

AFP®



Annual Conference

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ORIGINAL→ESSENTIAL→UNBIASED→**INFORMATION**

Controlling the Impact of Pension Expense on Corporate Finance

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Investment
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SEI's Institutional
Group

Agenda

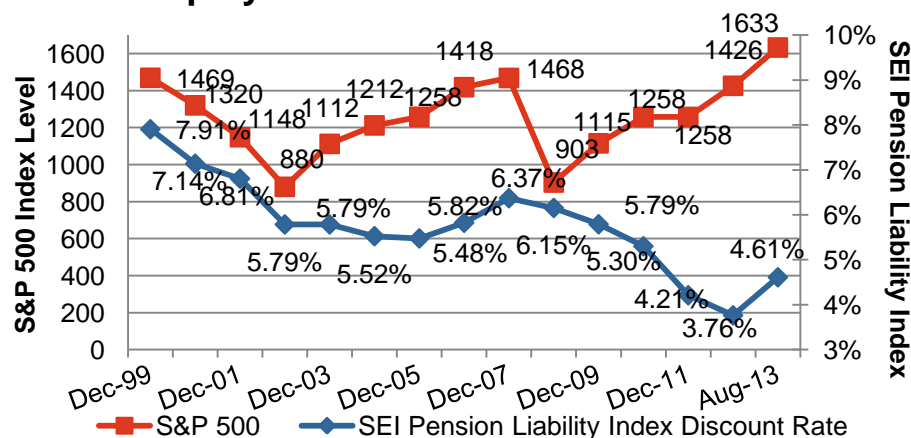
- **Current investment outlook**
- **Enterprise risk management**
- **Strategies for pension management**
- **Case study**
- **Q&A**

Outlook

It is critical to manage both equity and interest rate risk

- AA corporate-bond discount rates and equity markets have fallen significantly since 2000, hurting plan funded status
- As a result, liabilities have grown much faster than assets (as demonstrated by the green columns in the table below)
- Interest rate movements often overwhelm the impact of portfolio returns on plan funded status
- Failure to properly manage these risks can result in unnecessary funded status volatility and erosion

Equity Market and Interest Rate Levels

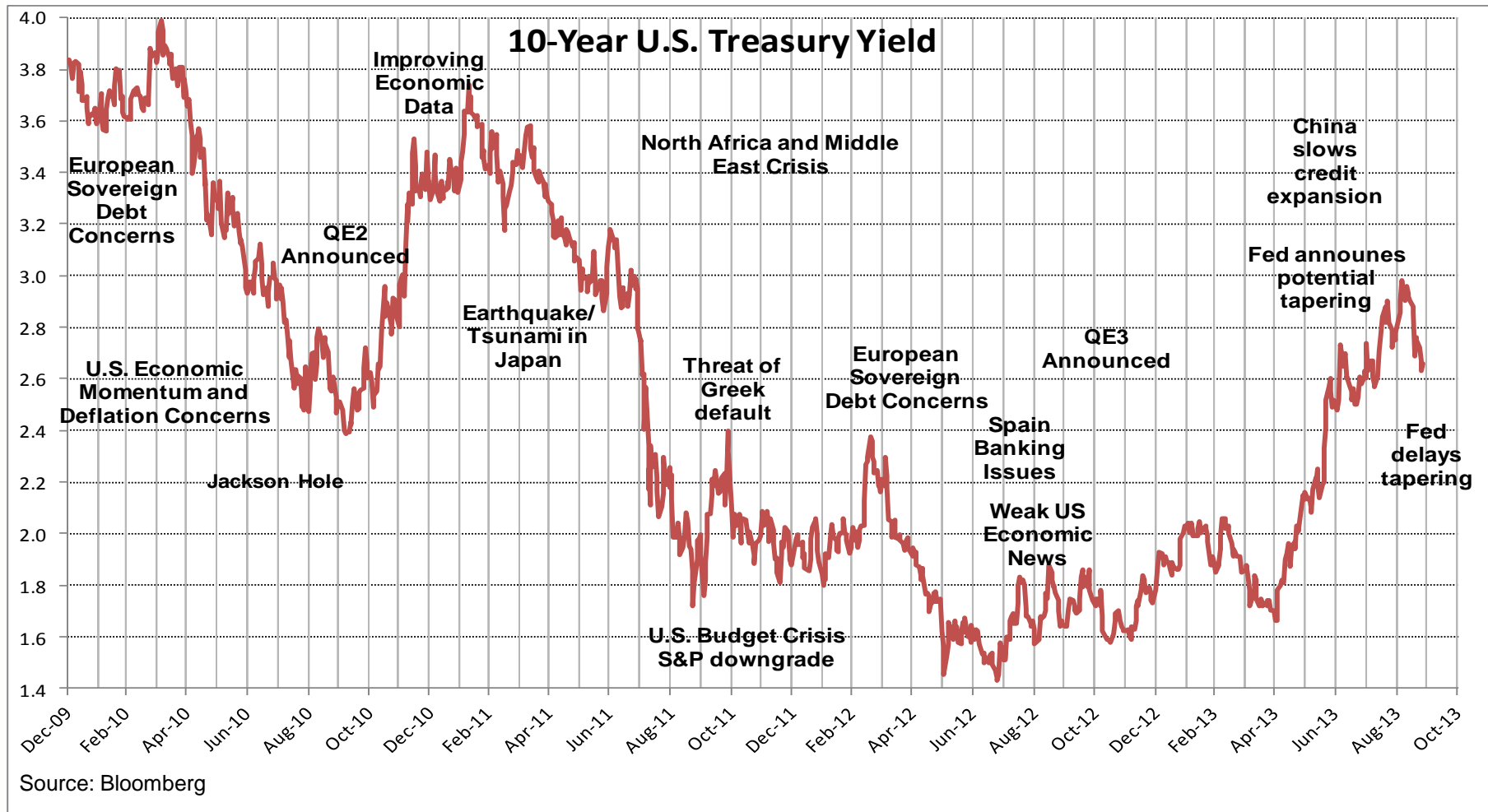


Asset Versus Liability Returns as of 8/31/2013

Calendar Year	Returns since 2000														Annualized	Cumulative
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013 YTD		
70/30 Portfolio ¹ return (%)	-3.3	-7.6	-11.3	24.0	11.3	6.6	14.3	7.0	-27.6	22.5	12.5	0.7	13.1	9.1	4.2	76.5
SEI Pension Liability Index ² return (%)	17.6	11.4	20.4	6.1	9.5	6.3	1.7	-0.3	9.9	11.0	12.2	21.4	10.6	-8.5	9.2	233.5
Excess returns of Portfolio over Liabilities	-20.9	-19.0	-31.7	17.9	1.8	0.3	12.6	7.3	-37.5	11.5	0.3	-20.7	2.5	17.6	-5.0	-157.0

Source: Bloomberg. The 70/30 Portfolio is based on the aggregate asset allocation of the top 1,000 defined benefit plans (Source: Pension & Investments) and is comprised of 50% Domestic Equities (Russell 3000) 20% International Equities (MSCI EAFE) and 30% Fixed Income (Barclay's Capital Aggregate Index). The SEI Pension Liability Index is comprised of the SEI Benefit Payment Stream, which is an equally weighted average of benefit payment streams of 15 of SEI Investments Management Corporation's institutional clients that had durations between 10 and 14 years as of June 30, 2010, discounted by Citigroup Pension Discount Curve. The Citigroup Pension Discount Curve is a spot curve derived from investment grade bonds.

10-year treasury yield: Record lows



Global market review: Markets pause on Fed concern

- **Market review**

- The Federal Reserve provided guidance that they would begin “tapering” QE in the second half, impacting fragile investor confidence
- Bonds sold off sharply as real yields spiked
- U.S. equities led all asset classes and geographies
- Concerns of moderating growth within the emerging markets pressured EM equities, debt and commodities

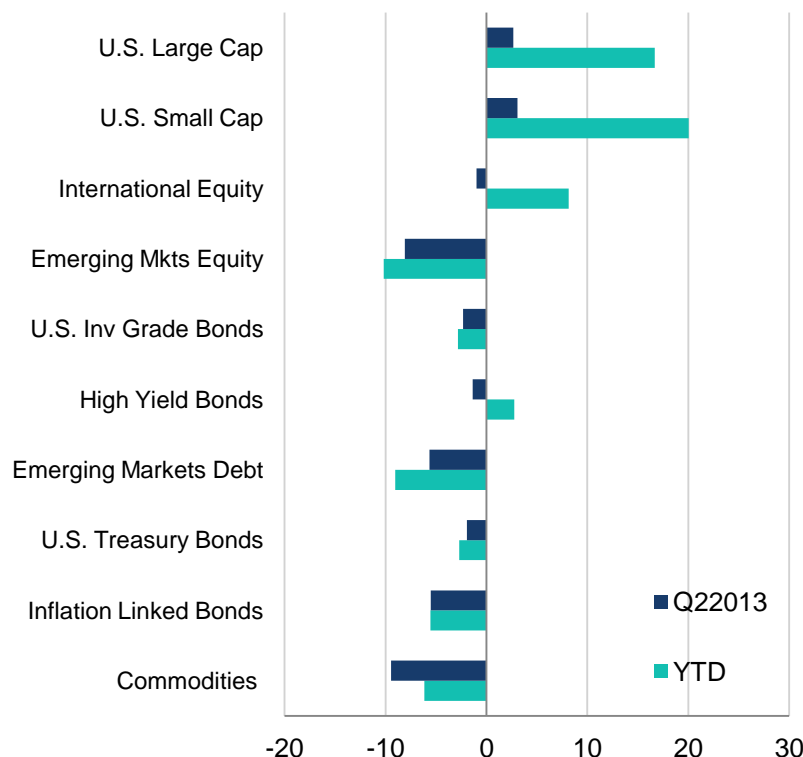
- **Strategy positioning**

- Client portfolios are generally well positioned for increased volatility amidst rising rates
- Bond market volatility provided opportunity for managers to add attractively valued credit exposure

- **SEI’s market and economic outlook**

- Investors overreacted to Fed comments
- Interest rates are likely to be range bound at these higher levels
- Slowing corporate earnings growth may lead to volatility as investors’ attention turns to fundamentals
- Select emerging market equity valuations have become attractive

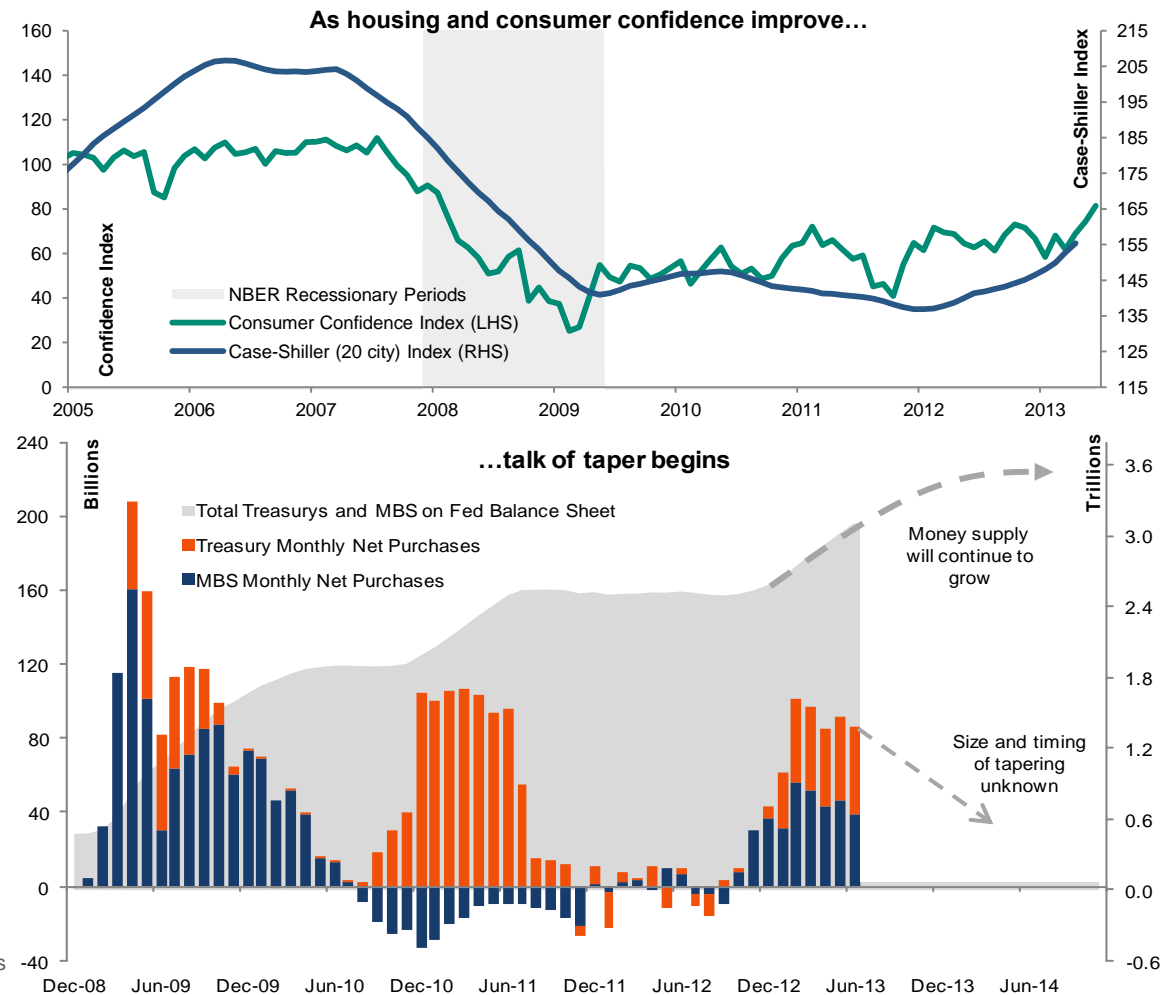
**Financial Markets Performance as of 8/31/13
Selected Markets Q2 2013 and YTD (%)**



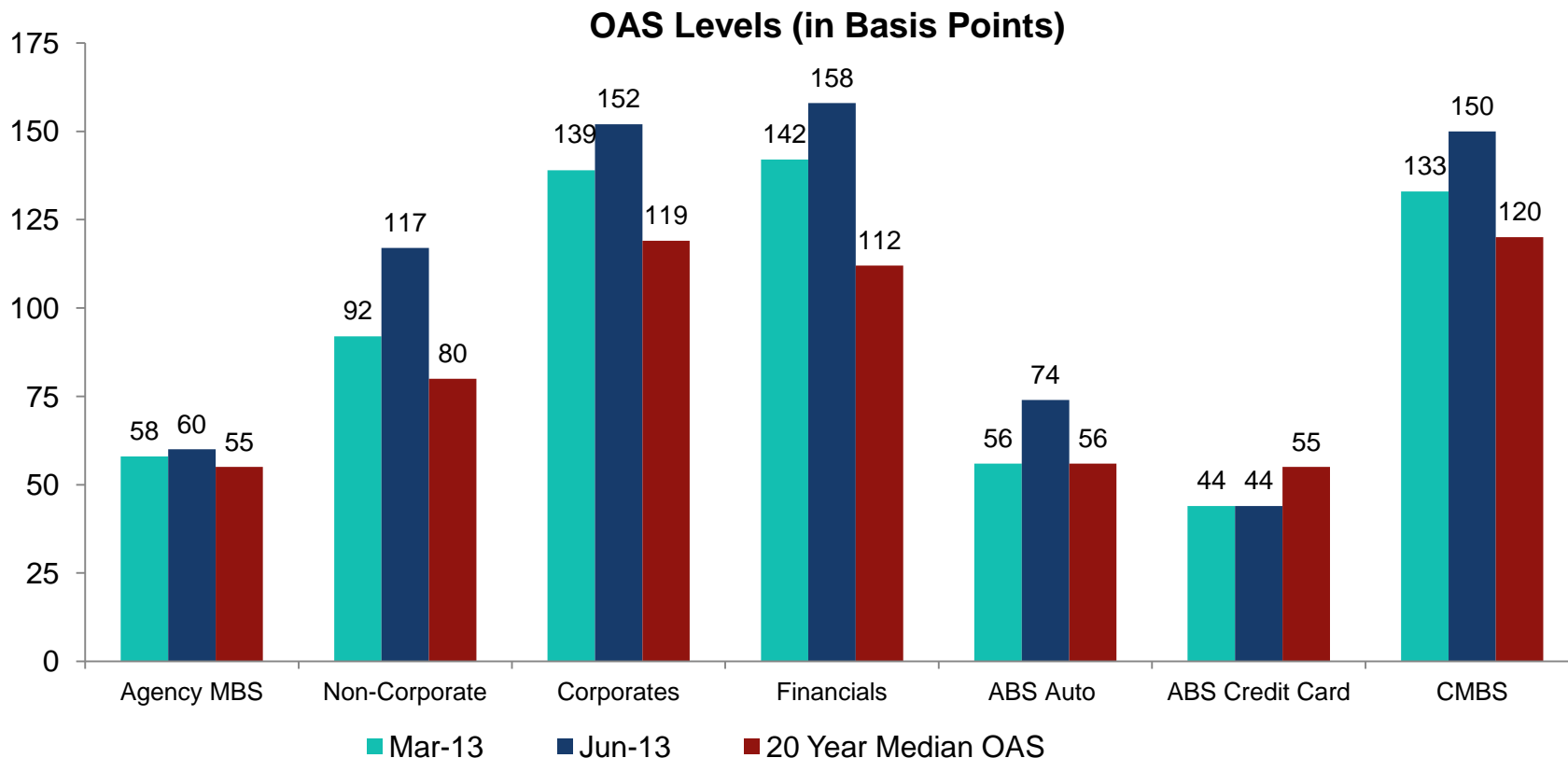
U.S. Large Cap = Russell 1000, U.S. Small Cap = Russell 2000, International Equity = MSCI EAFE, Emerging Markets Equity = MSCI EME, U.S. Investment Grade Bonds = Barclays U.S. Aggregate, High Yield = BofA ML Master II HY Constrained, Emerging Markets Debt = JP Morgan EMBI Global Diversified, Treasury = Treasury component of the Barclays U.S. Aggregate, Inflation Linked = Barclays 1-10 Year TIPS, Commodities = DJ UBS Commodity Index. Source: SEI, FactSet

“Taper talk” moves the markets

- An improving housing market and rising consumer confidence underpin the Fed’s view that downside risks are diminishing
- Tapering implies that the Fed will **slow** the rate of growth in its balance sheet rather than **withdrawing** monetary stimulus from the economy
- SEI believes that the markets overreacted to the Fed’s announcement
- The Fed emphasized that the rate of tapering will be dependent on economic conditions
- We believe tapering will be slower than many expect



Taper talk results in wider spreads and increased volatility: Market reprices uncertainty around US monetary policy



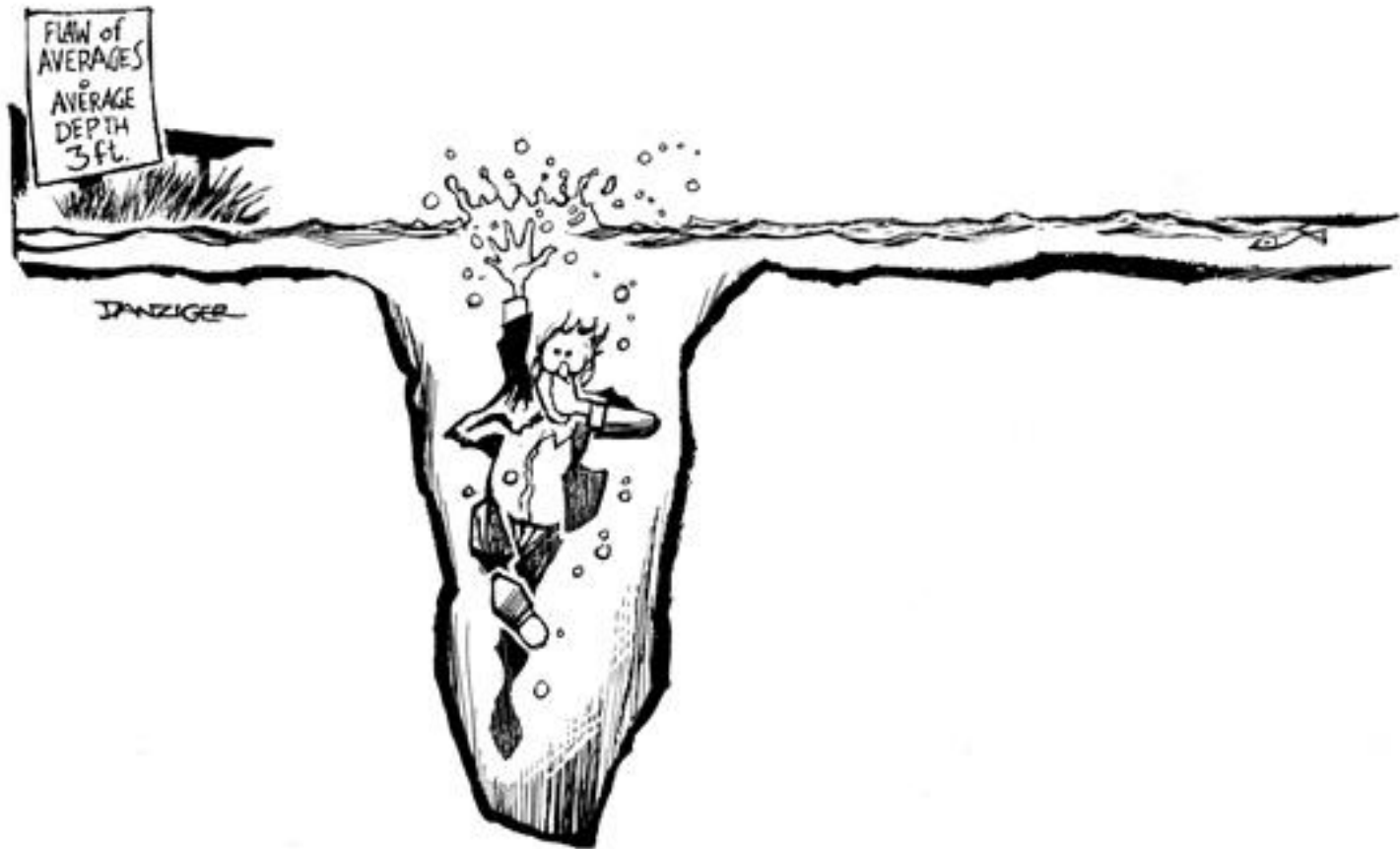
20-Year Median option-adjusted spread (OAS) calculated based on monthly data beginning 10/31/1992. CMBS OAS data begins 7/30/1999. Option-Adjusted Spreads estimate the difference in yield between a security or collection of securities and comparable Treasuries after removing the effects of any special features, such as provisions that allow an issuer to call a security before maturity. Source: Barclays

What will 2013 and 2014 look like?

- **Liabilities (absent future changes)**
 - Rates will come down across the curve
 - 25-year corridor expands to 85%
 - Liability losses may increase in short-term
- **Rate outlook**
 - Fed rate low until late 2015
 - Flat to slight increases is general expectation, short-term
- **Assets**
 - 2013: Will still have 1/3 of 2011 losses unrecognized and 2/3 of 2012 gains
 - **Smoothed close to market**
- **Asset outlook**
 - Unclear
 - Long-term expect growth
 - Short-term lower growth than in recent history

Enterprise risk management & the pension

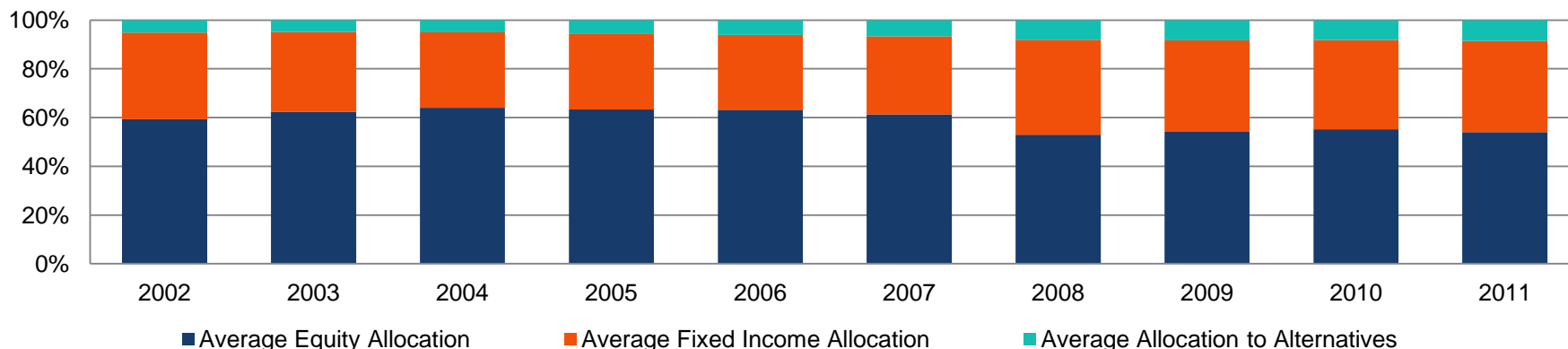
Average results - over time - can be fatal



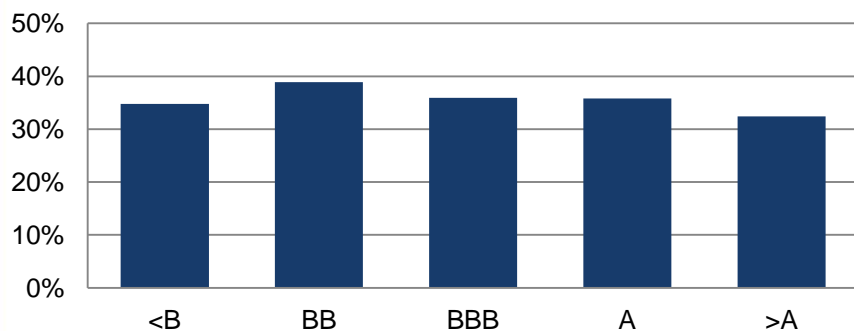
Plan sponsors typically implement standardized “balanced fund” asset allocation

Standard implementation – “Balanced Fund”

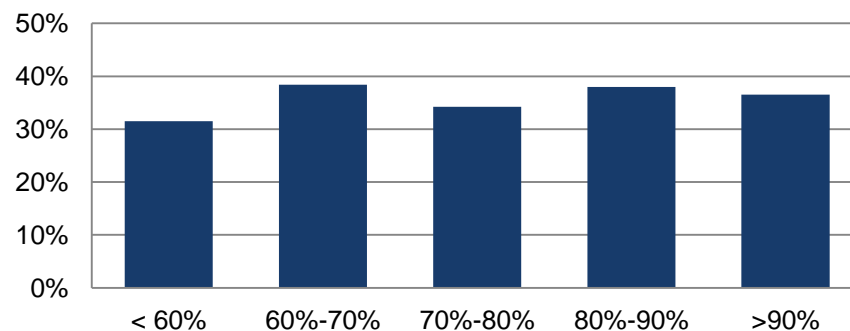
Average Pension Allocations



Fixed Income Allocation by Rating - U.S.



Fixed Income Allocation by Funded Status - U.S.



Note: Based on year-end 2011 financial results for 1,100 public companies with pension assets > \$10 MM. Source: SEC Filings, CapIQ.

Why the disconnect? Frame of reference often an individual retirement account

- **Wrong frame of reference**

- Application of classic portfolio optimization pioneered by Harry Markowitz, serves as a basis for implementation
- Approach to portfolio strategy similar to multi-asset construction of the efficient frontier
- Basis is primarily asset-only, with a modest overlay of hedging the pension liability



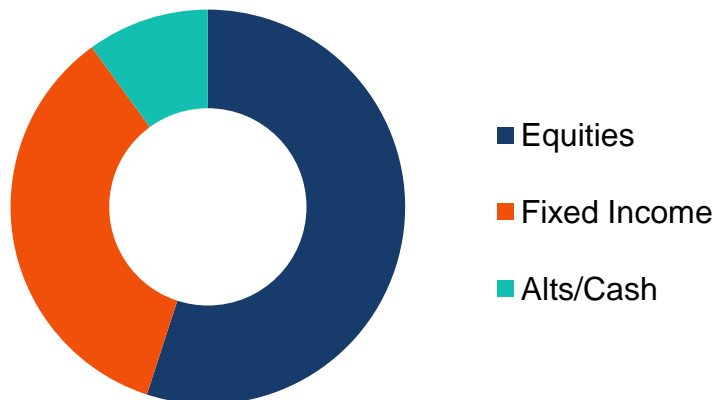
- **Significant departures from traditional individual investment strategies**

- Funding requirements – plan sponsors need to annually fund 1/7th of their funding gap
- Fixed liability – corporations cannot modify their retirement like individual savers
- No “investor life-cycle” model

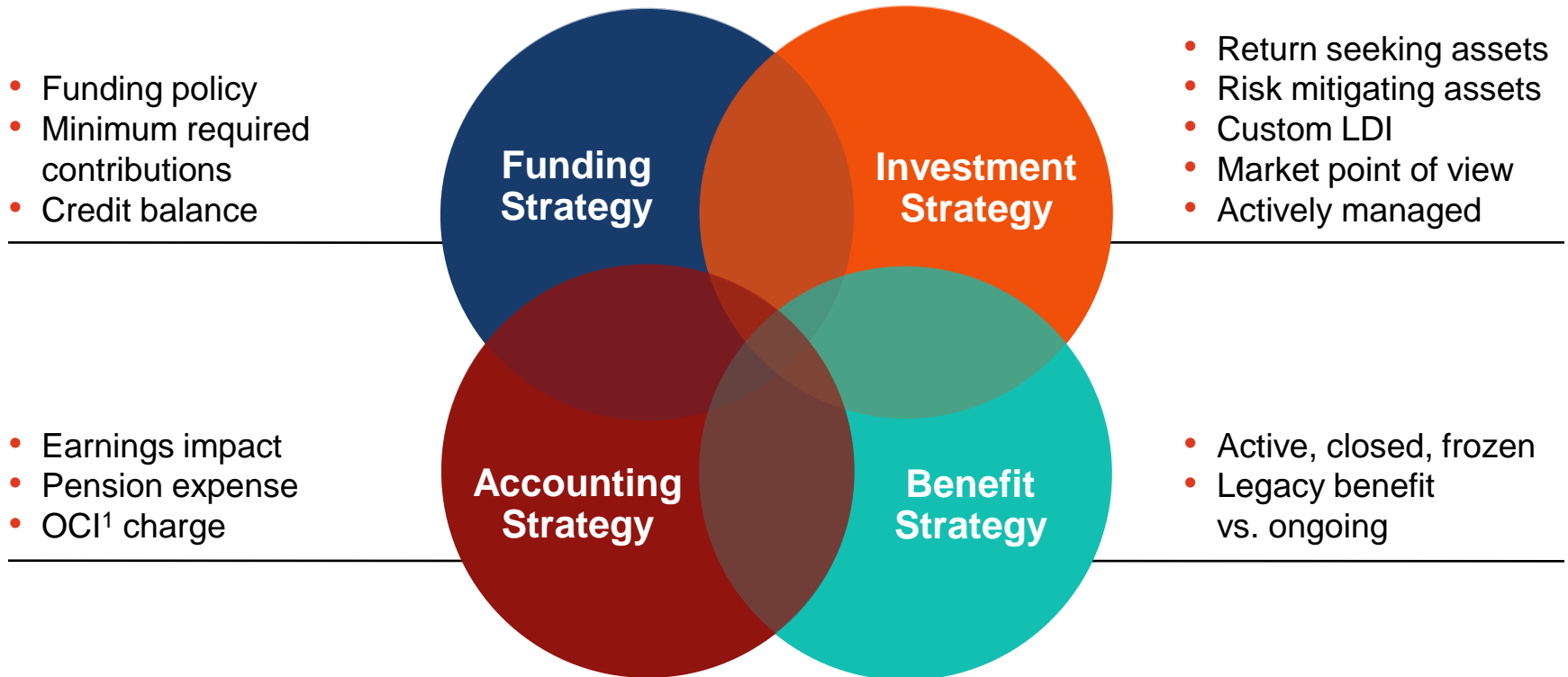
- **Corporate pensions in accumulation, consolidation and spending phase simultaneously**

- Exposure to interest rates reversed
- Asymmetry of benefits

Traditional Optimal Portfolio



Comprehensive plan management



¹ Other Comprehensive Income.

Enterprise Integration: Pension strategy should be part of a corporate-wide asset/liability framework

Asset-Liability Framework

- Pension management is part of an overall risk management structure.
 - Pension liability for corporate sponsors are integrated with other balance sheet and contingent liabilities.
 - Resources and risks need to be evaluated holistically.
- Capital structure decisions/capabilities have a significant impact on approach:
 - Liquidity, debt profile and leverage, capital needs.
- How does risk in the corporate pension plan impact corporate performance, valuation, and volatility?
- How does value-at-risk from the pension plan and corporate financial profile impact contribution strategy and allocation?

Pension, debt and risk management decisions

Corporate leverage

- Debt/equity
- Liquidity
- Risk

Debt profile

- Fixed-floating
- Maturity
- Coupon

Corporate Risk Management

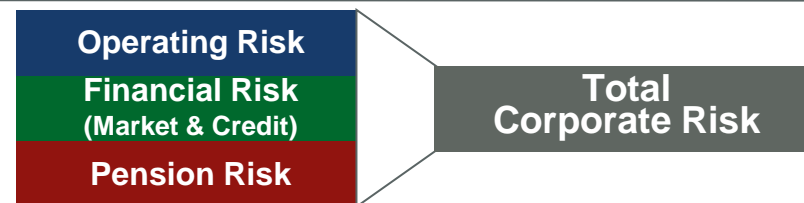
Pension

- Funding level
- Contribution policy
- Asset allocation

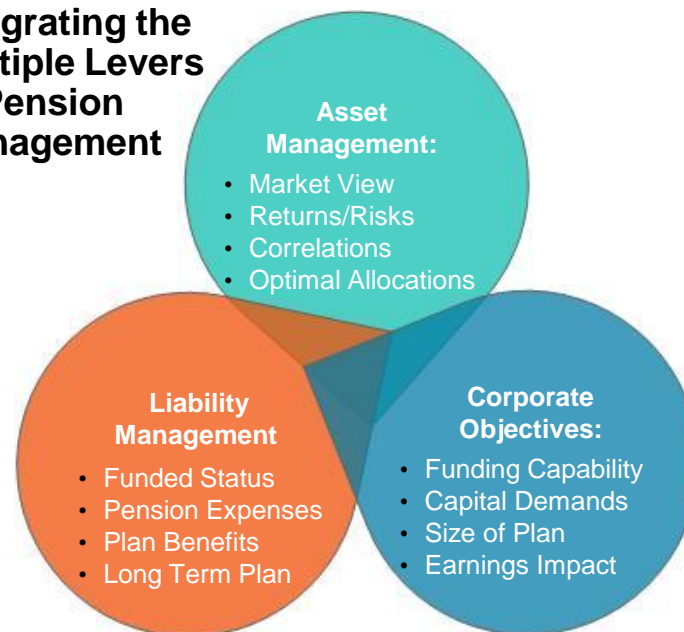
Corporate hedging

- Interest rate hedging
- Commodity hedging

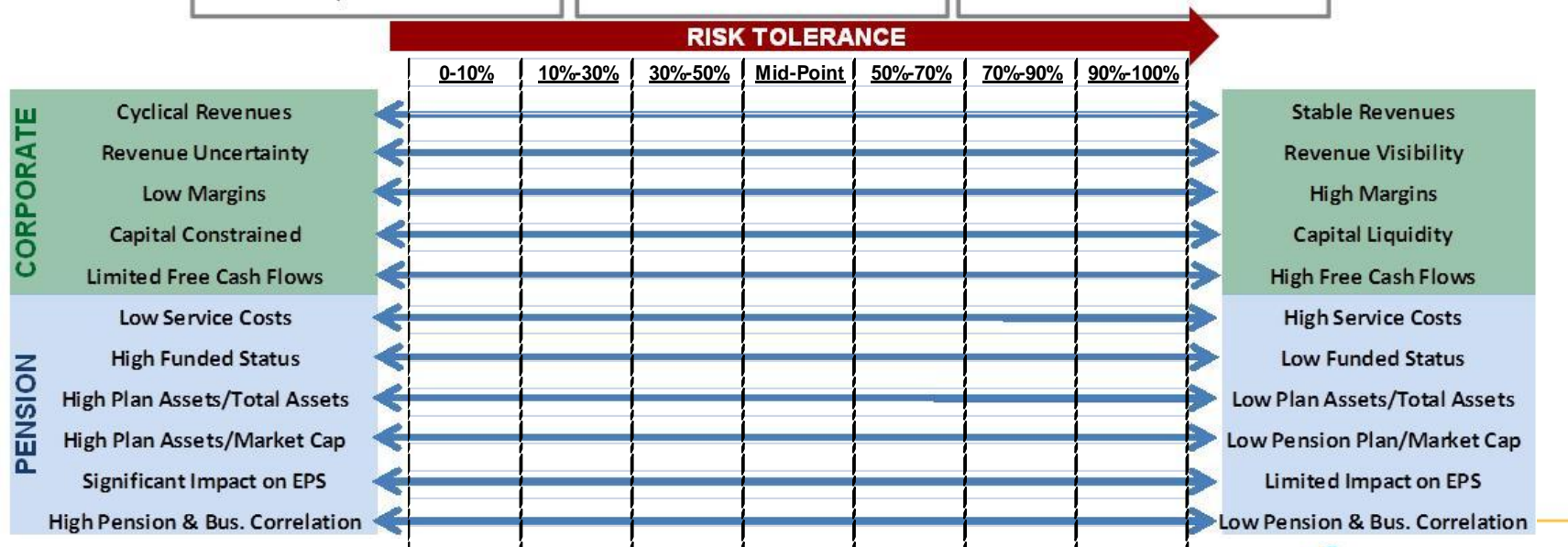
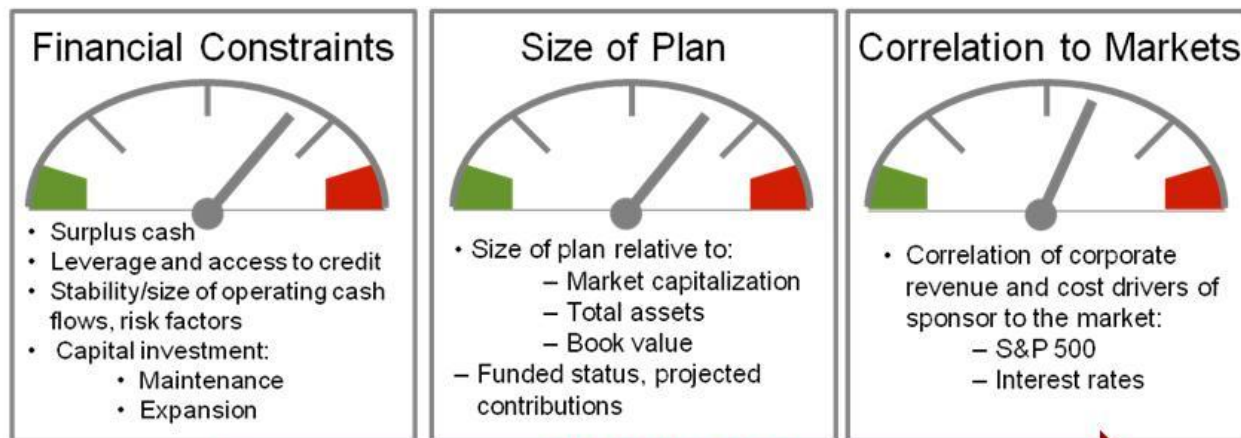
Total Corporate Risk



Integrating the Multiple Levers of Pension Management



Asset allocation and funding strategy needs to be tightly aligned with financials



Analyze the pension exposure both from an aggregate cash perspective...

Pension Liabilities (\$MM)	Legacy Liability (PBO)	+	PBO Annual Increase	+	Annual Service Costs
	\$558.0		\$29.0		\$4.0

Pension Assets		Cash		Debt Capacity		FCF (5 yrs)		Equity	
Value	\$390.0	Value	\$55.0	Value	\$500.0	Value	\$500.0	Value	Unlimited
Expected annual returns	7.3%	Available for pension ≈10%-20%	\$5.0–\$10.0	Available for pension ≈10%-20%	\$50.0–\$100.0	Available for pension ≈20%-30%	\$100.0–200.0	Available for Pension = 10% Plan	\$55.0
Annual income	\$29.0								
Benefit Targeted, dedicated resources High annual returns		Benefit Flexible Limited volatility		Benefit Flexible Limited volatility		Benefit On-going growth potential		Benefit Reduces cash contribution Equity upside	
Considerations Expected vs actual returns Investment volatility Lack of flexibility		Considerations Low returns Liquidity constraints resulting from use		Considerations Cost Liquidity constraints resulting from use		Considerations Volatile Uncertain		Considerations Accretion/Dilution Risk correlation	
Total Capital						\$500-\$700		\$55	

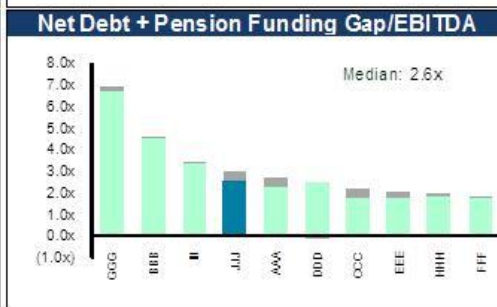
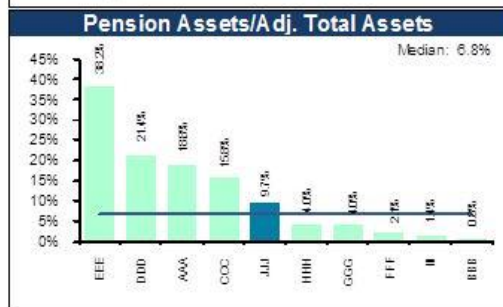
Long-Term Goal

- Minimize impact on financial statement/fully fund plan/immunization from operations

Source: Company 10K Filing, Bloomberg Consensus Estimates, Analyst Reports, SEI Projections. Notes: Debt Capacity 4.0Xs EBITDA.

Corporate pension metrics: measure of the market cap and balance sheet exposure

			Financial - LTM							Pension						Asset Allocation		
		Pension Data	Market Cap 10/15/2012	Gross Margin	EBITDA Margin	Return on Capital	EBITDA	Total Debt	Total Debt / EBITDA	Assets	Liabilities	Funded Ratio	Discount Rate	ROA Assump.	Annual Expense	Equity	Debt	Other
Company	Ticker																	
Company A	AAA	12/31/2011	11,496.5	23.2%	10.6%	8.2%	1,428.3	3,313.2	2.3x	2,766.6	3,328.3	83%	4.9%	7.8%	421.8	43.0%	23.0%	34.0%
Company B	BBB	12/31/2011	9,030.7	34.2%	29.2%	5.9%	2,232.0	10,001.0	4.5x	191.6	424.0	45%	4.6%	8.0%	78.0	57.7%	42.3%	0.0%
Company C	CCC	12/31/2011	2,660.2	46.1%	9.8%	9.7%	286.5	488.1	1.7x	330.1	472.8	70%	4.9%	8.0%	-0.4	51.7%	14.6%	33.7%
Company D	DDD	12/31/2011	18,317.3	35.4%	17.5%	13.3%	2,018.1	5,036.5	2.5x	3,140.8	2,930.3	107%	4.4%	8.2%	25.4	61.0%	31.0%	8.0%
Company E	EEE	12/31/2011	3,109.8	28.4%	13.4%	8.4%	547.0	944.0	1.7x	1,515.0	1,680.0	90%	5.1%	6.5%	0.0	6.0%	91.0%	3.0%
Company F	FFF	12/31/2011	26,829.3	31.7%	18.3%	10.8%	3,428.0	5,995.0	1.7x	470.0	527.0	89%	4.6%	7.4%	33.0	57.0%	43.0%	0.0%
Company G	GGG	12/31/2011	NA	24.4%	16.0%	5.5%	394.1	2,628.5	6.7x	176.5	266.7	66%	4.9%	7.0%	2.8	39.0%	61.0%	0.0%
Company H	HHH	12/31/2011	9,306.9	33.7%	20.1%	8.1%	1,146.7	2,069.9	1.8x	386.5	561.7	69%	5.1%	7.0%	21.8	49.5%	44.8%	5.8%
Company I	III	12/31/2011	1,966.1	22.0%	13.5%	6.2%	285.8	942.2	3.3x	34.8	50.8	69%	4.8%	7.2%	3.3	59.0%	41.0%	0.0%
Company J	JJJ	12/31/2011	\$11,708.2	56.7%	9.8%	7.7%	1,285.4	3,251.9	2.5x	\$1,116.1	\$1,649.8	68%	NA	NA	\$51.0	NA	NA	NA
Median				32.7%	14.8%	8.2%			2.3x			69.3%	4.9%	7.4%		51.7%	42.3%	3.0%
Mean				33.6%	15.8%	8.4%			2.9x			75.6%	4.8%	7.5%		47.5%	43.4%	9.1%



Client Compared to Comparables and US Public Comps			
Pension Metric	JJJ	Sector Comps Median	US Public Co Median
Pension Assets/Market Cap	9.5%	9.5%	10.9%
Pension Assets/Adj. Corporate Assets	9.7%	6.8%	9.5%
Pension Assets/Book Value	28.9%	24.9%	20.9%
PBO/Adjusted BS Liabilities	21.4%	17.1%	18.0%
Unfunded PBO/EBITDA	0.4x	0.2x	0.2x
Pension Expense/Corporate Income	21.9%	2.9%	4.7%
Funded Status	67.7%	69.3%	73.5%
Equity Allocation/Pension Assets	NA	51.7%	54.0%

Note: Based on year-end 2011 financial results for 1150 public companies with pension plans over \$10 MM. Excludes financial services firms

Source: SEC Filings, CapIQ

Best practices: plan sponsors need to evaluate the impact of plan volatility under a range of corporate scenarios

Four Key Inputs

Corporate Financial Analysis

- Develop risk tolerance profile of plan sponsor
- Create multiple projection scenarios to establish cash flow, leverage and liquidity metrics

Actuarial Data

- Review actuarial valuation reports and liability data from plan actuary

Enterprise Goals

- Review SEC filings and analyst and industry reports
- Identify enterprise financial goals and key sensitivities

CMAs and Simulations

- Develop capital market assumptions (CMAs)
- Use CMAs and current economic data to create Monte Carlo simulations

Portfolios

- Create customized asset allocation options designed to achieve goals more efficiently

Scenario Modeler

Output includes projections for the various portfolios and their impact on key plan and enterprise metrics



Corporate finance considerations impact plan funding as well as portfolio construction

Overview

- Many pension plan sponsors are making accelerated contributions to their plans
- Multiple factors driving contribution
 - Attractive financing environment
 - Large cash balances
 - Limited acquisition, investment appetite

Benefits

- For tax purposes, a pension contribution generates a deduction
 - Tax deduction can effectively be “spent” on reducing pension liability
- Arbitrage cost of financing and returns in plan
- EPS accretive – higher asset value in plan times EROA
- Accelerate plan de-risking

Recent Examples of Pension Funding

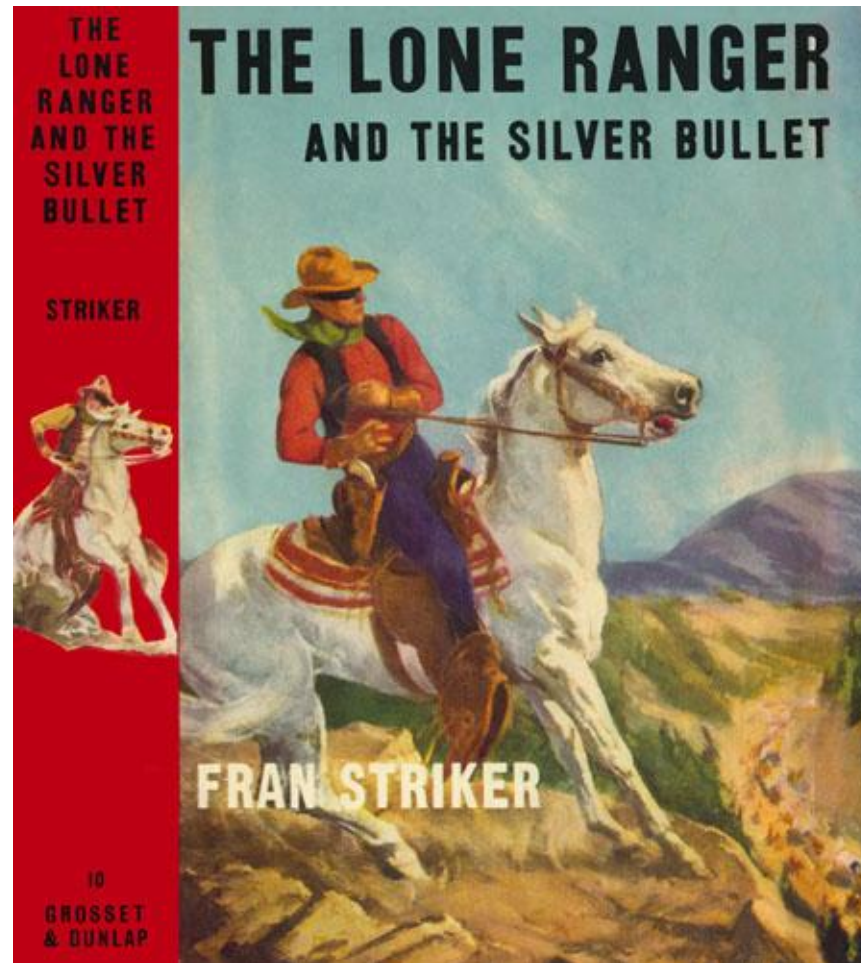
Company	Amount of debt raised to contribute	Underfunded pension	Use of proceeds in prospectus
Com Ed	\$600 MM	\$3,643 MM	“net proceeds from the sale of Bonds as an interim source of liquidity for the planned contribution to the Exelon-sponsored pension plan
Kellogg's	\$500 MM	\$282 MM	“general corporate purposes including voluntary pension contributions and repayment of commercial paper issued to fund share repurchases”
Albemarle	\$100 MM	\$154 MM	“intend to use approximately \$100 million from net proceeds to fund pension contributions...”
UPS	\$2,000 MM	\$2,605 MM	“intend to use the net proceeds of this offering...to make early contributions to certain of our primary domestic pension plans that are otherwise payable over the next five years.”
PPG	\$500 MM	\$950 MM	“to contribute to the employment pension fund”
Dow	\$400 MM	\$5,325 MM	“intend to use all of such net proceeds for general corporate purposes, which may include repaying or refinancing indebtedness and funding pension contributions”

Considering a switch to Mark-to-Market accounting?

- **Reasons to consider**
 - (US GAAP) is on a path to converge with International Accounting Standards (IAS)
 - Analysts already using mark-to-market to get a more accurate view of the assets and liabilities
 - Helps minimize the impact of the amortization of past losses in the pension plan
 - Could help control the volatility of pension expense via a more effective LDI strategy
- **Benefits**
 - Historical financial statements would be restated to reflect the actual losses experienced within the plan
 - Escrowed” losses awaiting future amortization would be flushed through the income statements
- **Risks moving forward**
 - Greater volatility in pension expense going forward - asset values and liability measures vary from expected returns and liabilities
 - Potential threat of a negative earnings impact, as evidenced by the 2012 decline in interest rates
- **SEI research: Stakeholder reaction**
 - In 2011 and 2013, a total of 23 companies announced change to Mark-to-Market
 - Reaction of stakeholders and subsequent impact is usually negligible

Strategies for pension management

There is no silver bullet...



Pension management strategies for 2013 and 2014

- **Funding strategy**
- **Liability reduction**
 - Annuity purchases
 - ET cash outs
 - Buy-ins and buy-outs
- **Diversification**
 - Asset classes
 - Include alternatives in consideration
- **Liability driven investing (LDI)**
 - Interest rate hedging
 - Also, portfolio development within consideration of liability
- **Monitor funded status**
 - Monthly (real-time) at a minimum
- **Portfolio changes**
 - In consideration of market changes
 - Glidepath
 - LDI strategy
- **Corporate finance perspective**

Options for defeasing liabilities

	Lump Sum for Term-Vested Participants	Annuity Buy-Out	Annuity Buy-In
Pros	<ul style="list-style-type: none"> • Reduction of the liability • Reduction of admin costs, including increased PBGC premiums • Less expensive than purchasing annuities for this group • Generally shortens duration for custom LDI implementations 	<ul style="list-style-type: none"> • Completely defeases the plan sponsor liability – may or may not be completely true in terms of a buy-in 	<ul style="list-style-type: none"> • Defers potential accounting impacts of annuity purchase
Cons	<ul style="list-style-type: none"> • One time charge to the P&L if the amount of the lump sums exceeds current service cost, plus interest costs • Dilutive to MAP-21 funded status • AA may be disrupted due to cash flow out, especially with plans holding illiquid assets • May cause a disruption in custom LDI implementation 	<ul style="list-style-type: none"> • Requires settlement accounting • Rather long and complicated process • The expense – anywhere between 115% to 125% of the liability value 	<ul style="list-style-type: none"> • Still subject to initial high price (more assets than liability covered) • Cost and process to flip to a buy-out (safest available rules) • Potential tracking risk to the liability • Impacts on custom LDI strategy

Funding alternatives

Funding of plans

- Required under law
- Approximately 7 years
- 80% (and 60%) threshold
- Participant communications
- Pension expense (P&L) and balance sheet impacts

Strategy
Minimum or minimum plus
Balance sheet cash
Raise debt
Raise equity
Asset sales
Other actions

Evaluate
ROA impact
EPS impact
Future flexibility
Rating impact
Transition benefits
Availability

Diversification

Asset classes

- Traditional equity and fixed income
- High yield and emerging market debt
- Alternatives: hedge, bank loans, private equity, real estate, commodities

Optimizes portfolio (efficient frontier expands)

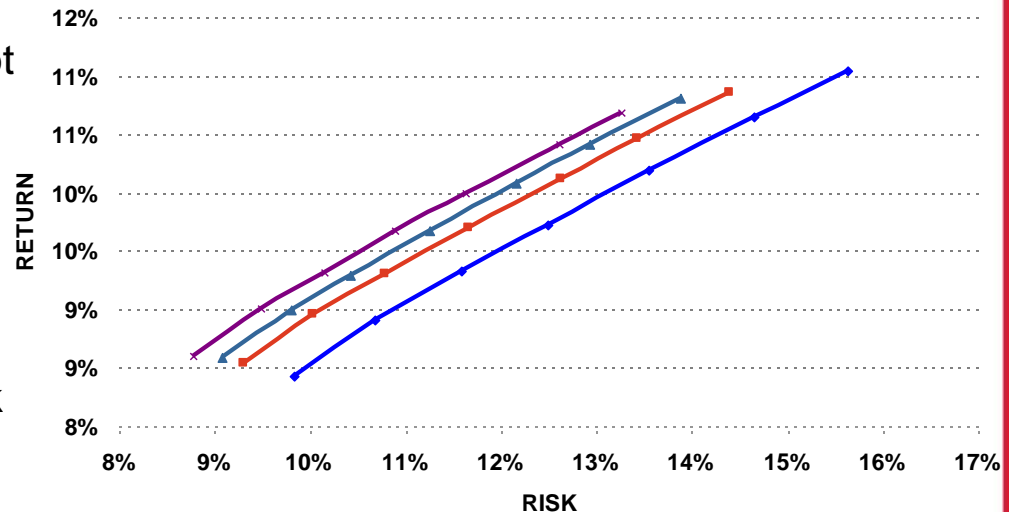
- Lower risk for given level of return
- Higher return for a given level of risk

Within asset classes too

- Single manager risks
- Across strategies for alts

New expertise may be needed

- Particularly in alternatives
- Liquidity for portfolio
- Lack of regulatory oversight

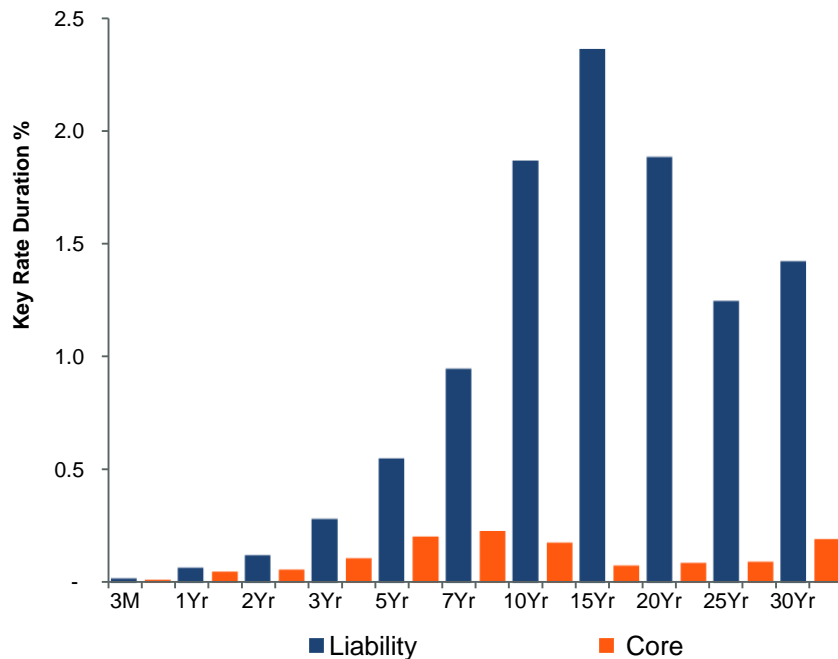


Diversified asset classes and multi-manager approach: Building blocks for custom LDI



Sub-Adviser Diversification as of June 2013. The strategies above are not an exhaustive list, but represent those that are typically utilized by SEI Institutional clients. Certain strategies are currently available only in registered mutual fund products. References to specific SEI funds are designed to illustrate SEI's manager selection process, which is implemented by SEI Investments Management Corporation (SIMC). The managers may be offered exclusively through mutual funds. References to specific securities do not constitute an offer or recommendation to buy, sell or hold such securities.

LDI analysis: Key rate duration of liability of current allocation



Decomposition of Effective Hedge Duration %

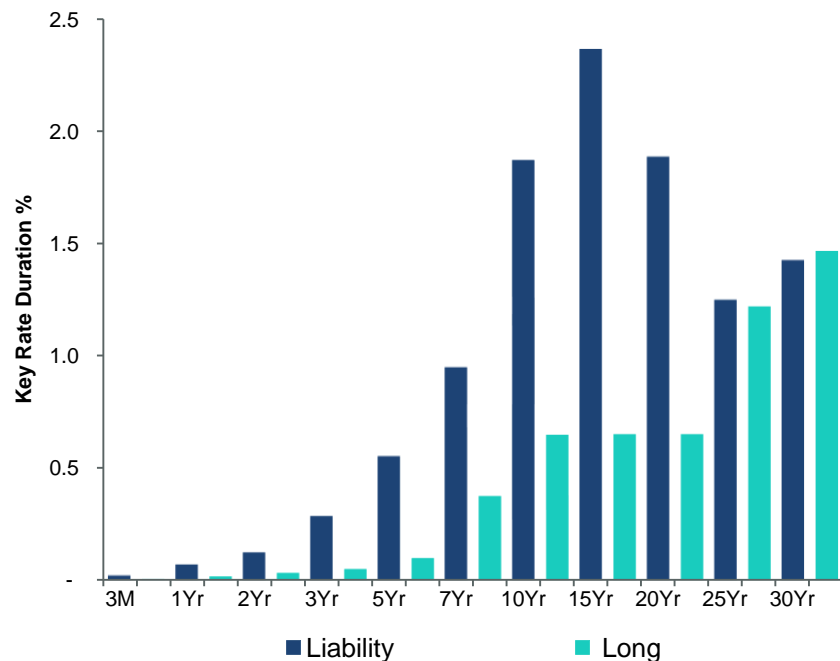
Total Fixed Income Asset Duration		4.38 years
Allocation to Fixed Income	x	34.9%
Funding %	x	82%
Effective Asset Duration	=	1.25 years
Liability Duration	÷	10.66 years
Effective Hedge Duration % (asset duration/liability duration)	=	11.7%

Fixed Income Asset Duration Composition (years):

Government	1.86
Credit	2.52
Total Fixed Income Asset Duration	4.38

Note: this chart denotes the approximate percent change in value the liability and fixed income assets would experience with a 1% change in key rate, holding all other rates even. Key rate duration shows percent change in total asset and liability value for a 1% change in the highlighted maturity point.

LDI analysis: Key rate duration of liability of Portfolio Allocation A



Decomposition of Effective Hedge Duration %

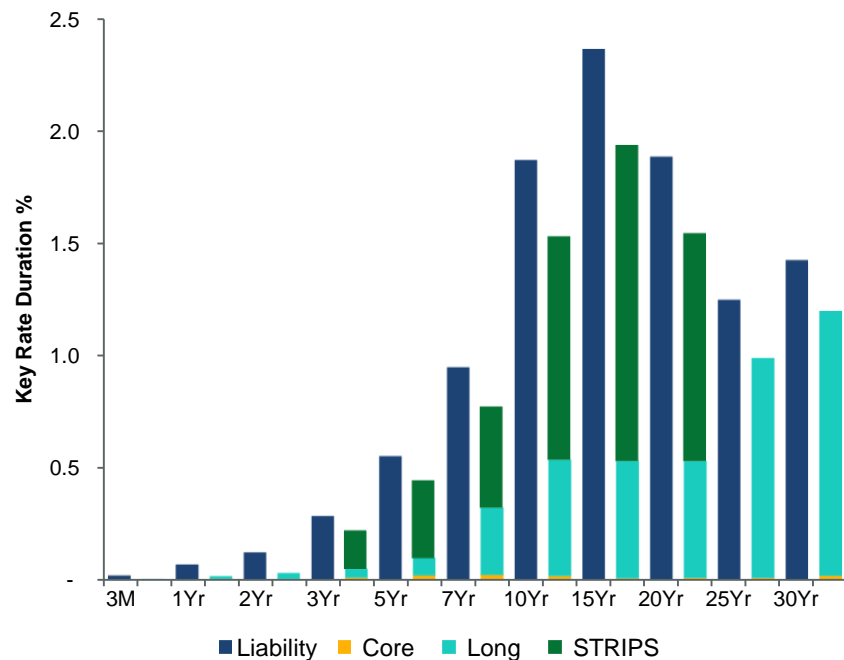
Total Fixed Income Asset Duration		12.66 years
Allocation to Fixed Income	x	50%
Funding %	x	82%
Effective Asset Duration	=	5.19 years
Liability Duration	÷	10.66 years
Effective Hedge Duration % (asset duration/liability duration)	=	48.6%

Fixed Income Asset Duration Composition (years):

Government	4.34
Credit	8.32
Total Fixed Income Asset Duration	12.66

Note: this chart denotes the approximate percent change in value the liability and fixed income assets would experience with a 1% change in key rate, holding all other rates even. Key rate duration shows percent change in total asset and liability value for a 1% change in the highlighted maturity point.

LDI analysis: Key rate duration of liability of Optimized Allocation B



Decomposition of Effective Hedge Duration %

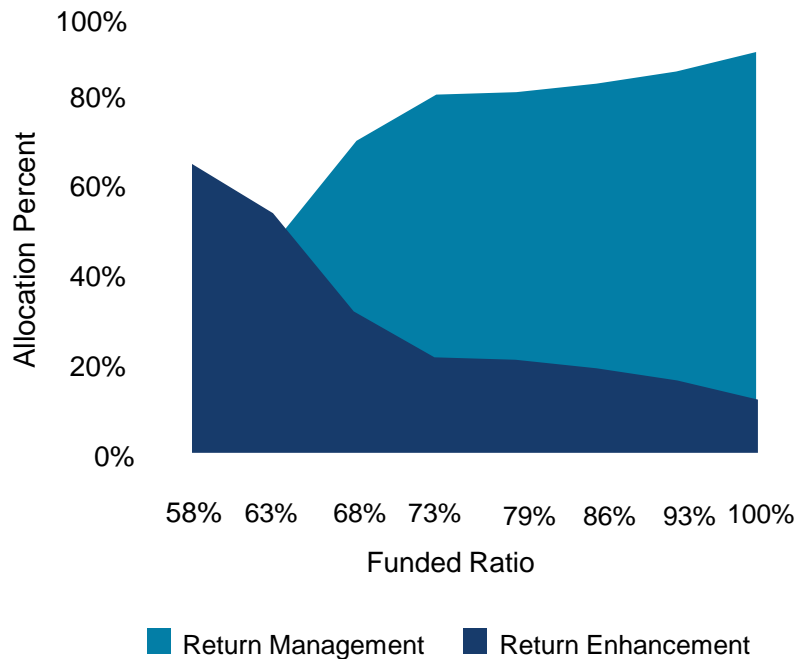
Total Fixed Income Asset Duration		10.32 years
Allocation to Fixed Income	x	100%
Funding %	x	82%
Effective Asset Duration	=	8.46 years
Liability Duration	÷	10.66 years
Effective Hedge Duration % (asset duration/liability duration)	=	79.4%

Fixed Income Asset Duration Composition (years):

Government	1.94
Credit	3.52
STRIP	4.86
Total Fixed Income Asset Duration	10.32

Note: this chart denotes the approximate percent change in value the liability and fixed income assets would experience with a 1% change in key rate, holding all other rates even. Key rate duration shows percent change in total asset and liability value for a 1% change in the highlighted maturity point.

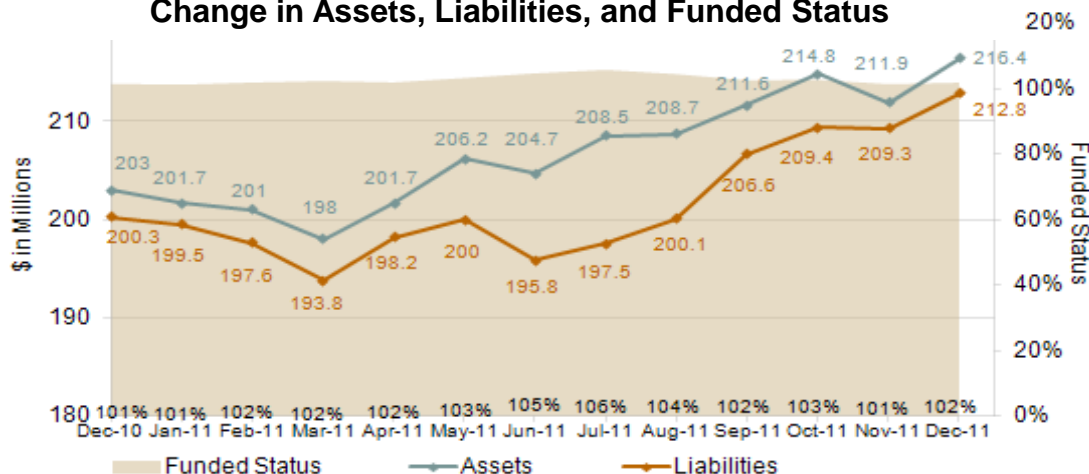
Retirement plan: Example glidepath, target set to reach 100% in 7 years



Funded Ratio	Risk Management	Return Enhancement	Asset Return	Surplus Volatility
58%	35.44%	64.56%	7.20%	2.13%
63%	46.43%	53.57%	6.50%	1.49%
68%	68.41%	31.59%	5.50%	0.77%
73%	78.64%	21.36%	5.03%	0.50%
79%	79.20%	20.80%	5.01%	0.40%
86%	81.12%	18.88%	4.92%	0.31%
93%	83.83%	16.17%	4.80%	0.24%
100%	88.11%	11.89%	4.60%	0.19%

Monthly snapshot: Change in assets, liabilities, and funded status

Change in Assets, Liabilities, and Funded Status



Year to date, funded status has deteriorated as:

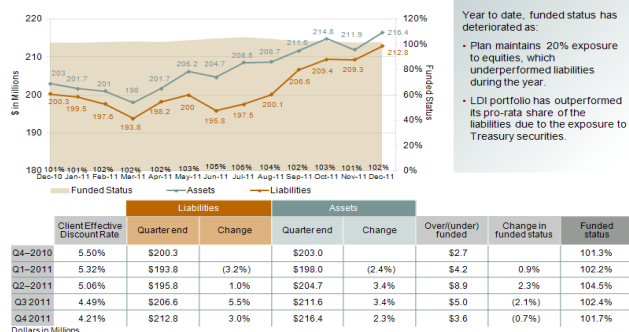
- Plan maintains 20% exposure to equities, which underperformed liabilities during the year
- LDI portfolio has outperformed its pro-rata share of liabilities due to the exposure of Treasury securities

	Client effective discount rate	Liabilities		Assets		Over/(under) funded	Change in funded status	Funded status
		Quarter end	Change	Quarter end	Change			
Q4	5.50%	\$200.1		\$200.3		\$2.7		101.3%
Q1	5.32%	\$193.8	(3.2%)	\$198.0	(2.4%)	\$4.2	0.9%	102.2%
Q2	5.06%	\$195.8	1.0%	\$204.7	3.4%	\$8.9	2.3%	104.5%
Q3	4.49%	\$206.6	5.5%	\$211.6	3.4%	\$5.0	(2.1%)	102.4%
Q4	4.21%	\$212.8	3.0%	\$216.4	2.3%	\$3.6	(0.7%)	101.7%

Dollars in Millions

Custom, real time reporting monitors progress against goals

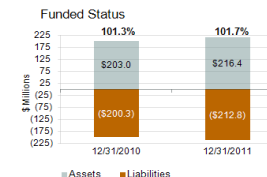
Change in Assets, Liabilities, and Funded Status



Reconciliation of Funded Status

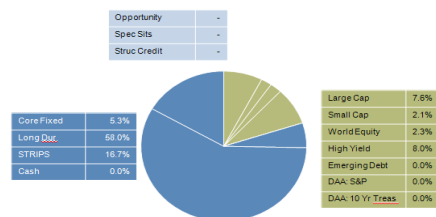
Assets	Quarter End 12/31/11	YTD 12/31/11
Beginning Assets	\$211.6	\$203.0
Asset Returns	10.1	29.5
Contributions	1.0	4.0
Benefits Paid	(5.5)	(18.5)
Fees/Other	(0.8)	(1.6)
Ending Assets	\$216.4	\$216.4

Liabilities	Quarter End 12/31/11	YTD 12/31/11
Beginning Liabilities	\$206.6	\$200.3
Service Cost	2.1	4.3
Benefits Paid	(5.5)	(18.5)
Interest Cost	4.3	9.1
Change in Discount Rate	5.3	17.6
Ending Liabilities	\$212.8	\$212.8



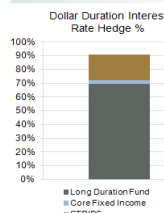
Asset Allocation and Liability Hedge

Asset Class	Target Allocation	Actual Allocation	Value
Return Enhancement	20.0%	20.4%	\$44,145,413
Risk Management	80.0%	79.6%	\$172,253,669
Alternatives	0.0%	0.0%	\$0
TOTAL	100%	100%	\$216,399,081

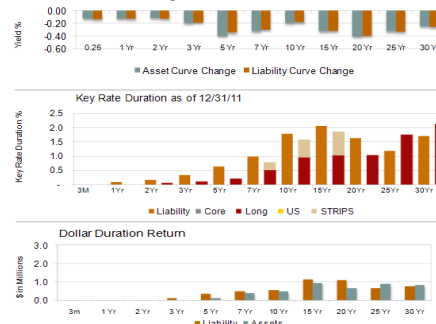


The target hedge of 80% is the percent of liability movements attributable to interest rate changes.

As of 12/31/2011, the actual hedge ratio was 79.3%.

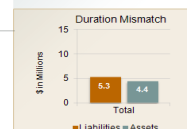


Liability Driven Investing Attribution



Basis risk impact compounded the asset/liability mismatch. Over the quarter interest rates fell, especially over the 5-20 year portion of the curve. There was approximately a 30 bps change in discount rate.

Key rate duration exposure mismatch also impacted the funded status. The portfolio is underweight duration on the parts of the curve that had the largest moves. The portfolio is only 80% LDI matched, with 20% invested in equities and high yield bonds.



Sample reporting. For illustrative purposes only.

Case Study: ABC Company

- **Progressing towards termination**

Important information

- This case study describes the attributes of a specific client that SEI has determined is comparable based on objective criteria, including organizational goals, asset size and industry sector. Any discussion of specific asset allocations is intended to help clients understand SEI's customized investment approach, and should not be regarded as a recommendation. Information concerning SEI's recommendations over the last year is available on request.
- For all slides containing bar charts: The shaded bars are created using a proprietary modeling tool and simulated capital market behavior. Capital market behavior is simulated as 1,000 possible scenarios based on the performance of each asset class and economic variable during a certain time period, using return, standard deviation and covariance assumptions. SEI's proprietary modeling tool uses these simulations as inputs to create 1,000 scenarios for each time period for each output variable. These 1,000 output scenarios are demonstrated above as confidence intervals which provide a baseline for evaluating the modeled scenarios. A 90% confidence interval should be interpreted as 90% of the projected output variables fall within this range. The 50th percentile shown in each floating bar represents the median projected scenario based on SEI's data. The shaded bars are meant to provide an overview of the range of possible outcomes that may result given a particular asset allocation. This projection is hypothetical in nature, does not reflect actual investment results and is not a guarantee of future results.
- There is no assurance that the asset allocation set forth above was actually accepted and implemented by the client. Past performance is not indicative of future results. You should not assume that future recommendations will be as profitable or will equal the performance of past recommendations. The expected return, standard deviation and duration do not reflect actual investment results and are not guarantees of future results. This information reflects projections based on SEI's capital market assumptions.

Profile of the ABC Co. retirement plan

Plan Overview

- Status: Frozen

Liability Overview

- Duration: 7
- Liability Growth: (7.5%)
- Benefit Payments/Assets: 14.7%

Hurdle Rate: 7.2%

Pension Impact on Financial Statements:

Balance Sheet

Funded status changes driven by portfolio returns relative to liability returns.

Fair Value of Assets: \$204.4M -

Projected Benefit Obligation: \$293.6M =

9/29/2012
Surplus/(Deficit):
(\$89.2M);
69%

Income Statement

Pension expense volatility driven by ROA and funded status. Plan's EROA assumption is 4.25%.

Service Cost: \$0 +
Interest Cost: \$12.0M +
Loss Amort: \$9.5M +
Settlement: \$6.4M -
Expected Return on Assets: \$7.8M =

FYE 2012
Pension Expense (Income):
\$20.1M

Cash Flow Statement

Minimum Required Contribution driven by funded ratio volatility.

Normal Cost: \$0 +
Shortfall Amort: \$12.3M

2012 Minimum Required Contribution:
\$12.3M

*Based on benefit payouts of \$3.3M. Note that 9/29/2012 FAS disclosure assumes \$6.1M.

Funding considerations for ABC Co. pension plan

	Option A: Minimum Required Contributions	Option B: Funding Policy	Option C: Plan Termination
Contribution Policy	Minimum Required Contributions	Develop funding policy to achieve Plan termination in 5 years: \$17.6M in FYE2013, greater of MRC or \$18.2M per year (or termination deficit if less than \$18.2M), thereafter	Fully fund Plan to termination (approximately \$119M)
Goal	Minimize cash contributions	Cost predictability	Eliminate volatility
Action Required	<ul style="list-style-type: none"> •Establish customized Glide Path for the Plan; Move upon predetermined triggers 	<ul style="list-style-type: none"> •Immediately implement more conservative investment strategies with lower equity exposure and longer durated bond positions •Establish accelerated Glide path; predetermined triggers 	<ul style="list-style-type: none"> •Implement custom LDI solutions •Begin exploring options to shift liabilities to third party
Pros	<ul style="list-style-type: none"> •Given that Plan is underfunded, it is appropriate to underweight duration as plans will benefit in a rising rate environment and equities rally 	<ul style="list-style-type: none"> •Surplus and contribution volatility will be minimized 	<ul style="list-style-type: none"> •Surplus and contribution volatility will be eliminated
Cons	<ul style="list-style-type: none"> •Plan's funded status will erode if interest rates fall and equities fall or stay flat •May miss window to opportunistically de-risk 	<ul style="list-style-type: none"> •Funding costs will be locked in at higher levels due to current low interest rate environment; may increase costs if interest rates fall & equities fall or stay flat 	<ul style="list-style-type: none"> •Funding costs will be locked in at higher levels due to current low interest rate environment

ABC Co. portfolio changes to consider

Asset Class	Current	Considered Portfolio A (Long Duration)	Considered Portfolio B (Conservative)
S&P 500 Index	26.3	26.3	8.8
US Managed Volatility	-	-	5.0
Small/Mid Cap Equity	7.4	7.4	5.0
World Equity ex-US	17.5	17.5	7.9
Global Managed Volatility	-	-	7.5
US High Yield	5.0	5.0	3.3
Emerging Market Debt	3.8	3.8	2.5
Total Return Enhancement	60.0	60.0	40.0
Core Fixed Income	40.0	-	-
Long Duration / Custom LDI	-	40.0	60.0
Total Risk Management	40.0	40.0	60.0
Expected Return	6.6	6.7	5.7
Standard Deviation	11.6	12.7	10.9
Risk of Loss (5 th Percentile)	-10.7	-12.1	-10.7
Portfolio Duration	1.7	5.3	TBD

How do we create probability distributions and what do they mean?

- The probability distribution graphs that follow are meant to provide an overview of the range of possible outcomes for a given variable (e.g., returns, pension contributions, expense) for a given asset allocation.
- The graphs are generated using SEI's proprietary modeling tool and simulated capital market behavior.
- Capital market behavior is simulated into 1,000 possible scenarios based on the performance of each asset class and economic factors during a certain time period, using return, standard deviation and covariance assumptions.
- We use these 1,000 capital markets scenarios to create 1,000 output scenarios for each variable being considered.
- A 90% confidence interval should be interpreted as 90% of the projected output variables, falling between the 5% and 95% results, based on SEI Capital Market Assumptions.
- The 50th percentile represents the median projected scenario.
- This projection is hypothetical in nature, does not reflect actual investment results and is not a guarantee of future results.

See disclosures at the end of the presentation for additional detail.

Distribution of Probable Outcomes

95th percentile:

95% of outcomes are less than or equal to this value

22

50th percentile:

50% of outcomes are greater than this amount, and 50% are less

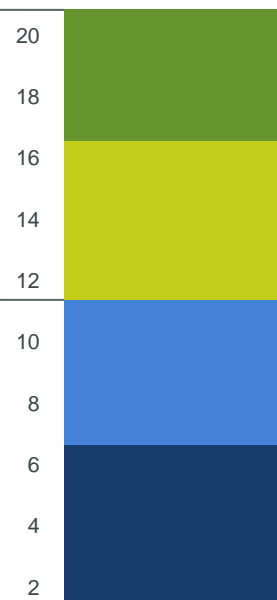
12

5th percentile:

5% of outcomes are less than or equal to this value

2

\$ Millions



95th Percentile

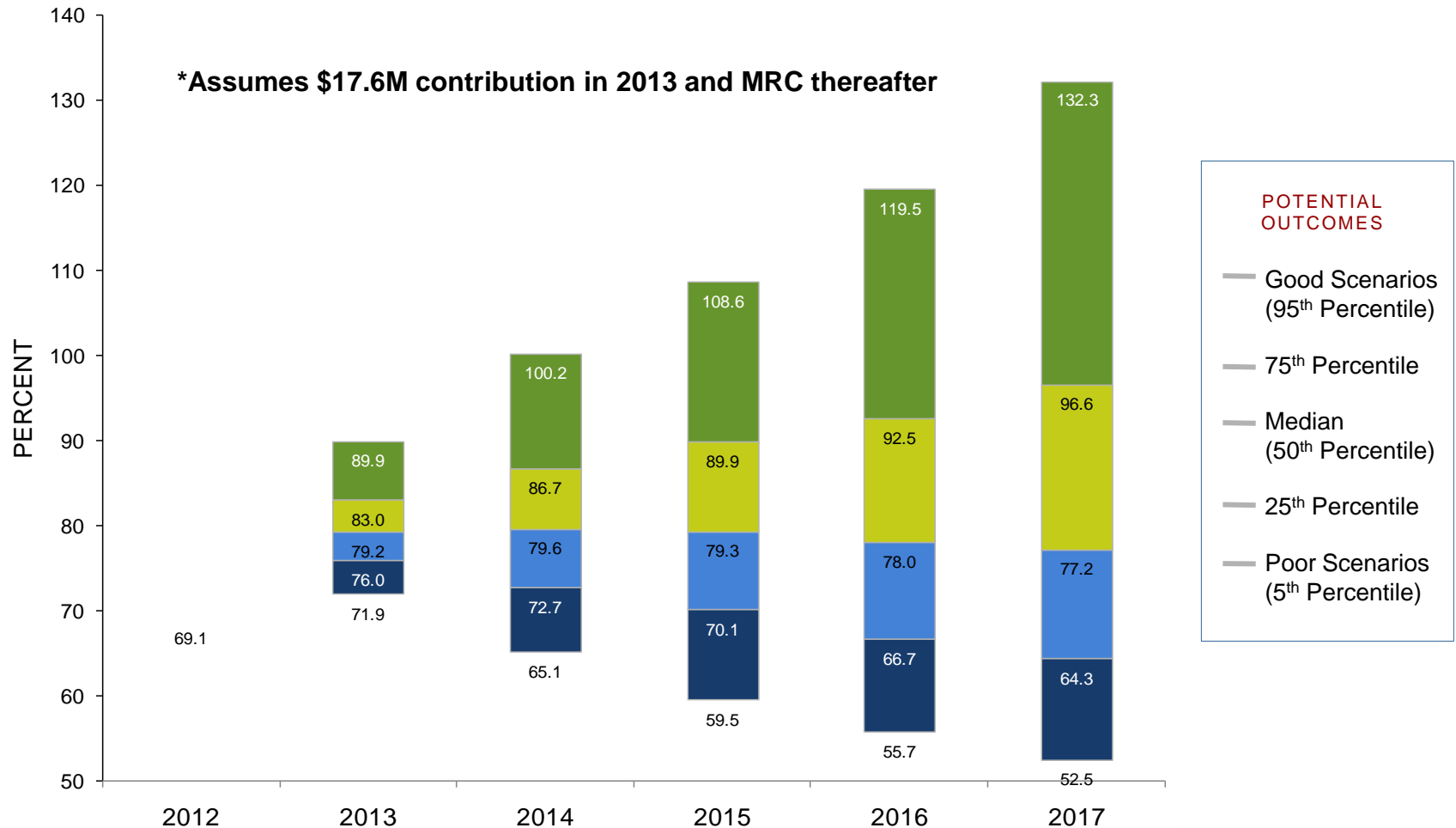
75th Percentile

Median
(50th Percentile)

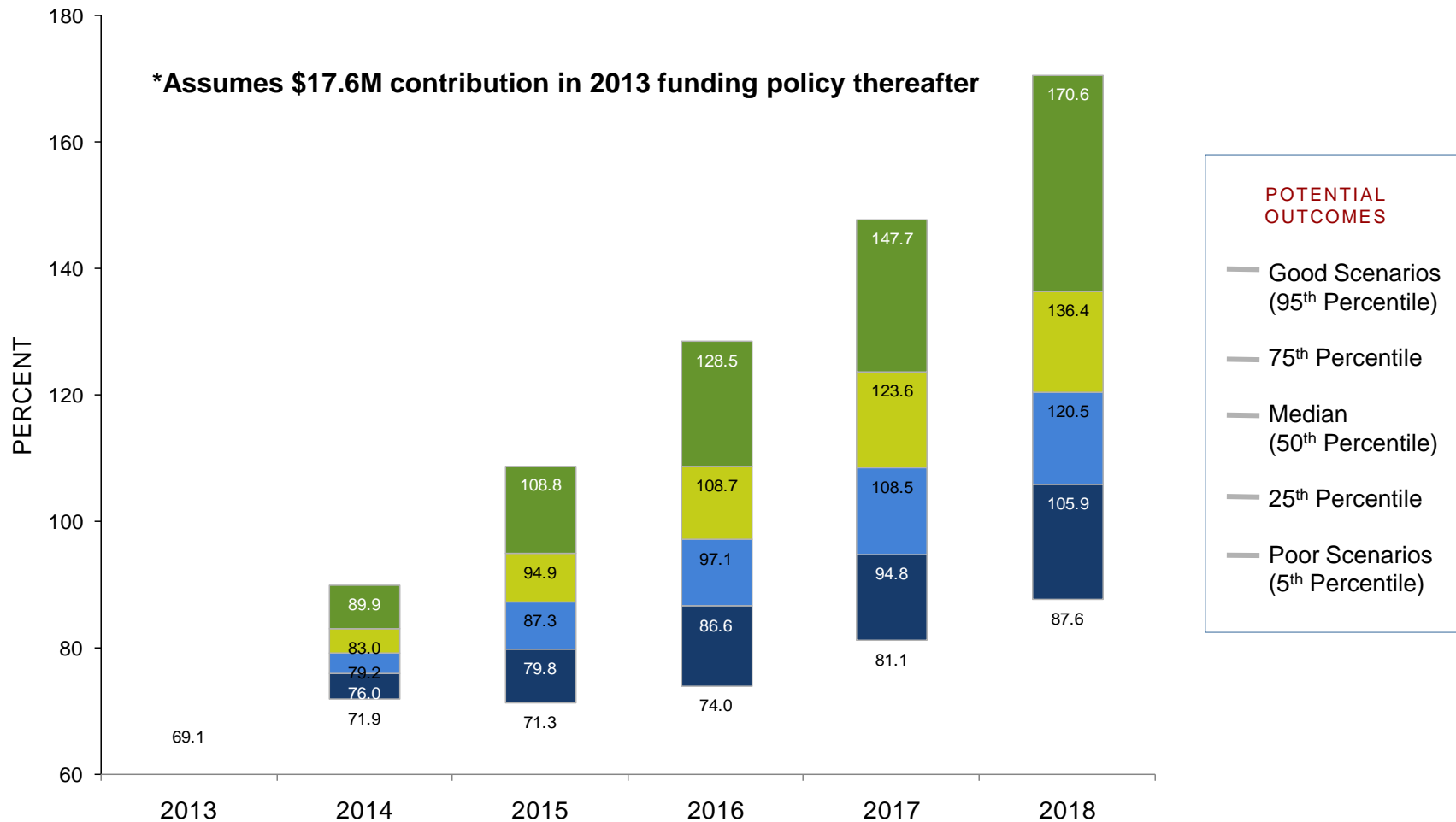
25th Percentile

5th Percentile

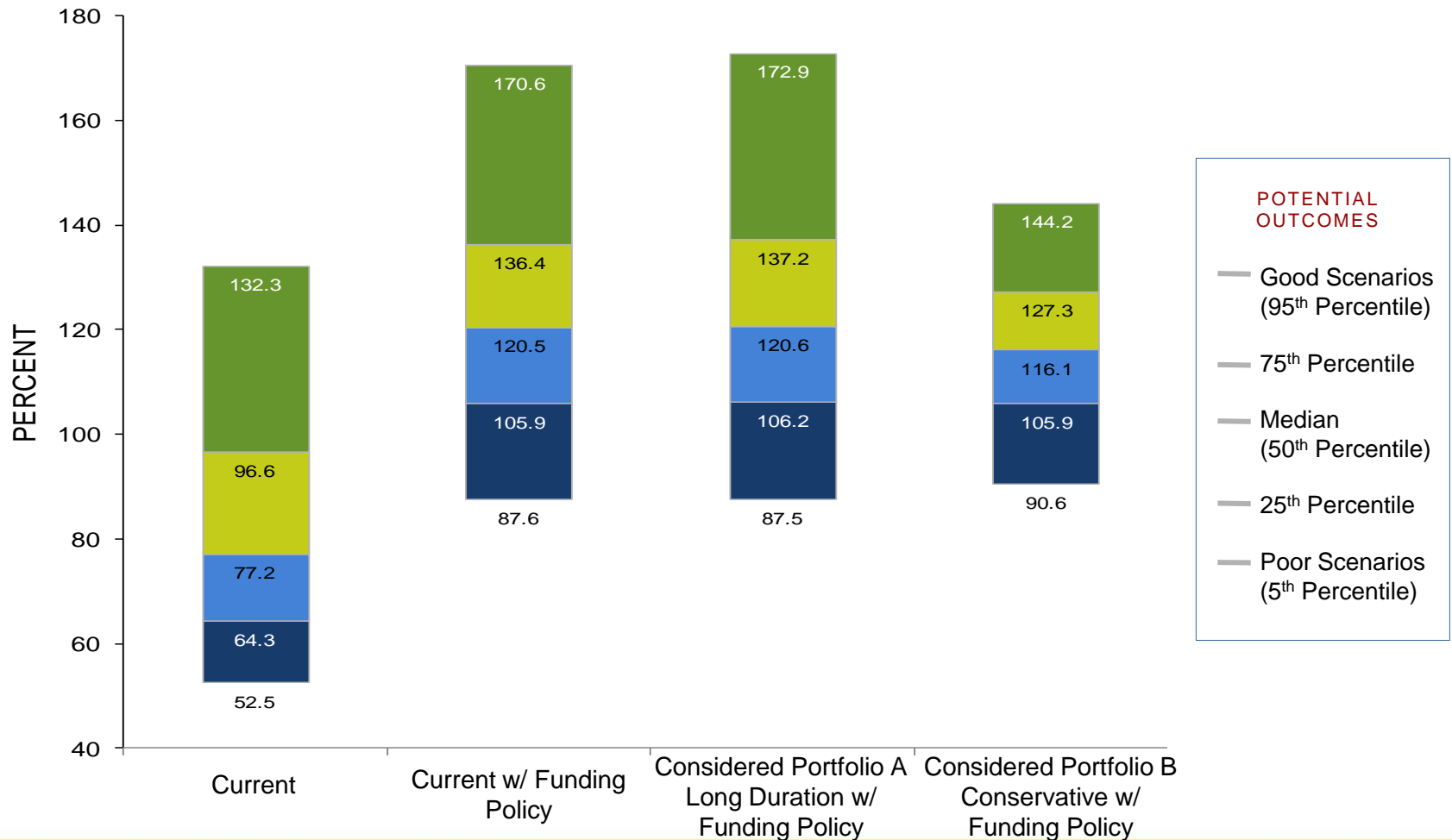
Range of potential impact of changes on PBO Funded Ratio – Current portfolio*



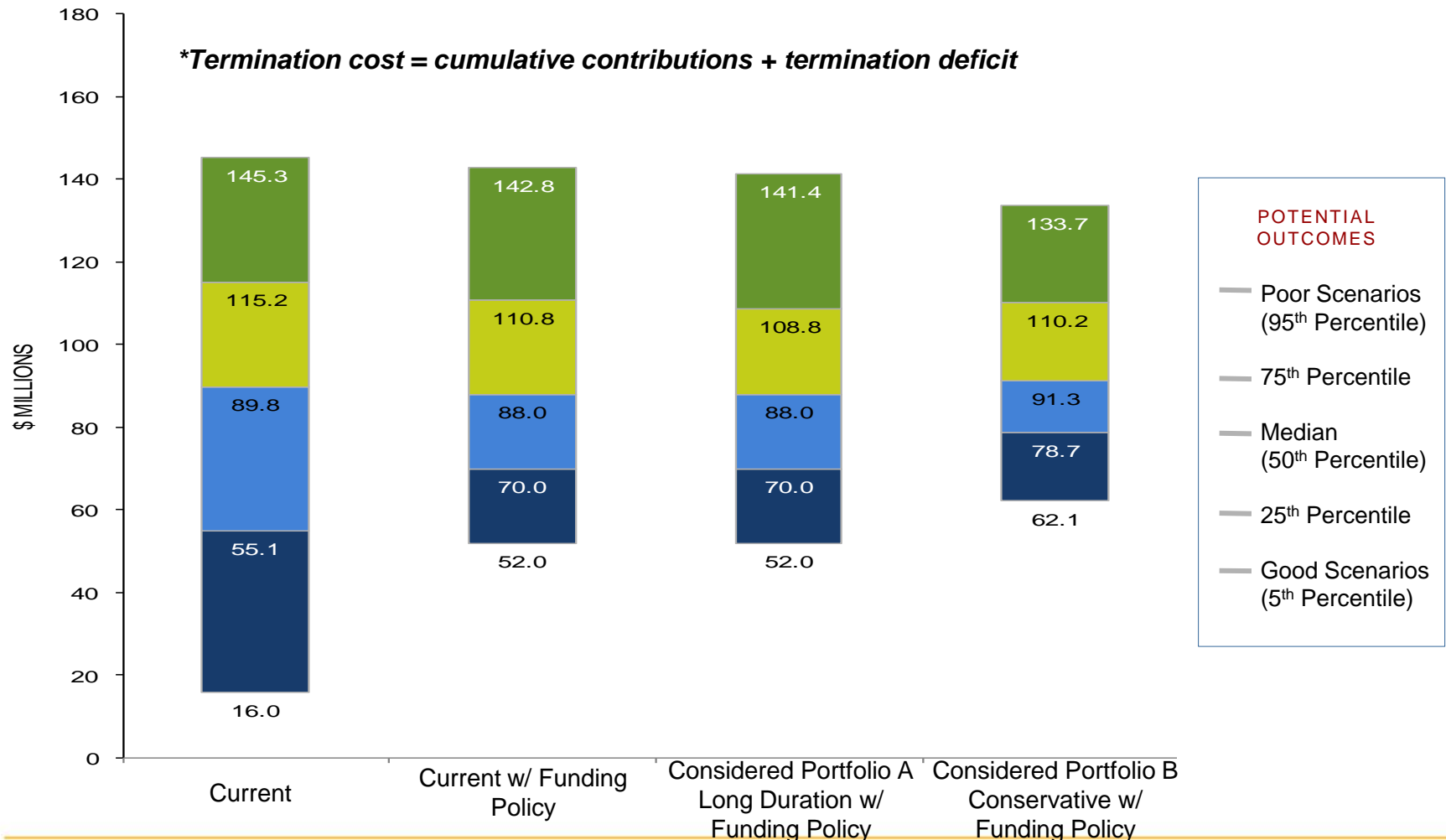
Range of potential impact of changes on PBO Funded Ratio – Current portfolio*



Range of distribution of 9/30/2017 PBO Funded Ratio



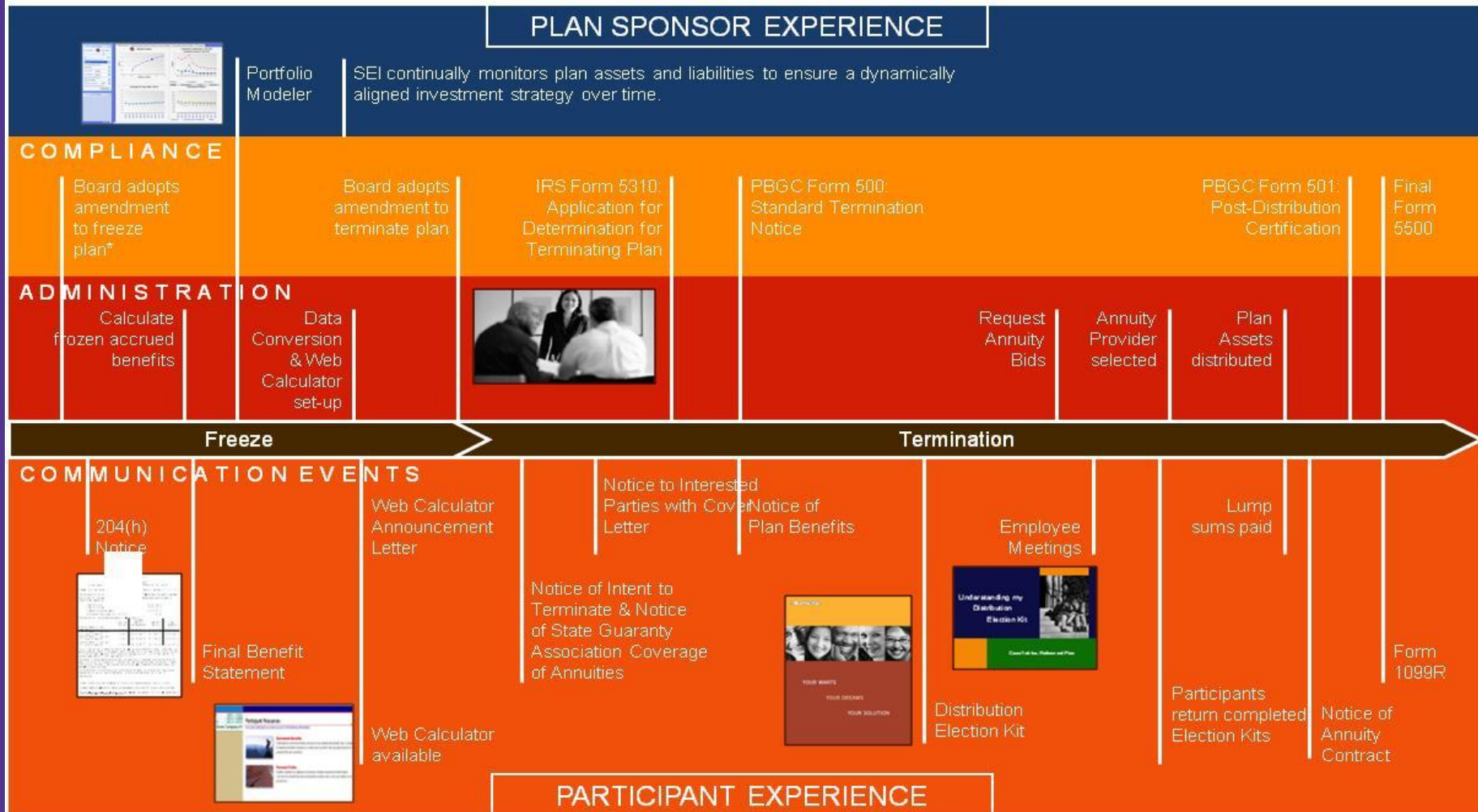
Range of distribution of 9/30/2017 termination cost*



Changes to consider for custom glidepath

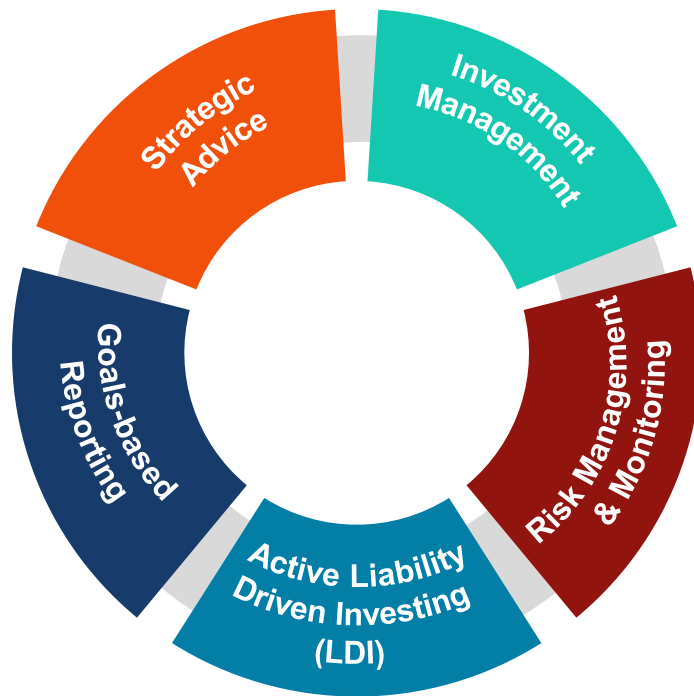
Target Ratio	7.2%	3.7%	3.1%	2.6%	2.1%	1.7%
Asset Class	< 90% Funded (Current)	90% - 95% Funded	95% - 100% Funded (Conservative)	100% - 105% Funded	105% - 110% Funded	> 110% Funded
S&P 500 Index	26.3	21.9	8.8	6.6	4.4	-
US Managed Volatility	-	-	5.0	3.8	2.5	-
Small/Mid Cap Equity	7.4	6.2	5.0	3.8	2.5	-
World Equity ex-US	17.5	14.6	7.9	5.8	4.0	-
Global Managed Volatility	-	-	7.5	5.6	3.7	-
US High Yield	5.0	4.2	3.3	2.5	1.7	-
Emerging Market Debt	3.8	3.1	2.5	1.9	1.2	-
Total Return Enhancement	60.0	50.0	40.0	30.0	20.0	-
Core Fixed Income	40.0	50.0	-	-	-	-
Long Duration / Custom LDI	-	-	60.0	70.0	80.0	100.0
Total Risk Management	40.0	50.0	60.0	70.0	80.0	100.0
Expected Return	6.6	6.1	5.7	5.1	4.5	3.3
Standard Deviation	11.6	10.2	10.9	10.8	10.9	12.0
Risk of Loss (5 th Percentile)	-10.7	-9.4	-10.7	-11.1	-11.9	-14.6
Portfolio Duration	1.7	2.2	TBD	TBD	TBD	TBD

Plan freeze/termination process



About SEI

SEI's Fiduciary Management Model for defined benefit plans



Other Optional Services

- Trust & custodial services
- Benefit payment administration
- Pension administration & actuarial services

Strategic Advice

- Goal setting & monitoring
- Asset/liability study
- Investment policy formulation

Investment Management

- Portfolio structure
- Manager research & selection
- Dynamic asset management

Risk Management & Monitoring

- Multi-level risk analysis & reporting
- Consolidated portfolio analysis & reporting
- Stress testing

Active Liability Driven Investing (LDI)

- Active management relative to liabilities
- Glidepath optimization
- Capital market point of view

Goals-based Reporting

- Reconciliation of funded status
- Pension surplus decomposition
- Attribution of interest rate changes

Presenter - Jonathan Waite, FSA, EA



Jonathan Waite, FSA, EA
Chief Actuary & Director, Investment Management Advice
SEI's Institutional Group

Mr. Waite serves as Director of Investment Management Advice for the SEI Institutional Group, which delivers ongoing advice regarding investment strategy, asset allocation, funding policy and plan design for SEI's corporate, multiemployer and public pension clients. Prior to joining SEI in 2005, Mr. Waite spent nearly 18 years working for Aon Consulting, where he led the organization's retirement and actuarial practice for the Philadelphia area.

Mr. Waite is widely recognized by the industry as an expert in the strategic elements of pension management. He has presented at more than 100 industry conferences nationwide and has been interviewed on best practices by numerous media outlets including *Bloomberg News*, *CFO Magazine*, *MarketWatch*, *Institutional Investor*, *Pensions & Investments*, *USA Today* and *The Wall Street Journal*.

Mr. Waite earned his Bachelor of Arts degree from Colgate University and is a Fellow of the Society of Actuaries, an Enrolled Actuary licensed to practice under ERISA by the Internal Revenue Service, and a Member of the American Academy of Actuaries. In addition, he is a member of the Resource Committee of the Penjerdel Employee Benefits Association (PEBA) and a member of the International Foundation of Employee Benefits Plans (IFEBP). Mr. Waite has over 25 years of experience working with retirement plans.

Email: jbwaite@seic.com

Phone: (610) 676-3493



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- SIMC develops forward-looking, long-term capital market assumptions for risk, return, and correlations for a variety of global asset classes, interest rates, and inflation. These assumptions are created using a combination of historical analysis, current market environment assessment and by applying our own judgment. We believe this approach is less biased than using pure historical data, which is often biased by a particular time period or event.
- The asset class assumptions are aggregated into a diversified portfolio, so that each portfolio can then be simulated through time using a monte-carlo simulation approach. This approach enables us to develop scenarios across a wide variety of market environments so that we can educate our clients with regard to the potential impact of market variability over time. Ultimately, the value of these assumptions is not in their accuracy as point estimates, but in their ability to capture relevant relationships and changes in those relationships as a function of economic and market influences.

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- We believe our approach enables our clients to make more informed decisions related to the selection of their investment strategies.
- For more information on how SIMC develops capital market assumptions, please refer to the SEI paper entitled “*Executive Summary: Developing Capital Market Assumptions for Asset Allocation Modeling.*” If you would like further information on the actual assumptions utilized, you may request them from your SEI representative.
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