Rhode Island SIC

PCA | PENSION CONSULTING ALLIANCE

Income Class Policy & Structure Discussion

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Today's Discussion

Income Class Portfolio:

- Background

- Objectives

- Proposed Policy

Income Class Portfolio: Why Income?

- <u>ERSRI has a need for income to make monthly benefit payments</u>
  - o Plan has net negative external cash flow (benefits > contributions)

- There are two primary sources of investment return:
  1. Income/Yield (dividends or interest income)
  2. Price Appreciation/Depreciation

- Income (yield), all else equal, is a less risky source of return (i.e., more predictable)
  - o Income is relatively stable and paid in the near future whereas appreciation is, by contrast, relatively uncertain and typically realized further in the future

- The asset / liability review included an Income Class (policy weight of 6%)

- An Income Class decreases pension payment management complexity

Income Class Portfolio: Basic Construct

<u>a *functional class* designed to generate relatively high income</u>

<u>Investment Objectives:</u>

- Yield of investment grade fixed income + 400 bps (today's premium ≈ 440 bps)
- Volatility lower than public equity (target volatility < 17%)

<u>Investment Characteristics:</u>

- Income primary source of total return
- Composed of both high yielding fixed income and equity assets
- Public and private assets

<u>Risks:</u>

- Economic Growth (i.e., equity risk)
- Credit Risk (i.e., risk of default)
- Interest Rate Risk
- Active Management Risk
- Liquidity Risk

Income Class Portfolio: Investable Universe

Deep and broad investable universe

1. Liquid, High Yielding Debt Strategies
   - High Yield Bonds / Bank Loans
   - Structured Credit / CLOs

2. Private Credit (not Growth portfolio)
   - i.e., middle market secured debt
   - Performing credits & immediately paying income (not deferred)
   - 8 - 9% expected return
     - Fund final maturity <7 years
     - Limited (if any) leverage

3. Equity Securities
   - REITs
   - MLPs

4. Other
   - Convertible Bonds
   - Business Development Companies(BDCs – often a proxy for private credit)

Income Class Portfolio: Policy

ERSRI Policy Customization

- Increase Income Class allocation to 8% (≈ $640mn)
  (formerly 6% | reduces Inflation Protection class)
    - Rationale: - given market conditions, higher need for income than inflation protection
      - additionally, many Income Class assets have inflation protection attributes too

- Include Bank Loans / short duration High Yield (formerly in Inflation Protection Class)
    - Rationale: these high income assets share many characteristics with the high yield market

- Structural allocation policy: include wide allocation bands for management flexibility
    - Provide flexibility to deviate from policy weights as market conditions evolve

- High Yield and Bank Loans – construct as one class
    - Investment characteristics of these assets are very similar
    - Model/optimizer cannot easily choose between the two assets

Income Class Portfolio: Modeling Process

Strategic Allocation Modeling Process / Policy Development

1. Identify investable universe

   o Examine current fundamentals and historical traits/behavior

2. Develop assumptions (yield / volatility / total return / correlations)

3. Run optimization (with minimal constraints)

4. Narrow investable universe

5. Revise constraints to better align with class objectives:

   o Minimum yield of 6%

   o Minimum debt assets

   o Maximum class allocations

6. Select potential policy allocations and test for reasonableness

   o Test for fidelity to asset / liability modeling assumptions and objectives

NOTE: Modeling input / constraints in appendix

Income Class Portfolio: Modeling Output

Efficient Frontier | Geometric Return & Risk
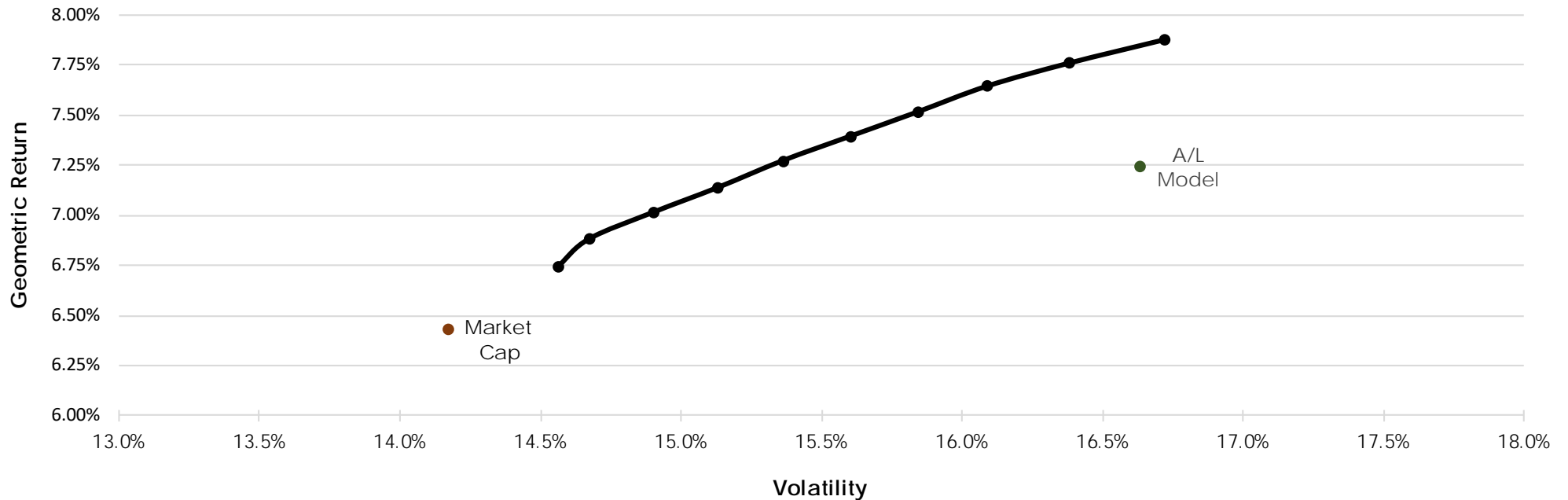
	Portfolio #1	Portfolio #2	Portfolio #3	Portfolio #4	Portfolio #5	Portfolio #6	Portfolio #7	Portfolio #8	Portfolio #9	Portfolio #10	A/L Model	Market Cap
Geo. Return	6.7%	6.9%	7.0%	7.1%	7.3%	7.4%	7.5%	7.6%	7.8%	7.9%	7.2%	6.4%
Volatility	14.6%	14.7%	14.9%	15.1%	15.4%	15.6%	15.8%	16.1%	16.4%	16.7%	16.6%	14.2%
Yield	6.0%	6.5%	6.6%	6.7%	6.8%	7.0%	7.1%	7.2%	7.3%	7.5%	6.4%	5.7%

	Core FI (BB Agg)
Geo. Return	2.9%
Volatility	5.5%
Yield	2.5%

Income Class Portfolio: Allocation Selection

- PCA and Staff recommend a structure near the middle of the efficient frontier

	Portfolio #1	Portfolio #2	Portfolio #3	Portfolio #4	Portfolio #5	Portfolio #6	Portfolio #7	Portfolio #8	Portfolio #9	Portfolio #10	A/L Model	Market Cap
Arith. Return	7.6%	7.8%	7.9%	8.1%	8.2%	8.4%	8.5%	8.7%	8.9%	9.0%	8.4%	7.3%
Geo. Return	6.7%	6.9%	7.0%	7.1%	7.3%	7.4%	7.5%	7.6%	7.8%	7.9%	7.2%	6.4%
Volatility	14.6%	14.7%	14.9%	15.1%	15.4%	15.6%	15.8%	16.1%	16.4%	16.7%	16.6%	14.2%
Yield	6.0%	6.5%	6.6%	6.7%	6.8%	7.0%	7.1%	7.2%	7.3%	7.5%	6.4%	5.7%

	Portfolio #1	Portfolio #2	Portfolio #3	Portfolio #4	Portfolio #5	Portfolio #6	Portfolio #7	Portfolio #8	Portfolio #9	Portfolio #10	A/L Model	Market Cap
MLPs	2%	5%	7%	8%	10%	11%	12%	14%	20%	25%	25%	5%
REITs	22%	11%	11%	11%	11%	11%	10%	10%	9%	8%	25%	22%
High Yield	25%	25%	21%	17%	13%	9%	5%	1%	0%	0%	25%	33%
Bank Loans	25%	25%	25%	25%	25%	25%	25%	25%	21%	17%	0%	25%
Private Credit	26%	33%	36%	39%	42%	45%	47%	50%	50%	50%	25%	15%

Income Class Portfolio: Allocation Selection & Policy

- PCA and Staff recommend a structure near the middle of the efficient frontier

- Rounded/naïve allocations are incorporated to reflect humility

- This structure is logical, implementable, and balances the risk/return tradeoff

- Near-term target required to fund private credit at a measured pace

Policy Guidelines

Income Class Components	Near-term Target	Long-term Target	Long-term Policy Ranges
MLPs	12.5%	12.5%	+/- 5%
REITs	12.5%	12.5%	+/- 5%
Liquid Debt*	50%	35%	+/- 15%
Private Credit	25%	40%	+/- 15%
	100%	100%	---

Policy guidelines allow management flexibility as market conditions evolve

*50% High Yield / 50% Bank Loans policy allocation

Income Class Portfolio: Benchmarks & Diversification

Policy Benchmark:

- Blend of individual asset class indices

Individual assets' benchmarks:

• MLPs	Alerian MLP Index
• REITs	MSCI U.S. REIT Index
• High Yield*	Bloomberg Barclays High Yield Index
• Bank Loans*	S&P/LSTA Leveraged Loan Index
• Private Credit	S&P/LSTA Leveraged Loan Index +3%

Diversification

- The Income Class is not designed as a diversifier to total portfolio equity (growth) risk
- Diversification from the Income Class is not a primary objective
- The portfolio will be diversified across numerous sources of income (yield)

*Will be combined into a *Liquid Debt Strategies* class at 50% HY / 50% Bank Loans policy weighting

Income Class Portfolio: Implementation

Transition Plan

	Current		Transition										Long-term Target		
	ERSRI May '17		Dec '17		Dec '18		Dec '19		Dec '20		Dec '21		Long-term Target $mm	% of Income Bucket	% of Total Plan
MLPs	155	1.9%	150	1.8%	150	1.8%	100	1.2%	92	1.0%	92	1.0%	92	12.5%	1.0%
REITs	-	0.0%	-	0.0%	20	0.2%	40	0.5%	64	0.7%	92	1.0%	92	12.5%	1.0%
HY/BL	385	4.8%	380	4.6%	370	4.4%	350	4.0%	300	3.4%	258	2.8%	258	35.0%	2.8%
Private Credit	60	0.8%	80	1.0%	135	1.6%	200	2.3%	260	2.9%	295	3.2%	295	40.0%	3.2%
Total	**601**	**7.5%**	**610**	**7.5%**	**675**	**8.0%**	**690**	**8.0%**	**716**	**8.0%**	**737**	**8.0%**	**736**	**100.0%**	**8.0%**
Total Plan w/ 3% growth	8,000		8,179		8,424		8,677		8,937		9,206		9,206		

Appendix

Income Class Portfolio: Modeling Inputs

Return/Yield/Risk Assumptions

Strategy	Arithmetic Return	Geometric Return	Volatility	Annual Yield
MLPs	9.25%	7.15%	23.00%	7.10%
Convertibles	6.50%	5.50%	15.00%	1.50%
REITs	8.25%	6.25%	22.50%	4.10%
High Yield	6.00%	4.75%	13.00%	5.50%
Bank Loans	6.05%	5.00%	12.00%	5.00%
Private Credit	10.00%	8.50%	19.50%	9.00%

Correlation Matrix

	Cash	MLPs	Convertibles	REITs	High Yield	Bank Loans
MLPs	0.00					
Convertibles	0.00	0.55				
REITs	0.10	0.70	0.45			
High Yield	0.15	0.75	0.80	0.60		
Bank Loans	0.20	0.75	0.75	0.55	0.90	
Private Credit	0.10	0.50	0.75	0.50	0.85	0.85

Income Class Portfolio: Assumptions Origin

Income Class Components/Assumptions Origin		
Strategy	**General Basis**	**Notes**
MLPs	Alerian Index	5/31 yield & mk cap | geo return = 2017 CMAs global equity | risk = global equity + 3%
Convertibles	BofA Merrill Lynch US Convertible Index	5/31 YTW, duration, mk cap | geo return = average of HY and US Eq | risk ≈ historical
REITs	MSCI US REIT Index	5/31 yield & mk cap | geo return = 2017 CMAs US Eq | risk = US Eq + 3%
High Yield	BB Corporate HY Index	5/31 YTW, duration, mk cap | geo return = YTW - 1.5% (defaults) + 75 bps (rising rates) | risk ≈ historical
Bank Loans	S&P/LSTA Global Leveraged Loan Index	5/31 yield & mk cap | geo return = yield - 1.5% (defaults) + 1.5% (rising rates) | risk ≈ historical | duration = reset period
Private Credit	No index	Yield = 9% | geo return = yield - 2.0% (defaults) + 1.5% (rising rates) | risk= 2017 CMAs U.S. equity| estimated mk cap

Sources: Bloomberg Barclays Live, Bloomberg, Alerian, MSCI, S&P, Deloitte, PCA

Correlations generally derived from 2017 CMAs and/or 1996-2017 historical.

Arithmetic returns for yield-driven classes are reverse engineered based on volatility and geometric assumptions (combined with qualitative overlay).
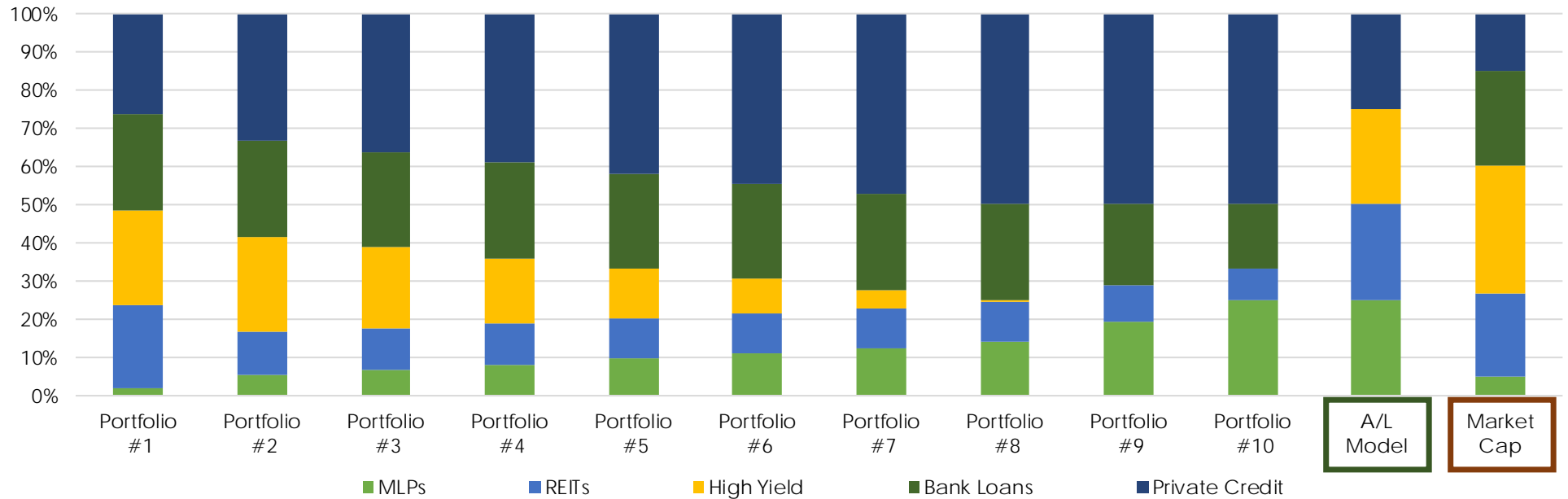
Income Class Portfolio: Modeling Inputs

Constraints

- Minimum of 66.67% in High Yield, Bank Loans, and Private Credit

- Minimum aggregate yield of 6%

- Maximum of 50% in Private Credit

- Maximum of 25% in everything else
  (including HY and Bank Loans; this is in addition to the group maximum)

Income Class Portfolio: Modeling Output

Efficient Portfolio Allocations

Legend: ■ MLPs ■ REITs ■ High Yield ■ Bank Loans ■ Private Credit

	Portfolio #1	Portfolio #2	Portfolio #3	Portfolio #4	Portfolio #5	Portfolio #6	Portfolio #7	Portfolio #8	Portfolio #9	Portfolio #10	A/L Model	Market Cap
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REITs	22%	11%	11%	11%	11%	11%	10%	10%	9%	8%	25%	22%
High Yield	25%	25%	21%	17%	13%	9%	5%	1%	0%	0%	25%	33%
Bank Loans	25%	25%	25%	25%	25%	25%	25%	25%	21%	17%	0%	25%
Private Credit	26%	33%	36%	39%	42%	45%	47%	50%	50%	50%	25%	15%

Income Class Portfolio: Terminology

- Arithmetic (average) Return
  - The return expected in any single given year

- Geometric/Compound (average) Return
  - The average/annualized return expected over a multi-year (e.g., 10) horizon
  - Geometric return = compound return
  - Due to volatility impacts, the geometric/compound average return is always less than the arithmetic average return

- Volatility/Standard Deviation
  - A measure that broadly describes how wide/narrow a distribution of returns is
  - Roughly 2/3 of all outcomes/observations fall within +/- one SD

- Annual Yield
  - The annual cash distribution
  - May be distributed monthly, quarterly, bi-annually, or annually

Income Class Portfolio: Asset / Liability Review Inputs

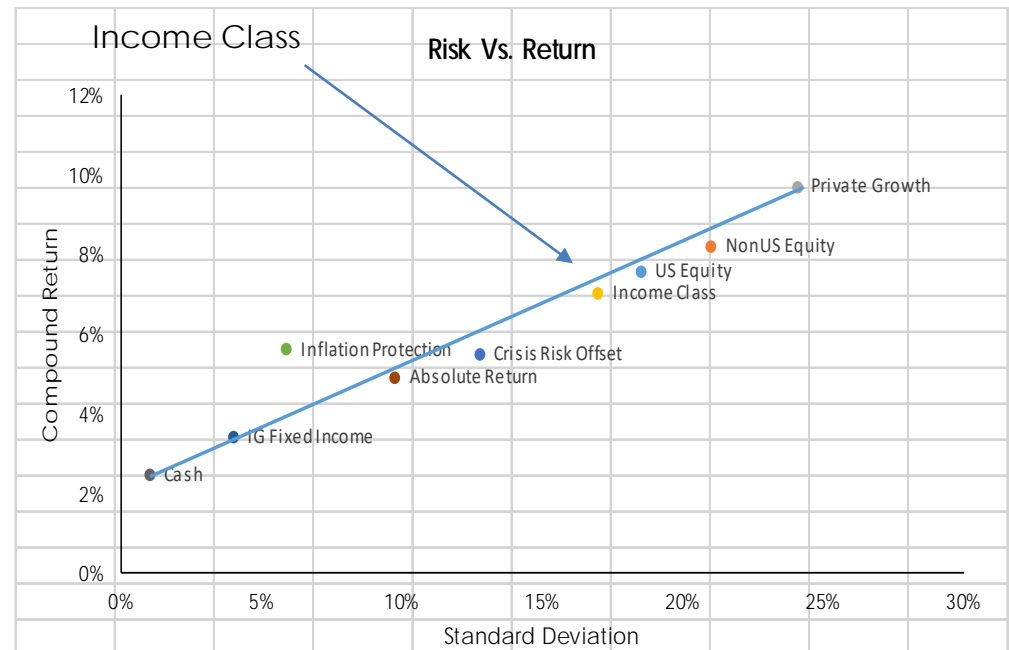The Income Class Portfolio is a functional / purpose-driven strategic class

- Designed to generate high levels of income from private and publicly-traded fixed income and equity securities

Asset / Liability Modeling Assumptions:

	Expected Return	Volatility
Income Class	7.1%	17.0%

Income Class Modeling Components:

Composition:		Expected Return	Volatility
REITS	25%	6.78%	20.00%
Infrastructure (MLPs)	25%	7.43%	25.00%
High Yield	25%	6.33%	15.30%
Private Credit	25%	6.33%	15.30%

Income Class — Risk Vs. Return (scatter plot of Compound Return vs. Standard Deviation showing: Cash, IG Fixed Income, Inflation Protection, Absolute Return, Crisis Risk Offset, Income Class, US Equity, NonUS Equity, Private Growth)

Modeling and portfolio structure / underwriting may differ as market conditions evolve

Note: September 28, 2016 SIC Materials

Proposed Portfolio Rebalancing Policy: Asset / Liability Review

Strategic Class	Focus Portfolio %	Rebalancing Bands
Global Equity	40	+/- 2%
Private Growth *	15	+/- 4%
Income Class	6	+/- 2%
Crisis Risk Offset	8	+/- 2%
Inflation Protection *	10	+/- 3%
IG Fixed Income	11.5	+/- 2%
Absolute Return	6.5	+/- 2%
Cash	3	+/- 2%
Total	100%	100%

Note: Current rebalancing policy is +/- 2% for all classes

- Wider rebalancing bands for functional classes with illiquid assets --- minimizes denominator effect in market crisis
- Will promote smoother investing of additional allocations to illiquid assets and promote vintage year diversification
- Current policy is to rebalance monthly

* Functional Class includes illiquid assets
Note: September 28, 2016 SIC Materials

Review: Portfolio Structure for Optimization Purposes

Strategic Classes	Classes/Assets for Optimization Purposes		Components of Optimization Classes/Assets
Growth Class	Global Equity	=	100% Global Equity
		=	
	Private Growth	=	75% Private Equity
			15% Non-Core Real Estate
			10% Opportunistic Private Credit
Income Class	Income Class	=	25% REITs
			25% High Yield Infrastructure
			25% High Yield
			25% Private Credit
Risk Reduction Class	Crisis Protection	=	50% Treasury Duration
			50% Systematic Trend Following
	Inflation Protection	=	21% Bank Loans
			37% Core Real Estate
			18% Core Infrastructure
			24% TIPS
	IG Fixed Income	=	100% IG Fixed Income
	Absolute Return	=	100% Absolute Return
	Cash	=	100% Cash

Nine Asset / Functional Classes to be Optimized

Note: September 28, 2016 SIC Materials