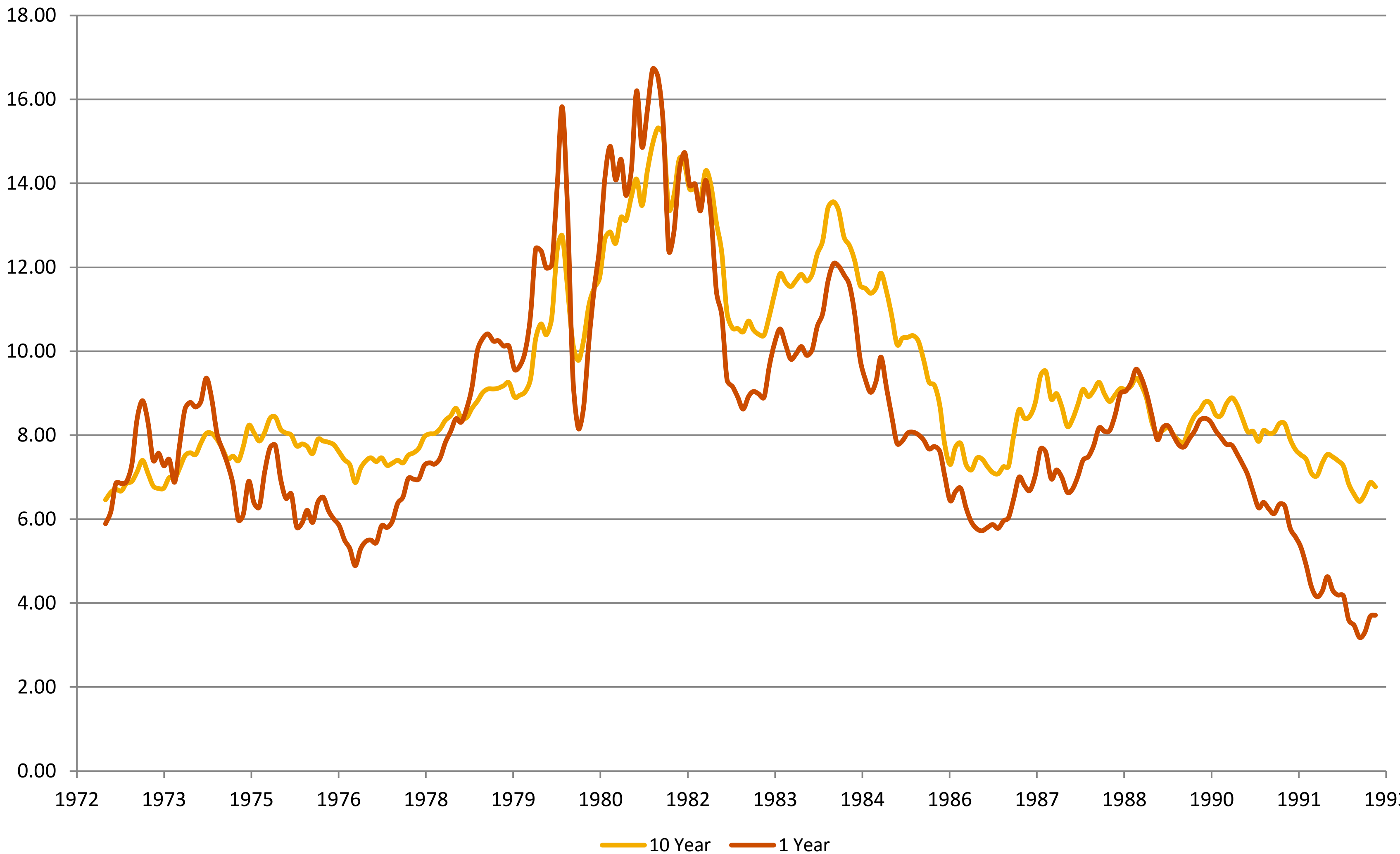
1 & 10 Year Treasuries: 1973 - 1992



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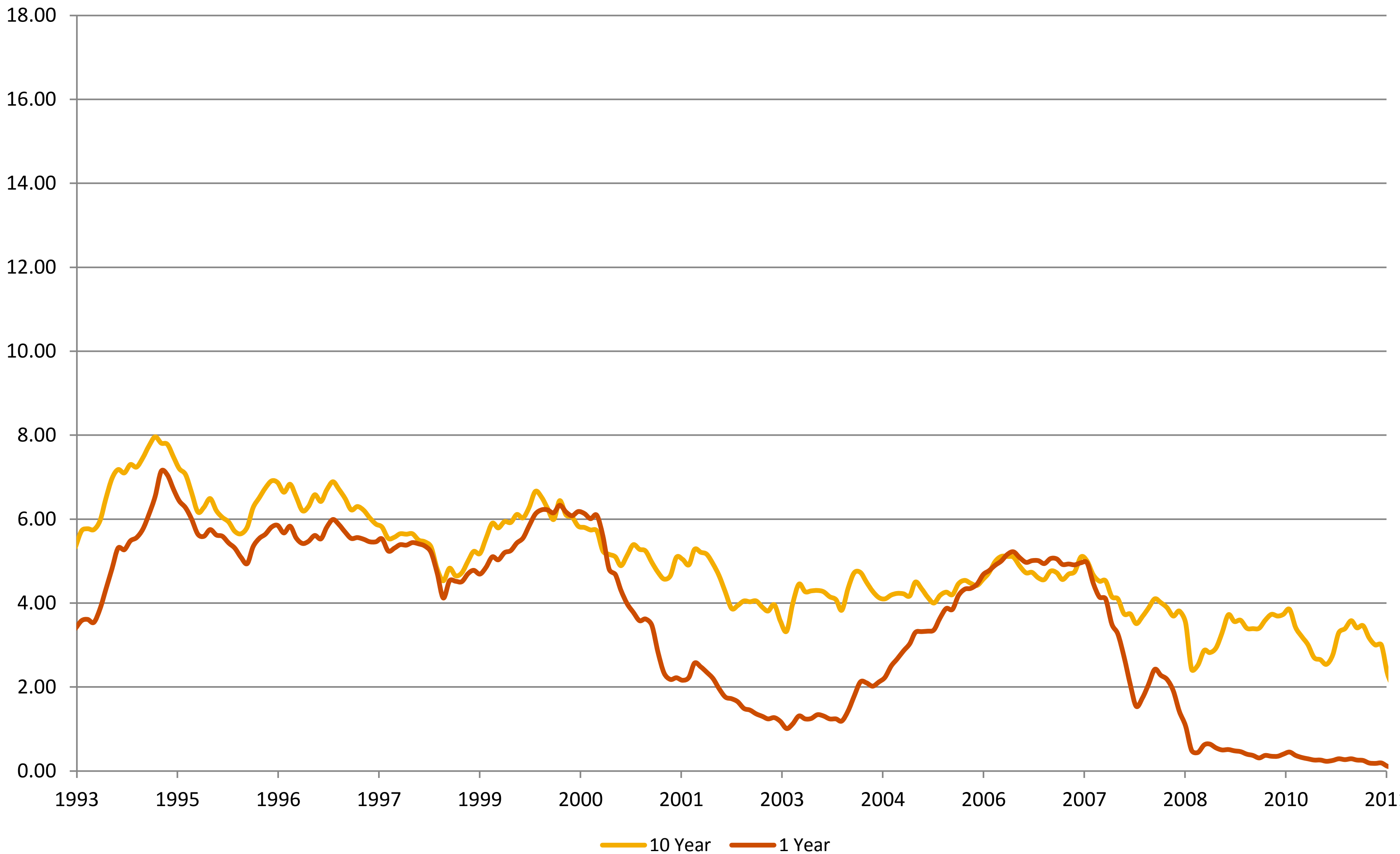
1 & 10 Year Treasuries: 1993 - 2011



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What are Normal Interest Rates?

- Normal depends on your time frame for projections.
- Here are two examples:
- For a 5-year projection, use the last 5 years as a baseline
- For a 40 year projection, consider the 40 year history from 1938.

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What are moderately adverse scenarios, given the history?

- Jim will talk about our survey of valuation actuaries.
- Actuaries will want to decide what is extreme, and what is moderately adverse, given the history we saw.

Why no Extreme Scenarios (ASOP No. 22, section 3.4.2)

"When forming an opinion, the actuary should consider whether the reserves and other liabilities being tested are adequate under moderately adverse conditions, in light of the assets supporting such reserves and other liabilities. To hold reserves or other liabilities so great as to withstand any conceivable circumstances, no matter how adverse, would usually imply an excessive level of reserves and liabilities."

Free Web Sources of Data

From SmallCo SOA Section

http://www.federalreserve.gov/econresdata/releases/statisticsdata.htm

http://www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/TextView.aspx?data=yield

http://online.wsj.com/mdc/public/page/marketsdata.html

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Free Web Sources of Data

From SmallCo SOA Section

www.marketwatch.com

www.bloomberg.com

There are many others.

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Thanks for your attention.

Jim Thompson will speak next.

Survey by Mark Rowley in Dec. 8 Webinar

- Is NY1 moderately adverse and thus must be passed?
  - All: Yes / No 67 / 12
  - Only appointed (45 / 28)

Survey (continued)

- Do you believe your regulator / auditor will consider NY1 moderately adverse?
  - All Yes / No (75 / 11)
  - Appointed only: (64 / 16)

Survey (continued)

- In your opinion, is an interest rate scenario with low interest for 10 years moderately adverse?
  - All Yes / No (81 / 9)

California Halloween Letter

- Give details of any mean reversion
- Discuss sensitivity testing on mean reversion, if done
- Discuss criteria for determining asset adequacy, including “moderately adverse conditions”

New York Halloween Letter

- December 5 2011
- Pp 5-6: Sec. 4 – Clarification of Interest Rate Scenarios
- Baseline NY7 NOT normalized
- Can do additional scenarios

NY Halloween (cont’d)

- Sec. 6 Calls/Prepayments: justification should reflect comparison of actual prior to expected
- Sec. 7 Defaults: include justification of future rating migration
- Yield pick up now at 125 bp, formerly 100 bp
- Sec. 9: special sensitivity test; 500 bp pop up

NY Halloween (cont’d)

- Sec. 1 – Assumptions: para. 4: Regardless of premium pay’t history, flex contracts must perform appropriate tests assuming additional premiums in decreasing scenarios to test guarantees

Illinois Halloween Letter

- Page 3: concerns RAAIS: nothing specific mentioned

Surprise !!

- When I compared the 2011 letter with 2010 and earlier, I saw no change except
- NY Defaults: yield pick-up up to 125 bp and 500 bp pop up
- States had already staked out their positions
- Did you pay extra attention to any of these provisions?

Constructing a Mean Reversion Scenario

- Flat how long? 10 years
- Gradation? 10 years?
- Ultimate Level: Over what interval?

	P711 in FRED2Trates									
	In Assumptions/CFT			TEN YEAR AVERAGES BY CALENDAR YEAR						
			GS3M	GS6M	GS1	GS3	GS5	GS7	GS10	
From	To									
Apr-53	Dec-61		0.00%	0.00%	2.79%	3.16%	3.30%	0.00%	3.41%	
Jan-62	Dec-71		0.00%	0.00%	4.91%	5.13%	5.21%	6.85%	5.22%	
Jan-72	Dec-81		0.00%	0.00%	8.50%	8.54%	8.61%	8.66%	8.69%	
Jan-82	Dec-91		7.83%	8.15%	8.43%	9.15%	9.41%	9.62%	9.70%	
Jan-92	Dec-01		4.61%	4.78%	4.94%	5.53%	5.82%	6.04%	6.13%	
Jan-02	Oct-11		1.86%	2.01%	2.13%	2.69%	3.23%	3.62%	3.99%	

Twenty Year Averages

				TWENTY YEAR AVERAGES BY CALENDAR YEAR							
			GS3M	GS6M	GS1	GS3	GS5	GS7	GS10		
Apr-53	Dec-71		0.00%	0.00%	3.92%	4.21%	4.32%	6.85%	4.38%		
Jan-72	Dec-91		7.83%	8.15%	8.47%	8.85%	9.01%	9.14%	9.19%		
Jan-92	Oct-11		3.25%	3.40%	3.55%	4.12%	4.53%	4.84%	5.07%		
			NOTE: first interval has 225 months, not 240 except for GS7 which has 30 months								

Thirty Year Averages

				THIRTY (approximately) YEAR AVERAGES BY CALENDAR YEAR							
			GS3M	GS6M	GS1	GS3	GS5	GS7	GS10		
Apr-53	Dec-81		0.00%	0.00%	5.51%	5.72%	5.81%	8.30%	5.88%		
Jan-82	Oct-11		4.79%	5.00%	5.19%	5.81%	6.17%	6.44%	6.62%		
Jan-62	Dec 91		7.83%	8.15%	7.28%	7.61%	7.74%	8.38%	7.87%		
Jan-72	Dec 01		4.15%	4.31%	7.29%	7.74%	7.95%	8.10%	8.17%		
			NOTE GS3M and GS6M are only for 10 years Jan 82 - Dec 91								
				GS7 is only for 150 months July 69 - Dec 81							

Conclusion

Research.stlouisfed.org/fred2

Lowest over 30 year average

3 and 6 months: Jan 72 – Dec 01

1-10 years: Jan 82 – Oct 11

Graded Portion of the T Curve

YR	GS3M	GS6M	GS1	GS3	GS5	GS7	GS10
10	0.02%	0.05%	0.13%	0.42%	0.96%	1.47%	1.93%
11	0.43%	0.48%	0.64%	0.96%	1.48%	1.97%	2.40%
12	0.85%	0.90%	1.14%	1.50%	2.00%	2.47%	2.86%
13	1.26%	1.33%	1.65%	2.03%	2.52%	2.96%	3.33%
14	1.67%	1.75%	2.16%	2.57%	3.04%	3.46%	3.80%
15	2.09%	2.18%	2.67%	3.11%	3.56%	3.96%	4.27%
16	2.50%	2.60%	3.17%	3.65%	4.07%	4.46%	4.73%
17	2.91%	3.03%	3.68%	4.19%	4.59%	4.96%	5.20%
18	3.32%	3.45%	4.19%	4.72%	5.11%	5.45%	5.67%
19	3.74%	3.88%	4.69%	5.26%	5.63%	5.95%	6.13%
20	4.15%	4.30%	5.20%	5.80%	6.15%	6.45%	6.60%

Low Rates and Other Assumptions that Interact

- When the actuary does cash flow projections, the interest rates, default rates, investment spreads, and competitor rates should be internally consistent in each scenario.
- How can an actuary find that information without a lot of cost?

Sources of Information

- Investment managers might be a good source of data, or they might have access to sources such as a Bloomberg terminal or a Moody's subscription.
- Some of these sources have web sites where information is available.
- Public web sites have less information than investment managers would.

Default Rates

- Rating Agencies such as Moody's or S&P publish historical default rates.
- Actuaries can use a 20 year average or recent several year average from such studies as a basis for modeling defaults across different quality ratings. These vary over time as interest rates change.

Investment Spreads

- Many brokers, banks, or Bloomberg publish a series of corporate yields based on credit quality.
- From the Treasury yield curve, the actuary can derive average spreads for each quality type.
- I regress the spreads by month over 5 to 10 years to compute future spreads.

Investment Spread Example

Maturity	Treasury	AA Bond	AA spread
1 year	0.10%	0.63%	0.53%
5 year	0.88%	1.64%	0.76%
10 year	2.00%	2.96%	0.96%

Maturity	Treasury	BBB Bond	BBB spread
1 year	0.10%	1.20%	1.10%
5 year	0.88%	2.53%	1.65%
10 year	2.00%	3.78%	1.78%

Bond Spread Ideas

- 10 years ago, bond spreads contracted as Treasury rates fell.
- In the past few years, bond spreads have not contracted as Treasury rates fell further. Financial turmoil was a better predictor of spread expansion or contraction.
- The future will be something else.

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The End

Do you have questions that you wish to discuss?