

Arizona State Retirement System

Investment Committee

Fixed Income Asset Class Review

June 20, 2016



EXECUTIVE SUMMARY

Fixed Income Asset Class Overview

- **Market Value as of May 31, 2016:**

- **\$8.8 B**

- **Passive Allocation: 45.4%**

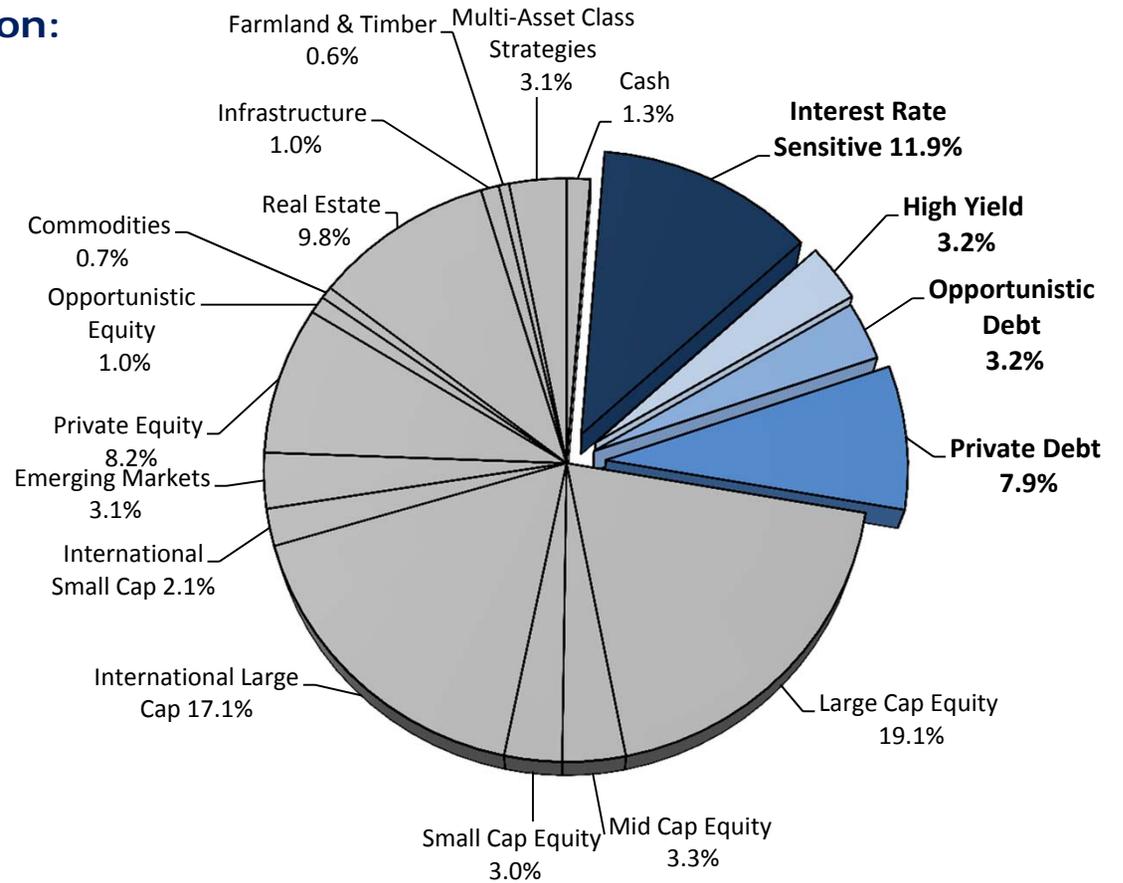
- **Fixed Income Style Composition:**

- Interest Rate Sensitive: 45.4%
 - High Yield: 12.2%
 - Private Debt: 30.1%
 - Opportunistic Debt: 12.3%

- **Portfolios:**

- 3 Passive
 - Core: 2
 - Treasuries (Long) 1
 - 23 Active
 - HY: 2
 - Private Debt: 11
 - Opportunistic Debt: 10

Total Fund: \$33.4 B
 U.S. Fixed Income SAAP
 Policy: 25%
 Range: 18-35%
 Actual: 26.3%



Arizona State Retirement System

Total Fixed Income Performance Summary as of March 31, 2016

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Return (%)	Since
Total Public Markets Fixed Income	4,965,178,558	14.7	3.4	28	3.0	24	1.8	26	1.6	57	3.6	71	5.0	62	8.2	Jul-75
<i>ASRS Custom Public Markets Fixed Income Benchmark</i>			<u>3.1</u>	36	<u>1.7</u>	38	<u>0.5</u>	53	<u>0.8</u>	74	<u>3.0</u>	90	<u>4.5</u>	85	--	<i>Jul-75</i>
Over/Under			0.3		1.3		1.3		0.8		0.6		0.5			
	Market Value (\$)	% of Portfolio	3 Mo (%)		1 Yr (%)		3 Yrs (%)		5 Yrs (%)		Inception (%)		Since			
Total Private Debt	2,381,652,235	7.1	1.9		8.5		10.7		10.9				Jul-12			
<i>S&P/LSTA Leveraged Loan Index + 250 bps 1 QTR Lagged</i>			<u>-1.5</u>		<u>1.1</u>		<u>3.1</u>		<u>3.3</u>				<i>Jul-12</i>			
Over/Under			3.4		7.4		7.6		7.6							
	Market Value (\$)	% of Portfolio	3 Mo (%)		1 Yr (%)		3 Yrs (%)		5 Yrs (%)		Inception (%)		Since			
Total Opportunistic Debt	1,117,282,802	3.3	-3.7		-3.1		4.2		5.5		9.3		Jan-08			

- ASRS Custom Public Markets Fixed Income Benchmark** was 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 12/31/2012; 59% Barclays Capital U.S. Aggregate Index, 23% Barclays Capital U.S. High Yield Bond Index, 18% JP Morgan GBI-EM Global Diversified through 3/31/2015; 73% Barclays Capital U.S. Aggregate Index, 27% Barclays Capital U.S. High Yield Bond Index thereafter.

Executive Summary

Public Markets Fixed Income

For the one-year period ended 3/31/16, the Public Markets Fixed Income portfolio generated a 1.8% return, which exceeded its benchmark by 1.3%.

The outperformance over the one-year period was primarily due to a tactical underweight to High Yield Fixed Income, an asset class which performed poorly with a market return of -3.7%; outperformance by high yield managers (particularly Columbia) relative to the high yield bond benchmark; outperformance by passive Core Fixed Income managers particularly the internally managed F2 portfolio; and a tactical allocation made to the Treasuries (Long Duration) asset class in August 2015 which performed well with an inception-to-date return of 8.3%.

Over the past one-, three-, five- and ten-year periods, the ASRS Public Markets Fixed Income portfolio experienced returns of 1.8%, 1.6%, 3.6% and 5.0%, respectively. The portfolio produced returns in excess of its benchmark in each of these periods. Returns in the most recent one- and three-year periods are lower in comparison to prior periods due to the low level of interest rates and an increase in credit spreads, which adversely affected returns of credit investments.

Executive Summary (continued)

Private Debt and Opportunistic Debt

Private Debt and Opportunistic Debt are two important asset classes that are not included in the ASRS Custom Public Markets Fixed Income Benchmark.

Private Debt generated a return for the one-year period ended 12/31/15 of 8.5%, which exceeded the return of its benchmark by 7.4%. The inception-to-date IRR for this asset class was 10.9%, which exceeded the return of the benchmark by 7.6%.

Opportunistic Debt experienced weak performance with a return for the one year period ended 12/31/15 of -3.1%. This compares with an expected return of 8.0% over the long-run. The disappointing performance was due to across-the-board weakness in credit markets particularly distressed debt, which represents the vast majority of the Opportunistic Debt portfolio. The inception-to-date IRR for the Opportunistic Debt asset class was 9.3%.

(Note: returns for Private Debt and Opportunistic Debt are reported with a one quarter lag.)

Executive Summary (continued)

- As a May 31, 2016, ASRS was positioned in fixed income as follows based on the SAAP adopted in 2015 and the Interim Adjusted SAAP Policy targets:

	<u>Actual</u>	<u>SAAP Target</u>	Interim Adjust. <u>SAAP</u>	Over/ <u>(Under)</u> ¹
Total Fixed Income	26.3%	25.0%	25.1%	1.2%
Treasuries (Long Duration)	1.1%	0.0%		
Core Fixed Income	<u>10.8%</u>	<u>11.0%</u>		
Interest Rate Sensitive	11.9%	11.0%	12.6%	(0.6%)
High Yield	3.2%	4.0%	4.6%	(1.4%)
Private Debt	7.9%	10.0%	7.9%	0.0%
Opportunistic Debt	3.2%	0.0%	0.0%	3.2%

¹ Versus Interim SAA adjusted policy with unfunded private debt and real estate prorated to Interest Rate Sensitive and High Yield.

Executive Summary (continued)

- **As of May 31, 2016, yields and durations in select sectors of the U.S. public fixed income markets were as follows:**

	<u>Yield</u>	<u>Duration</u>
Core Fixed Income (Barclays US Aggregate Index)	2.2%	5.5
US Treasuries	1.4%	6.2
US Treasuries - Long	2.5%	18.0
US Agency Mortgage-Backed Securities	2.4%	3.1
Investment Grade Corporates	3.1%	7.3
High Yield (Below Investment Grade Corporates)	7.3%	4.2

Executive Summary (continued)

- **IMD believes that compelling opportunities to achieve the fund's 8% target return over the long-term 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	8-12%

- **The ability to allocate capital to private and opportunistic debt is constrained by our managers' ability to source attractive investments. In addition, the investments are typically illiquid.**

Interest Rate Sensitive Fixed Income

Interest Rate Sensitive Fixed Income

Interest Rate Sensitive Fixed Income is comprised of the Core Fixed Income and Treasuries (Long Duration) asset classes. 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. Treasuries (Long Duration) is comprised of US Treasuries with maturities of 10 years or longer; its benchmark is the Barclays U.S. Treasury Long Index.

The performance of Interest Rate Sensitive Fixed Income is heavily tied to the direction of US Treasury rates. In addition, Interest Rate Sensitive Fixed Income tends to perform well when equity markets decline (ex. 2008) or when inflation expectations materially decline. As a result, it is an important part of the overall ASRS portfolio because it provides a source of balance and diversification from riskier assets such as equities.

IMD House View:

Interest Rate Sensitive Fixed Income is likely to generate low returns due to low overall yields as Treasury rates remain at low levels. That being said, it remains a safe haven in times of market turbulence and tends to perform well when risky assets such as equities sell off. We are underweight Interest Rate Sensitive Fixed Income vs. the interim SAA adjusted policy target. However, when factoring in our allocation to the Treasuries (Long Duration) asset class, we are effectively equal weight to the target based on the portfolio's sensitivity to interest rate movements.

Actual Weighting vs. SAAP Policy:	Underweight
ASRS Actual Weighting (May 31, 2016)	11.9%
Interest Rate Sensitive Interim Adj. Policy	12.6%
Interest Rate Sensitive Policy	11.0%

Core Fixed Income Managers

Portfolio	Market Value (\$MM) 5/31/16	%	IMD Commentary
F2 Internally Managed Account	\$1,879	54	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 particularly over the past 10-year period.
Blackrock US Debt Index Fund	\$1,599	46	Passive strategy with history of modest outperformance.
Total	\$3,478	100	

Treasuries (Long Duration) Manager

Portfolio	Market Value (\$MM) 5/31/16	%	IMD Commentary
BlackRock Long Term Government Bond Index Fund	\$383	100	Passive strategy.
Total	\$383	100	

Changes to Interest Rate Sensitive Fixed Income Managers

- In August 2015, due to concerns about weakness in the broader financial markets, ASRS tactically made a \$388 million allocation to the Treasuries (Long Duration) asset class through an investment in the passive Blackrock Long Term Government Bond Index Fund.
- In addition, we have occasionally withdrawn cash from both Core Fixed Income and Treasuries (Long Duration) mandates to meet the operating needs of the total fund.

Arizona State Retirement System

Interest Rate Sensitive Fixed Income Performance Summary as of March 31, 2016

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Return (%)	Since
Total Interest Rate Sensitive Fixed Income	3,927,020,606	11.6	3.5	15	4.2	5	2.5	7	2.7	29	4.0	63	5.1	60	8.3	Jul-75
<i>Barclays Aggregate</i>			<u>3.0</u>	30	<u>3.7</u>	8	<u>2.0</u>	19	<u>2.5</u>	39	<u>3.8</u>	79	<u>4.9</u>	83	--	Jul-75
<i>Over/Under</i>			0.5		0.5		0.5		0.2		0.2		0.2			
<i>InvestorForce Public DB > \$1 Billion US Fixed Income Net Median</i>			2.7		1.7		0.7		2.2		4.1		5.4		8.4	Jul-75
Treasuries (Long Duration)																
BlackRock Long Gov't Bond Index	382,039,530	1.1	8.1	1	--	--	--	--	--	--	--	--	--	--	8.3	Sep-15
<i>Barclays U.S. Treasury Long TR USD</i>			<u>8.2</u>	1	<u>12.1</u>	1	<u>2.8</u>	6	<u>6.1</u>	1	<u>9.7</u>	1	<u>8.0</u>	1	<u>8.3</u>	Sep-15
<i>Over/Under</i>			-0.1												0.0	
<i>eA US Core Fixed Inc Net Median</i>			2.9		3.3		1.8		2.5		4.0		5.1		3.0	Sep-15
Core Fixed Income																
BlackRock US Debt Index	1,592,829,593	4.7	3.1	34	3.8	29	2.1	28	--	--	--	--	--	--	3.7	May-14
<i>Barclays Aggregate</i>			<u>3.0</u>	40	<u>3.7</u>	32	<u>2.0</u>	35	<u>2.5</u>	47	<u>3.8</u>	69	<u>4.9</u>	73	<u>3.5</u>	May-14
<i>Over/Under</i>			0.1		0.1		0.1								0.2	
<i>eA US Core Fixed Inc Net Median</i>			2.9		3.3		1.8		2.5		4.0		5.1		3.4	May-14
Internally Managed F2	1,927,206,711	5.7	3.0	49	3.9	24	2.3	18	2.8	23	4.1	46	5.2	47	5.4	Oct-00
<i>Barclays Aggregate</i>			<u>3.0</u>	40	<u>3.7</u>	32	<u>2.0</u>	35	<u>2.5</u>	47	<u>3.8</u>	69	<u>4.9</u>	73	<u>5.3</u>	Oct-00
<i>Over/Under (vs. Net)</i>			0.0		0.2		0.3		0.3		0.3		0.3		0.1	
<i>eA US Core Fixed Inc Net Median</i>			2.9		3.3		1.8		2.5		4.0		5.1		5.5	Oct-00
Passive Intermediate Gov't/Credit Fixed Income																
BlackRock Intermediate Gov't/Credit Bond Index	24,944,772	0.1	2.3	54	2.6	52	2.0	41	1.9	43	3.1	51	--	--	4.5	Nov-08
<i>Barclays Int Gov't/Credit</i>			<u>2.4</u>	28	<u>2.7</u>	41	<u>2.1</u>	35	<u>1.8</u>	50	<u>3.0</u>	56	<u>4.3</u>	52	<u>4.4</u>	Nov-08
<i>Over/Under</i>			-0.1		-0.1		-0.1		0.1		0.1				0.1	
<i>eA US Interm Duration Fixed Inc Net Median</i>			2.3		2.6		1.9		1.8		3.1		4.4		4.8	Nov-08

NOTES:

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

HIGH YIELD FIXED INCOME

High Yield Fixed Income

High Yield Fixed Income is the below investment-grade corporate bond market in the US. Unlike Interest Rate Sensitive Fixed Income which has a high correlation with Treasury rates, High Yield Fixed Income has historically had 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:

Over the past few years, valuations in the high yield bond market have become more attractive; however, the wider spreads may primarily reflect deteriorating credit quality. Over the coming months, we expect a significant rise in corporate defaults. Initially, this deterioration in credit quality will be led by sectors that have been adversely affected by the severe decline in global commodity prices including energy, energy services, metals and mining. However, as we are likely in the later stages of credit cycle that began with an upturn in 2009, we expect credit ratings to decline and defaults to increase in other sectors as well. We believe this will likely lead to a spike in defaults (probably in 2017) and further spread widening before the market bottoms. An increase in defaults should create attractive opportunities for our distressed debt managers in the Opportunistic Debt asset class. With this view, we are underweight High Yield vs. the SAA interim adjusted policy target.

Actual Weighting vs. SAAP Policy:

ASRS Actual Weighting (May 31, 2016)
High Yield Fixed Income Interim Adj. Policy
High Yield Fixed Income Policy

Underweight

3.2%
4.6%
4.0%

High Yield Fixed Income Managers

Portfolio	Market Value (\$MM) 5/31/16	%	IMD Commentary
Columbia Separate Account	\$709	66	Active manager with flexible investment style that adjusts portfolio risk based on the investment outlook. Columbia has outperformed the high yield benchmark for the one-year, three-year, and five-year periods as well as since the inception of the mandate in 2009.
JP Morgan High Yield	\$362	34	Active manager with a flexible investment style that is agnostic to credit quality. Since the inception of the mandate in 2013, JP Morgan has slightly outperformed the high yield benchmark.
Total	\$1,071	100	

Changes to High Yield Fixed Income Managers

- In August 2015, due to concerns about the credit markets, ASRS tactically withdrew \$250 million from High Yield Fixed Income (\$125 million from each manager).

Arizona State Retirement System

High Yield Fixed Income Performance Summary as of March 31, 2016

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Return (%)	Since
Total High Yield Fixed Income	1,038,157,952	3.1	3.0	19	-1.1	24	-1.1	24	3.1	16	5.5	15	--	--	7.6	Oct-09
<i>Barclays High Yield</i>			<u>3.4</u>	12	<u>-3.7</u>	53	<u>-3.7</u>	56	<u>1.8</u>	51	<u>4.9</u>	39	<u>7.0</u>	20	<u>7.7</u>	<i>Oct-09</i>
<i>Over/Under</i>			-0.4		2.6		2.6		1.3		0.6				-0.1	
<i>eA US High Yield Fixed Inc Net Median</i>			2.3		-3.5		-3.2		1.9		4.6		6.3		7.1	<i>Oct-09</i>
Active High Yield Fixed Income																
<i>Columbia Management</i>	691,147,784	2.1	3.1	19	0.3	10	0.2	9	3.7	3	6.1	5	--	--	8.2	<i>Oct-09</i>
<i>Barclays High Yield</i>			<u>3.4</u>	12	<u>-3.7</u>	53	<u>-3.7</u>	56	<u>1.8</u>	51	<u>4.9</u>	39	<u>7.0</u>	20	<u>7.7</u>	<i>Oct-09</i>
<i>Over/Under</i>			-0.3		4.0		3.9		1.9		1.2				0.5	
<i>eA US High Yield Fixed Inc Net Median</i>			2.3		-3.5		-3.2		1.9		4.6		6.3		7.1	<i>Oct-09</i>
<i>JP Morgan High Yield</i>	346,996,407	1.0	2.8	27	-3.7	53	-3.5	54	--	--	--	--	--	--	2.7	<i>Jul-13</i>
<i>Barclays High Yield</i>			<u>3.4</u>	12	<u>-3.7</u>	53	<u>-3.7</u>	56	<u>1.8</u>	51	<u>4.9</u>	39	<u>7.0</u>	20	<u>2.6</u>	<i>Jul-13</i>
<i>Over/Under</i>			-0.6		0.0		0.2								0.1	
<i>eA US High Yield Fixed Inc Net Median</i>			2.3		-3.5		-3.2		1.9		4.6		6.3		2.5	<i>Jul-13</i>

PRIVATE DEBT

Private Debt

Private Debt is comprised of illiquid loans and bonds that typically fund highly leveraged companies and real estate properties that are typically 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 real estate properties.

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, original issuance discounts and premium call features) and 2) the actual level of credit losses experienced in the underlying portfolios.

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:	Underweight¹
Actual Weighting (May 31, 2016)	7.9%
Private Debt Policy	10.0% (8-12% range)

¹ASRS is tactically overweight based on commitments made of approximately 15.2% of the total fund.

Private Debt Characteristics

Pros

- High Expected Net Returns (10-11% on average)
 - Substantially higher gross returns (a combination of yield, fees, OID, and call premiums) than comparable public market securities (high yield bonds, tradable bank loans, asset-backed securities, CMBS)
 - Low loss history in underlying portfolios
- Primarily Floating Rate
 - Approximately 80% of ASRS's ongoing private debt commitments are expected to be floating rate investments
- Full Due Diligence by Managers
- Customized Covenants and Credit Monitoring

Cons

- Illiquid
- Delayed Deployment of Capital

Private Debt Market Environment

- Demand for corporate loans are driven by: 1) middle market buyout and acquisition activities which need financing, and 2) middle market borrowers which need to refinance existing loans from banks.
- Regulatory constraints limit banks ability to make below investment-grade, illiquid loans (typically to middle market companies)
 - Basel III
 - Dodd-Frank
 - “Leveraged Lending Guidelines” of OCC/Fed/FDIC
- Business Development Companies (“BDCs”) have pulled back on lending due to their depressed equity valuations.

ASRS Private Debt Program

Lending Strategies Diversified Across 10 Managers

- US Corporate
 - Five managers targeting unique areas of the middle market
 - One manager targeting larger companies
- European Corporate
 - One manager targeting middle market lending
- Real Estate Finance
 - Two managers targeting three market segments
- Asset Backed
 - One manager targeting unique market opportunity

ASRS Private Debt Program

- Focus on Fund-of-One Partnerships With Leading Managers
- Customized Terms:
 - Scalable
 - Evergreen
 - Termination Rights
 - Superior Fees
 - Investment Restrictions
 - Leverage Constraints (if applicable)

Private Debt Managers

Portfolio	ASRS Commitment (\$MM)	Market Value (\$MM) 5/31/16	Target Net Return	%	IMD Commentary
Cerberus ASRS Credit Opportunities Fund	\$1,100	878	13%	33	Fund-of-one partnership that invests in floating-rate secured loans primarily to fund private-equity sponsored middle market leveraged transactions . The partnership can leverage ASRS's equity investment by up to 1.25x to boost returns.
RFM Cactus Holding Company, LLC (Partnership with Related)	\$600	445	10%	17	Fund-of-one partnership that invests in: 1) "Freddie B" securities (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.
Cactus Direct Lending Fund, LP (Partnership with Highbridge)	\$600	183	12%	7	Fund-of-one partnership that invests in floating-rate secured loans primarily to fund middle market leveraged transactions (ex. buyouts, recapitalizations) often without a private equity sponsor. The partnership can leverage ASRS's equity investment by up to 1.25x to boost returns.
AP Mezzanine Partners III , LP (Partnership with Highbridge)	\$500	0	12%	0	Fund-of-one partnership that invests primarily in mezzanine debt to fund highly leveraged transactions for larger capitalization companies.
ICG Arizona Senior Direct Lending Credit Fund	\$401	74	11%	3	Fund-of-one partnership that invests in floating-rate secured loans primarily to fund private-equity sponsored middle market leveraged transactions in Europe. The partnership can leverage ASRS's equity investment by up to 1.0x.
H/2 Core Real Estate Debt Fund	\$400	282	6%	10	Open-ended fund that invests in floating-rate senior mortgage loans and other conservatively underwritten real estate finance investments. The fund will utilize leverage of up to 60%.
Ares Cactus Private Asset Backed Fund	\$500	67	10%	2	Fund-of-one partnership that invests in loans backed by consumer and commercial receivables.
Monroe Private Credit Fund A	\$450	290	11%	11	Fund-of-one partnership that invests in floating-rate secured loans primarily to fund smaller middle market leveraged transactions . The partnership can leverage ASRS's equity investment by up to 1.25x to boost returns.
AP Mezzanine Partners II, LP (Partnership with Highbridge)	\$229	185	11%	8	Fund-of-one partnership that invests primarily in mezzanine debt to fund highly leveraged transactions for larger capitalization companies. Investment period expires 6/30/16.
Arizona – White Oak Investor LLC	\$210	171	12%	7	Separate account invests in floating-rate secured loans for small-to mid-size companies typically lacking a deal sponsor.
Blackstone/GSO Capital Solutions Fund (closed end fund in liquidation)	\$66	66	13%	2	Commingled fund which provided rescue financing to companies seeking to avoid a bankruptcy or restructuring. Investment period ended in 2013 and portfolio is now running off.
Total	\$5,056	\$2,641		100	27

Changes to Private Debt Managers

- Over the past twelve months, ASRS increased the size of its Private Debt commitments by \$1 billion. Total commitments for Private Debt are now \$5.1 billion or approximately 15.2% of the total fund (vs. an SAAP target of 10%).
 - We believe it may take 2 to 3 years to fully invest these commitments.
 - We estimate that ASRS will reach its 10% SAAP target for the Private Debt asset class in the first half of 2017.
- The expansion of our commitments included a new \$500 million commitment to AP Mezzanine Partners III, a fund-of-one partnership with Highbridge to invest in the mezzanine debt of larger companies.
- In addition, ASRS expanded our commitments to the following existing private debt mandates:
 - Cerberus ASRS Credit Opportunities Fund to \$1.1 billion from \$1 billion
 - RFM Cactus Holding Company, LLC to \$600 million from \$500 million.
 - HPS – Cactus Direct Lending Fund to \$600 million from \$500 million.
 - Monroe Private Credit Fund A to \$450 million from \$350 million.
 - H/2 Core Real Estate Debt Fund \$400 million from \$350 million.
 - Arizona – White Oak Investor, LLC to \$210 million from \$160 million.

Private Debt Performance Summary as of December 31, 2015

	Market Value (\$)	% of Portfolio	3 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	Inception (%)	Since
Total Private Debt	2,381,652,235	7.1	1.9	8.5	10.7		10.9	Jul-12
<i>S&P/LSTA Leveraged Loan Index + 250 bps 1 QTR Lagged</i>			<i>-1.5</i>	<i>1.1</i>	<i>3.1</i>		<i>3.3</i>	<i>Jul-12</i>
Over/Under			3.4	7.4	7.6		7.6	
Total Corporate Private Debt	1,643,861,421	4.9	2.1	9.4	12.7		12.8	
Blackstone/GSO Capital Solutions Fund, LP	80,676,065	0.2	-6.6	-5.9	11.1		12.0	Jul-12
Cerberus ASRS Credit Opportunities Fund, LP	745,833,029	2.2	2.7	12.1			13.1	Jan-13
AP Mezzanine Partners II, LP	195,753,488	0.6	2.4	10.1			12.7	Jan-13
Cactus Direct lending Fund, L.P.	94,623,957	0.3	3.8				5.1	Jul-15
ICG Arizona Senior Direct Lending Credit Fund	169,139,745	0.5	1.8				2.4	Jul-15
Monroe Private Credit Fund A	194,772,983	0.6	3.2				5.6	Jul-15
Arizona White Oak Investor LLC	163,062,154	0.5	2.4	10.3			15.4	Jan-13
Total Real Estate Private Debt	695,378,992	2.1	1.4	6.7			6.5	
H/2 Core Real Estate Debt Fund, LP	289,226,751	0.9	2.3	5.7			5.5	Jan-13
RFM Cactus Holding Company, LLC	406,152,241	1.2	0.7	7.8			7.7	Apr-13
Total Asset Backed Private Debt	42,411,823	0.1	6.1				11.5	
Ares Cactus Private Asset Backed Fund	42,411,823	0.1	6.1				11.5	Jul-15

Source: State Street

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 9.3% through 12/31/15. However, performance over the past three years was not as strong with a 4.2% net IRR primarily due to weak performance in 2015.

IMD House View:

Opportunities exist in select fixed income markets (primarily distressed debt) to achieve outsized returns or generate expected returns that exceed other fixed income asset classes in the SAAP. ASRS has \$1.3 billion of commitments (representing approximately 3.9% of the total fund) to ongoing Opportunistic Debt partnerships and \$0.3 billion of investments (representing approximately 0.9% of the total fund) in partnerships that are in liquidation.

Actual Weighting vs. SAAP Policy Target:

ASRS Actual Weighting (May 31, 2016)	3.2%
Opportunistic Debt Policy	0.0% (0-10% ¹ range)

¹ Range of 0-10% includes all opportunistic asset classes (debt, equity and inflation-linked) which totaled 4.2% at 5/31/16.

Opportunistic Debt Managers Funds Making New Investments

Portfolio	ASRS Commitment (\$MM)	Market Value (\$MM) 5/31/16	Target Net Return	%	IMD Commentary
GSO Cactus Credit Opportunities Fund	\$350	\$308	12%	40	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.
Avenue-ASRS Europe Opportunities Fund & Avenue Europe Capital Partners III	\$350	\$158	12%	21	\$250 million partnership with ASRS and \$100 million co-mingled fund commitment to invest in distressed debt of European companies.
OZ Credit Opportunities Fund	\$300	\$304	12%	39	Fund utilizes a multi-strategy approach to allocate to both distressed structured and corporate credit as it sees fit based on the opportunity.
Ares Saguaro Income Opportunity Fund	\$300	\$0	8%	0	Fund invests in publicly-traded, high-yielding business development companies (“BDCs”) and commercial mortgage REIT
Total	\$1,300	\$770		100	

Opportunistic Debt Managers Funds in Liquidation

Portfolio	ASRS Commitment (\$MM)	Market Value (\$MM) 5/31/16	Target Net Return	%	IMD Commentary
Avenue Europe Capital Partners II	\$133	\$133	15%	43	Fund invests in distressed debt of European companies. Investment period ended in 2014.
Oaktree Opportunities Fund VIIIb	\$112	\$112	15%	36	Funds invests in distressed debt primarily corporate such as leveraged loans. Investment period ended in 2014.
Fortress MSR Opportunities Fund II	\$30	\$30	12%	10	Fund invests in excess mortgage-servicing rights. Investment period ended in 2015.
Oaktree Opportunities Fund VIII	\$19	\$19	15%	6	Funds invests in distressed debt primarily corporate such as leveraged loans. Investment period ended in 2012.
TCW Capital Trust	\$13	\$13	10%	5	Fund invests in four asset classes: leveraged loans, high yield bonds, private debt and mezzanine debt. Investment period ended in 2013.
Total	\$307	\$307		100	

Changes to Opportunistic Debt Managers

- In May, ASRS partnered with Ares to create a unique mandate, the Ares Saguaro Income Opportunity Fund, to invest in publicly-traded, high-yielding business development companies (“BDCs”) and commercial mortgage REITS. ASRS made a \$300 million commitment to this fund with an initial investment of \$75 million funded in early June.
- The investment period of the Fortress MSR Opportunities Fund II ended and the fund is returning capital.

Opportunistic Debt Performance Summary as of December 31, 2015

	Market Value (\$)	% of Portfolio	3 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	Inception (%)	Since
Total Opportunistic Debt	1,117,282,802	3.3	-3.7	-3.1	4.2	5.5	9.3	Jan-08
Avenue Europe Special Situations Fund II (U.S.), L.P.	180,249,671	0.5	0.1	10.6	8.5		8.9	Jan-12
Avenue Europe Special Situations Fund III (US), L.P.	52,598,162	0.2	-3.5				-7.6	Jul-15
Avenue-ASRS Europe Opportunities Fund, L.P.	69,885,811	0.2	-5.3				-9.9	Jul-15
Blackrock Credit Investors II, L.P.	158,480	0.0	-5.1	-5.5	12.8	2.7	15.7	Jul-08
Blackrock Mortgage Investors, LP	6,224	0.0	0.0	0.0	6.0	10.6	8.2	Jan-08
Fortress MSR Opportunities Fund II A LP	32,564,516	0.1	-1.6	6.5			10.9	Jul-13
GSO Cactus Credit Opportunities Fund LP	311,139,146	0.9	-6.3	-6.0			-2.5	Apr-14
Oaktree Opportunities Fund VIII, L.P.	23,951,338	0.1	-3.6	-13.3	6.6	7.7	8.4	Apr-10
Oaktree Opportunities Fund VIIIb, L.P.	127,019,846	0.4	-4.0	-6.7	3.5		4.4	Jul-11
OZ Credit Opportunities Domestic Partners, L.P.	302,875,643	0.9	-3.2	-5.4			0.5	Jan-14
TCW Capital Trust	16,833,964	0.0	-1.9	4.9	6.8	7.0	8.3	Oct-09

Source: State Street

Opportunistic Debt Manager Performance in 2015

- In 2015, the Opportunistic Debt portfolio returned -3.1% vs. a long-term target of 8.0%. The negative performance was primarily caused by substantial spread widening in the broader credit markets (both corporate and structured credit) as well as weakness in specific industries (ex. oil and gas, coal, shipping) that adversely affected distressed debt.
- Overall, the Opportunistic Debt portfolio performed relatively well versus the HFRX ED: Distressed Restructuring Index, which tracks a peer group of distressed debt funds as compiled by Hedge Fund Research. This index returned -11.1% in 2015.
- In addition, the Opportunistic Debt portfolio performed relatively well versus other high yield and distressed debt indices in 2015:

– Barclays U.S. High Yield Index	-4.4%
– Credit Suisse CCC index	-15.5%
– Altman Defaulted Public Bond and Bank Loan Index	-31.0%
– CS Distressed Securities Index	-43.5%

APPENDICES

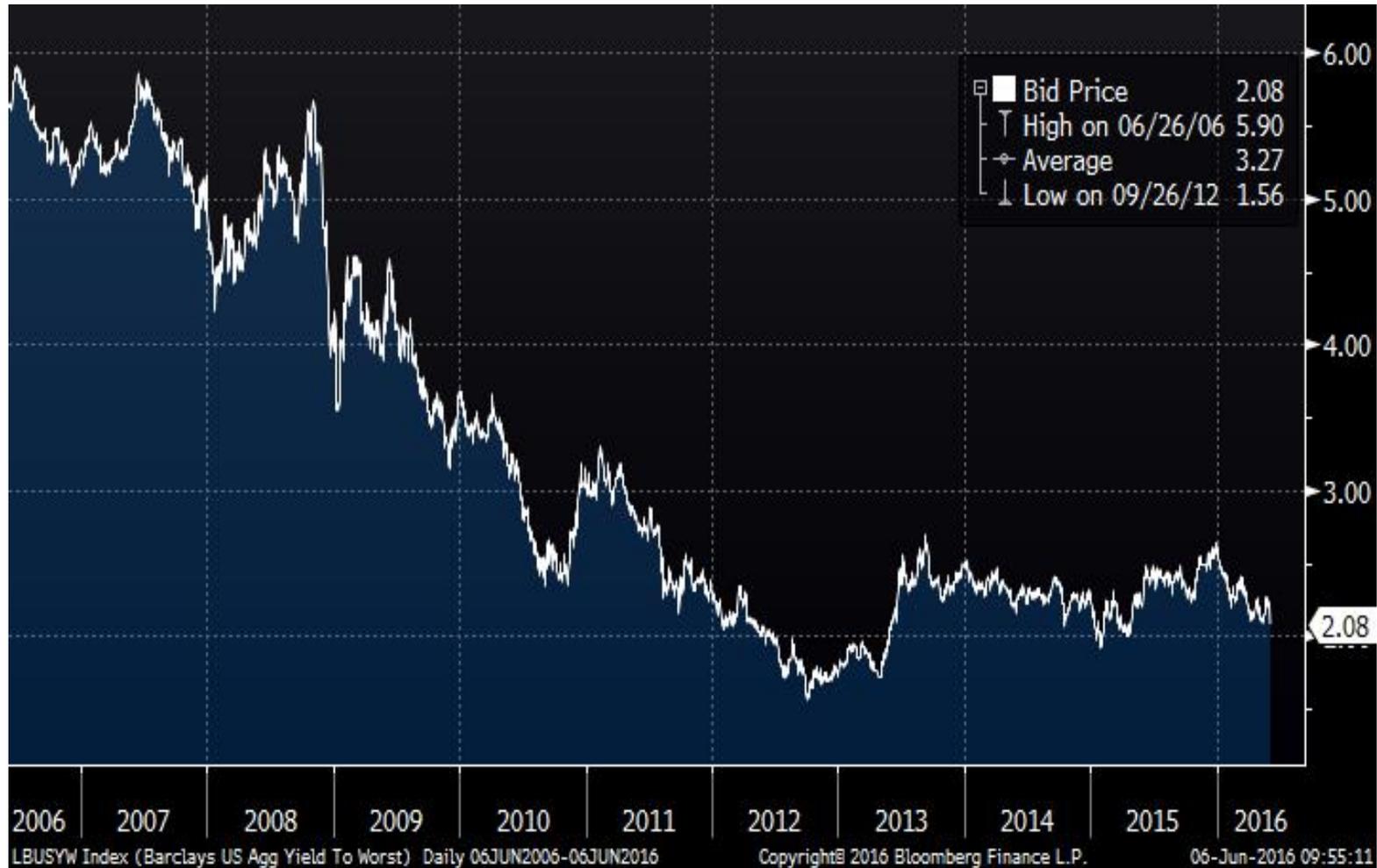
1. Fixed Income Market Environment (For Reference Only)
2. ASRS Strategic Asset Allocation Policy Schematic

APPENDIX 1

FIXED INCOME MARKET ENVIRONMENT (FOR REFERENCE ONLY)

Interest Rate Sensitive Fixed Income

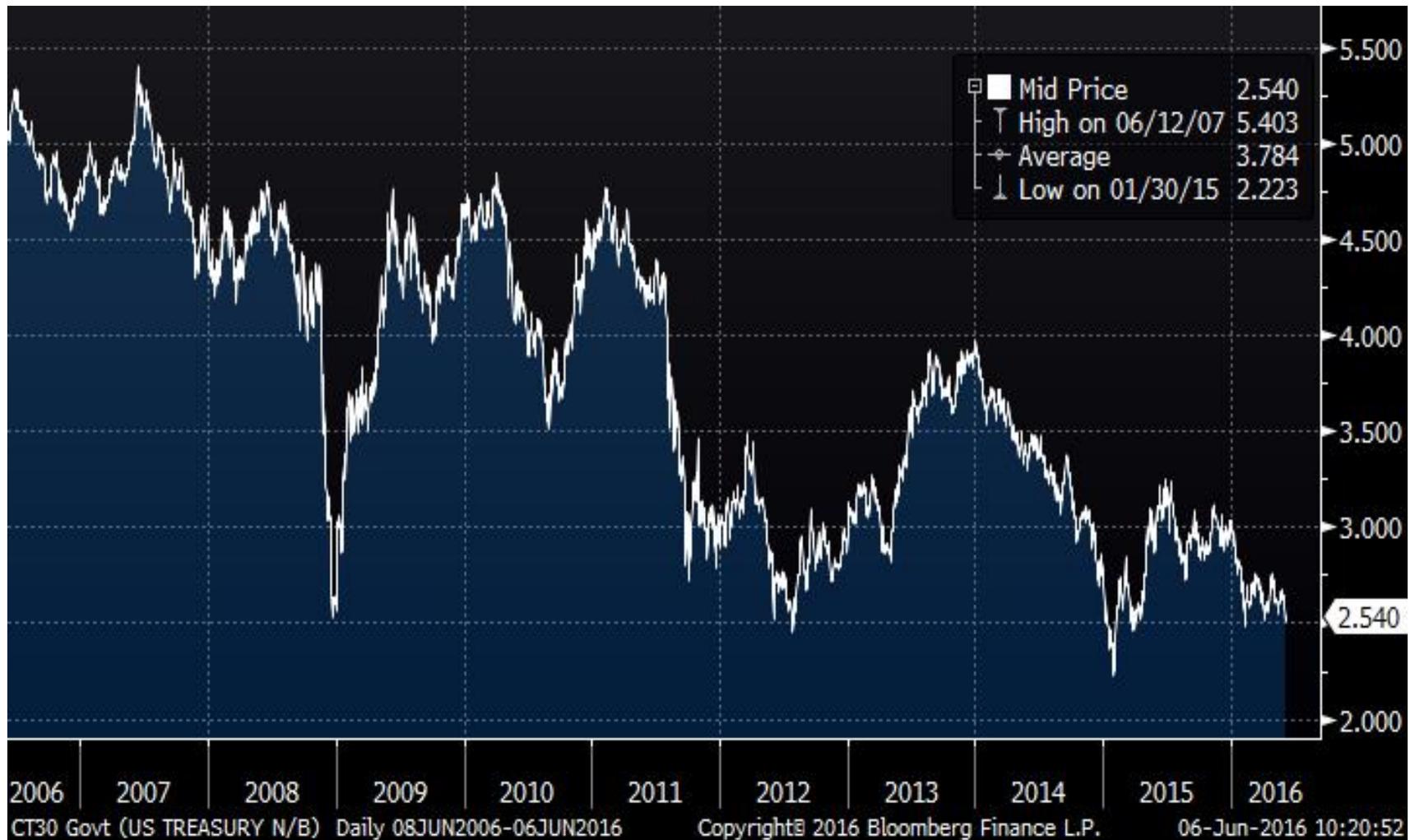
Barclays US Aggregate Index Yield-to-Worst 2006 – 2016



10 Year U.S. Treasury Bond Yield 2006 - 2016

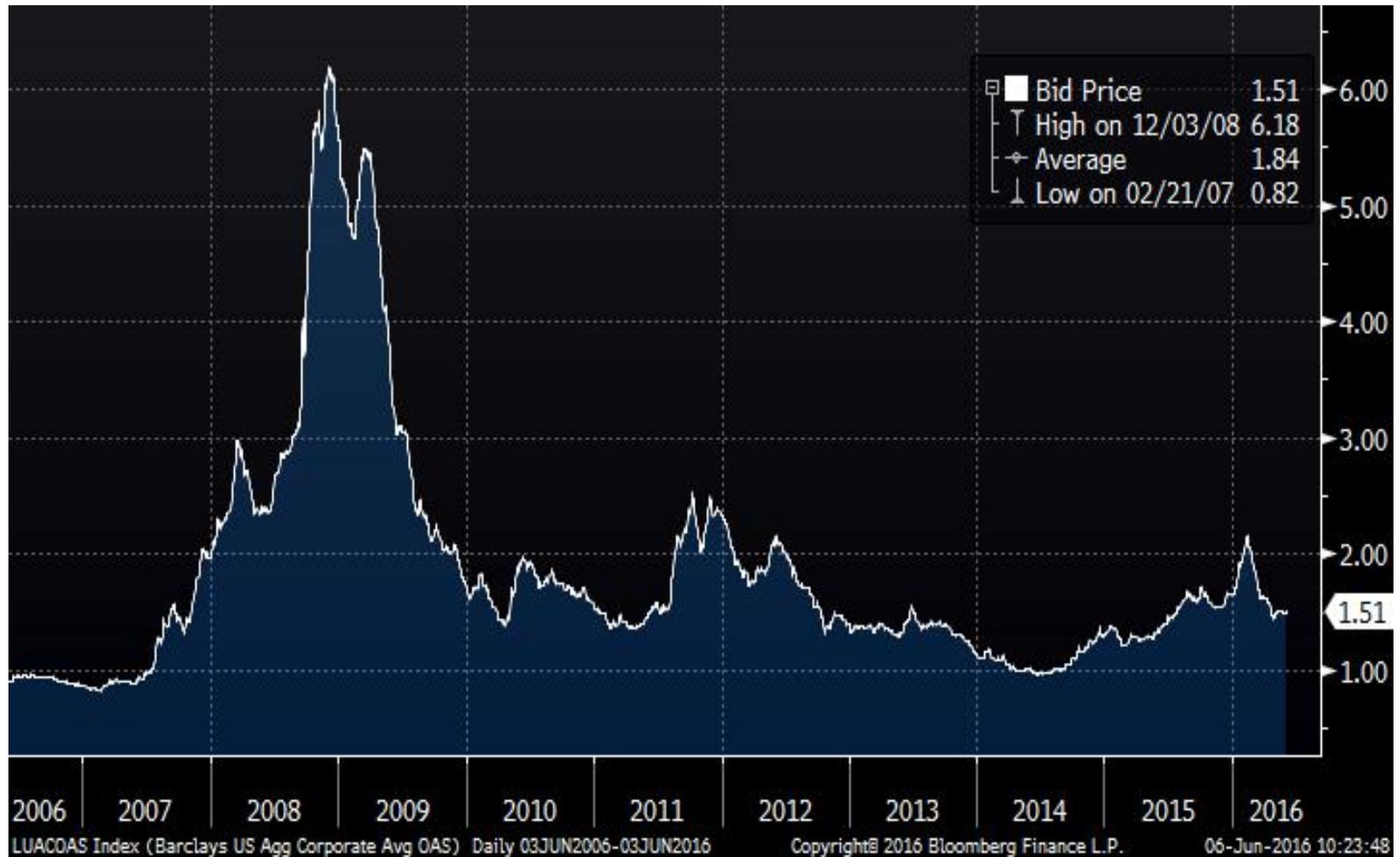


30 Year U.S. Treasury Bond Yield 2006 – 2016



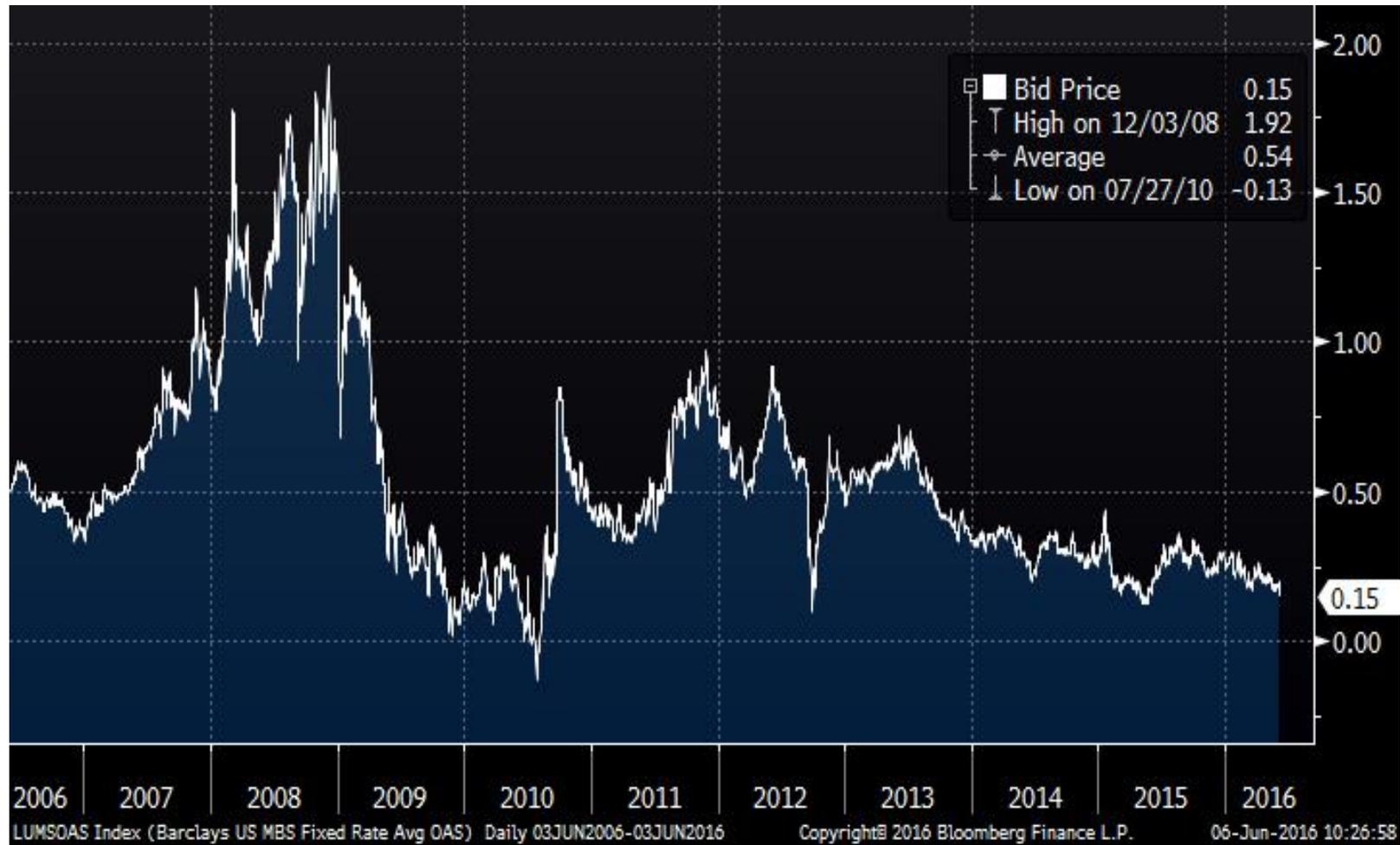
Corporate Investment Grade Spreads

Option Adjusted Spreads (OAS) 2006 – 2016



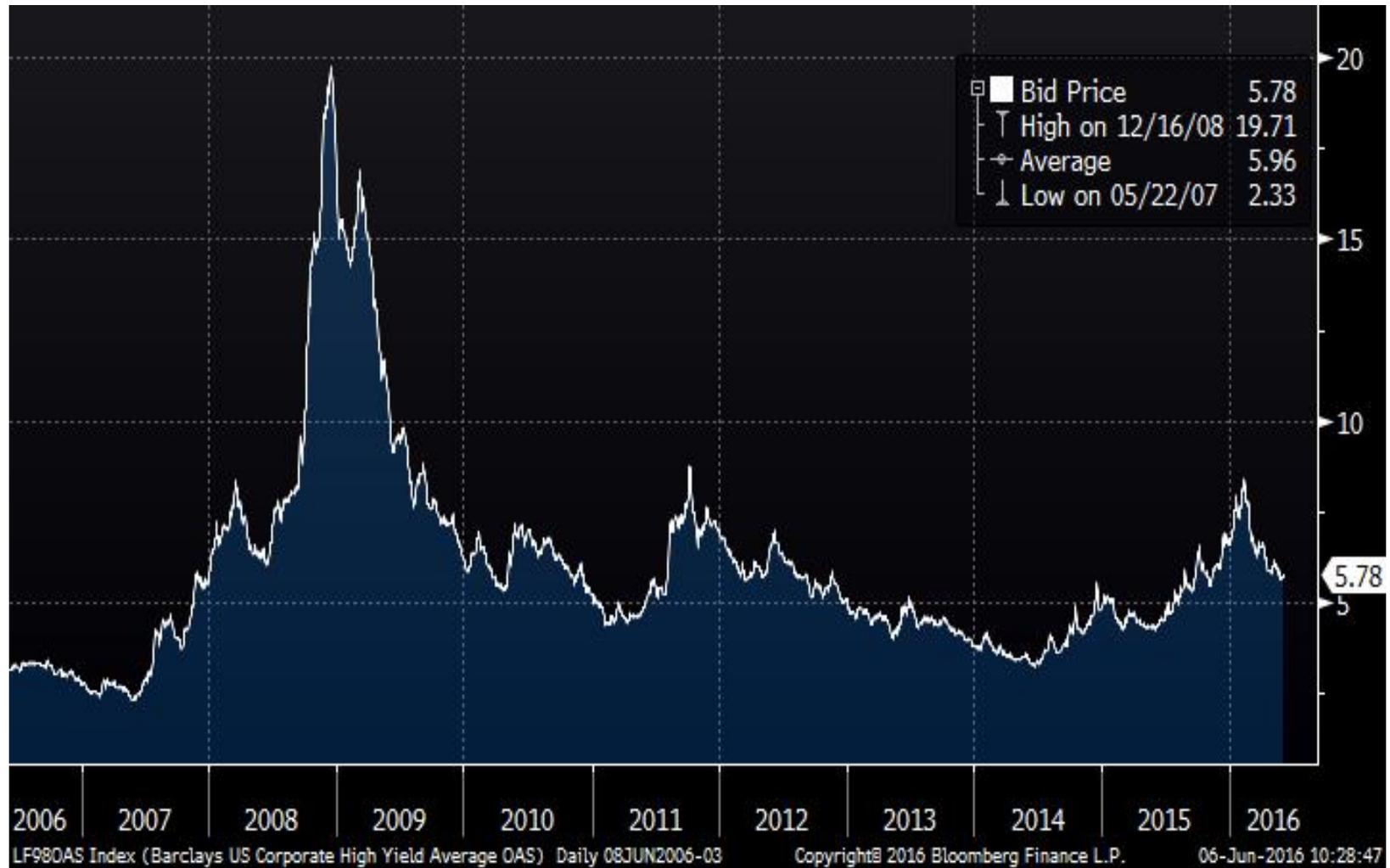
US Mortgage-Backed Securities Spreads

Option Adjusted Spreads (OAS) 2006 – 2016



High Yield Fixed Income

Barclays US Corporate High Yield Index Option Adjusted Spread (OAS) 2006 – 2016



Barclays US Corporate High Yield Index Yield-to-Worst 2006 – 2016



Sovereign Bond Yields

10 Year German Bund Yield 2006 - 2016



10 Year Japanese Government Bond Yield 2006 - 2016



Emerging Market Local Debt Index 2006 - 2016



APPENDIX 2

ASRS STRATEGIC ASSET ALLOCATION POLICY SCHEMATIC

ASRS Strategic Asset Allocation Policy Schematic

Asset Class	Policy	Range	Benchmark
Tactical Cash (Unassetized)	0%	(0-3%)	
Operating Cash (Unassetized)	0%		
Operating Cash (Assetized)	<u>0%</u>		
Total Cash	0%		
<hr/>			
Treasuries (Long Duration)	0%	(0-10%)	Barclays LT Treasuries
Core Bonds	<u>11%</u>		Barclays Aggregate
Interest Rate Sensitive	11%		
High Yield	4%		Barclays High Yield
Private Debt	10%	(8-12%)	S&P/LSTA Leveraged Loan Index+2.5%
Opportunistic Debt	0%		Investment Specific
Total Fixed Income	25%	(18-35%)	
<hr/>			
Large Cap	20%		S&P 500
Mid Cap	3%		S&P 400
Small Cap	<u>3%</u>		S&P 600
US Public Equity	26%	(16-36%)	
Developed Large Cap	17%		MSCI EAFE
Developed Small Cap	2%		MSCI EAFE Small Cap
Emerging	<u>5%</u>		MSCI EM
Non-US Public Equity	24%	(14-34%)	
Private Equity	8%	(6-10%)	Russell 2000
Opportunistic Equity	0%		Investment Specific
Total Equity	58%	(48-65%)	
<hr/>			
Commodities	2%	(0-4%)	Bloomberg Total Return
Real Estate	10%	(8-12%)	NCREIF ODCE
Infrastructure	0%	(0-3%)	Investment Specific
Farmland and Timber	0%	(0-3%)	Investment Specific
Opportunistic Inflation Linked	0%		Investment Specific
Total Inflation Linked Assets	12%	(10-16%)	
<hr/>			
Multi-Asset Class Strategies	5%	(0-12%)	Investment Specific
<hr/>			
TOTAL	100%		

Approved by the full Board on 03/27/2015