

# Arizona State Retirement System Investment Committee

## Fixed Income Asset Class Review

June 23, 2014



# EXECUTIVE SUMMARY

Fixed Income Asset Class Overview

• **Market Value as of May 30, 2014:**

- \$7.6 B with GTAA
- \$6.5 B without GTAA

• **Passive Allocation: 42%**

• **Fixed Income Style Composition:**

- Core: 42%
- HY: 18%
- EM Debt: 14%
- Private Debt: 14%
- Opp Debt: 13%

• **Portfolios:**

- 3 Passive
  - Core: 3
- 21 Active
  - HY: 3
  - EM Debt: 2
  - Private Debt: 6
  - Opportunistic Debt: 10

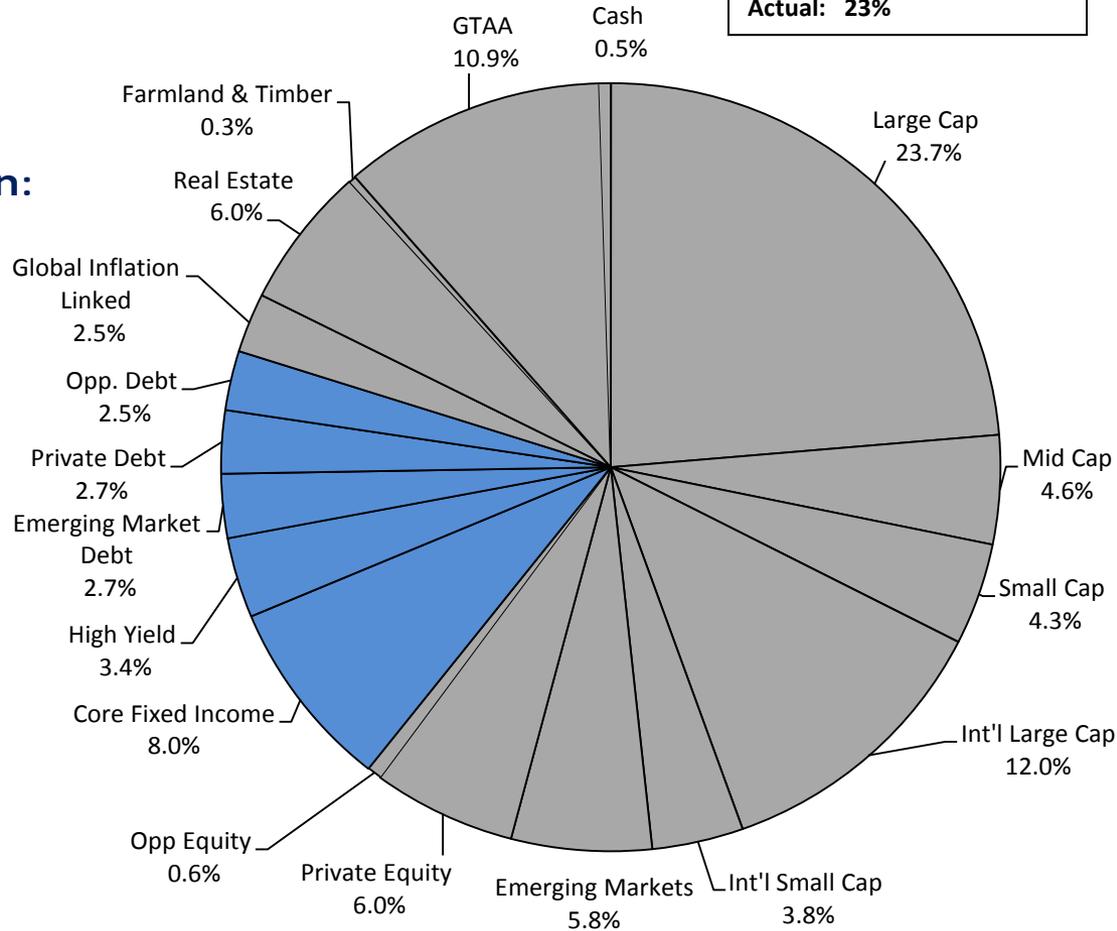
**Total Fund: \$33.9 B**

U.S. Fixed Income SAAP

Policy: 25%

Range: 15-35%

Actual: 23%



*Note: All data above excludes allocation from GTAA portfolios.*

# Executive Summary

Over the past three-, five- and ten-year periods, the ASRS Public Markets Fixed Income Portfolio has benefited from a falling interest rate environment and periods of spread compression which have resulted in annualized returns ranging from 4-6%. The portfolio has produced returns equal to or in excess of its benchmark in each of these periods.

Recently, over the one-year period ended 3/31/14, a combination of rising interest rates, poor returns in emerging market debt (-7.5%) and disappointing performance by active managers resulted in a slightly negative return (-0.3%) for the public markets fixed income portfolio that was moderately below the return of its benchmark (+0.4%).

Private debt and opportunistic debt, which are not included in the ASRS Custom Public Markets Fixed Income Benchmark, performed well and generated returns for the one year period ended 12/31/13 of 17.8% and 8.4%, respectively. Returns for private debt and opportunistic debt are reported with a one quarter lag.

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**Total Public Markets Fixed Income Performance Summary as of March 31, 2014 - FINAL**

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	9 Mo (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Return (%)	Since
Total Public Markets Fixed Income	4,373,957,134	13.0	1.9	46	3.4	38	-0.3	83	4.3	48	6.1	49	4.9	38	8.5	Jul-75
ASRS Custom Public Markets Fixed Income Benchmark			2.2	35	3.5	38	0.4	56	4.3	48	5.2	58	4.6	45	--	Jul-75
Over/Under			-0.3		-0.1		-0.7		0.0		0.9		0.3			
eA All US Fixed Inc Net Median			1.8		2.6		0.5		4.1		5.9		4.5		8.3	Jul-75

Note: Performance is based on net of fee performance data.

**ASRS Custom Public Markets Fixed Income Benchmark** is calculated as follows: Barclays Capital U.S. Aggregate Index through 12/31/2010; 93% Barclays Capital U.S. Aggregate Index, 7% Barclays Capital U.S. High Yield Bond Index through 6/30/2012; 59% Barclays Capital U.S. Aggregate Index, 23% Barclays Capital U.S. High Yield Bond Index, 18% JP Morgan GBI-EM Global Diversified thereafter.

## Executive Summary (continued)

- **As a May 30, 2014, ASRS was positioned in fixed income as follows based on the SAAP adopted in 2012:**

	<u>Actual</u>	<u>SAAP Policy</u>	<u>Over/ (Under)</u>
Total Fixed Income	23.0%	25.0%	(2.0%)
Core Fixed Income	11.3%	13.0%	(1.7%)
High Yield	3.4%	5.0%	(1.6%)
Total US Fixed Income	14.6%	18.0%	(3.4%)
Emerging Market Debt	2.7%	4.0%	(1.3%)
Private Debt	2.7%	3.0%	(0.3%)
Opportunistic Debt	2.5%	0.0%	2.5%

## Executive Summary (continued)

- **ASRS is tactically underweight fixed income. Moreover, ASRS is tactically underweight the *public* fixed income markets including core, high yield and emerging market debt as we do not see compelling opportunities to achieve the fund's overall 8% target return.**
- **As of May 30, 2014, yields and durations in the public fixed income markets were as follows:**

	<u>Yield</u>	<u>Duration</u>
Core Fixed Income	2.2%	5.6
US Treasuries	1.3%	5.3
US Agency Mortgage-Backed Securities	2.8%	5.1
Investment Grade Corporates	2.9%	7.1
High Yield (Below Investment Grade Corporates)	5.0%	4.0
Emerging Market Debt - Local Currency Sovereign	6.6%	4.7
Emerging Market Debt - Hard Currency Sovereign	5.1%	7.0

## Executive Summary (continued)

- **IMD believes that compelling opportunities to achieve the fund's 8% target return do exist in two areas of fixed income: private and opportunistic debt.**

	Expected Net Return
Private Debt Mandates Drawing Capital	6-13%
Opportunistic Debt Mandates Drawing Capital	12-15%

- **IMD believes that investment opportunities in private and opportunistic debt are relatively insensitive to rising interest rates.**
- **The ability to allocate capital to private and opportunistic debt is constrained by the respective managers' ability to source attractive investments. In addition, the investments are typically illiquid.**

## Executive Summary (continued)

- **Going forward, IMD envisions a gradual reallocation of a portion of its fixed income portfolio currently invested in lower-yielding public markets to more attractive opportunities in private and opportunistic debt which offer significantly higher expected returns. In the past twelve months, IMD staff has done the following to reallocate funds over time to mandates with higher expected returns:**
  - Created two new distressed debt mandates to capitalize on high return, distressed opportunities in the US and Europe – a \$350 million commitment to the GSO Cactus Credit Opportunities Fund, a fund of one partnership managed by GSO, and a \$300 million commitment to the OZ Credit Opportunities Fund managed by Och-Ziff.
  - Expanded our private debt commitments by \$400 million in total with three existing managers. In addition, we are currently in the process of a search for a European private debt manager to complement our existing US private debt managers.
  - Made a \$200 million commitment to the Fortress MSR Opportunities Fund II, which invests in excess mortgage servicing rights.
  - Withdrawn funds from mandates in less attractive public fixed income markets such as asset-backed securities, emerging market debt and high yield bonds.

# CORE FIXED INCOME

# Core Fixed Income

Core fixed income represents the US investment-grade market which includes US Treasuries and Agencies, Agency Mortgage-Backed Securities, Corporate Bonds, Commercial Mortgage-Backed Securities (CMBS) and Asset-Backed Securities (ABS). Its benchmark is the Barclays U.S. Aggregate Bond Index, which encompasses the market for U.S. dollar denominated, fixed-rate, taxable, investment-grade bonds that are SEC-registered.

The performance of core fixed income is heavily tied to the direction of US Treasury rates. In addition, core fixed income tends to perform well when equity markets decline (ex. 2008). As a result, it is an important part of the overall ASRS portfolio because it provides a source of balance and diversification.

## **IMD House View:**

The core fixed income market is relatively unattractive due to relatively low overall yields as Treasury rates remain at artificially low levels, credit spreads are relatively tight and spreads on agency MBS are compressed due to buying of these securities by the Fed. The market is vulnerable to rising interest rates should the US economy demonstrate sustained improvement and the Fed ends its asset purchases.

## **Actual Weighting vs. SAAP Policy:**

ASRS Actual Weighting (May 30, 2014)	11.3%
Core Fixed Income Policy	13.0%

## **Underweight**

# Core Fixed Income Managers

Portfolio	Market Value (\$MM) 5/30/14	%	IMD Commentary
F2 Internally Managed Account	\$1,978	73	Enhanced passive strategy with an objective to slightly outperform the Barclays U.S. Aggregate Bond Index (the "Index") through a stratified sampling strategy. History of outperformance which is slightly ahead of expectations.
Blackrock US Debt Index Fund	\$711	26	Passive strategy with history of modest outperformance.
Blackrock Intermediate Government/Credit Fund	\$24	1	Passive portfolio for System assets.
Total	\$2,713	100	

# Changes to Core Fixed Income Managers

- In April and May 2014, ASRS defunded its \$300 million active mandate with PIMCO for core fixed income. The funds were transferred to the Blackrock US Debt Index Fund, a passive strategy.

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## Core Fixed Income Performance Summary as of March 31, 2014

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	9 Mo (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Return (%)	Since
<b>Total Core Fixed Income</b>	<b>2,265,584,297</b>	<b>6.7</b>	<b>1.7</b>	<b>73</b>	<b>2.3</b>	<b>68</b>	<b>0.0</b>	<b>61</b>	<b>3.8</b>	<b>64</b>	<b>5.6</b>	<b>57</b>	<b>4.7</b>	<b>51</b>	<b>8.5</b>	<b>Jul-75</b>
Barclays Aggregate			1.8	62	2.3	72	-0.1	64	3.7	71	4.8	80	4.5	64	-	Jul-75
Over/Under			-0.1		0.0		0.1		0.1		0.8		0.2			
eA US Core Fixed Inc Net Median			2.0		2.6		0.1		4.1		5.8		4.7		-	Jul-75
<b>Active Core Fixed Income</b>																
PIMCO	301,089,094	0.9	1.8	70	1.6	88	-1.7	99	3.5	84	--	--	--	--	4.3	Feb-10
Barclays Aggregate			1.8	62	2.3	72	-0.1	64	3.7	71	4.8	80	4.5	64	4.0	Feb-10
Over/Under			0.0		-0.7		-1.6		-0.2					0.3		
eA US Core Fixed Inc Net Median			2.0		2.6		0.1		4.1		5.8		4.7	4.5	Feb-10	
<b>Enhanced Passive Core Fixed Income</b>																
Internally Managed F2	1,940,914,987	5.8	1.7	72	2.5	58	0.3	41	4.1	57	5.2	71	4.7	51	5.7	Oct-00
Barclays Aggregate			1.8	62	2.3	72	-0.1	64	3.7	71	4.8	80	4.5	64	5.5	Oct-00
Over/Under			-0.1		0.2		0.4		0.4		0.4		0.2	0.2		
eA US Core Fixed Inc Net Median			2.0		2.6		0.1		4.1		5.8		4.7	5.7	Oct-00	
<b>Passive Intermediate Gov't/Credit Fixed Income</b>																
BlackRock Intermediate Gov't/Credit Bond Index <sup>1</sup>	23,580,216	0.1	1.1	65	1.7	71	0.0	61	3.2	52	4.3	73	--	--	5.1	Nov-08
Barclays Int Gov't/Credit			1.0	71	1.6	82	-0.1	67	3.1	63	4.2	75	3.9	63	5.0	Nov-08
Over/Under			0.1		0.1		0.1		0.1		0.1			0.1		
eA US Intern Duration Fixed Inc Net Median			1.2		1.9		0.1		3.3		4.7		4.2	5.6	Nov-08	

1. BlackRock Intermediate Gov't/Credit Bond Index is System only.

Note: Performance, ranks and medians are based on net of fee performance data. Rankings are from highest (1) to lowest (100) in the eVestment Alliance Universe.

# HIGH YIELD FIXED INCOME

# High Yield Fixed Income

High yield bonds reflect the below investment-grade corporate bond market in the US. Unlike core fixed income which has a high correlation with Treasury rates, high yield bonds have historically has a negative correlation with Treasury rates and a positive correlation with the equity markets.

Returns are heavily influenced by credit developments at highly leveraged companies whose performance is tied to factors that affect equity markets (economic outlook, earnings, cash flow, valuations, etc.)

## **IMD House View:**

Both overall yields and spreads of high yield bonds have substantially compressed since mid-2012; this spread compression has corresponded with an unusual period of diminished volatility in the financial markets as well as a period of low corporate defaults. We have been tactically underweight the asset class as we have preferred to invest in select areas of opportunistic debt offering higher expected returns than the high yield market. Over time, we expect to tactically reduce our investments in the high yield market as opportunities to invest capital arise from new or expanded private and opportunistic debt mandates offering higher expected returns.

## **Actual Weighting vs. SAAP Policy:**

ASRS Actual Weighting (May 30, 2014)

High Yield Fixed Income Policy

## **Underweight**

3.4%

5.0%

# High Yield Fixed Income Managers

Portfolio	Market Value (\$MM) 5/30/14	%	IMD Commentary
Columbia Separate Account	\$744	65	Active manager with flexible investment style that adjusts portfolio risk based on the investment outlook. While Columbia has underperformed the HY benchmark since inception in 2009, it has outperformed the universe of high yield managers in the latest 3 year period.
JP Morgan High Yield	\$328	29	Active manager with a flexible investment style that is agnostic to credit quality. ASRS funded \$300 million of the \$450 million mandate in 2013. JP Morgan has modestly underperformed the benchmark since inception.
Shenkman Separate Account	\$74	6	In May and June 2014, the Shenkman account was defunded to meet capital calls in private and opportunistic debt. Shenkman is an active manager with conservative, higher quality investment strategy. This higher quality strategy is the primary reason for ITD underperformance as the riskiest sectors of high yield (CCC's and below) have significantly outperformed.
Total	\$1,146	100	

# Changes to High Yield Fixed Income Managers

- In May and June 2014, ASRS defunded its \$175 million high yield mandate with Shenkman. The funds were used for capital calls in private and opportunistic debt.

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High Yield Fixed Income Performance Summary as of March 31, 2014 - FINAL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	9 Mo (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Return (%)	Since
<b>Total High Yield Fixed Income</b>	<b>1,228,136,960</b>	<b>3.6</b>	<b>2.8</b>	<b>51</b>	<b>8.7</b>	<b>45</b>	<b>7.1</b>	<b>47</b>	<b>8.5</b>	<b>46</b>	--	--	--	--	<b>10.6</b>	<b>Oct-09</b>
Barclays High Yield			<u>3.0</u>	42	<u>9.1</u>	28	<u>7.5</u>	40	<u>9.0</u>	26	<u>18.2</u>	16	<u>8.7</u>	20	<u>11.7</u>	Oct-09
Over/Under			-0.2		-0.4		-0.4		-0.5						-1.1	
eA US High Yield Fixed Inc Net Median			2.8		8.6		7.1		8.4		16.2		7.9		11.1	Oct-09
<b>Active High Yield Fixed Income</b>																
Columbia Management	731,783,268	2.2	2.9	49	8.6	49	6.9	58	8.8	38	--	--	--	--	11.0	Oct-09
Barclays High Yield			<u>3.0</u>	42	<u>9.1</u>	28	<u>7.5</u>	40	<u>9.0</u>	26	<u>18.2</u>	16	<u>8.7</u>	20	<u>11.7</u>	Oct-09
Over/Under			-0.1		-0.5		-0.6		-0.2						-0.7	
eA US High Yield Fixed Inc Net Median			2.8		8.6		7.1		8.4		16.2		7.9		11.1	Oct-09
Shenkman	172,126,185	0.5	2.9	49	8.6	49	6.8	58	7.2	82	--	--	--	--	9.6	Oct-09
Barclays High Yield			<u>3.0</u>	42	<u>9.1</u>	28	<u>7.5</u>	40	<u>9.0</u>	26	<u>18.2</u>	16	<u>8.7</u>	20	<u>11.7</u>	Oct-09
Over/Under			-0.1		-0.5		-0.7		-1.8						-2.1	
eA US High Yield Fixed Inc Net Median			2.8		8.6		7.1		8.4		16.2		7.9		11.1	Oct-09
JP Morgan High Yield	324,227,507	1.0	2.7	63	8.9	36	--	--	--	--	--	--	--	--	8.9	Jul-13
Barclays High Yield			<u>3.0</u>	42	<u>9.1</u>	28	<u>7.5</u>	40	<u>9.0</u>	26	<u>18.2</u>	16	<u>8.7</u>	20	<u>9.1</u>	Jul-13
Over/Under			-0.3		-0.2										-0.2	
eA US High Yield Fixed Inc Net Median			2.8		8.6		7.1		8.4		16.2		7.9		8.6	Jul-13

Note: Performance, ranks and medians are based on net of fee performance data. Rankings are from highest (1) to lowest (100) in the eVestment Alliance Universe.

# EMERGING MARKET DEBT

# Emerging Market Debt

Emerging market debt represents sovereign or corporate debt of entities based in emerging market countries that is issued in either local or hard currency (US dollar or Euro). IMD has chosen to concentrate our investments primarily in local currency sovereign debt, the benchmark for which is the JP Morgan GBI-EM Global Diversified Index. Emerging market debt was added as an asset class in the June 2012 SAAP.

Returns for local currency EM debt have a relatively low correlation with US Treasury rates and a high correlation with emerging market equities and the S&P 500. Returns are affected by: 1) currency exchange rates for emerging market countries relative to the US dollar (appreciation in EM local currencies is positive for returns) which in turn is influenced by the interest rate, economic and fiscal outlooks of EM countries relative to the US, and 2) the required risk premium for holding emerging market debt vs. US Treasuries which is influenced by the demand for risky assets.

## **IMD House View:**

Emerging market debt denominated in local currencies offers attractive yields as well as a potential currency hedge against a decline in the U.S. dollar stemming from long-term U.S. fiscal problems and the Fed's unusually accommodative monetary policy. That being said, we are concerned about two risks of emerging market local debt: 1) the underlying volatility of emerging market currencies and 2) the possibility that the general trend of US dollar depreciation that has boosted returns of emerging market local debt in the past may have ended as the US economy demonstrates an improvement in relative economic outlook and investors show an increasing willingness to add US dollar denominated assets. Because of these concerns, we view EM local currency debt as a potential funding source, depending on market levels, for private and opportunistic debt capital calls.

## **Actual Weighting vs. SAAP Policy:**

ASRS Actual Weighting (May 30, 2014)

Emerging Market Debt Policy

## **Underweight**

2.7%

4.0%

# Emerging Market Debt Managers

Portfolio	Market Value (\$MM) 5/30/14	%	IMD Commentary
Ashmore Blended Separate Account	\$562	62	Active strategy that enables the manager to tactically allocate to either the local or hard currency markets through the use of commingled funds. Since inception, strategy has underperformed its blended benchmark but has added value by outperforming the overall EM local currency bond benchmark.
PIMCO Local Currency Separate Account	\$349	38	Active strategy that separates currency and interest rate risk and opportunities in EM debt through utilization of derivatives (primarily currency forwards). Strategy has underperformed since inception primarily due to country selection.
Total	\$913	100%	

# Changes to Emerging Market Fixed Income Managers

- In September 2013, ASRS defunded a \$275 million mandate invested in the Ashmore Local Currency Bond Fund and moved the funds into the Ashmore Blended Separate Account in order to better diversify our emerging market debt holdings and reduce the risk from potential depreciation in emerging market currencies.
- In January 2014, ASRS withdrew \$200 million from the PIMCO local currency account.

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## Emerging Market Debt Performance Summary as of March 31, 2014 - FINAL

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	9 Mo (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Return (%)	Since
<b>Total Emerging Market Debt</b>	<b>880,235,877</b>	<b>2.6</b>	<b>1.7</b>	<b>78</b>	<b>0.3</b>	<b>79</b>	<b>-7.5</b>	<b>80</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>-6.0</b>	<b>Jan-13</b>
<i>JP Morgan GBI - EM Global Diversified Index</i>			<u>1.0</u>	74	<u>-0.1</u>	80	<u>-7.1</u>	75	<u>1.1</u>	71	<u>9.8</u>	86	<u>9.3</u>	22	<u>-5.8</u>	Jan-13
Over/Under			-0.2		0.4		-0.4								-0.2	
<i>eA Emg Mkt Fixed Inc Unhedged Net Median</i>			2.6		3.8		-3.7		4.1		11.5		7.8		-3.3	Jan-13
<b>Ashmore Emerging Market Blended Debt</b>	<b>543,719,313</b>	<b>1.6</b>	<b>1.5</b>	<b>84</b>	<b>1.3</b>	<b>65</b>	<b>-5.1</b>	<b>63</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>-3.7</b>	<b>Jan-13</b>
<i>ASRS Custom Emerging Markets Blended Benchmark</i>			<u>2.5</u>	55	<u>3.0</u>	60	<u>-3.3</u>	46	<u>3.8</u>	53	<u>10.0</u>	67	<u>8.5</u>	33	<u>-3.0</u>	Jan-13
Over/Under			-1.0		-1.7		-1.8								-0.7	
<i>eA Emg Mkt Fixed Inc Unhedged Net Median</i>			2.6		3.8		-3.7		4.1		11.5		7.8		-3.3	Jan-13
<b>PIMCO Emerging Market Debt LC</b>	<b>336,516,564</b>	<b>1.0</b>	<b>2.4</b>	<b>63</b>	<b>-0.4</b>	<b>82</b>	<b>-8.6</b>	<b>89</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>-6.9</b>	<b>Jan-13</b>
<i>JP Morgan GBI - EM Global Diversified Index</i>			<u>1.0</u>	74	<u>-0.1</u>	80	<u>-7.1</u>	75	<u>1.1</u>	71	<u>9.8</u>	86	<u>9.3</u>	22	<u>-5.8</u>	Jan-13
Over/Under			0.5		-0.3		-1.5								-1.1	
<i>eA Emg Mkt Fixed Inc Unhedged Net Median</i>			2.6		3.8		-3.7		4.1		11.5		7.8		-3.3	Jan-13

Note: Performance, ranks and medians are based on net of fee performance data.

Rankings are from highest (1) to lowest (100) in the eVestment Alliance Universe.

Composition of ASRS Custom Emerging Markets Blended Benchmark can be found in the appendix.

The Ashmore Emerging Markets Local Debt Fund was reallocated into the Ashmore Emerging Markets Blended Separate Account, as of September 24, 2013. The Ashmore Emerging Markets Local Debt Fund had a partial monthly return, for September, of 6.19% vs the return of 6.07% of its benchmark, the JPMorgan GBI-EM GD. The partial return is included in the Total Emerging Markets Debt Composite, the Total Public Markets Fixed Income and the Total Fund level.



# PRIVATE DEBT

# Private Debt

Private debt is comprised of illiquid loans and bonds that fund highly leveraged companies and real estate properties that are too small in size to meet the requirements of the tradable leveraged loan, high yield bond, or commercial mortgage-backed securities markets. For example, private debt may consist of secured loans funding leveraged buyouts of small to mid-size companies or mezzanine financing for highly levered real estate properties. Private debt was added as an asset class in the June 2012 SAAP. IMD staff has adopted an implementation plan for private debt which allocates approximately 67% to corporate credit and 33% to real estate credit.

Returns in the asset class are determined by: 1) the expected returns of individual investments (based on the cash coupon rate or spread over LIBOR and other sources of return including underwriting fees, new issuance discounts and premium call features) and 2) the actual level of credit losses experienced.

## **IMD House View:**

Private debt offers the most attractive opportunity in the fixed income markets with double-digit yields readily available for investors willing to accept illiquidity. The market opportunity is principally driven by regulatory constraints that make it unattractive for banks to hold illiquid loans or other debt of below investment-grade credit quality.

## **Actual Weighting vs. SAAP Policy: Underweight<sup>1</sup>**

Actual Weighting (May 30, 2014)	2.7%
Private Debt Policy	3.0%

<sup>1</sup>ASRS is tactically overweight based on commitments made of up to 5.4% of the total fund.

# Private Debt Managers

Portfolio	ASRS Commitment (\$MM)	Market Value (\$MM) 5/30/14	Target Net Return	%	IMD Commentary
Cerberus ASRS Credit Opportunities Fund	\$600	\$303	13%	34	Partnership with ASRS to invest in secured loans primarily to fund middle market leveraged transactions (ex. buyouts, recapitalizations). The partnership can leverage ASRS's equity investment by up to 1.25x to boost returns.
H/2 Core Real Estate Debt Fund	\$350	\$158	6%	17	Fund invests in senior mortgage loans and other conservatively underwritten real estate finance investments. The fund will utilize leverage of up to 60%.
Blackstone/GSO Capital Solutions Fund	\$200	\$152	13%	17	Fund provides rescue financing primarily to companies seeking to avoid a bankruptcy or restructuring. The fund has generated net returns well in excess of expectations. Investment period ended in 2013 and portfolio is now running off.
RFM Cactus Holding Company, LLC (Partnership with Related)	\$300	\$108	10%	12	Partnership with ASRS to invest in: 1) "Freddie B" securities, which are first loss tranches of multi-family property securitizations that have been pooled and sponsored by Freddie Mac; and 2) mezzanine debt to finance real estate properties.
Highbridge Principal Strategies – AP Mezzanine Partners II, LP	\$210	\$103	11%	11	Fund invests primarily in mezzanine debt to fund highly leveraged transactions for larger capitalization companies.
White Oak Separate Account	\$160	\$79	12%	9	Separate account invests in secured loans for small- to mid-size companies typically lacking a deal sponsor with an emphasis on lending based on the value of the underlying collateral.
Total	\$1,820	\$902		100	

# Changes to Private Debt Managers

- In the first half of 2014, ASRS increased the size of the following private debt mandates:
  - Cerberus ASRS Credit Opportunities Fund to \$600 million from \$400 million
  - H/2 Core Real Estate Debt Fund to \$350 million from \$250 million
  - RFM Cactus Holding Company, LLC to \$300 million from \$200 million.
- IMD staff is in the process of completing a search for a European private debt manager.

	Market Value (\$)	3 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	Inception		Date
		TNET <sup>(3)</sup>	IRR <sup>(4)</sup>					
<b>Total ASRS Private Debt Portfolio<sup>(1),(2)</sup></b>	<b>853,164,094</b>	<b>4.1</b>	<b>17.8</b>	<b>17.8</b>	<b>N/A</b>	<b>17.3</b>	<b>17.2</b>	<b>Jul-12</b>
Blackstone / GSO Capital Solutions Fund LP <sup>(5)</sup>	196,023,467	9.5	24.4	24.4	N/A	21.6	21.5	Jul-12
Cerberus ASRS Credit Opportunities Fund, L.P.	258,021,374	2.6	10.1	N/A	N/A	10.1	14.0	Jan-13
Highbridge Principal Strategies – Mezzanine Partners II, L.P.	67,240,435	2.6	7.2	N/A	N/A	7.2	11.4	Mar-13
H/2 Core Real Estate Debt Fund L.P.	159,120,733	1.5	4.5	N/A	N/A	4.5	5.6	Mar-13
RFM Cactus Holding Company, LLC	106,140,347	2.2	4.3	N/A	N/A	4.3	4.3	Jun-13
White Oak Global Advisors Private Debt	66,617,738	4.1	23.8	N/A	N/A	23.8	26.6	Feb-13
<i>S&amp;P/LSTA Index + 250bps QTR Lagged<sup>(6)</sup></i>		2.3	7.8	7.8	N/A	9.3	8.4	

**Notes:**

1. Time Weighted Returns are calculated as the geometric mean of the holding period returns of each underlying investment since the first full quarter after the investment's inception to the report date. Each holding period return is calculated on a quarterly basis by dividing the fund's gain (gross or net depending on the type of report) and income over the time-weighted net capital in every period. Time weighted net capital is equal to the sum of each period's beginning balance and the subsequent cash flows, which are weighted based on the number of days that each cash flow has been outstanding during the corresponding quarter.
2. The Time Weighted Return is a periodic return, which means that the result corresponds to the return achieved by each underlying investment during the measured period (first full quarter after inception to report date). For comparability purposes and in order to provide a more meaningful result, the TWR is annualized for the cases where funds operational period is more than a year.
3. Returns have been compressed to begin with first full quarter and eliminate partial periods. IRR calculations use actual cash flow dates.
4. The Net IRR is calculated using all outflows to and inflows from the fund investments, including cash flows for expenses and fees paid by the portfolio of those investments.
5. Effective 07/01/12 Blackstone/GSO Capital Solutions Fund LP was transferred from ASRS Opportunistic Portfolio to ASRS Private Debt Portfolio. Cash flows are from 07/01/12.
6. S&P/LSTA Index - The S&P/LSTA U.S. Leveraged Loan index plus 250 bps (for a one year period). Therefore, the bps is prorated for Quarter, YTD returns and becomes static 250 bps for One Year and Three Year and Inception.

Source: Credit Suisse Fund Group



NEPC, LLC

March 31, 2014

# OPPORTUNISTIC DEBT

# Opportunistic Debt

Opportunistic debt is tactical in nature and represents asset classes or strategies not encompassed in the SAAP and offer the potential to meet the fund's targeted return. Since its inclusion in ASRS's portfolio beginning in 2008, opportunistic debt, including both existing and defunded mandates, has generated an aggregate net IRR of 12.1% through 12/31/13.

## **IMD House View:**

Opportunities exist in select fixed income markets (such as distressed debt and asset-backed securities) to achieve outsized returns or generate expected returns that exceed other fixed income asset classes in the SAAP.

<b>Actual Weighting vs. SAAP Policy Target:</b>	<b>Overweight</b>
ASRS Actual Weighting (May 30, 2014)	2.5%
Opportunistic Debt Policy	0.0% (with a range of 0-10%)

Portfolio	ASRS Commitment (\$MM)	Market Value (\$MM) 5/30/14	Target Net Return	%	IMD Commentary
OZ Credit Opportunities Fund	\$300	\$258	12%	30	Fund utilizes a multi-strategy approach to allocate to both distressed structured and corporate credit as it sees fit based on the opportunity.
Avenue Europe Capital Partners II	\$250	\$236	15%	28	Fund invests in distressed debt such as bank loans of European companies. Initial funding in 2011; investment period ends in August 2014.
Oaktree Opportunities Fund VIIIb	\$150	\$176	15%	21	Funds invests in distressed debt primarily corporate such as leveraged loans. Investment period ends in August 2014.
TCW Capital Trust	\$150	\$62	10%	8	Fund invests in four asset classes: leveraged loans, high yield bonds, private debt and mezzanine debt. Investment period ended in 2013; fund actively returning capital.
GSO Cactus Credit Opportunities Fund	\$350	\$50	12%	6	Partnership with ASRS to exploit the highest conviction, risk-adjusted corporate credit opportunities across the GSO platform including distressed debt in the US and Europe.
Oaktree Opportunities Fund VIII	\$50	\$39	15%	4	Funds invests in distressed debt primarily corporate such as leveraged loans. Investment period ended in 2012; fund actively returning capital.
Fortress MSR Opportunities Fund II	\$200	\$10	12%	1	Fund invests in excess mortgage-servicing rights. Initial funding in September 2013.
Funds Close to Being Fully Liquidated	N/A	\$19	10-14%	2	Blackrock Credit Investors II, Blackrock Mortgage and the Guggenheim separate account are close to being fully liquidated.
Total	\$1,450	\$850		100	

# Changes to Opportunistic Debt Managers

- Over the past twelve months, ASRS has added the following new opportunistic debt mandates:
  - \$350 million commitment to GSO Cactus Credit Opportunities Fund
  - \$300 million commitment to OZ Credit Opportunities Fund
  - \$200 million commitment to Fortress MSR Opportunities Fund II.
- In addition, the following mandates have either been substantially defunded or have returned a majority of their capital:
  - Guggenheim separate account
  - Blackrock Mortgage
  - Blackrock Credit
  - TCW Capital Trust

	Market Value (\$)	3 Mo (%)	YTD (%)	1Yr (%)	3 Yrs (%)	Inception		Date
		TNET <sup>(3)</sup>	IRR <sup>(5)</sup>					
<b>Total ASRS Opportunistic Portfolio<sup>(1),(2)</sup></b>	<b>884,564,294</b>	<b>1.8</b>	<b>8.4</b>	<b>8.4</b>	<b>8.5</b>	<b>8.7</b>	<b>12.1</b>	
Avenue Europe Special Situations Fund II (U.S.), L.P.	213,240,938	2.0	5.1	5.1	N/A	6.3	7.5	Jan-12
Blackrock Credit Investors II, L.P.	4,353,977	4.1	12.1	12.1	3.7	19.1	15.7	Jul-08
Blackrock Mortgage Investors, LP	1,023,281	-9.3	-3.4	-3.4	7.2	6.7	8.1	Jan-08
Fortress MSR Opportunities Fund II A LP	8,057,215	-1.3	-1.3	N/A	N/A	-1.3	-3.7	Sep-13
Guggenheim Partners Asset Management	310,569,553	1.5	7.7	7.7	9.0	15.9	16.2	Jul-08
Oaktree Opportunities Fund VIII, L.P.	43,964,374	3.6	18.8	18.8	11.5	12.9	12.4	Apr-10
Oaktree Opportunities Fund VIIIb, L.P.	168,755,199	4.3	14.2	14.2	N/A	12.2	12.5	Jul-11
TCW Capital Trust	134,599,757	2.2	7.4	7.4	7.3	9.0	8.7	Oct-09

**Notes:**

1. Time Weighted Returns are calculated as the geometric mean of the holding period returns of each underlying investment since the first full quarter after the investment's inception to the report date. Each holding period return is calculated on a quarterly basis by dividing the fund's gain (gross or net depending on the type of report) and income over the time-weighted net capital in every period. Time weighted net capital is equal to the sum of each period's beginning balance and the subsequent cash flows, which are weighted based on the number of days that each cash flow has been outstanding during the corresponding quarter.
2. The Time Weighted Return is a periodic return, which means that the result corresponds to the return achieved by each underlying investment during the measured period (first full quarter after inception to report date). For comparability purposes and in order to provide a more meaningful result, the TWR is annualized for the cases where funds operational period is more than a year.
3. Returns have been compressed to begin with first full quarter and eliminate partial periods. IRR calculations use actual cash flow dates.
4. Hyperion Asset Management and TCW Credit Opportunity have been liquidated in Q3 2010.
5. The Net IRR is calculated using all outflows to and inflows from the fund investments, including cash flows for expenses and fees paid by the portfolio of those investments.

Source: Credit Suisse Fund Group



NEPC, LLC

March 31, 2014

# APPENDICES

1. Fixed Income Market Environment
2. Correlations Between Various Fixed Income Asset Classes
3. ASRS Strategic Asset Allocation Policy Schematic

# APPENDIX 1

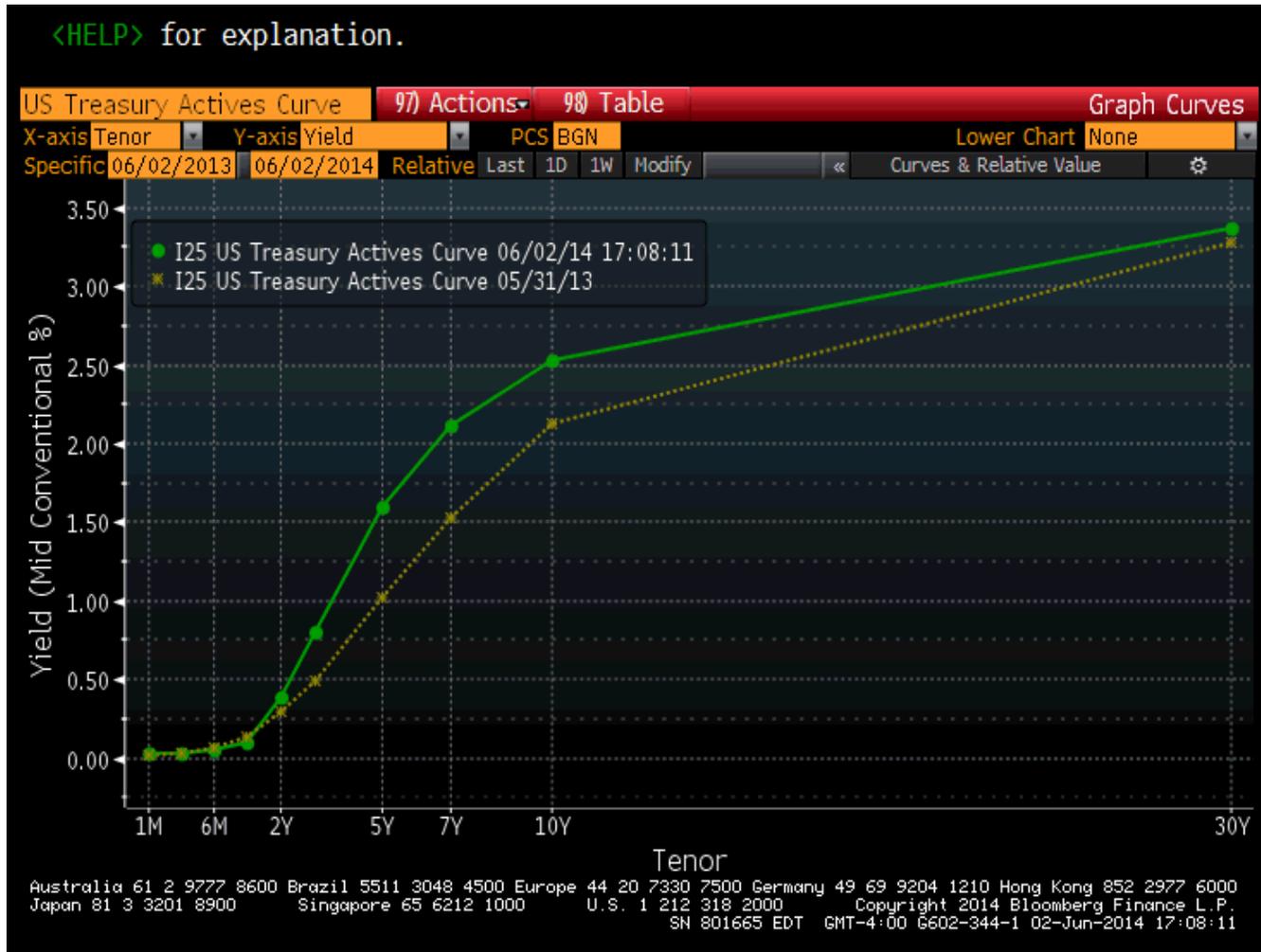
## FIXED INCOME MARKET ENVIRONMENT

# Core Fixed Income

# Barclays US Aggregate Index Yield-to-Worst 2004 – 2014



# Yield Curve



# 10 Year U.S. Treasury Bond Yield 2004 - 2014



# 30 Year U.S. Treasury Bond Yield 2004 – 2014



# Corporate Investment Grade Spreads

## Option Adjusted Spreads (OAS) 2004-2014



# US Mortgage-Backed Securities Spreads

## Option Adjusted Spreads (OAS) 2004-2014



# High Yield Fixed Income

# Barclays US Corporate High Yield Index Option Adjusted Spread (OAS) 2004 - 2014



# Barclays US Corporate High Yield Index Yield-to-Worst 2004 – 2014



# Emerging Market Debt

# Yield of JPM GBI-EM Global Diversified Index 2004 – 2014



The JPM GBI-EM Global Diversified Index tracks the returns of local currency emerging market sovereign debt. **This index is the benchmark for ASRS's emerging market debt asset class.**

# Yield of JPM EMBI Global Diversified Index (EMBI-GD) 2004 – 2014



The JP Morgan EMBI Global Diversified Index (EMBI-GD) tracks total returns for **US dollar denominated debt instruments of sovereign and quasi sovereign entities** of emerging market countries. This index is included as part of the manager benchmark for the Ashmore blended mandate.

# Yield of JPM Corporate Emerging Markets Bond Index Broad Diversified (CEMBI BD) 2004 – 2014



The JP Morgan Corporate Emerging Markets Bond Index Broad Diversified (CEMBI BD) tracks total returns for **US dollar denominated debt instruments of corporate entities** in emerging market countries. This index is included as part of the manager benchmark for the Ashmore blended mandate.

# Excess Returns

# Broad sector excess returns

Barclays Fixed Income Indices relative to Treasuries (excess return) 1998–2014

	U.S. Agency	U.S. MBS	ABS	CMBS	U.S. Credit	U.S. Intermediate Credit	U.S. Long Credit	U.S. High Yield	EMD
Quality Ranking	High	High	High	High	Medium	Medium	Medium	Low	Low
1998	-49	-90	-88	n/a	-238	-150	-381	-843	-2046
1999	41	113	137	87	170	164	182	476	2417
2000	-13	-77	43	-41	-463	-237	-1003	-1897	148
2001	73	-75	139	131	277	138	667	-285	-541
2002	96	173	-16	210	-187	-129	-371	-1329	23
2003	27	11	181	201	527	439	824	2642	2465
2004	78	142	142	118	159	151	190	800	823
2005	13	-37	32	15	-85	-25	-291	47	959
2006	75	122	87	137	119	107	156	843	702
2007	-52	-185	-634	-435	-464	-399	-655	-777	-457
2008	-110	-255	-2223	-3274	-1786	-1504	-2719	-3832	-2842
2009	238	482	2496	2960	1990	1707	2880	5955	3797
2010	72	230	169	1501	192	212	124	974	508
2011	19	-113	52	47	-322	-197	-696	-240	-537
2012	97	91	246	841	693	614	898	1394	1503
2013	-10	98	24	97	226	176	352	923	-32
YTD	41	25	39	92	132	122	158	240	326

Source: Barclays The above table is shown for illustrative purposes only. Indices do not include fees or operating expenses and are not available for actual investment. YTD through May 31 2014

# APPENDIX 2

## CORRELATIONS BETWEEN VARIOUS FIXED INCOME ASSET CLASSES

# Correlations Between Various Fixed Income Asset Classes

## 10-YEAR CORRELATIONS, MONTHLY

	JPM EMBI GLOBAL	JPM ELMI+ UNHEDGED	JPM GBI-EM GLOBAL DIV UNHEDGED	JPM CEMBI DIV	U.S. TREASURY	BAGG	HIGH GRADE	HIGH YIELD	U.S. TIPS*	FOREIGN HEDGED	FOREIGN UNHEDGED	S&P 500 Total return	EM Equity	DJ UBS COMMODITY
JPM EMBI GLOBAL	1.00													
JPM ELMI+ UNHEDGED	0.68	1.00												
JPM GBI-EM GLOBAL DIV UNHEDGED*	0.80	0.94	1.00											
JPM CEMBI DIV	0.92	0.62	0.72	1.00										
U.S. TREASURY	0.26	-0.04	0.07	0.22	1.00									
BAGG	0.64	0.24	0.38	0.61	0.86	1.00								
HIGH GRADE	0.79	0.43	0.56	0.81	0.45	0.81	1.00							
HIGH YIELD	0.76	0.60	0.65	0.77	-0.23	0.26	0.61	1.00						
U.S. TIPS	0.66	0.38	0.46	0.65	0.60	0.78	0.66	0.40	1.00					
FOREIGN HEDGED	0.24	-0.07	0.08	0.16	0.76	0.70	0.53	-0.15	0.42	1.00				
FOREIGN UNHEDGED	0.45	0.57	0.55	0.40	0.52	0.61	0.51	0.22	0.59	0.45	1.00			
S&P 500 TOTAL RETURN	0.55	0.69	0.65	0.56	-0.28	0.03	0.34	0.72	0.16	-0.24	0.19	1.00		
EM EQUITY	0.69	0.83	0.82	0.66	-0.20	0.15	0.45	0.74	0.29	-0.17	0.32	0.77	1.00	
DJ UBS COMMODITY	0.42	0.64	0.53	0.45	-0.17	0.05	0.26	0.48	0.31	-0.25	0.32	0.49	0.63	1.00

As of 31 March 2014

SOURCE: PIMCO, JPMorgan, Barclays, BofA Merrill Lynch, Morgan Stanley

\* Treasury Inflation Protected Treasuries (TIPS)

U.S. Treasury is represented by the Citigroup U.S. Treasury Index; BAGG is the Barclays U.S. Aggregate Index; high grade is represented by the Barclays U.S. Credit Investment Grade Index; high yield is represented by the BofA Merrill Lynch High Yield Master II Index; U.S. TIPS is represented by the Barclays U.S. TIPS Index; foreign hedged is represented by the JPMorgan GBI Global Ex-U.S. Hedged Index; foreign unhedged is represented by the JPMorgan Non-U.S. Government Bond Index Unhedged; EM equity is represented by MSCI Emerging Markets Total Return Net Index.

**APPENDIX 3**  
**ASRS STRATEGIC ASSET ALLOCATION**  
**POLICY SCHEMATIC**

# ASRS Strategic Asset Allocation Policy Schematic

Asset Class	Policy	Range	Benchmark	Passive %
Large Cap	23%		S&P 500	
Mid Cap	5%		S&P 400	
Small Cap	5%		S&P 600	
<b>US Equity</b>	<b>33%</b>	(26 - 38%)		Min 50%
Developed Large Cap	14%		MSCI EAFE	
Developed Small Cap	3%		MSCI EAFE Small Cap	
Emerging Markets	6%		MSCI EM	
<b>Non-US Equity</b>	<b>23%</b>	(16 - 28%)		Min 30%
Private Equity	7%	(5 - 9%)	Russell 2000	
Opportunistic Equity*	0%	(0 - 3%)	Investment Specific	
<b>Total Equity</b>	<b>63%</b>	<b>(53 - 70%)</b>		
Core	13%		Barclays Aggregate	Min 50%
High Yield	5%		Barclays HY	
<b>US Fixed Income</b>	<b>18%</b>	(8 - 28%)		
Emerging Market Debt	4%		JP Morgan GBI-EM Global Diversified	
Opportunistic Debt*	0%	(0 - 10%)	Investment Specific	
Private Debt	3%		S&P /LSTA Leveraged Loan Index + 2.5%	
<b>Total Fixed Income</b>	<b>25%</b>	<b>(15 - 35%)</b>		
Commodities	4%	(1 - 7%)	DJ UBS Total Return	
Real Estate	8%	(6 - 10%)	NCREIF ODCE	
Infrastructure	0%	(0 - 3%)	CPI (ex food and energy) + 3.5%	
Farmland and Timber	0%	(0 - 3%)	CPI (ex food and energy) + 3.5%	
Opportunistic Inflation Linked*	0%	(0 - 3%)	Investment Specific	
<b>Total Inflation Linked Assets</b>	<b>12%</b>	<b>(8 - 16%)</b>		
<b>TOTAL</b>	<b>100%</b>			
Global Tactical Asset Allocation (GTAA)	10%	(5 - 15%)	Total Fund Benchmark	
*Note: Aggregate Opportunistic asset classes not to exceed 10%				