



PFM

Portfolio Management Strategies for Insurance Pools

Investment Management & Oversight Workshop
for Public Entity Risk and Benefits Pools

October 5, 2011



NATIONAL
LEAGUE
of CITIES | RISK INFORMATION
SHARING CONSORTIUM

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PFM Asset Management LLC



Topics To Be Covered

- 1) How insurance liabilities impact investment strategy
- 2) Characteristics unique to insurance investing
- 3) Investment risks
- 4) The investment universe
- 5) “Liability-Driven Investing”
- 6) The portfolio construction process
- 7) The concept of “duration”
- 8) Assessing “relative value” through yield spreads
- 9) Understanding corporate credit risk
- 10) Putting it all together



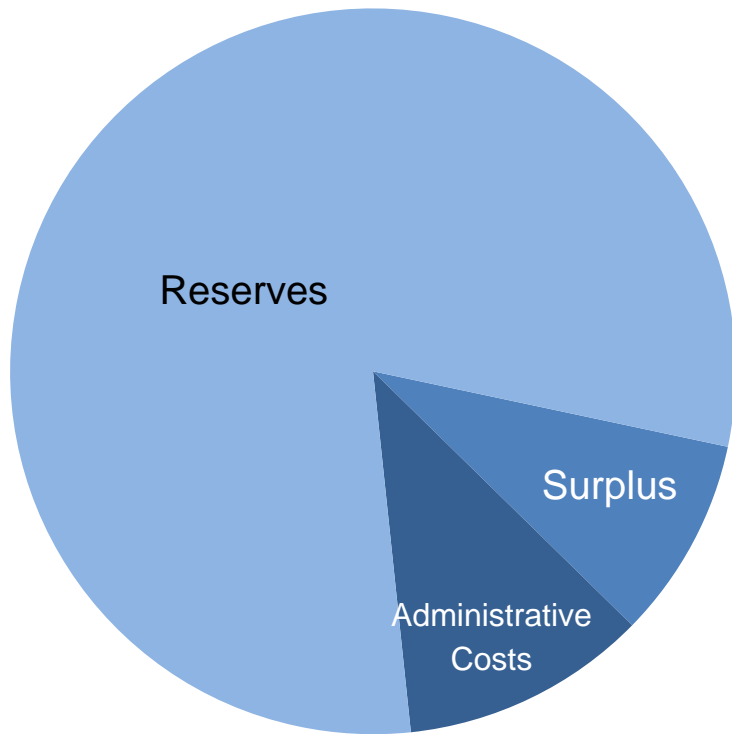
Insurance Liabilities

- Unique nature of insurance liabilities:
 - Both the timing and amount of liabilities are uncertain
- Understanding liabilities is key:
 - Lines of business (short tail vs. long tail)
 - Actuarial assumptions
 - Confidence levels
 - Cyclical nature of claims
 - Low probability/high impact events

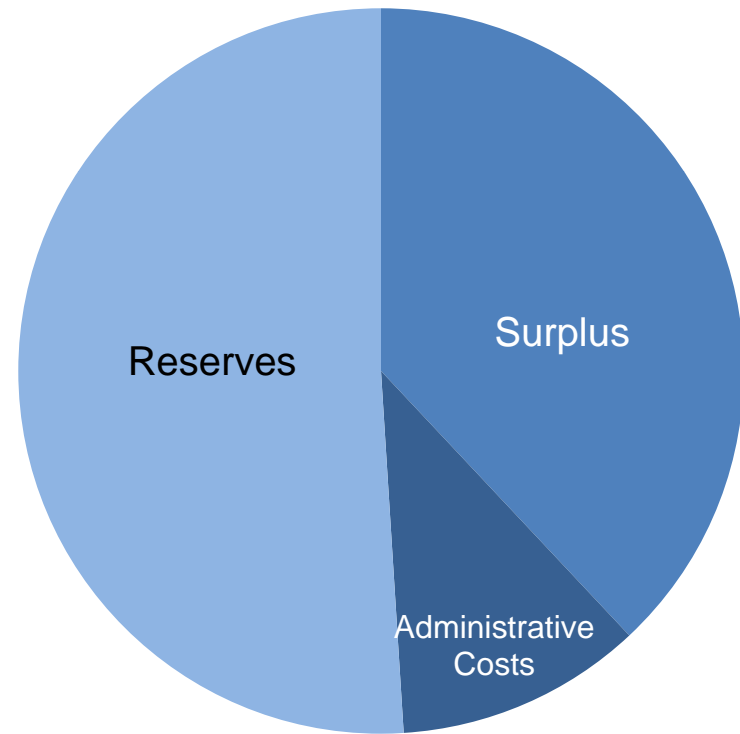


Investable Assets

Newer Pool



Mature Pool



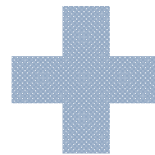


Risk Management

Traditional Portfolio

Investment risks:

- Interest rate risk *
- Credit/default risk
- Reinvestment risk
- Prepayment/call risk
- Liquidity risk
- Inflation risk *
- Exchange rate risk



Insurance Specific

Business risks:

- Cash available to pay claims
- Pricing adequacy
- Surplus sufficiency
- Operating ratios

* Key risks to insurance portfolios.



Factors Impacting Investment Strategy

Business Profile

- Lines of business
- Risk retention
- Liabilities
- Size/history
- Surplus
- Accounting
- Ratings

Investment Policy

- State law
- Objectives
- Risk tolerance
- Permitted Investments
- Sophistication
- Benchmark(s)

Portfolio Construction

- Objectives
- Market yields
- Relative value
- Diversification
- Risk management
- Taxes
- Compliance
- Income vs. Growth



Considerations Unique to Insurance Pools

- **Matching assets to liabilities**
 - Actuarial reports & assumptions
 - Ensure sufficient liquidity to pay claims
 - Invest reserve funds to match expected claim payments
 - Surplus management

- **Business considerations**
 - Pricing
 - Budgeting of investment earnings
 - Cash flow/liquidity management
 - Actuarial discount rate
 - Specialized statutory reporting
 - Dividend policies



Mandate Driven vs. Liability Driven Approach

Benchmark / Mandate Driven:

- Investment universe is defined by the mandate
- Benchmark = return bogey
- Success is measured by comparison to the benchmark
- Manager must deviate and take risks to beat the benchmark
- Liabilities (other than current cash needs) are not considered
- Does not adapt to changes in business conditions or market risk

Liability Driven:

- Focus on meeting liabilities
- Performance measured *relative to* liabilities
- Linkage to business needs – a holistic approach
- Still gives managers freedom to add value through portfolio strategy
- Increases likelihood that the business will achieve its objectives



“Liability-Driven Investing”

Traditional Approach	Liability-Driven Investing (LDI)
Asset-only focus	Asset-Liability focus
Objective to beat a benchmark	Treat the risk and return characteristics of the liability stream as the benchmark
Product-based	Situation-based
Investment performance focused on total returns	Investment performance measured in terms of impact on enterprise value
Beating a benchmark does not assure assets can meet liabilities	Increases likelihood of business success → meeting liabilities and growing surplus

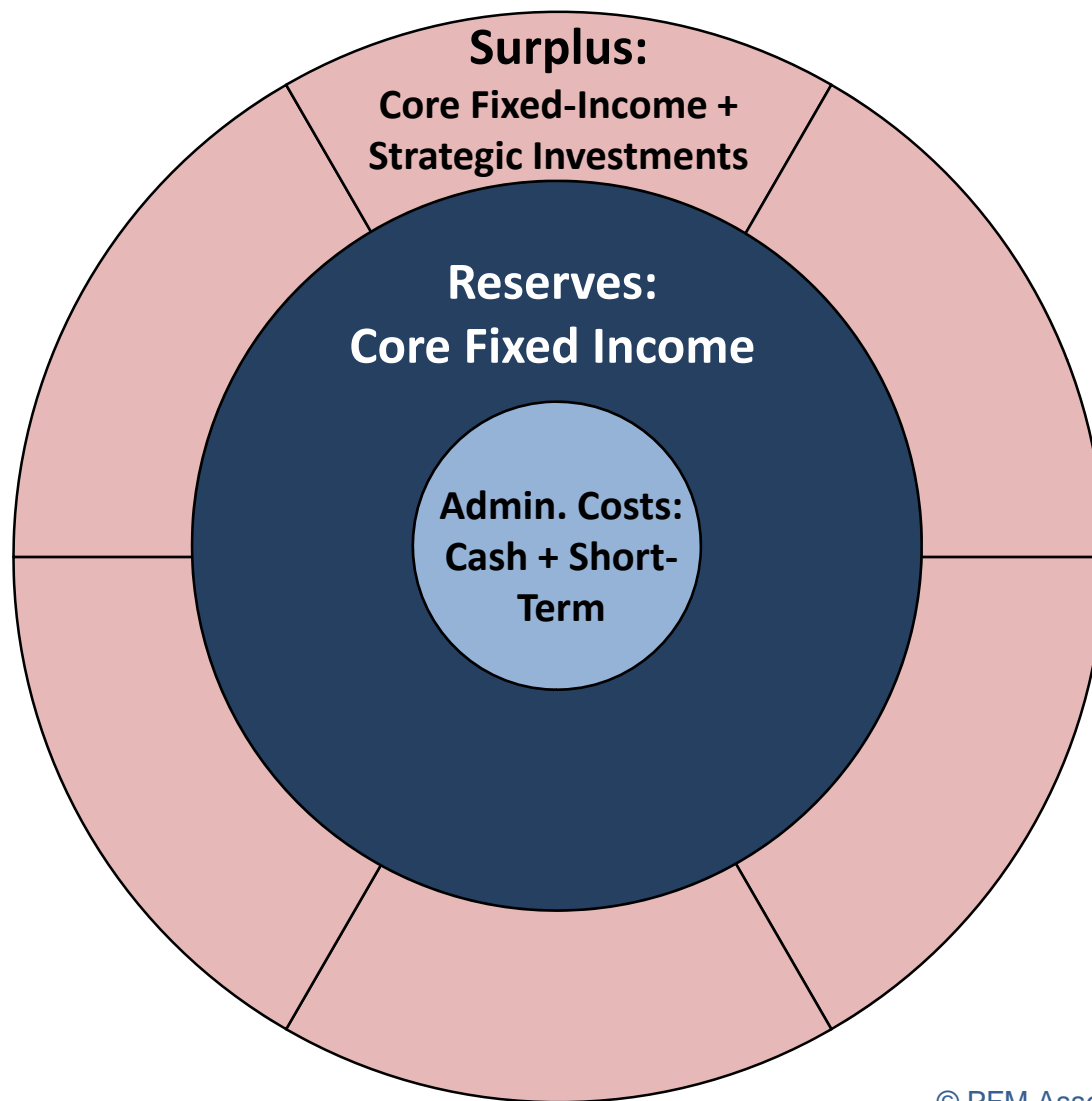


Segmenting the Portfolio

Liabilities	Investment Strategy
Administrative Costs	<ul style="list-style-type: none">• “Cash portfolio”• Highly liquid• Short term investments• Laddered maturities• Very high credit quality
Claim Reserves	<ul style="list-style-type: none">• “Liability hedging portfolio”• Assets matched to expected claim payments• Based on actuarial assumptions• Short and intermediate-term investments• High credit quality
Surplus	<ul style="list-style-type: none">• “Performance seeking portfolio”• Goal: long term surplus growth• Longer term investments• Less need for liquidity• Potential for (moderately) greater risk



An Investment Framework



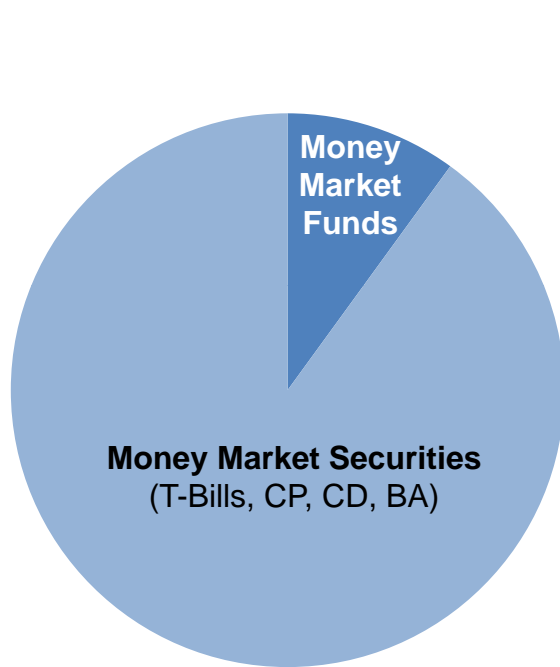


Universe of Investment Sectors

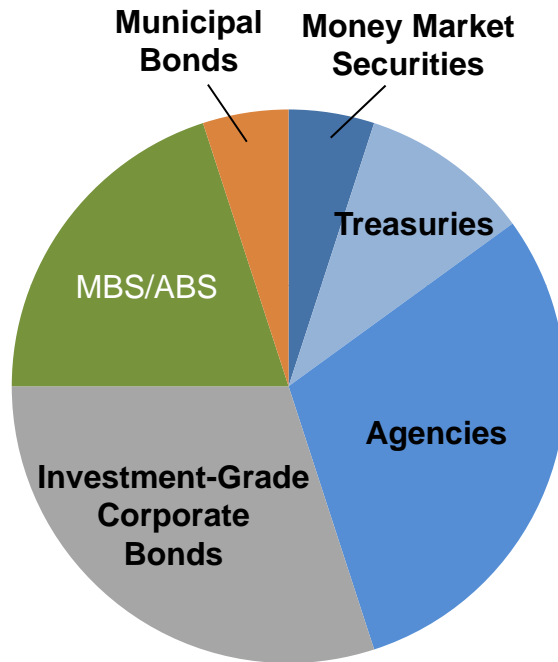
Cash	<ul style="list-style-type: none"> • Money Market Securities (MMF, Repo, CP, CD, BA, FRN) 	
“Conventional” Fixed-Income	<ul style="list-style-type: none"> • U.S. Treasury / Agency Bonds • U.S. Corporate Bonds • Mortgage Backed Securities (MBS) • Asset Backed Securities (ABS) • Municipal Securities (Taxable and Tax-exempt) 	
Broader Fixed-Income	<ul style="list-style-type: none"> • TIPS/Inflation-hedge • Foreign Sovereign/Supras • Commercial MBS • High Yield 	<ul style="list-style-type: none"> • Private Placements • Convertibles • Non-U.S. Dollar investment grade • Emerging Markets Debt
Equities	<ul style="list-style-type: none"> • Domestic Small/Mid Cap • Domestic Large Cap • Domestic Value/Growth 	<ul style="list-style-type: none"> • International Small/Mid Cap • International Large Cap • Emerging Markets
Alternatives	<ul style="list-style-type: none"> • Commodities • Real Estate • Hedge Funds 	<ul style="list-style-type: none"> • Private Equity • Venture Capital • Tangible Assets



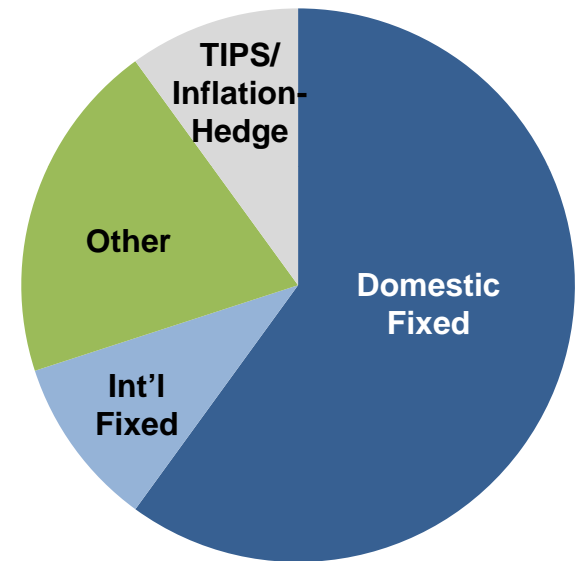
Sample Segmented Portfolios



Administrative Costs



Reserves



Surplus



Portfolio Construction Process

Define Universe

- Sectors: U.S. government, corporates, international
- Maturities: Short, intermediate, long
- Credit parameters: investment-grade, high yield

Define Constraints and Objective

- Expected liability stream
- Maximum maturity
- Duration target \pm x% of liabilities/benchmark
- Diversification: maximum per issuer: y%
- Diversification: z% max/min per sector

Optimize

- Meet expected liabilities
- Provide sufficient liquidity
- Model expected enterprise value
- Maximize return within constraints



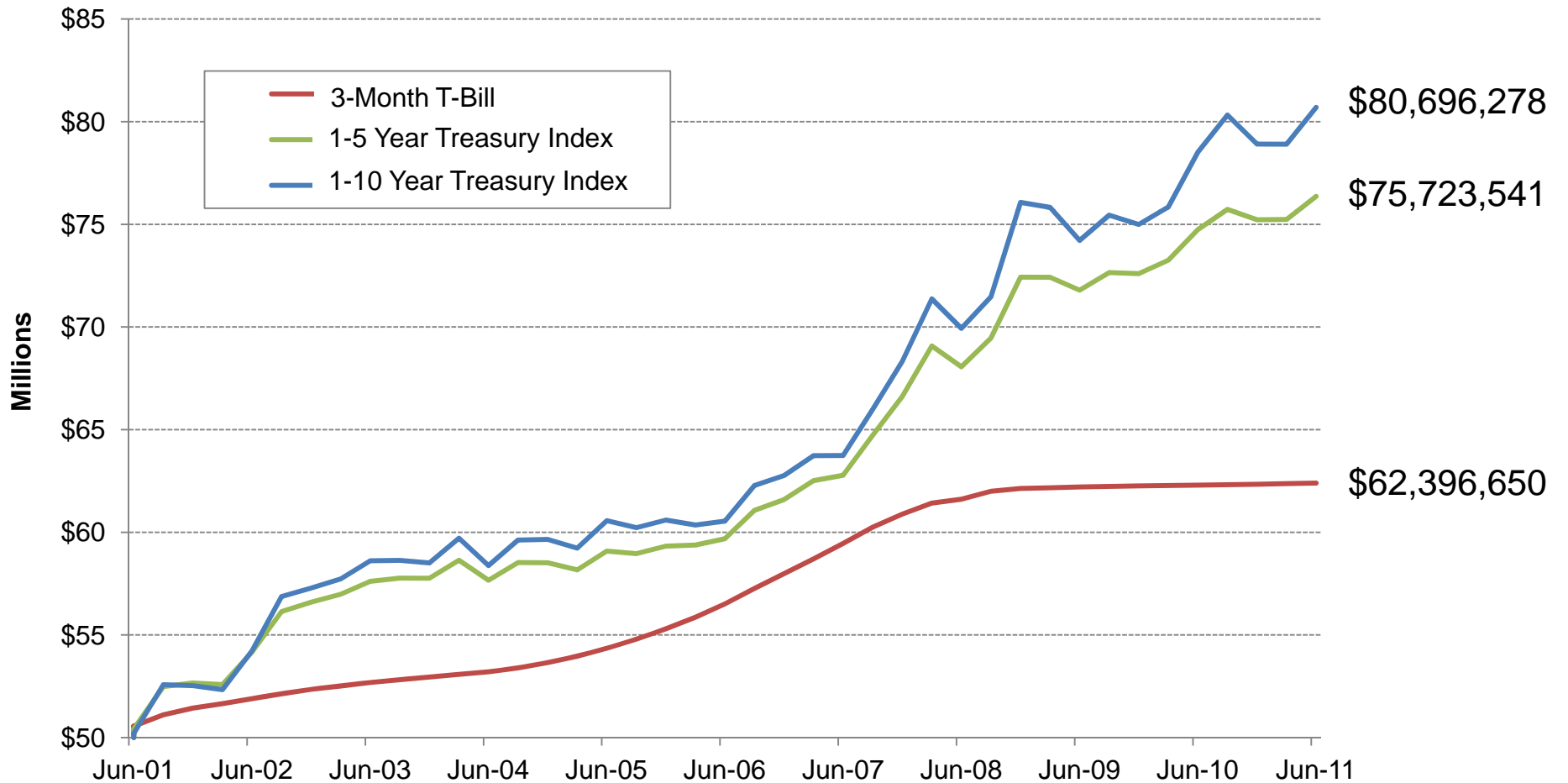
Longer Maturities Generate Higher Returns

Risk/Return of Various Benchmarks 10 Years Ended 6/30/2011			
Merrill Lynch Index	Duration	Overall Return	Cumulative Value of \$50,000,000
3-Month Treasury Bill	0.25 Years	2.12%	\$62,396,650
1-3 Year Treasury Index	1.88 Years	3.60%	\$71,255,750
1-5 Year Treasury Index	2.64 Years	4.24%	\$75,723,541
1-10 Year Treasury Index	3.99 Years	4.86%	\$80,696,278
1-30 Year Treasury Index	5.55 Years	5.44%	\$84,627,193



... And Result in Greater Portfolio Growth

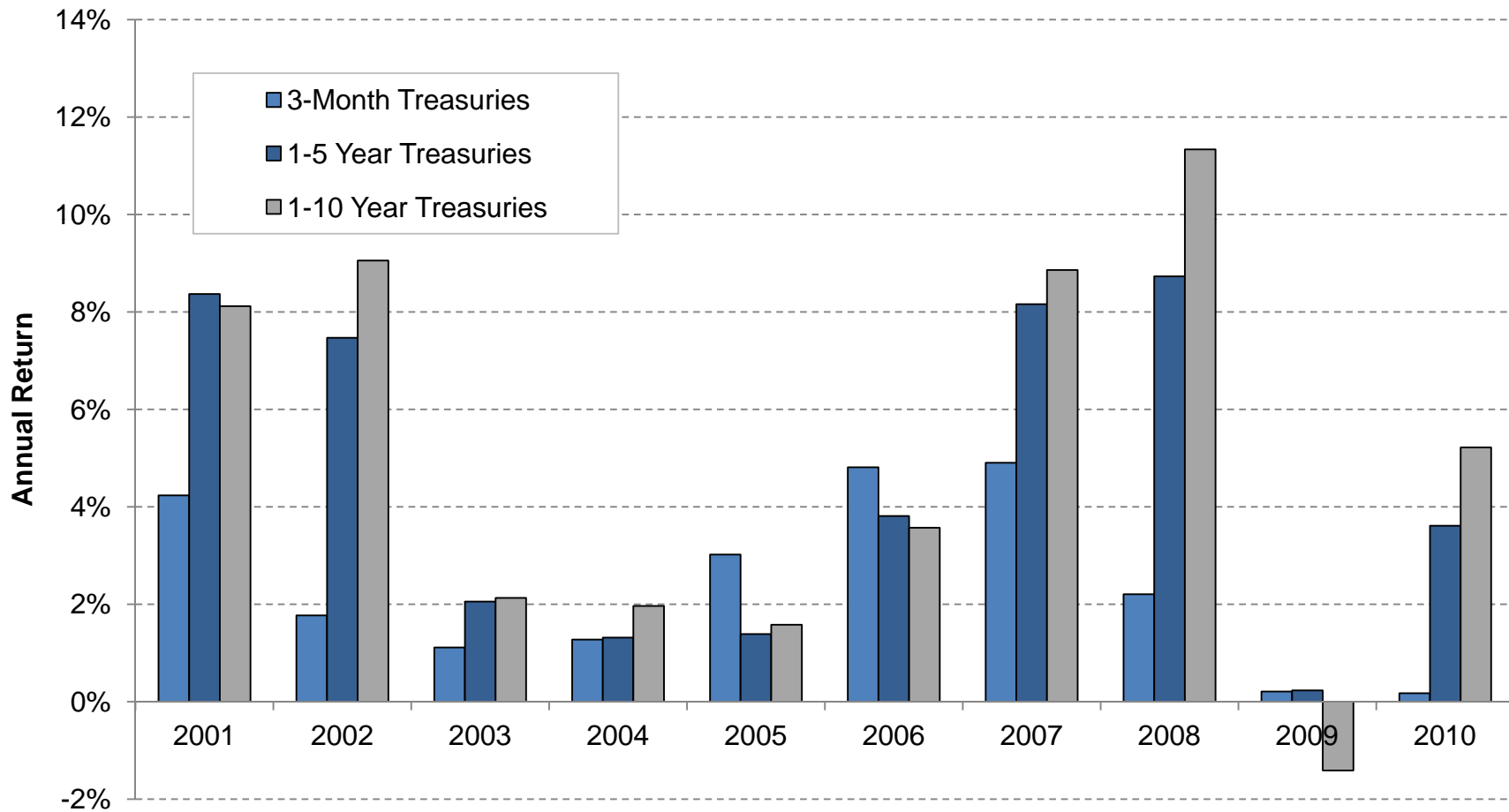
Growth of \$50 Million Portfolio Over 10 Years





Volatility of Returns

Annual Returns 2001 - 2010

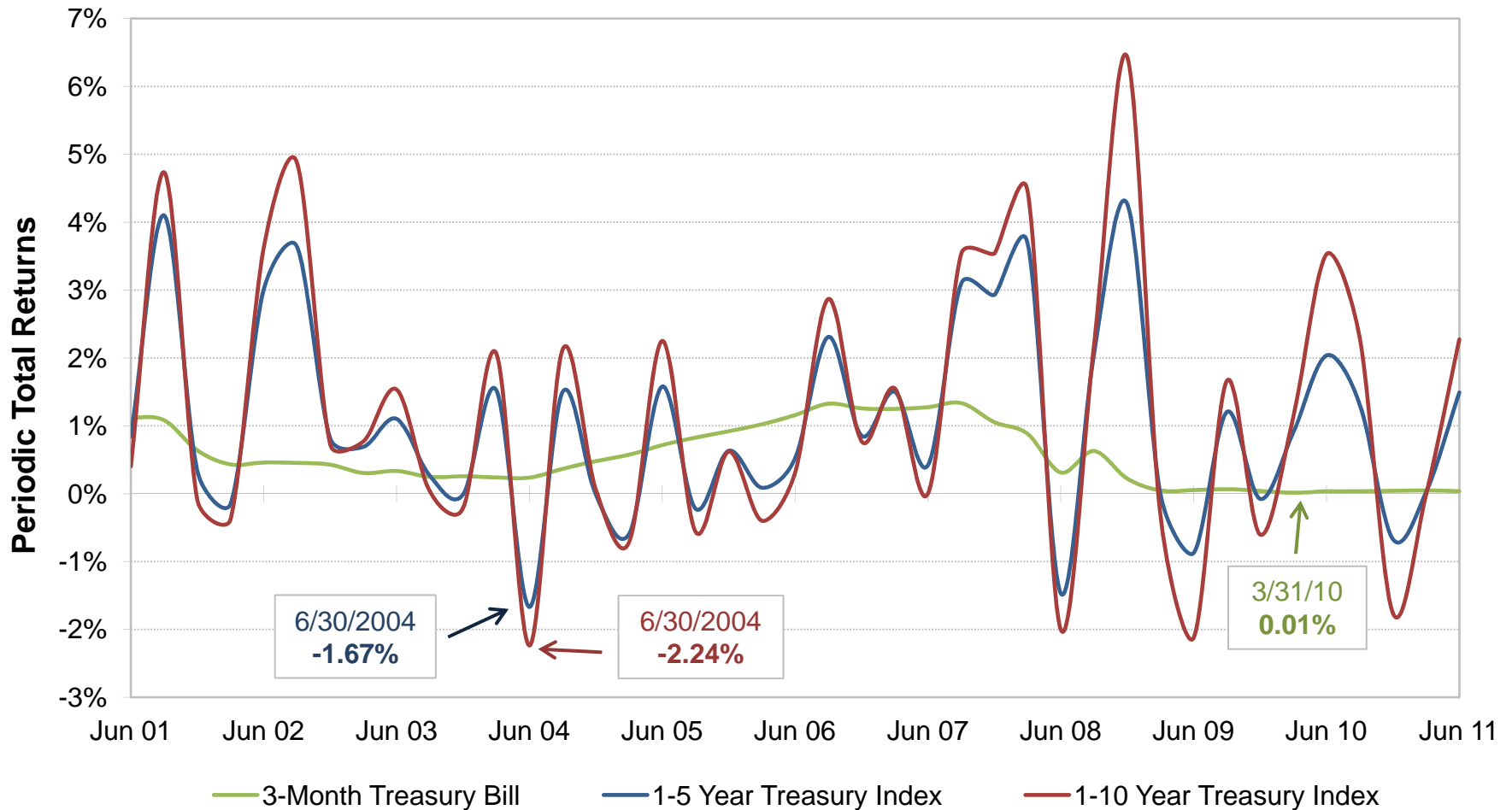


Source: Bloomberg



The Cost of Staying "Safe"

Comparison of Periodic Quarterly Returns June 2001 – June 2011

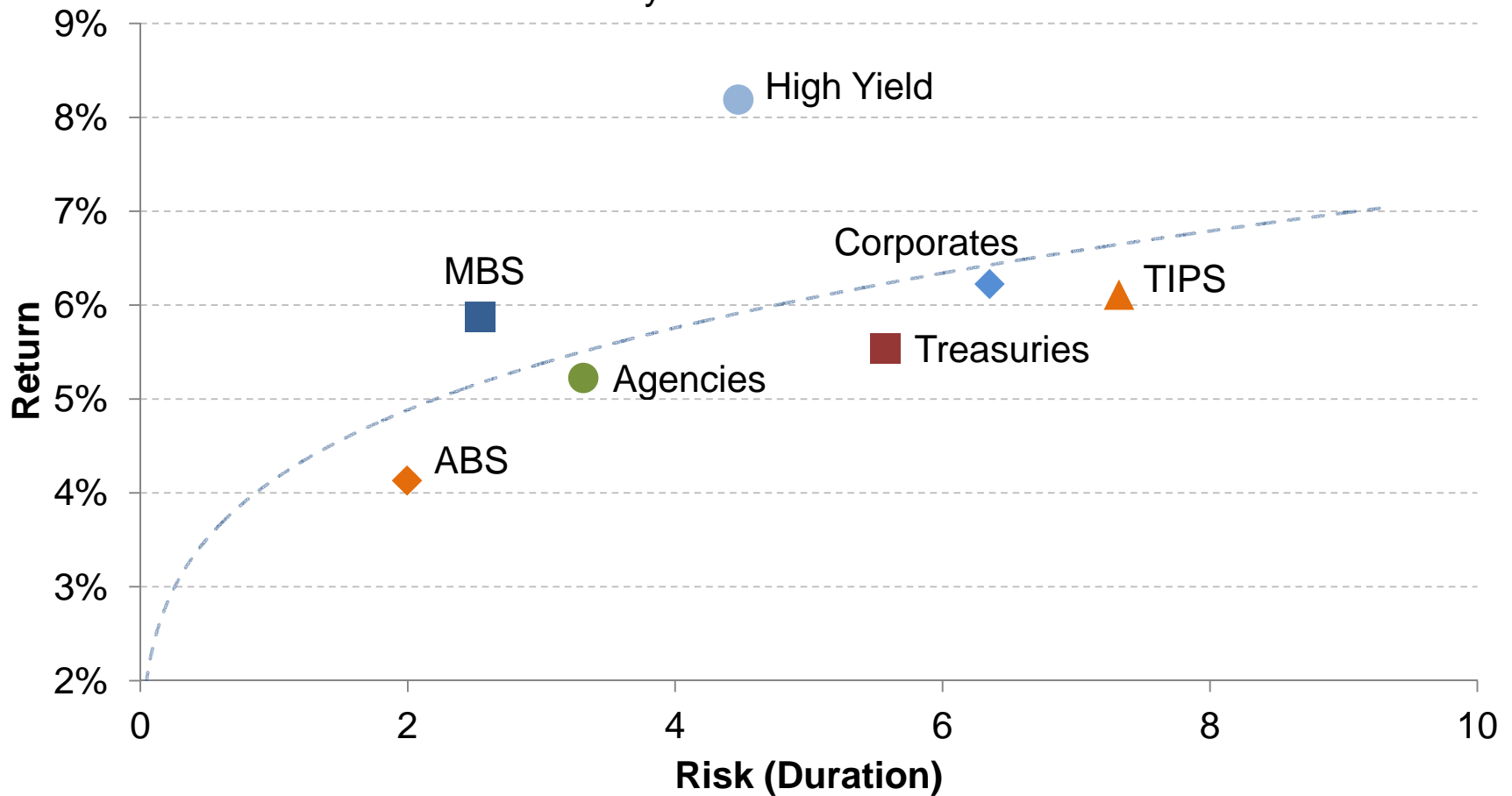


Source: Bloomberg



Assessing Risk vs. Return

U.S. Fixed-Income Market Sectors
Average Annual Returns
10-years ended 6/30/10

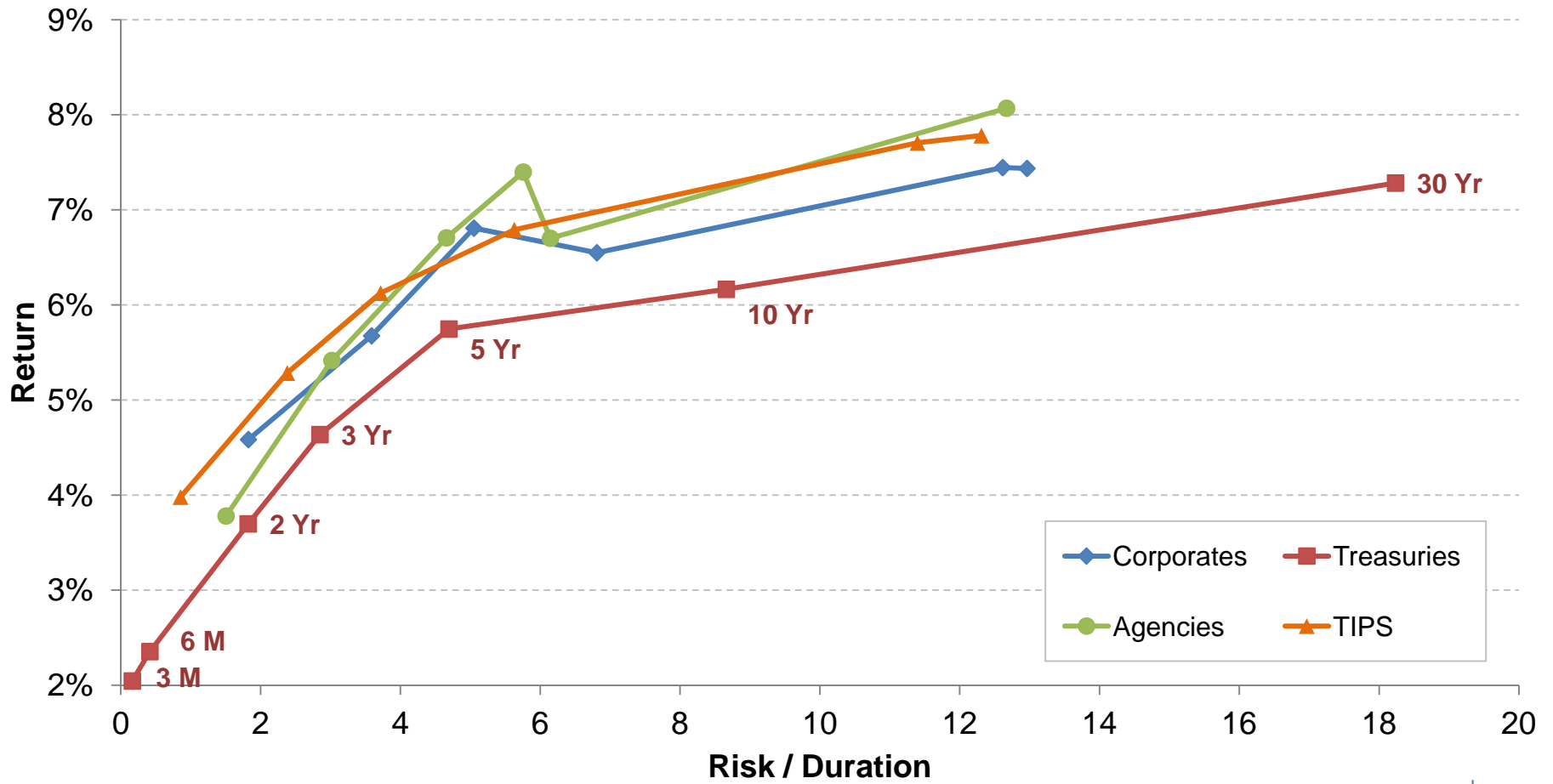


Source: Bloomberg



Impact of Maturity on Historical Return

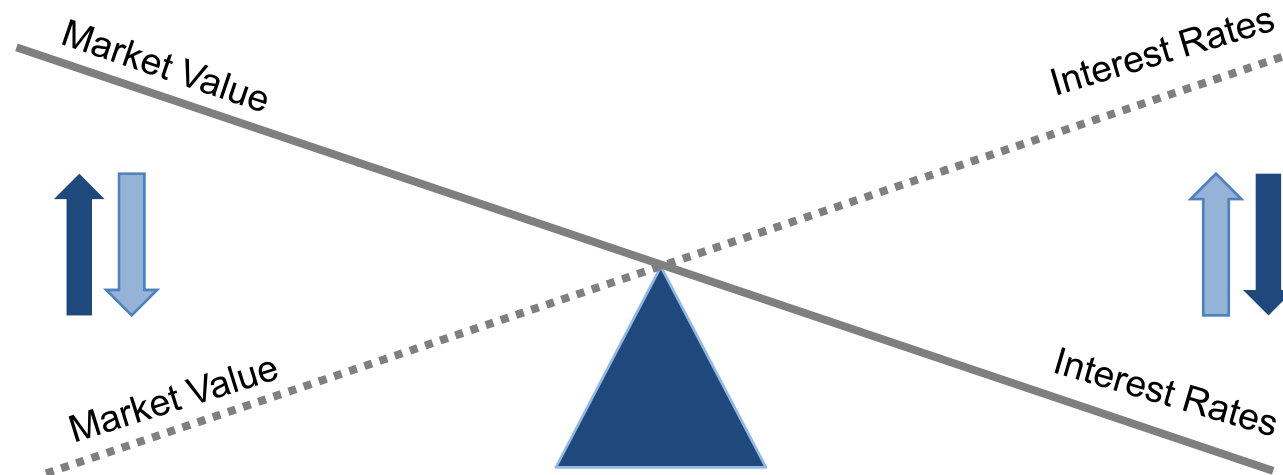
U.S. Fixed-Income Market Sectors by Maturity Range
Average Annual Returns
10-years ended 6/30/10



Source: Bloomberg



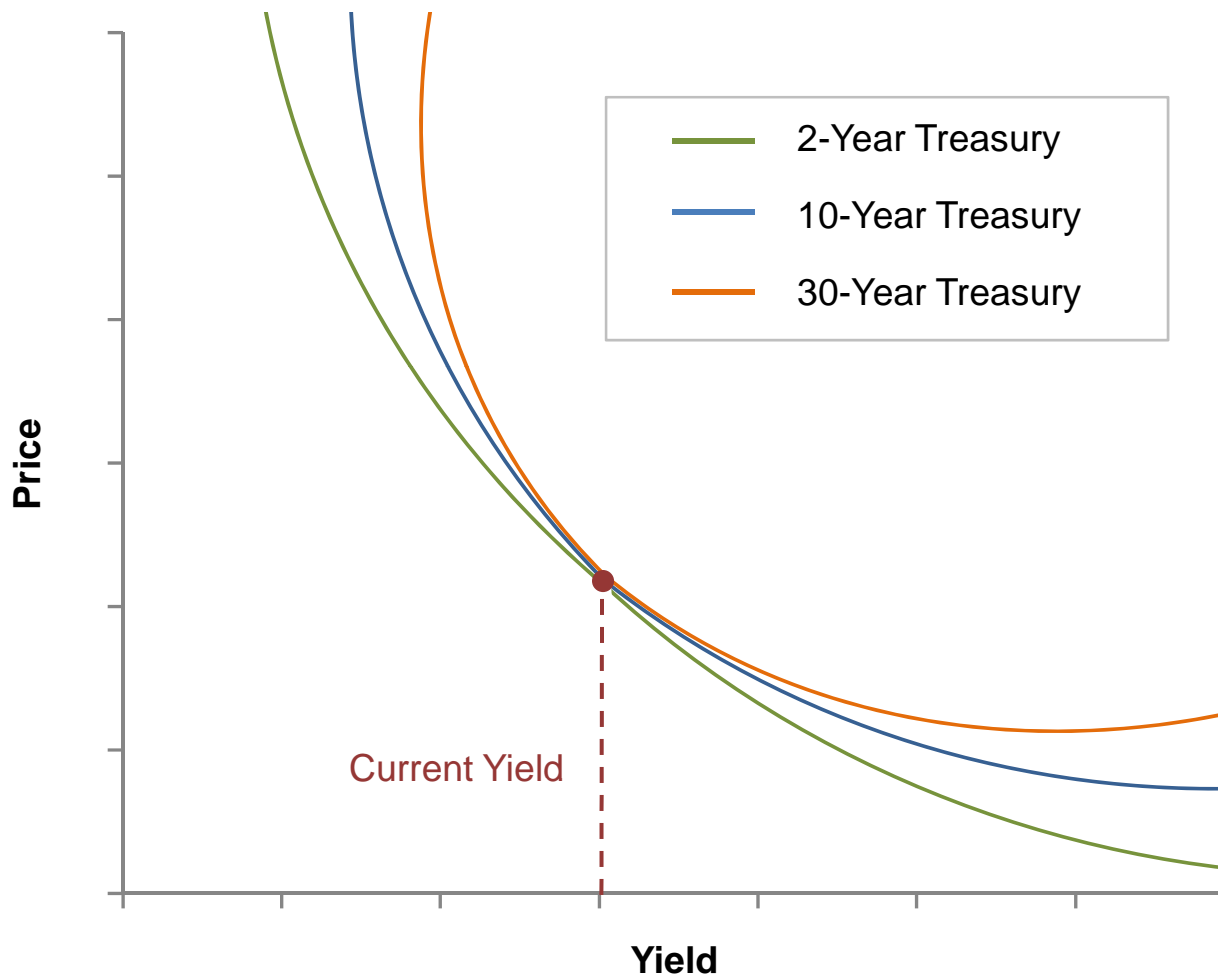
Impact of Interest Rate Changes



- Effects both assets and liabilities





Maturity Effects the Degree of Price Volatility



- There is no free lunch: Greater rewards require greater risk



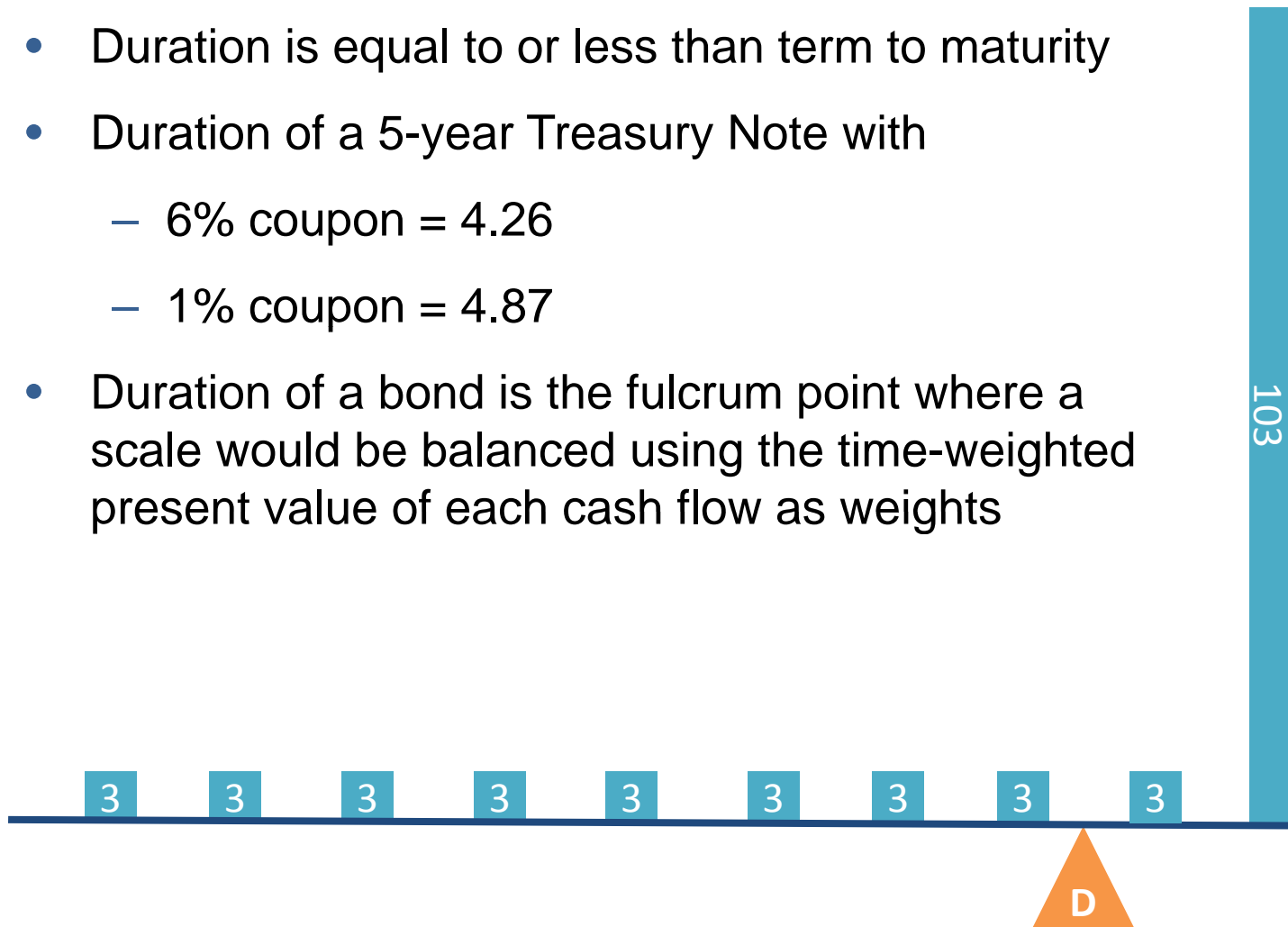
What is “Duration?”

- A mathematical calculation of a bond’s or portfolio’s sensitivity to changes in interest rates.
- For every 100 basis point (1%) change in interest rates, a bond’s price will change approximately the same percentage as its duration, but in the opposite direction.
- Example:
 - Duration = 2.5 years
 - Interest rates  by 100 basis points
 - The market value of the security  by approximately 2.5%
 - The market value of a \$1,000,000 investment falls to roughly \$975,000



Duration: Time-Weighted PV of Cash Flows

- Duration is equal to or less than term to maturity
- Duration of a 5-year Treasury Note with
 - 6% coupon = 4.26
 - 1% coupon = 4.87
- Duration of a bond is the fulcrum point where a scale would be balanced using the time-weighted present value of each cash flow as weights





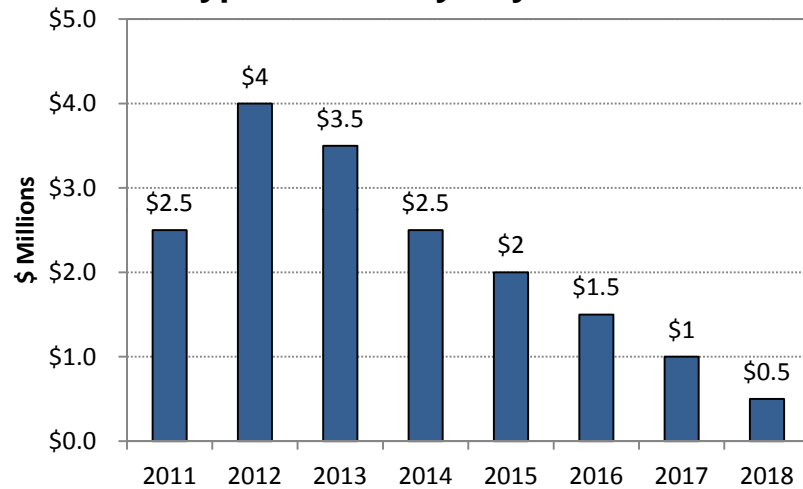
Portfolio Management Strategy

- Strategies can be liability driven, but managed actively:
 - Active Management techniques include:
 - Asset class allocation
 - Sector allocation
 - Duration management
 - Maturity distribution
 - Yield curve placement
 - Security selection

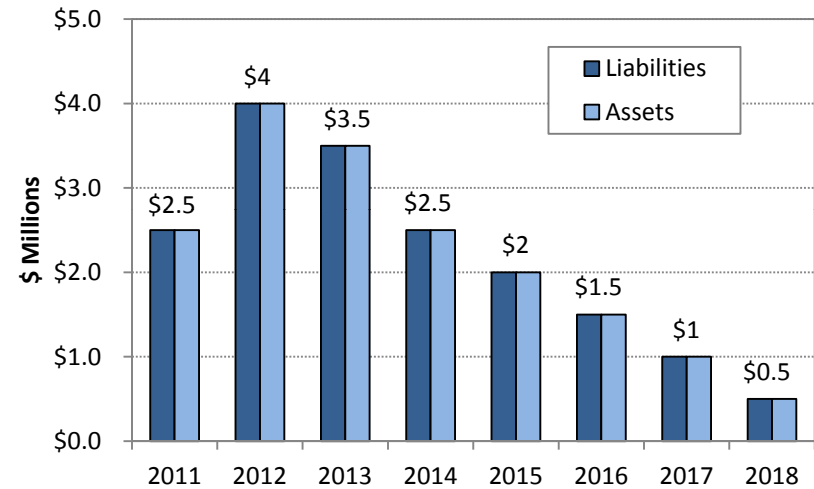


Matching Assets to Liabilities

Typical Liability Pay-Out Pattern



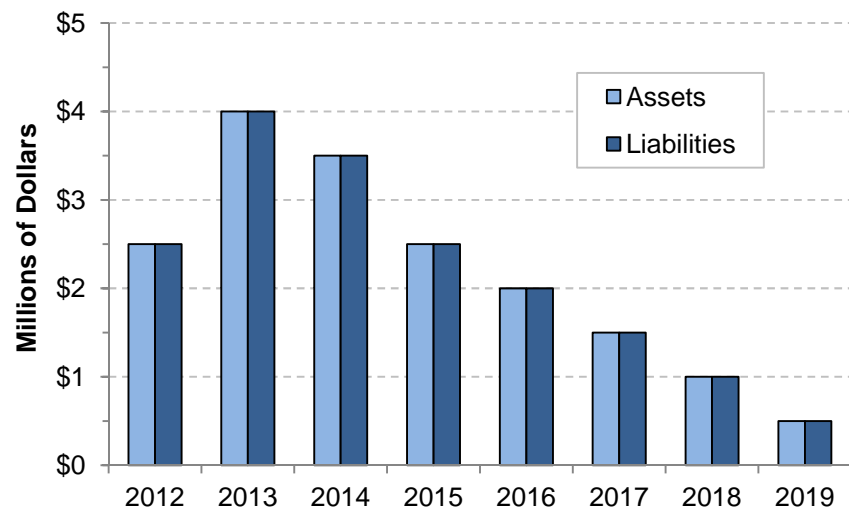
Perfect Cash Flow Match





Impact of Liability Mismatch

Perfect Cash Flow Match



Total Assets \$17.500 million

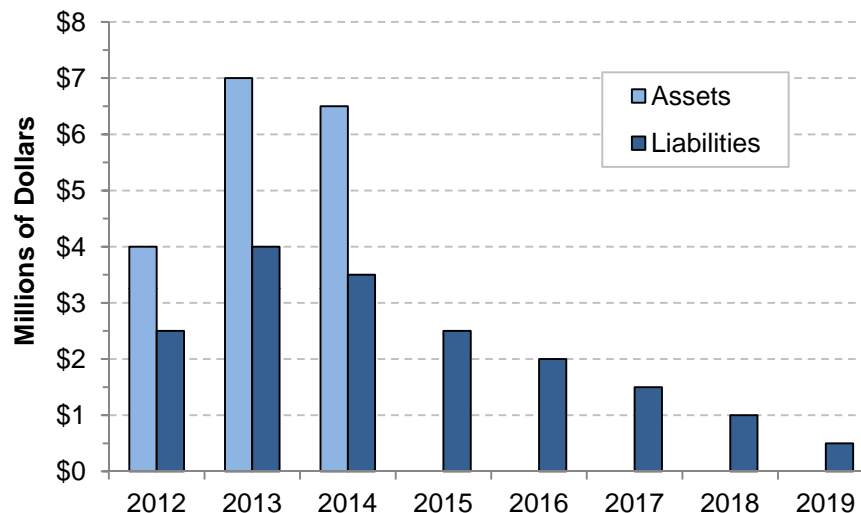
Total Liabilities \$17.500 million

Duration of Assets 3.22 years

Duration of Liabilities 3.22 years

Equal Duration of Assets and Liabilities

Mismatched Portfolio



Total Assets \$17.500 million

Total Liabilities \$17.500 million

Duration of Assets **2.04 years**

Duration of Liabilities 3.22 years

Shorter Duration of Assets than Liabilities



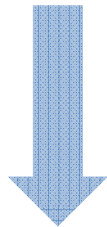
Impact of Liability Mismatch

Perfect Cash Flow Match

Before

Total Assets \$17.500 million

Total Liabilities \$17.500 million



After

Total Assets \$18.064 million

Total Liabilities \$18.064 million

Impact on Surplus = \$0

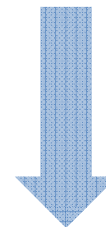
Liabilities Remain Funded

Mismatch Portfolio

Before

Total Assets \$17.500 million

Total Liabilities \$17.500 million



After

Total Assets \$17.857 million

Total Liabilities \$18.064 million

Impact on Surplus = **\$(207,000)**

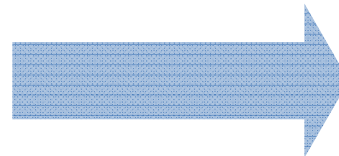
Liabilities Become Un-funded

Assume a 100 basis point (1%)
decrease in interest rates



Security Selection

- Portfolio managers make two kinds of decisions when managing a portfolio:
 - Broad: Structure, Duration, Sector Allocation
 - Narrow: Security by security basis
- Factors that affect security evaluation:
 - Issuer
 - Industry
 - Maturity
 - Coupon
 - Yield
 - Credit rating
 - Structure
 - Issue size
 - Frequency



Relative Value



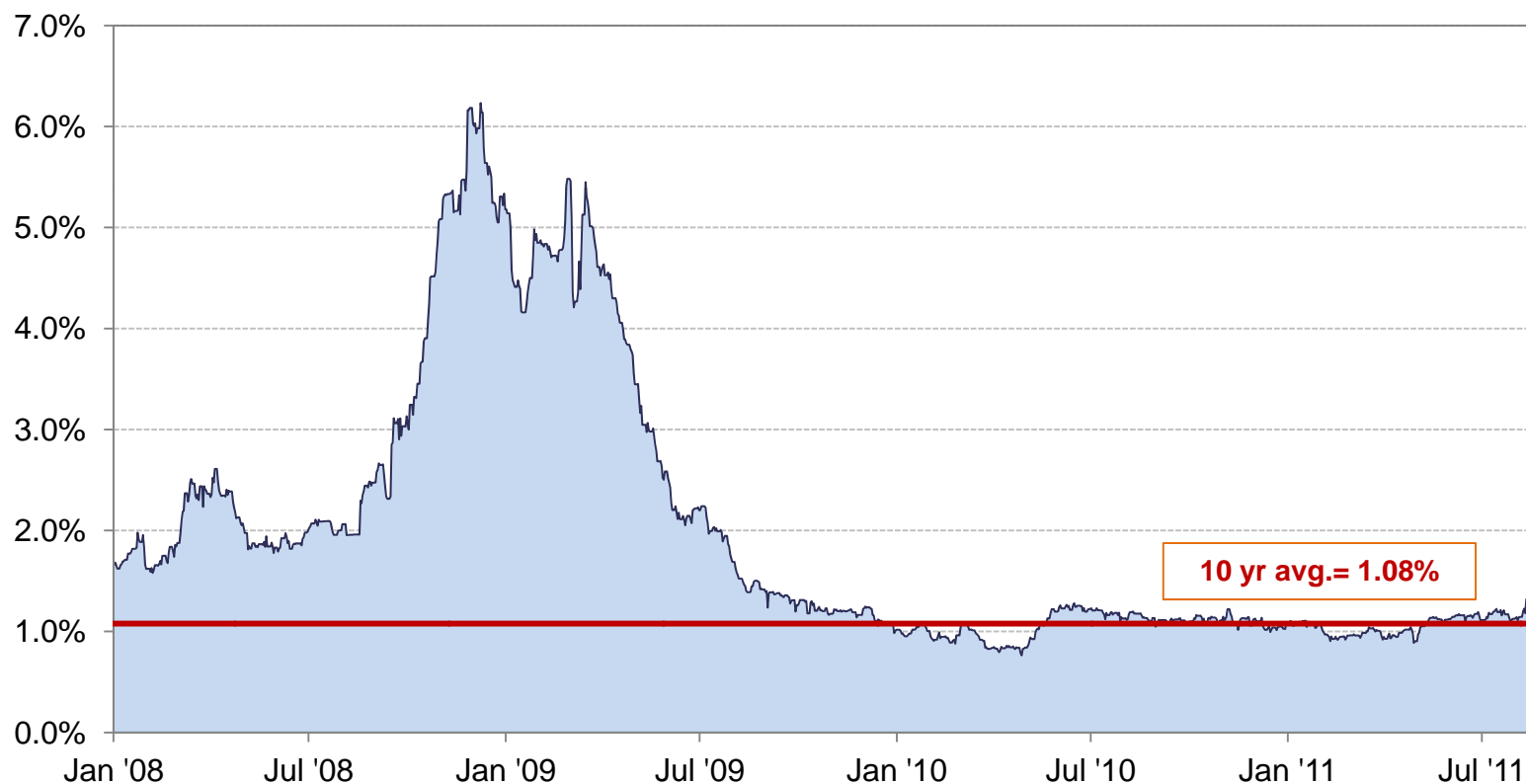
What is Yield Spread?

- Spread = Yield of Security A – Yield of Security B
 - Usually use a reference security, such as a comparable maturity U.S. Treasury, as Security B
- Represents compensation for perceived additional risk
 - Credit
 - Liquidity
 - Prepayment
 - Reinvestment
 - Structure/complexity
 - Sovereign



Determining Relative Value

2-Year Corporate/Treasury Spread January 1, 2008 – August 15, 2011



Source: Bloomberg

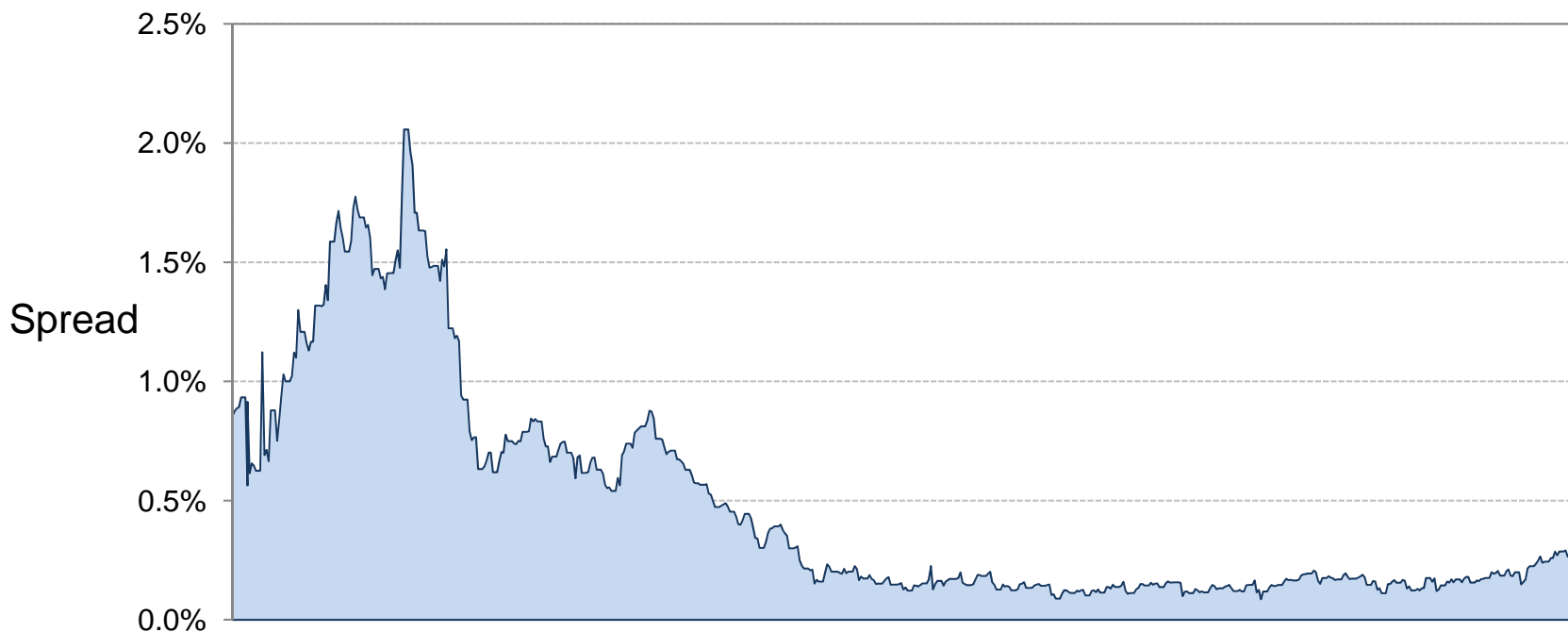
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Changing Allocation Based on Spreads

2 Year Treasury – Agency Spread

September 2008 – June 2010



Allocations	4Q08	1Q09	2Q09	3Q09	4Q09	1Q10	2Q10
Federal Agency	71%	65%	57%	40%	41%	42%	46%
U.S. Treasury	9%	12%	29%	37%	36%	35%	34%

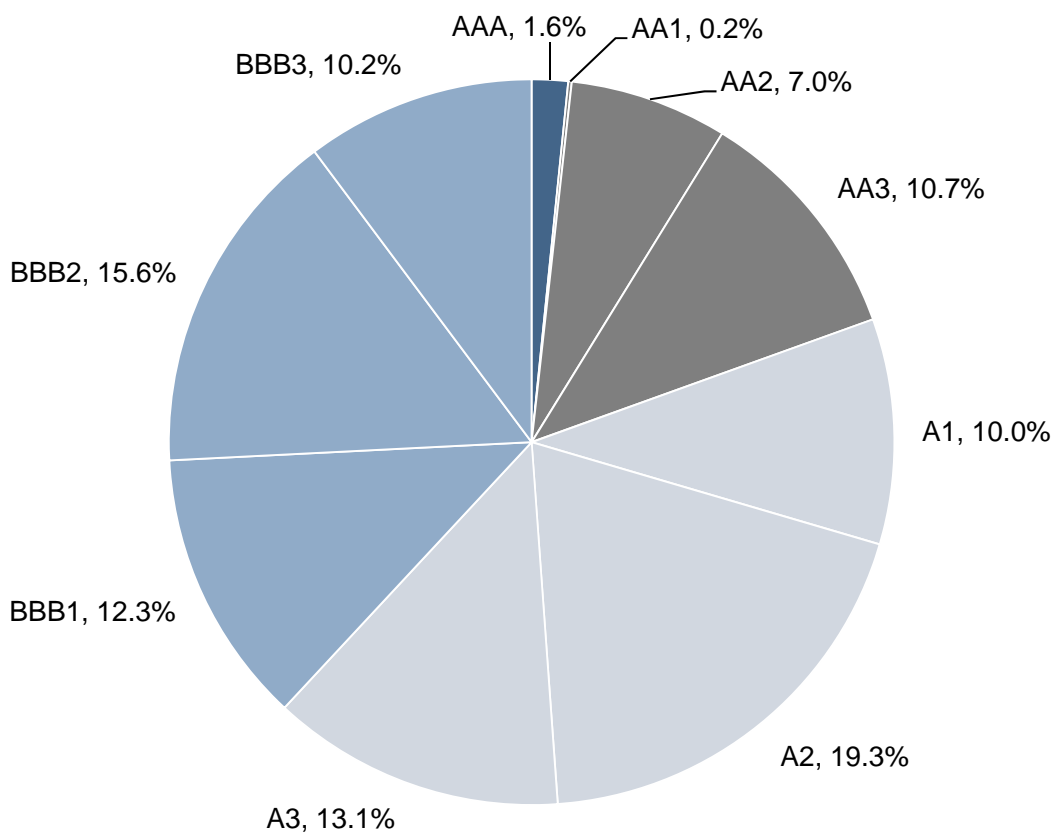
Source: Bloomberg

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Composition of the Corporate Universe

**Credit Rating Distribution of
Merrill Lynch Investment Grade Corporate Index
as of August 2011**



Category	% of Index
AAA	1.6%
AA	17.9%
A	42.4%
BBB	38.1%



Definition of Credit Ratings

<u>S&P</u>	<u>Moody's</u>	<u>Explanation of Rating</u>
AAA	Aaa	Extremely strong capacity to meet financial commitments. Highest Rating.
AA	Aa	Very strong capacity to meet financial commitments.
A	A	Strong capacity to meet financial commitments, but somewhat susceptible to adverse economic conditions and changes in circumstances.

BBB	Baa	More susceptible to adverse effects of changes in economic conditions.

BB	Ba	Has speculative elements; future not considered to be well-assured.
B	B	Generally lack characteristics of desirable investment.
CCC	Caa	Poor standing. Vulnerability to default.
C	C	Extremely poor prospect.
D	D	In default.



Credit Screening and Monitoring

Preliminary Screening

- Minimum credit ratings
- Consistent availability
- Relative value

General Market Assessment

- Macro-economic conditions
- Regulatory environment
- Industry/sector trends

Issuer Review

- Financial statements
- Quarterly earnings
- Record of historical performance
- Stable or improving credit profile
- Diversified sources of revenue/profits
- Quality management

Approved Issuer List

- Issuers, brokers, repo counter-parties
- Selective, conservative list
- Detailed monitoring process



The Importance of Diversification

Annual Fixed-Income Performance As of June 30, 2011

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	YTD
Best ↑ ↓ Worst	10.91%	10.03%	4.85%	17.15%	10.28%	11.91%	6.18%	5.45%	3.94%	5.32%	9.06%	13.98%	14.45%	7.77%	4.76%
	9.62%	8.95%	3.66%	13.37%	9.63%	11.57%	5.44%	4.74%	3.07%	4.96%	8.86%	11.33%	14.04%	6.00%	2.91%
	9.57%	8.86%	3.51%	12.07%	8.80%	10.77%	3.82%	4.10%	2.81%	4.85%	8.03%	9.69%	11.57%	5.88%	2.86%
	9.49%	8.76%	3.06%	11.93%	8.63%	10.75%	3.29%	3.70%	2.62%	4.62%	7.85%	8.73%	5.76%	5.67%	2.59%
	9.32%	8.63%	1.61%	11.28%	8.34%	10.73%	3.23%	3.50%	2.62%	4.51%	7.42%	8.30%	3.20%	5.22%	2.30%
	8.27%	7.92%	0.85%	10.71%	8.30%	9.98%	2.61%	3.26%	2.27%	4.49%	7.32%	7.78%	2.17%	4.61%	2.27%
	7.86%	7.32%	0.55%	10.19%	8.15%	9.41%	2.55%	2.61%	1.96%	4.44%	6.96%	7.05%	2.04%	4.35%	1.76%
	7.76%	7.19%	-0.20%	10.14%	8.14%	9.05%	2.26%	1.96%	1.93%	4.37%	6.74%	6.61%	0.90%	3.95%	1.68%
	7.05%	7.10%	-0.75%	8.57%	8.12%	7.27%	2.18%	1.45%	1.77%	4.29%	6.04%	2.06%	0.78%	2.35%	1.61%
	6.66%	7.00%	-0.96%	8.54%	6.74%	6.11%	2.13%	1.33%	1.73%	3.96%	5.39%	-2.38%	0.21%	2.32%	0.96%
	6.63%	6.86%	-2.38%	7.99%	4.47%	5.76%	1.90%	1.18%	1.67%	3.57%	5.00%	-3.95%	-1.41%	2.25%	0.86%
	5.33%	5.23%	-6.34%	6.18%	4.42%	1.78%	1.15%	0.91%	1.58%	3.14%	3.29%	-4.94%	-3.72%	0.13%	0.08%

ML 3-month T-Bill	ML 1-3 US Treasury	ML 1-10 Treasury	U.S. Treasury Master	ML 1-3 Agency	ML 1-10 Agency	Unsubordinated U.S. Agency Master	ML US Corporates, A-AAA, 1-3 Yrs	ML US Corporates, A-AAA, 1-10 Yrs	ML US Domestic Master, A-AAA	Mortgage Master Index	Municipal Master Index
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Source: Bloomberg



The Importance of Diversification

Annual Asset Class Performance
As of June 30, 2011

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	YTD
Best	35.18%	38.71%	43.09%	31.84%	14.03%	25.91%	48.54%	31.56%	21.36%	35.03%	16.23%	5.24%	37.21%	29.09%	10.19%
	33.36%	28.58%	33.16%	26.36%	13.93%	10.27%	46.03%	22.25%	20.06%	26.34%	15.85%	-6.46%	34.47%	27.94%	8.59%
	31.78%	20.00%	26.96%	22.83%	8.43%	6.74%	38.59%	20.25%	13.54%	23.48%	11.81%	-21.37%	31.78%	24.50%	7.43%
	30.49%	16.24%	26.47%	12.24%	7.29%	3.81%	37.08%	16.49%	12.17%	22.25%	11.17%	-28.92%	28.01%	16.83%	6.83%
	20.29%	15.63%	24.35%	11.63%	2.80%	1.02%	30.03%	14.48%	7.49%	16.60%	10.25%	-35.65%	26.46%	16.71%	6.02%
	16.20%	8.67%	21.04%	7.01%	-5.59%	-11.43%	29.75%	14.31%	7.05%	15.79%	7.05%	-36.85%	20.58%	15.51%	5.92%
	13.90%	1.23%	11.40%	4.07%	-9.23%	-15.52%	28.68%	10.88%	5.26%	13.35%	6.97%	-37.00%	19.69%	15.06%	4.98%
	12.95%	-5.11%	7.35%	-9.10%	-11.89%	-15.94%	23.93%	9.15%	4.91%	10.39%	5.49%	-37.74%	18.91%	13.11%	3.77%
	9.68%	-6.45%	-0.83%	-14.17%	-19.51%	-22.10%	11.61%	6.86%	4.71%	9.07%	-0.17%	-38.44%	11.47%	7.75%	2.72%
	1.78%	-17.51%	-1.49%	-22.42%	-20.42%	-27.88%	8.99%	6.30%	4.15%	4.34%	-9.78%	-38.54%	5.93%	6.54%	-0.27%
Worst	-3.39%	-27.03%	-4.62%	-22.43%	-21.44%	-30.26%	4.11%	4.34%	2.43%	2.07%	-15.70%	-43.38%	-16.85%	5.70%	-2.58%
	Russell 1000 Value Index	Russell 1000 Growth Index	S&P 500	Russell 2000 Value Index	Russell 2000 Growth Index	MSCI EAFE (net)	FTSE NAREIT Equity REIT	NCREIF Property Index	HFRI Fund of Funds	DJ-UBS Commodity TR Index	Barclays Capital Aggregate				

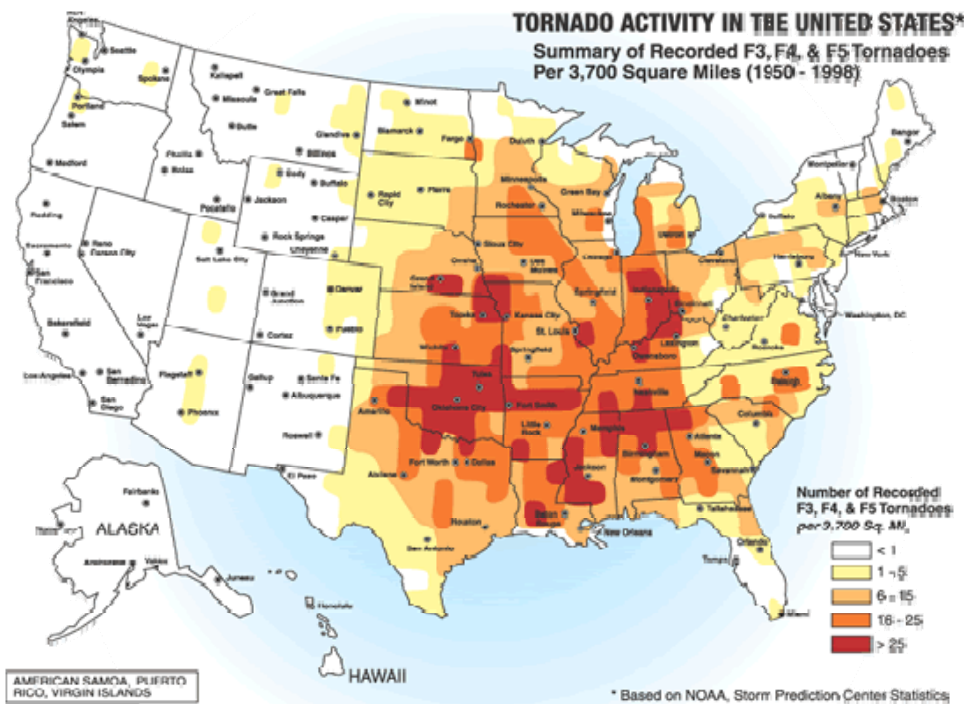
Source: Bloomberg



Identify Any Special Risk Factors

**Total Number of Tornadoes by State
1950-1994**

Rank	State	Amount
1	Texas	5,490
2	Oklahoma	2,300
3	Kansas	2,110
4	Florida	2,009
5	Nebraska	1,673
6	Iowa	1,374
7	Missouri	1,166
8	South Dakota	1,139
9	Illinois	1,137
10	Colorado	1,113



Source: www.statemaster.com/graph/geo_tot_tot_num-geography-tornadoes-total-number
http://en.wikipedia.org/wiki/File:Tornado_Alley.gif



Putting It All Together

Conclusion

- Liability-driven investing aligns with business needs
- Active management adds further value
- Benchmark management alone is one-dimensional
- Portfolio structure and strategy are key

What We've Learned

- Understand the unique characteristics of YOUR risk pool
- Create an investment policy that meets YOUR needs, states YOUR objectives and with which YOU are comfortable
- Learn the basics about security types and market dynamics
- Develop an understanding of portfolio management principles as they apply to YOUR industry and may affect the financial results of YOUR pool
- Work with experts to create and implement an effective portfolio strategy



Questions?

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Disclaimer

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