



ARIZONA STATE RETIREMENT SYSTEM

3300 NORTH CENTRAL AVENUE • PO BOX 33910 • PHOENIX, AZ 85067-3910 • PHONE (602) 240-2000
7660 EAST BROADWAY BOULEVARD • SUITE 108 • TUCSON, AZ 85710-3776 • PHONE (520) 239-3100
TOLL FREE OUTSIDE METRO PHOENIX AND TUCSON 1 (800) 621-3778
EMAIL ADDRESS: ASKMAC@AZASRS.GOV • WEB ADDRESS: WWW.AZASRS.GOV

*Paul Matson
Director*

AGENDA

NOTICE OF A PUBLIC MEETING OF THE ARIZONA STATE RETIREMENT SYSTEM (ASRS) INVESTMENT COMMITTEE

3300 North Central Avenue
14th Floor Conference Room
Phoenix, Arizona 85012

**Monday, June 23, 2014
2:30 p.m.**

Pursuant to A.R.S. § 38-431.02, notice is hereby given to the members of the Arizona State Retirement System (ASRS) Investment Committee (IC) and to the general public that the ASRS Investment Committee will hold a public meeting June 23, 2014 beginning at 2:30 p.m., in the 14th Floor Conference Room of the Arizona State Retirement System office, 3300 North Central Avenue, Phoenix, Arizona. Trustees of the Committee may attend either in person or by telephone conference call.

This is a regularly scheduled meeting of the Investment Committee; however, due to possible attendance by other ASRS Board Trustees, this meeting may technically become a meeting of the Board or one of its Committees. Actions taken will be consistent with Investment Committee governance procedures. Actions requiring Board authority will be presented to the full Board for final decision.

The Chair may take public comment during any agenda item. If any member of the public wishes to speak to a particular agenda item, they should complete a Request to Speak form indicating the item and provide it to the Committee Administrator.

This meeting will be teleconferenced to the ASRS office in Tucson, 7660 E. Broadway Blvd., Suite 108, Tucson, AZ 85710. The conference call to Tucson will be disconnected after 15 minutes if there are no attendees in the Tucson audience.

The Agenda for the meeting is as follows:

1. Call to Order; Roll Call (estimated time 4 min. to 2:34 p.m.)Mr. Tom Connelly
Chair, Investment Committee
2. Approval of Minutes of the April 21, 2014 Public Meeting (Action item; estimated time 1 min. to 2:35 p.m.).....Mr. Tom Connelly

3. Presentation, Discussion, and Appropriate Action Regarding ASRS Investment Program Updates (Informational and discussion item; estimated time 20 min. to 2:55 p.m.).....
.....Mr. Paul Matson
Director, ASRS
.....Mr. Gary Dokes
Chief Investment Officer, ASRS
.....Mr. Dave Underwood
Assistant Chief Investment Officer, ASRS
.....Mr. Karl Polen
Head of Private Markets Investing, ASRS
.....Mr. Eric Glass
Portfolio Manager of Private Markets, ASRS
.....Mr. Kien Trinh
Assistant Vice President, Risk Services, State Street Investment Analytics
 - a. ASRS Fund Positioning
 - b. IMD Investment House Views
 - c. Asset Class Committee (ACC) Activities
 - d. Tactical Portfolio Positioning
 - e. IMD Projects, Research, and Initiatives
 - f. Investment Risk Reports and Securities Lending Risk Metrics

Regarding the following agenda item, pursuant to A.R.S. § 38-431.03(A)(2) and A.R.S. § 38-718(P) notice is hereby given to Trustees of the ASRS Investment Committee and the general public that the ASRS Investment Committee may vote to go into executive session, in the event specific manager data is discussed that is deemed confidential/non-public information. The executive session will take place in the 14th floor conference room.

4. Presentation, Discussion, and Appropriate Action Regarding Independent Reporting, Monitoring and Oversight of the ASRS Investment Program – Includes Total Fund and Investment Performance Report Q1-14 (Informational and discussion item; estimated time 40 min. to 3:35 p.m.)Mr. Allan Martin
Partner, NEPC
.....Mr. Dan LeBeau
Consultant, NEPC
5. Presentation, Discussion, and Appropriate Action Regarding Total Fixed Income (Private and Public) Asset Class Presentation (Informational and discussion item; estimated time 45 min. to 4:20 p.m.)Mr. Paul Matson
.....Mr. Gary Dokes
.....Mr. Al Alaimo
Fixed Income Portfolio Manager, ASRS
6. Presentation, Discussion and Appropriate Action Regarding ASRS IMD Investment Dashboard (Informational and discussion item; estimated time 15 min. to 4:35 p.m.).....
.....Mr. Paul Matson
.....Mr. Gary Dokes
.....Mr. Micheal Copeland
Investment Analyst, ASRS

7. Presentation, Discussion, and Appropriate Action Regarding the Audit of the Investment Management Division's (IMD) use of the Bloomberg "AIM" Order Management and Trade Execution System used for the Internally Managed Equity and Fixed Income Portfolio (Informational and discussion item; estimated time 10 min. to 4:45 p.m.).....
..... Mr. Bernard Glick
Chief Internal Auditor, ASRS
..... Mr. Jeff Volzka
Internal Auditor, ASRS
8. Requests for Future Agenda Items (Informational and discussion item; estimated time 5 min. to 4:50 p.m.).....Mr. Tom Connelly
.....Mr. Gary Dokes
9. Call to the PublicMr. Tom Connelly

Those wishing to address the ASRS Committee are required to complete a Request to Speak form before the meeting indicating their desire to speak. Request to Speak forms are available at the sign-in desk and should be given to the Committee Administrator. Trustees of the Committee are prohibited by A.R.S. § 38-431.01(G) from discussing or taking legal action on matters raised during an open call to the public unless the matters are properly noticed for discussion and legal action. As a result of public comment, the Committee Chair may direct staff to study and/or reschedule the matter for discussion and decision at a later date.

10. The next ASRS Investment Committee Meeting is scheduled for Monday, August 18, 2014 at 2:30 p.m., at 3300 N. Central Avenue, 14th Floor Conference room, Phoenix, Arizona.

11. Adjournment of the ASRS Investment Committee Meeting

A copy of the agenda background material provided to Committee Trustees (with the exception of material relating to possible executive sessions) is available for public inspection at the ASRS offices located at 3300 North Central Avenue, 14th Floor, Phoenix, Arizona, and 7660 East Broadway Boulevard, Suite 108, Tucson, Arizona. The agenda is subject to revision up to 24 hours prior to meeting. These materials are also available on the ASRS website (<https://www.azasrs.gov/web/BoardCommittees.do>) approximately 48 hours prior to the meeting.

Persons with a disability may request a reasonable accommodation such as a sign language interpreter or alternate formats of this document by contacting Tracy Darmer, ADA Coordinator at (602) 240-5378 in Phoenix, at (520) 239-3100, ext. 5378 in Tucson or 1-800-621-3778, ext. 5378 outside metro Phoenix or Tucson. Requests should be made as early as possible to allow time to arrange the accommodations.

Dated June 16, 2014

ARIZONA STATE RETIREMENT SYSTEM

Gloria Trujillo
Committee Administrator

Gary Dokes
Chief Investment Officer



ARIZONA STATE RETIREMENT SYSTEM

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*Paul Matson
Director*

MINUTES OF THE PUBLIC MEETING OF THE ARIZONA STATE RETIREMENT SYSTEM INVESTMENT COMMITTEE

HELD ON

Monday, April 21, 2014

2:30 p.m.

The Arizona State Retirement System (ASRS) Investment Committee (IC) met at 3300 N. Central Avenue, 14th Floor, Phoenix, AZ 85012. Mr. Tom Connelly, Chair of the IC, called the meeting to order at 2:33 p.m.

1. Call to Order; Roll Call; Opening Remarks

Present: Mr. Tom Connelly, Chair
Prof. Dennis Hoffman, Vice-Chair
Mr. Marc Boatwright (via teleconference)

A quorum was present for the purpose of conducting business.

2. Approval of Minutes of the November 18, 2013 Investment Committee Meeting and the January 31, 2014 Investment Committee and Executive Session Meeting.

Motion: Mr. Dennis Hoffman moved to approve the minutes of the February 20, 2014 Public and Executive Session Meetings and the February 24, 2014 Public Meeting. Mr. Tom Connelly seconded the motion.

By a vote of 3 in favor, 0 opposed, 0 abstentions, 0 excused, the motion was approved.

3. Presentation and Roundtable Discussion Regarding the Federal Reserve Balance Sheet, its Management, and Monetary Policy

Guest speakers, Mr. William Poole, Senior Advisor with Merk Investments, Mr. Michael Cembalest, Chairman of Market & Investment Strategy with J.P. Morgan, and Mr. Kurt Winkelmann, Head of Risk and Analytical Research with MSCI engaged in detailed discussions on key issues relating to the Federal Reserve balance sheets, the effects of increased monetary policy, and federal tapering. Each also provided their viewpoints on various subject matters relating to macroeconomic policy issues as they relate to monetary policy and investors.

4. Presentation, Discussion, and Appropriate Action Regarding ASRS Investment Program Updates

Mr. Gary Dokes, ASRS Chief Investment Officer, provided an overview of the ASRS investment program as it relates to Asset Class Committees, tactical portfolio positioning, IMD belief systems, IMD House Views, IMD projects, activities and research initiatives.

Mr. Kien Trinh, State Street Assistant Vice President, provided an overview of the State Street Report, stating risk reports have been consistent with no major changes since the last report provided to members of the IC.

5. Presentation, Discussion, and Appropriate Action Regarding Independent Reporting, Monitoring and Oversight of the ASRS Investment Program

Mr. Allan Martin, NEPC Partner, presented information on NEPC's reporting, monitoring, and oversight of the ASRS investment program. Mr. Martin stated the fund continues to make significant progress in moving toward the long-term Strategic Asset Allocation Policy (SAAP) and explained the restructure of the non-U.S. Develop Markets Portfolio. He also noted the different methods available to allow portfolios to be less resistant to down drafts at lower costs and expanded on the current ASRS asset allocation.

6. Presentation, Discussion, and Appropriate Action Regarding Total Equities Asset Class Presentation

Mr. Dave Underwood, Assistant Chief Investment Officer provided the Committee with a detailed summary of the Public Equity Asset Class as of February 28, 2014. He gave detailed information on the Equities liquidation of \$400 million from Domestic Equities asset classes to various other portfolios; provided market performance commentary; and discussed the performance of current investment managers.

Mr. Karl Polen, Head of Private Markets Investing and Eric Glass, Portfolio Manager of Private Markets, provided a brief summary of the Private Equity Program. Members of the IC were provided information relating to key areas of focus, areas of capital demand and the emphasis placed on manager selection in terms of performance, organizational criteria and terms (i.e. cost, fees, governance, etc.).

7. Requests for Future Agenda Items

There were no requests for future Agenda items.

8. Call to the Public

No members of the public requested to speak.

9. Adjournment

The meeting adjourned at 6:06 p.m.

Respectfully submitted,

ARIZONA STATE RETIREMENT SYSTEM

Gloria Trujillo Date
Investment Committee Administrator

Gary Dokes Date
Chief Investment Officer



ARIZONA STATE RETIREMENT SYSTEM

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Paul Matson
Director

MEMORANDUM

TO: The Arizona State Retirement System (ASRS) Investment Committee (IC)

FROM: Mr. Paul Matson, Director
Mr. Gary Dokes, Chief Investment Officer (CIO)
Mr. Dave Underwood, Assistant Chief Investment Officer
Mr. Al Alaimo, Fixed Income Portfolio Manager
Mr. Karl Polen, Head of Private Markets Investing
Mr. Eric Glass, Portfolio Manager of Private Markets

DATE: June 16, 2014

RE: **Agenda Item #3:** Presentation, Discussion, and Appropriate Action Regarding ASRS Investment Program Updates

Purpose

To present and discuss information regarding ASRS investment program updates and Investment Risk Reports.

Recommendation

Informational only; no action required.

Background

The CIO and IMD Portfolio Managers will present and facilitate a discussion of the ASRS Investment Program.

The topics listed below are intended to comprehensively cover how ASRS investments are managed, what and why recent strategic/tactical investment decisions have been made and share other information regarding the investment activities of the ASRS.

- a. ASRS Fund Positioning
- b. IMD Investment House Views
- c. Asset Class Committee (ACC) Activities
- d. Tactical Portfolio Positioning
- e. IMD Projects, Research, and Initiatives
- f. Investment Risk Reports and Securities Lending Risk Metrics

Additionally, on a quarterly basis; the Director includes in the Board Packet the two primary Investment Risk reports IMD uses to help monitor and manage macro-level Total Fund investment risk. These reports along with other portfolio risk and positioning reports provide the CIO with valuable information needed to manage the ASRS Total Fund.

The Director and CIO will discuss the Total Fund, State Street truView Risk Report as well as IMD's Securities Lending Risk Metrics.

Attachments:

From ASRS

- Investment Program Updates Report

From State Street

- truView Risk Report – as of April 30, 2014

From ASRS

- Securities Lending Risk Metrics – as of May 31, 2014

Arizona State Retirement System

Investment Committee

Investment Program Updates

June 23, 2014

Presented by:

Gary R. Dokes, Chief Investment Officer, ASRS

David Underwood, Assistant Chief Investment Officer, ASRS

Karl Polen, Head of Private Markets Investing, ASRS

Al Alaimo, Fixed Income Portfolio Manager, ASRS

Eric Glass, Portfolio Manager of Private Markets, ASRS

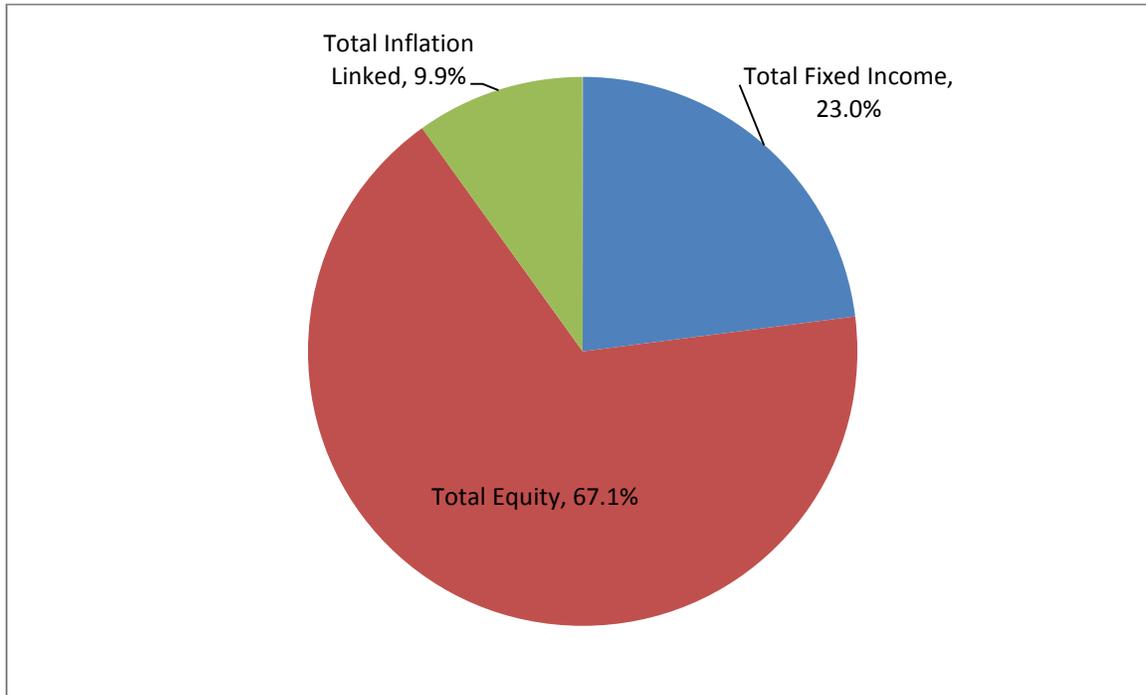


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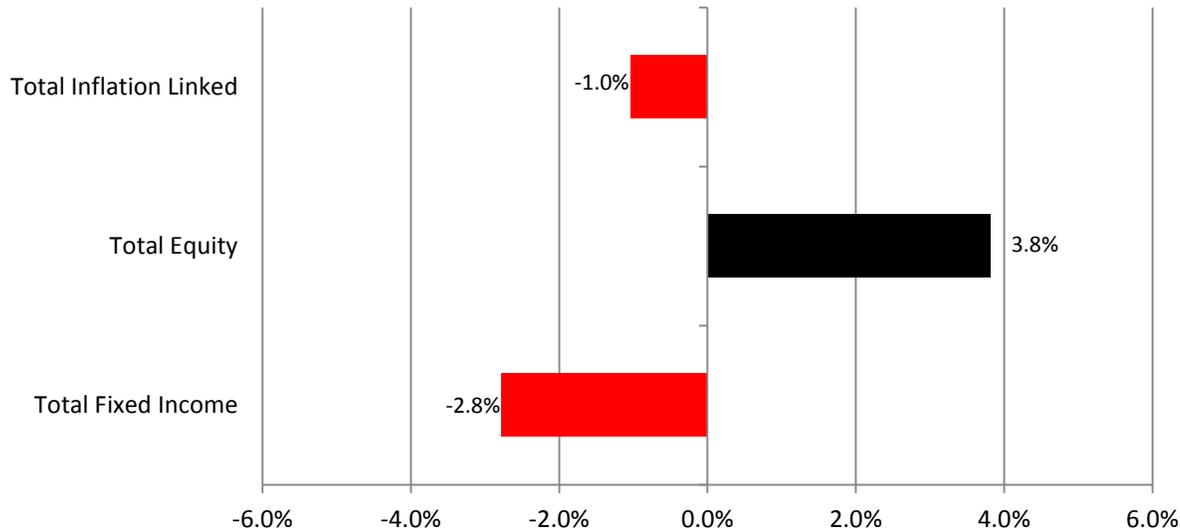
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TOTAL FUND POSITIONING – 5/31/14

ACTUAL PORTFOLIO



ACTUAL PORTFOLIO (ASSUMED GTAA ALLOCATION VS. ADJUSTED SAA POLICY *)



*Real Estate and Private Equity actual weight is equal to policy weight during the implementation of the asset class.

*Over/Underweights include both GTAA positions as well as IMD tactical considerations.

Note: Opportunistic & Private Debt, Opportunistic Private Equity, Farmland & Timber, Real Estate and Private Equity market values are reported on a quarter-lag and adjusted to include the current quarter's cash flows. Within the Assumed GTAA Allocation vs. Adjusted SAA Policy chart, Real Estate was prorated to domestic equity, international equity and fixed income. Private Equity was prorated to domestic equity.

Pension (Plan, System, HBS Assets) ASRS Market Value Report As of: Friday, May 30, 2014

Account Manager	Account Manager Style	Fixed Income		Equity		Inflation Linked		Total	Pct of Fund
		Active	Enh/Passive	Active	Enh/Passive	Active	Enh/Passive		
State Street B&T: Boston	Master Cash & Pension Acct.	743,420,187	162,815,927					162,815,927	0.48%
	Cash Total							\$162,815,927	0.48%
GTAA Managers (2)	Active GTAA	1,108,500,300						1,108,500,300	3.27%
Blackrock: San Francisco	Passive (Intermediate Gov Credit)		23,896,767					23,896,767	0.07%
ASRS: Phoenix	Enhanced Passive F2		1,977,765,294					1,977,765,294	5.83%
Blackrock: San Francisco	Passive (US Debt Index)		711,390,076					711,390,076	2.10%
	Core Fixed Income Total							\$3,821,754,993	11.27%
	Core Fixed Income Policy								13.00%
Columbia: Minneapolis	Active	743,420,187						743,420,187	2.19%
Shenkman: Connecticut	Active	74,409,938						74,409,938	0.22%
JP Morgan: Indianapolis	Active	328,122,039						328,122,039	0.97%
	High Yield Fixed Income Total							\$1,145,952,165	3.38%
	High Yield Fixed Income Policy								5.00%
	US Fixed Income Total							\$4,967,707,158	14.64%
	US Fixed Income Policy Range: 8% - 28%								18.00%
PIMCO (local): Newport Beach	Active	348,494,510						348,494,510	1.03%
Ashmore (blended): London	Active	562,226,722						562,226,722	1.66%
	EM Debt Total							\$910,721,232	2.68%
	EM Debt Policy								4.00%
	Opportunistic Debt							\$849,822,562	2.50%
	Opportunistic Debt Policy Range: 0% - 10%								0.00%
	Private Debt Total							\$902,116,163	2.66%
	Private Debt Policy								3.00%
	Fixed Income Total							\$7,793,183,042	22.97%
	Total Fixed Income Policy Range: 15% - 35%								25.00%
Intech: FL	Active (Growth)			524,568,291				524,568,291	1.55%
LSV: Chicago	Active (Value)			786,316,797				786,316,797	2.32%
GTAA Managers (2)	Active GTAA			1,114,746,317				1,114,746,317	3.29%
ASRS: Phoenix	Passive E2				4,912,588,329			4,912,588,329	14.48%
ASRS: Phoenix	Enhanced Passive E7				791,134,515			791,134,515	2.33%
ASRS: Phoenix	Enhanced Passive E8				509,472,720			509,472,720	1.50%
ASRS: Phoenix	Risk Factor Portfolio				500,629,963			500,629,963	1.48%
	Large Cap Equity Total							\$9,139,470,159	26.94%
	Large Cap Policy								23.00%
Wellington: Boston	Active (Core)			418,089,739				418,089,739	1.23%
CRM: New York	Active (Value)			99,100,622				99,100,622	0.29%
ASRS: Phoenix	Passive E3 (Growth)				509,238,459			509,238,459	1.50%
ASRS: Phoenix	Passive E4 (Value)				526,180,615			526,180,615	1.55%
	Mid Cap Equity Total							\$1,552,609,435	4.58%
	Mid Cap Policy								5.00%
TimesSquare: New York	Active SMID (Growth)			461,772,531				461,772,531	1.36%
DFA: Santa Monica	Active (Value)			409,312,119				409,312,119	1.21%
Champlain:Vermont	Active (Core)			97,507,711				97,507,711	0.29%
ASRS: Phoenix	Passive E6				483,750,075			483,750,075	1.43%
	Small Cap Equity Total							\$1,452,342,436	4.28%
	Small Cap Policy								5.00%
	U.S. Equity Total							\$12,144,422,031	35.80%
	US Equity Policy Range: 26% - 38%								33.00%
Brandes: San Diego	Active (Value)			549,067,070				549,067,070	1.62%
Aberdeen: Edinburgh	Active (Value)			518,997,351				518,997,351	1.53%
Hansberger: Ft. Lauderdale	Active (Growth)			345,286,274				345,286,274	1.02%
Walter Scott: Edinburgh	Active (Growth)			238,486,640				238,486,640	0.70%
GTAA Managers (2)	Active GTAA			1,063,819,276				1,063,819,276	3.14%
Blackrock: San Francisco	Passive (EAFE)				2,417,751,406			2,417,751,406	7.13%
	Large Cap Developed Non-US Equity Total							\$5,133,418,253	15.13%
	Large Cap Developed Policy								14.00%
AQR: Greenwich	Active (EAFE SC)			178,232,590				178,232,590	0.53%
DFA: Santa Monica	Active (EAFE SC)			226,371,709				226,371,709	0.67%
Franklin Templeton: San Mateo	Active (EAFE SC)			415,906,369				415,906,369	1.23%
Blackrock: San Francisco	Passive (EAFE SC)				469,212,977			469,212,977	1.38%
	Small Cap Developed Non-US Equity Total							\$1,289,727,976	3.80%
	Small Cap Developed Policy								3.00%
William Blair: Chicago	Active (EM)			461,762,584				461,762,584	1.36%
Eaton Vance: Boston	Active (EM)			513,528,765				513,528,765	1.51%
LSV: Chicago	Active (EM)			308,747,094				308,747,094	0.91%
Blackrock: San Francisco	Passive (EM)				687,901,238			687,901,238	2.03%
	Emerging Markets Equity Total							\$1,971,939,681	5.81%
	Emerging Markets Policy								6.00%
	Non-US Equity Total							\$8,395,085,910	24.75%
	Non-US Equity Policy Range: 16% - 28%								23.00%
	Private Equity Total							\$2,018,830,127	5.95%
	Private Equity Policy Range: 5% - 9%								7.00%
	Opportunistic Equity							\$204,841,646	0.60%
	Opportunistic Equity Policy Range: 0% - 3%								0.00%
	Equity Total							\$22,763,179,713	67.10%
	Total Equity Policy Range: 53% - 73%								63.00%
Gresham: New York						849,432,638		849,432,638	2.50%
GTAA Managers (2)	Active GTAA					345,588,902		345,588,902	1.02%
	Commodities Total							\$1,195,021,540	3.52%
	Commodities Policy Range: 1% - 7%								4.00%
GTAA Manager (1)	Active GTAA					54,828,894		54,828,894	0.16%
	Real Estate Total							\$2,074,445,895	6.11%
	Real Estate Policy Range: 6% - 10%								8.00%
	Infrastructure Total							\$0	0.00%
	Infrastructure Policy Range: 0% - 3%								0.00%
	Farmland & Timber Total					99,329,710		\$99,329,710	0.29%
	Farmland & Timber Policy Range: 0% - 3%								0.00%
	Opportunistic Inflation Linked Total							\$0	0.00%
	Opportunistic I/L Policy Range: 0% - 3%								0.00%
	Inflation Linked Total							\$3,368,797,146	9.93%
	Inflation Linked Policy Range: 7% - 15%								12.00%
	TOTAL Amounts	\$4,067,492,416	\$3,725,690,626	\$10,955,306,190	\$11,807,873,524	\$3,468,126,856	\$0	\$33,925,159,901	Total Fund
	TOTAL Percent	11.99%	10.98%	32.29%	34.81%	10.22%	0.00%		

Asset Class	Actual Portfolio	SAA Policy: Target (Range)	Rebalancing		Assumed - Adjusted		Policy Band check	Passive Min	Passive Actual
			Assumed Port	Adj Policy	% diff	\$ diff			
Cash	0.48%								
Core	11.27%	13%						50%	72%
High Yield	3.38%	5%							
US Fixed Income	14.64%	18% (8-28%)	14.90%	18.53% (9-29%)	-3.63%	-\$1,231,089,296	OK		
EM Debt	2.68%	4%		4.00%					
Opportunistic Debt	2.50%	0% (0-10%)	2.50%	0% (0-10%)	2.50%	\$849,822,562	OK		
Private Debt	2.66%	3%		3.00%					
Total Fixed Income	22.97%	25% (15-35%)	22.75%	25.53% (16-36%)	-2.78%	-\$943,190,532	OK		
Large Cap	26.94%	23%							
Mid Cap	4.58%	5%							
Small Cap	4.28%	5%							
US Equity	35.80%	33% (26-38%)	37.19%	34.86% (28-40%)	2.33%	\$789,046,100	OK	50%	65%
Developed Large Cap	15.13%	14%							
Developed Small Cap	3.80%	3%							
Emerging Markets	5.81%	6%							
Non-US Equity	24.75%	23% (16-28%)	24.33%	23.47% (16-28%)	0.86%	\$290,459,055	OK	30%	43%
Private Equity	5.95%	7% (5-9%)	5.95%	5.95% (4-8%)	0.00%	\$0	OK		
Opportunistic Equity	0.60%	0% (0-3%)	0.60%	0% (0-3%)	0.60%	\$204,841,646	OK		
Total Equity	67.10%	63% (53-70%)	68.07%	64.28% (54-71%)	3.79%	\$1,284,346,801	OK		
Commodities	3.52%	4% (1-7%)	2.94%	4.08% (1-7%)	-1.14%	-\$385,657,086	OK		
Real Estate	6.11%	8% (6-10%)	5.95%	6.11% (4-8%)	-0.16%	-\$54,828,894	OK		
Infrastructure	0.00%	0% (0-3%)	0.00%	0% (0-3%)	0.00%	\$0	OK		
Farmland & Timber	0.29%	0% (0-3%)	0.29%	0% (0-3%)	0.29%	\$99,329,710	OK		
Opportunistic I/L	0.00%	0% (0-3%)	0.00%	0% (0-3%)	0.00%	\$0	OK		
Total Inflation Linked	9.93%	12% (8-16%)	9.18%	10.19% (6-14%)	-1.01%	-\$341,156,270	OK		
Total	100.00%	100%	100.00%	100.00%	0.00%	\$0		30%	42%
Total GTAA								Internally Managed Portfolios:	
Bridgewater	\$3,086,948,160	9.1%						\$9,710,130,008	29%
Windham	\$600,535,529	1.8%							
Total	\$3,687,483,689	10.9%							
Policy	10% ±5%	OK							

Opportunistic definitions:
1) Tactical in nature: Function of market dislocation AND
2a) Outside SAA benchmark, OR
2b) Within SAA benchmark but absolute return oriented

(Notable changes from the previous month are highlighted in RED)

JUNE 2014

U.S. EQUITIES

Primary Market Metrics & Indicators:

1. Fundamentals: **POSITIVE**
 - Major risks have receded and economic data suggests stable, sub-trend growth into 2014.
 - Persistently high U.S. unemployment raise questions about a sustainable recovery, but no other tailspin issues have surfaced.
 - At risk longer term due to stimulus measures; inflation remains generally subdued.
 - There is considerable liquidity; Federal Reserve policy remains accommodative.
 - Overall U.S. corporate profits are still growing, but with decelerating momentum as revenue trends are flat and pressures on profit margin expansion are surfacing.
2. Valuations: **NEUTRAL**
 - P/E ratios (forward) **have inched lower recently, and though** less generous, and marginally less so for the mid- and smaller-sized companies, **they remain near historic averages:** S&P 500, **14.7x-16.3x**, S&P MID, **16.5x-19.3x**; S&P SC600, **16.6x-20.3x**.
 - Historic P/Es imply advances of 5-10% for mid and small caps; 9-12% for S&P 500.
 - Still rising earnings and low yields on 10-Yr Treasury notes combine for equity risk premiums that are favorably above the 4.0% long-range average for large caps, but market advances have trimmed those of mid- and small-caps to near 3.0%.
3. Sentiment: **POSITIVE**
 - Lessened near-term equity market volatility (i.e., VIX Index) still reflects growing acceptance of risk-oriented assets.
 - Asset flows that had gone to bonds and non-U.S. equities until 2013 continue to shift toward equities, though not necessarily to stock mutual funds

Commentary:

Throughout 1Q2014, IMD systematically pared back the allocation of U.S. stocks to address capital calls in the Plan's private equity and real estate asset classes. Proportionally more was withdrawn from the small cap and mid cap sub-classes. Strong price advances in 2013 outpaced earnings growth in these categories to the extent that their short-run risk premiums are less compelling than the larger-cap counterparts. This has also been reflected in the waning performance of small cap stocks *relative* to their large and mid- cap counterparts over 1Q2014. Small caps are off by about 1.5%; large caps and midcaps are up 4.6% and 3.8%, respectively.

Notwithstanding some opinions that prices of U.S. stocks are greatly overextended and thus due for a precipitous decline, data suggests otherwise. Valuations of domestic equities are full, but generally don't yet exceed long-term average valuations by much. Business conditions are constructive if not vibrant. Moreover, the equity markets have been resilient in spite of unsettling political events and have rebounded on shallow dips over 1H2014. Rather than setting up for an abrupt decline, in re-rating over the past year, the markets have pulled forward some return from future periods. This implies that future equity returns will still be

available however not to the magnitude as those experienced over the past year. This drives our “*NEUTRAL*” opinion on Valuations and “*POSITIVE*” opinions on Fundamentals and Sentiment.

CURRENT PORTFOLIO POSTURE: Over-Weight vs. SAA target

NON – U.S. EQUITIES

Primary Market Metrics & Indicators:

1. Fundamentals: **POSITIVE**
 - GDP growth in the Eurozone has begun to look less recessional while that of the lesser-developed economies remains off its pace, but comparatively stronger.
 - Relatively inexpensive and available money supports a shift toward risk assets.
 - Monetary and economic policies are focused on controlling economic growth and fiscal stability.

2. Valuations: **POSITIVE**
 - Reasonable global valuations relative to U.S.; price-to-book values of 1.5x - 1.9x; P/Es of 13.5x – 15.2x on trend earnings.
 - Dividend yields are incrementally more favorable with most ranging from 1.5x to 1.6x that of the S&P500.

3. Sentiment: **POSITIVE**
 - Money flows continue toward both U.S. and non-U.S. equities; excepting the emerging economies markets, investors are less guarded and remain constructive on global risks.
 - Major non-U.S. markets performances are keeping pace with those of the U.S.

Commentary:

Global equities have begun responding positively to stabilizing economic momentum across major economies. Weaker than expected economic readings earlier in the year from China and the U.S. triggered corrections in the equities markets and a 50 basis points decline in U.S. 10-year bond yields. It is also attributable to a 5% relative underperformance of global cyclical equities versus more defensive stocks. U.S. ISM indices and their international PMI counterparts are rising; this often leads to better performance of equities and to an extent, markets have reacted. Other business conditions appear to be toughing tipping macro surprise indicators to positive. Adding to confidence is that PMI new orders globally are mid-range, so any slide back would be small and thus not transfer into major negative signal to the equities markets. Various measures of global monetary conditions such as policy rates, money supply growth and currency valuation continue to ease and the tapering policy of the U.S. Federal Reserve is not yet bringing about a broad tightening of monetary conditions.

Available liquidity is supportive for re-rating equity risk premiums. Equity risk premiums on international stocks of over 5% exceed those of the U.S. by about 100 basis points. Both imply ample compensation for investment, more so for the former. Falling yields among high-yield bonds and other compressions of credit spreads are further magnifying the relative advantage available in current equity risk premiums.

The Japanese equities markets continue to be challenged after responding well earlier in 2013. Japanese economic reform continues, but the markets are waiting for follow-on to the Abe policies. **They might be unduly bearish. The solid gains in personal consumption from the spurt of income growth are now appearing vulnerable to this new round of taxes. Most remain of the opinion that the Bank of Japan will need to ease additionally if hoped-for 2% annualized inflation targets are to be met. The bulk of the rise in inflation so far this year has come via higher import prices, which now are set to fall back. This suggests the BoJ will need to expand its program of bond purchases in 2H2014, and possibly further broadening of quantitative easing.**

Emerging markets (EM) overall, are enigmatic, **but of late are trading more favorably.** Having undergone two years of price correction, valuations for the most part remain attractive as compared to those of the developed economies. But an inherent “value trap” persists, as economic fundamentals continue to shift about for the larger countries, weaken for those with large external debt balances yet are surprisingly solid for many others. **Up until recently, capital was withdrawn indiscriminately from EM equity markets, despite select opportunities at the specific company level. Staff is watching this equilibration with interest of for opportunities to shift the allocation of the sub-class to above policy weight.**

IMD moved equities positioning in late 4Q2013 to a more neutral allocation to both the U.S. markets asset class, and to the Non-U.S. developed-economies equities class, and expects to increase the Non-U.S. exposure opportunistically over the course of 2014.

CURRENT PORTFOLIO POSTURE: Approx. Equal Weight vs. SAA target

FIXED INCOME

Primary Markets Metrics & Indicators:

1. Fundamentals: NEUTRAL

- Over the past few years, fundamentals in the fixed income markets have been dominated by an extremely accommodative monetary policy by the Federal Reserve. This has included massive, unprecedented bond buying programs of both treasury bonds and agency MBS securities known as “quantitative easing” that began in 2009 during the credit crisis and continues to this day. The Fed has now gradually begun to reduce its monthly purchases with a potential complete cessation of bond buying by the end of this year. In addition, the Fed has pledged to keep short-term rates near zero over an extended time depending on select economic targets and conditions. While these policies have kept interest rates artificially low, the potential cessation of bond buying activities along with an improving U.S. economic outlook could lead to higher interest rates over an intermediate to long-term time frame.
- In the near-term, long-term interest rates have fallen in 2014 in response to a combination of factors including some disappointing economic data, concerns about **global growth, some geopolitical uncertainty (ex. Ukraine), subdued inflation expectations and possible short covering by investors positioned for rising rates.**

2. Valuations: NEGATIVE

- The core fixed income market is relatively unattractive due to low overall yields as Treasury rates remain at low levels, investment-grade credit spreads are relatively tight and spreads on agency MBS are somewhat compressed due to aggressive buying by the Fed. Ultimately, we believe the

Fed will end its aggressive bond buying, and Treasury rates will rise over the intermediate-term from artificially low levels in the current market. That being said, core fixed income remains a safe haven in times of market turbulence and tends to perform well when risky assets such as equities sell off.

- With a benign outlook for corporate defaults and an overall demand in the market for yield, the valuation of high yield bonds has substantially compressed since mid-2012. As a result, the market has lost much of its return potential relative to prior years and will likely achieve low to mid-single-digit returns over the coming year.
- While emerging market debt denominated in local currencies offers attractive yields, **it comes with the added risk that emerging market currencies depreciate in value relative to the U.S. dollar resulting in poor returns as happened in 2013.** Of most concern is the potential for a sustained period of US dollar appreciation as has occurred periodically in the past (such as the 1990's) that could adversely affect the returns of EM local currency debt going forward.
- Private debt offers the most attractive opportunity in the fixed income markets with double-digit yields readily available for investors willing to accept illiquidity.
- Select areas of opportunistic debt such as distressed debt (both corporate and structured credit) and excess mortgage-servicing rights ("MSRs") also offer opportunities to potentially achieve double-digit returns.

3. Sentiment: **NEUTRAL**

- Following a multi-decade period of declining interest rates, IMD has modest concerns that investors sentiment is shifting away from fixed income. That being said, going forward, IMD believes demand will continue for income producing assets particularly those which offer a yield premium.

Commentary:

IMD remains underweight in its overall fixed income target due to the relatively low yields offered in the public fixed income markets as well as the risk of potentially higher treasury rates. ASRS is currently underweight in its SAAP target for core fixed income, high yield and emerging market debt. While core fixed income offers important defensive characteristics to potentially balance out the overall risks of the total fund portfolio, low levels of U.S. Treasuries and generally tight spreads in the investment-grade bond markets make it generally unattractive.

Furthermore, IMD remains concerned about the potential for higher Treasury rates and the impact on returns for core fixed income, should the Fed completely end its quantitative easing programs. In high yield, which historically is less sensitive to higher interest rates, spreads have compressed to levels which make potential returns much less compelling than in prior years. In emerging market debt, we are concerned about the currency risk embedded in the local currency bond markets of this asset class.

IMD sees the most attractive opportunities in fixed income in select credit markets -- particularly private debt and opportunistic debt -- where compelling yield and total return opportunities exist. Opportunistic debt includes a number of mandates such as distressed debt and structured asset-backed securities that are likely to provide very attractive returns. Since December, we have established two new multi-strategy mandates with strategic partners in opportunistic debt to take advantage of potential investment opportunities as European banks disgorge troubled fixed income assets.

CURRENT PORTFOLIO POSTURE: UNDERWEIGHT vs. SAA target

Primary Market Metrics & Indicators:

1. Fundamentals: **POSITIVE**

- While vacancy is declining across the board, excess inventory remains a problem in some sectors especially retail and suburban office.
- Our review of property market fundamentals leads to emphasize apartments, industrial properties, medical office buildings, senior housing self-storage, and student housing in our current investing efforts for demographic and macro policy reasons.
- There are relatively few foreclosures on high quality property, but there continues to be pressures on refinancing of legacy leverage structures and we participate in those transactions through several of our manager relationships.
- Single family housing has turned the corner with effects rippling through the economy. Recovery in construction and NOI has been led by apartments to date.

2. Valuations: **NEUTRAL**

- On a total market basis, valuations have recovered from recession lows but are still about 15% below prior peak. However, coastal markets have rebounded more strongly than interior markets.
- High quality coastal market properties are trading at historic low cap rates; however these cap rates still reflect approximately a normal spread to treasury. The financing market for assets of this quality has recovered and supports these valuations by providing fixed rate financing that mitigates the risk of later cap rate expansion. International investors looking for safe assets have contributed to demand in the coastal markets.
- Recent increases in treasury rates do not appear to have affected commercial real estate valuations. Many observers believe that ~100bps of rate increase was already discounted into cap rates.
- REITs are trading at a **6%** premium to NAV with an average dividend yield of **3.8%**. This reflects a **120bps** spread to the 10 year treasury, which is **a bit higher than** the historical average of 108bps.

3. Sentiment: **POSITIVE**

- U.S. focused real estate fund raising rose 13% to \$76 billion per year. U.S. focused dry powder has trended down to approximately \$80 billion.
- Global commercial real estate transaction volume peaked at around \$700 billion in 2007, but dropped to about a third of that during the global financial crisis. Current volume of approximately \$550 billion is double the recession trough, but still well below the peak.
- Debt availability has improved considerably since the depth of the recession, but is still tight by historic standards for all but the most desirable properties. Construction financing remains a considerable challenge, even for well justified projects.

Commentary:

IMD continues to implement its separate account real estate strategic manager program. ASRS adopted an updated pacing and implementation plan in December, calling for \$500 million in new commitments in 2014 including \$350M allocated to niche and tactical opportunities.

CURRENT PORTFOLIO POSTURE: UNDERWEIGHT * vs. SAA target * in program funding/build-out phase

Primary Market Metrics & Indicators:

1. Fundamentals: **POSITIVE**

- The U.S. economy continues to show steady improvement.
 - ◇ The energy sector is dynamic with massive new investment in “tight oil” and related infrastructure and services, with supply improvements also resulting in improved energy efficiency particularly of benefit to manufacturers.
 - ◇ Healthcare is being reshaped to implement the requirements of “Obamacare”
 - ◇ The U.S. continues to be a global leader in technology innovation.
- Europe continues to struggle in recovering from the financial crisis although recent data suggests a pickup in economic activity. Its problems are exacerbated by a unified currency without unified fiscal policy and it is expected to experience a very slow recovery.
- Emerging markets have slowed while the largest emerging markets are transitioning to focus on domestic consumption.

2. Valuations: **NEUTRAL**

- Purchase price multiples in 2013 (through Q3) were 8.4x, roughly flat from 2012 levels and below 2007 peak valuations. Over the course of 2013, large deal multiples rose from 10x to 11x while small deals fell from 4.0x to 2.5x.
- The leveraged loan and high yield debt markets were active in 2013 reaching multi-year highs for net issuance, albeit principally for refinancing. Single B high yield spreads have recently dipped below 350bps.
- Total leverage in 2013 (through Q3) ticked up to 5.3x from 5.1x in 2012, although still down ~0.8x turn from the 2007 peak.

3. Sentiment: **NEUTRAL**

- Globally, fund raising was up from \$381B (1,035 funds) closed 2012 to \$454B (873 funds) closed in 2013. In aggregate, there are 2,000+ funds currently seeking ~\$800B. In North America fund raising was up from \$201B (475 funds) closed 2012 to \$288B (487 funds) closed in 2013.
- Dry powder of nearly \$1.0 trillion globally in all categories rose from \$941 at the end of 2012.
- In 2013, PE deal flow fell 10% globally while the aggregate value of deals was up 10% in N. America, down 6% in Europe, and down 28% in Asia.
- In 2013 there were 1,300+ exits valued at \$300B, the highest count on record and matching the value of 2011. The average exit size of \$500M was the same as 2012.
- The IPO market continued to trend up in 2013 (particularly in H1) as equity markets rallied.

Commentary:

Areas of emphasis are U.S middle market buyout with focus on managers with strong operational capability. Vertical strategies in energy, healthcare and technology are under consideration. IMD will reduce emphasis on large buyout strategies though larger managers with specialized deal flow remain of interest. IMD will continue to monitor Europe for a favorable reentry point. IMD’s pacing plan calls for \$550M in commitments for 2014, with an additional \$50M carried over from 2013.

CURRENT PORTFOLIO POSTURE: UNDERWEIGHT * vs. SAA target*in program funding/build-out phase

COMMODITIES

Primary Market Metrics & Indicators:

1. Fundamentals: **NEGATIVE**

- The Fed continued to taper its QE program by \$10B per month and **reiterated that inflation continues to run below the FOMC's long-term objective.**
- Recent data indicates the US economy has momentum, although the winter weather has impeded progress. Excluding exogenous factors, most commodity sectors appear well supplied, particularly for the current global slow growth environment.
- **Ags planting season has gone well as 95% of corn is planted with 76% of the crop rated good/excellent, both metrics in-line with or ahead of last year and a similar story for soybeans.** Energy markets reflect the continued growth in US production, although geopolitical events in Ukraine/Russia have kept prices up. Metals have been mixed as precious metals have benefitted from a flight to safety while industrial metals still exhibit weak demand.

2. Valuations: **NEUTRAL**

- **After being range bound from 245 – 260 in 2H 2013, the index has rose to 270 in Q1 2014 and has remained flat during Q2.**
- **Year-to-date, coffee, nickel, and hogs have been the leaders with copper and lead being the biggest laggards.**
- The index on a year-to-date basis is up **6.6%**, largely on cold winter weather and geopolitical concerns (ags & energy) and flight to safety (precious metals).

3. Sentiment: **NEUTRAL**

- **The improvement in macroeconomic sentiment in the U.S. year-to-date has softened while EM continues to exhibit weakness and resulted in modest inflows into commodities.**
- Exogenous shocks have pushed up specific commodities in energy and ags although demand has largely not driven prices.
- Looking across the individual commodities, most remain well supplied, which has been reflected in prices as inflationary fears have abated.

Commentary:

IMD maintained a tactical underweight position relative to the SAAP during 2013 and into 2014 after recognizing the potential effects of Fed tapering and Chinese transition. IMD recognizes that Fed tapering will be data dependent but the Fed has been clear about its intention to reduce stimulus. China's transition to a more consumer oriented economy will be gradual but the era of infrastructure build-out which fueled a portion of the demand for commodities is abating.

IMD will closely monitor the growth and inflation dynamics globally with improving economic conditions and inflationary pressures serving as a catalyst which may initiate a neutral position.

CURRENT PORTFOLIO POSTURE: UNDERWEIGHT vs. SAA target

OPPORTUNISTIC INVESTMENTS

IMD continues to monitor and assess co-investment flow from real estate, private equity and debt managers for select opportunistic equity investments in idiosyncratic opportunities with favorable capital market dynamics. Opportunistic investments are tactical in nature AND are outside ASRS SAAP benchmarks or are absolute return oriented.

CURRENT PORTFOLIO POSTURE: APPROX 3.2% of ASRS TOTAL MARKET VALUE

GLOSSARY

Commentary: Provides verbiage on 1) the current asset class market environment and possible changes to this environment and 2) ASRS asset class portfolio positioning relative to ASRS SAA policy, its rationale for positioning and anticipated changes which may occur in such positioning.

Current Portfolio Posture: Indicates ASRS asset class position relative to its asset allocation policy weight. “Overweight” indicates an asset class weight is greater than its policy target, “Neutral” indicates an equal weight and “Underweight” indicates a lesser weight than its policy target.

Investment House Views: Synthesizes IMD’s current and forward-looking investment perspectives and tactical positioning in asset classes and investment strategies in which the ASRS invests.

Primary Market Metrics and Indicators: Broadly-defined metrics (Fundamentals, Valuations, and Sentiments) applied universally to ASRS asset classes and used collectively to evaluate existing market conditions. Indicators (“Positive,” “Neutral” and “Negative”) reflect IMD’s existing views of these metrics and, in addition to other factors, generally determine the basis for the existing (and possible future changes) to ASRS aggregate portfolio position relative to or within ASRS SAA policy targets.

ASRS INVESTMENT MEETINGS									
2014		Asset Class Committees				Board Committee		Grand Totals	
		Private Market Committee (PRIFMC)		Public Market Committee (PUBMC)		Investment Committee (IC)			
Quarter	Month	Dates		Total	Dates		Total	15	
1 st	January	1/15	1/31	2	1/31		1		
	February	2/21		1					
	March	3/24		1	3/27		1		
2 nd	April	04/22		1	04/17		1		
	May	05/12	05/27	3					
		05/28							
June									
3 rd	July								
	August								
	September								
4 th	October								
	November								
	December								
Totals				8		3	4		

04/22/14:

➤ **Private Equity Program**

- The Committee approved a \$40 million commitment to Lovell Minnick IV, a smaller buyout firm focused on the financial services industry. ASRS analysis shows their performance to generate positive PME, particularly when compared to financial services benchmark.

05/12/14

➤ **Real Estate Program**

- The Committee approved a \$100 million investment to a separately managed account to invest in residential land pursuant to a strategy previously approved to the Committee. Legal negotiations are pending.

05/27/14

➤ **Private Equity Program**

- The Committee approved a \$40 million commitment to a small buyout GP. The ASRS has previously invested with the GP through their previous fund. Legal negotiations are pending.
- The Committee approved a \$25 million commitment to a venture capital fund. ASRS has previously invested with this GP; this GP is one of a handful of the highest performing Silicon Valley venture capital firms. Legal negotiations are pending.

05/28/14

➤ **Niche and Tactical Real Estate Investments**

- The Committee was presented with the following investments for preliminary review and approved additional due diligence for each investment:
 - Related companies energy fields housing
 - Cornerstone/LAZ parking assets
 - L3 Capital urban retail
 - Buchanan Street growth market office
 - Hines/Pearlmark San Mateo office project

04/17/14:

➤ **Public Fixed Income Program**

- The Committee approved the termination of PIMCO core fixed income mandate of approximately \$300 million due to myriad of factors that hindered the fund's performance. Funds will remain in fixed income and will be redeployed at the discretion of the CIO.
- The Committee approved the termination of the Shenkman high yield mandate of approximately \$170 million due to performance considerations and decided to redeploy the funds to private opportunistic debt mandates with expected higher returns.

TACTICAL PORTFOLIO POSITIONING

Per approval by the Public Markets Committee, IMD released three (3) non-US equity managers Aberdeen, Hansberger Global Investors and Walter Scott (due to performance issues) and replaced them with three (3) non-US equity managers whose strategy and investment process are expected to provide excess returns and a better in aggregation risk profile within the ASRS non-US equity asset. BlackRock will assist in transitioning the portfolios; completion is expected to occur before the end of June.

Due to concerns about personnel and processes, an active core fixed income mandate with PIMCO with approximately \$300 million of assets was terminated and transitioned into Blackrock US Debt Index Fund, a passive strategy.

Due to near all-time tight spread in high yield and House Views to further underweight high yield relative to policy, Shenkman with approximately \$170 million of assets was defunded. The funds were used for capital calls in private and opportunistic debt.

The CIO will discuss this tactical portfolio repositioning in more detail at the IC meeting.

Note: tactical portfolio positioning is captured in the ASRS Asset Allocation report; the performance results of tactical positioning (vs. policy targets) are reflected in the ASRS Quarterly Total Fund Performance Attribution Analysis.

IMD (INVESTMENT MANAGEMENT DIVISION) ACTIVITIES, PROJECTS AND RESEARCH INITIATIVES

- The Director and CIO are evaluating methodologies and the structural frameworks for a new asset allocation study which is expected to be completed in calendar year 2014. Separately but related, IMD continues to explore various attribution methodologies which enhance ASRS measuring the effects of internal and external TAA decisions.
- Implementation of the redesigned ASRS securities lending program is pending final contract negotiations with State Street. The program will include two parts: 'base lending' to initiate a conservative strategic lending program and 'opportunistic lending' to profit from relatively large or one-off individual lending transactions, the latter of which will be evaluated and approved on a case-by-case basis by the Director and CIO. The ASRS is currently investigating two opportunistic short term loans of ASRS treasury holdings (approx. \$1 billion in aggregate) which is expected to generate net revenue to the ASRS of approximately \$250K per month.
- IMD is evaluating enhanced cash management options intended to mitigate potential cash drag on total fund returns and to more efficiently manage monthly internal and external cash flow requirements and their affect the public fixed and equity portfolios. Paramount is to ensure that excess cash balances

maintain exposure to equity or fixed income markets while providing ample liquidity to meet pension funding needs and minimizing associated transaction costs. Implementation is expected to occur in Q3-14.

- An IC/IMD Investment Roundtable is scheduled for August 18 which will focus on the following interrelated topics: Equity Risk Factors, Smart Beta Constructs and New/Alternative Beta/Alpha Investment Strategies. Participation will include both internal and external subject matter experts who will provide their perspectives on the agenda topics.
- As a standard course of business, IMD meets with both incumbent and potential investment managers to discuss macro-economies and capital markets as well as providing a means to review new initiatives, relationships and new strategy offerings. Since the last IC meeting, IMD has met via conference call or in-person with a total of 95 investment managers: Private markets (RE, PE, Debt) – 61 and Public markets (Equity and Debt) – 34.
- IMD internally manages 7 public equities and fixed income portfolios which had an aggregate market value of over \$9.8 billion or 30% of Total Fund. For the 1-year ending May 31, 3 of 7 met or exceeded their benchmarks, and 7 of 7 portfolios met or exceeded their benchmarks on an inception-to-date basis. For the former noted period, portfolios' underperformance were minor, within TE parameters and mostly applicable to various settlement and operational issues in calendar year 2014.

Executive Presentation

To: Arizona State Retirement System

truView Risk Report April 30, 2014

Produced by State Street Investment Analytics, Risk Services

Monthly Reallocation Summary*

Month Ending April 30, 2014

Portfolio Reductions

- TOTAL US EQUITY
 - \$10M – INTECH US Large Cap)
 - \$15M – LSV (US Large Cap)
 - \$20M – WELLINGTON (US Mid Cap)
 - \$15M – CHAMPLAIN (US Small Cap)
 - \$40M – DFA (US Small Cap)
 - \$40M – TIMESSQUARE (US Small Cap)
- TOTAL OPPORTUNISTIC
 - \$52M – GUGGENHEIM PARTNERS
- TOTAL FIXED INCOME
 - \$150M – PIMCO (Core)
- TOTAL MASTER CASH
 - \$108M – MASTER CASH
- **TOTAL REDUCTIONS****
 - **\$450M**

Portfolio Additions

- TOTAL FIXED INCOME
 - \$450M – BGI US DEBT FUND (Core)
- **TOTAL ADDITIONS****
 - **\$450M**

*Based on State Street accounting records for public markets and therefore exclude private market drawdowns.

**Reductions and additions do not include plan distributions.

Monthly Reallocation Summary*

Month Ending May 31, 2014

Portfolio Reductions

- TOTAL OPPORTUNISTIC
 - \$23M – GUGGENHEIM PARTNERS
- TOTAL FIXED INCOME
 - \$150M – PIMCO (Core)
 - \$100M – SHENKMAN (High Yield)
- **TOTAL REDUCTIONS****
 - **\$273M**

Portfolio Additions

- TOTAL FIXED INCOME
 - \$250M – BGI US DEBT FUND (Core)
- TOTAL MASTER CASH
 - \$23M – MASTER CASH
- **TOTAL ADDITIONS****
 - **\$273M**

*Based on State Street accounting records for public markets and therefore exclude private market drawdowns.

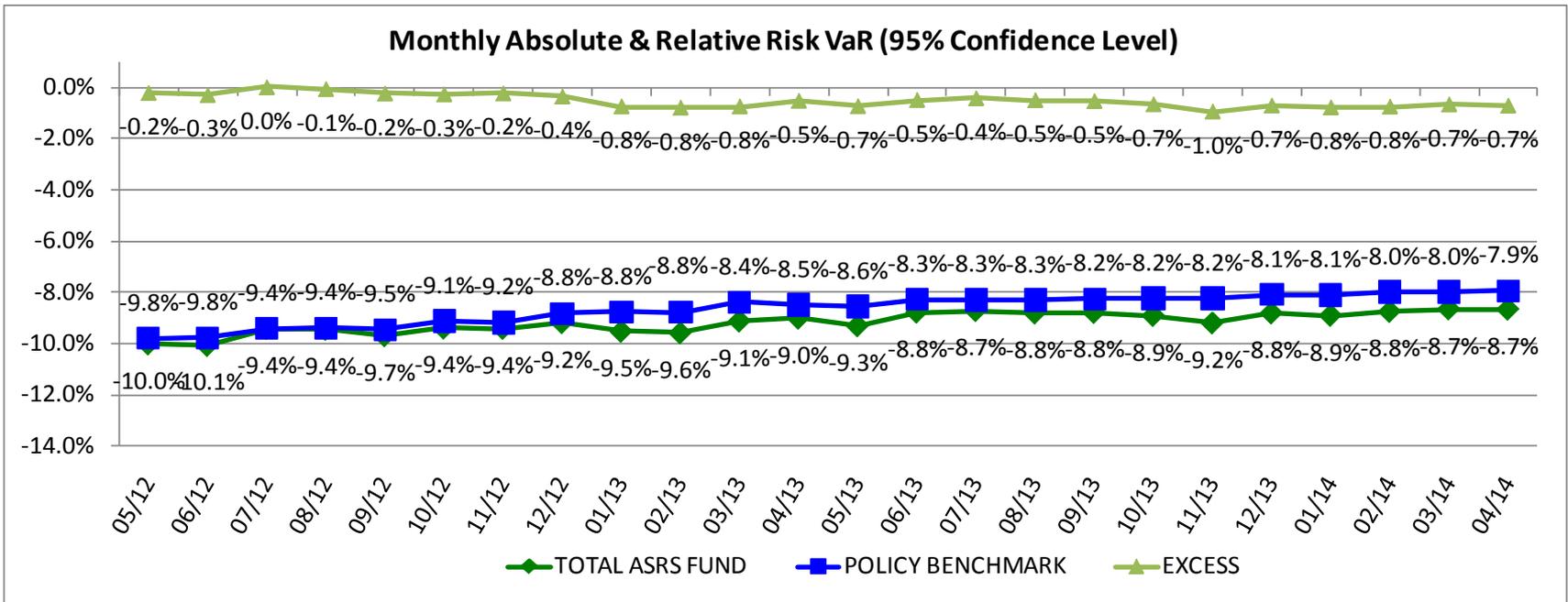
**Reductions and additions do not include plan distributions.

Monthly Risk Summary

Month Ending April 30, 2014

Month-end Risk Profile

- Historical Risk (95% VaR) for all asset classes remain relatively constant from prior months with no substantial deltas. Total Plan risk decreased a marginal 1bps with corresponding 4bps decrease in the Policy Benchmark. A steady market environment has helped produced a stable risk profile since the beginning of last year.
- Excess risk over the Policy Benchmark is unchanged from the prior month at -0.7%.



ARIZONA STATE RETIREMENT SYSTEM

TOTAL PLAN EXPOSURE OVERVIEW

As of April 30, 2014

Sector (Public US Equity Only)	\$ Value	% Value	**Blended US BM	Difference
BASIC MATERIALS	\$ 353,297,538	3.3%	3.3%	(0.0%)
CASH	\$ 153,978,113	1.4%	0.0%	1.4%
COMMUNICATIONS	\$ 902,264,269	8.3%	11.5%	(3.2%)
CONSUMER CYCLICAL	\$ 1,082,055,269	10.0%	9.4%	0.6%
CONSUMER NON-CYCLICAL	\$ 2,406,948,225	22.2%	21.9%	0.3%
DIVERSIFIED	\$ 2,237,806	0.0%	0.0%	(0.0%)
ENERGY	\$ 966,723,510	8.9%	10.6%	(1.7%)
FINANCIAL	\$ 1,664,236,173	15.4%	16.5%	(1.1%)
FUNDS	\$ 482,532,300	4.5%	0.0%	4.5%
GOVERNMENT	\$ 28,118,853	0.3%	0.0%	0.3%
INDEX	\$ 7,993,952	0.1%	0.0%	0.1%
INDUSTRIAL	\$ 1,240,725,251	11.5%	10.8%	0.7%
TECHNOLOGY	\$ 1,168,795,083	10.8%	12.8%	(2.0%)
UTILITIES	\$ 362,666,664	3.4%	3.2%	0.2%
GRAND TOTAL	\$ 10,822,573,008	100.0%	100.0%	0.0%

Country Category (Total Plan)	\$ Value	% Value	*Blended TOTAL BM	Difference
AFRICA	\$ 293,344,732	0.9%	0.9%	0.0%
ASIA DEVELOPED	\$ 1,835,640,245	5.5%	8.7%	(3.2%)
ASIA EM	\$ 1,285,377,215	3.9%	4.4%	(0.5%)
EUROPE DEVELOPED	\$ 3,968,363,723	11.9%	14.6%	(2.7%)
EUROPE EM	\$ 160,113,218	0.5%	1.0%	(0.5%)
LATIN AMERICA	\$ 789,124,791	2.4%	3.2%	(0.8%)
MIDDLE EAST	\$ 127,424,876	0.4%	0.4%	0.0%
NORTH AMERICA	\$ 24,825,418,092	74.6%	66.9%	7.7%
GRAND TOTAL	\$ 33,284,806,892	100.0%	100.0%	0.0%

Market Cap^ (Public Equities Only)	\$ Value	% Value	*Blended TOTAL BM	Difference
1) 0 - 100M	\$ 4,411,035	0.0%	0.0%	0.0%
2) 100M - 500M	\$ 627,673,261	3.2%	1.3%	1.9%
3) 500M - 1B	\$ 408,532,197	2.1%	3.6%	(1.5%)
4) 1B - 5B	\$ 3,333,621,915	17.0%	22.5%	(5.5%)
5) 5B - 10B	\$ 2,142,204,274	10.9%	10.5%	0.4%
6) 10B - 50B	\$ 5,599,584,939	28.5%	27.9%	0.6%
7) >50B	\$ 7,524,359,643	38.3%	34.1%	4.2%
GRAND TOTAL	\$ 19,640,387,264	100.0%	100.0%	100.0%

^Excludes cash and non-traded securities

Top 20 Issuer (Total Plan)	\$ Value	% Value	Market Cap	Sector	Industry Group
1 Cash**	\$ 1,739,325,048	5.2%		CASH	Cash
2 SPDR S&P 500 ETF TRUST	\$ 1,270,941,852	3.8%	7) 50B+	FUNDS	EQUITY FUND
3 TREASURY BILL	\$ 770,279,639	2.3%		GOVERNMENT	SOVEREIGN
4 US TREASURY N/B	\$ 758,762,885	2.3%		GOVERNMENT	SOVEREIGN
5 FANNIE MAE	\$ 720,596,530	2.2%		MORTGAGE SECURITIES	FNMA COLLATERAL
6 APPLE INC	\$ 208,837,470	0.6%	7) 50B+	TECHNOLOGY	COMPUTERS
7 EXXON MOBIL CORP	\$ 193,947,745	0.6%	7) 50B+	ENERGY	OIL&GAS
8 FREDDIE MAC	\$ 166,025,062	0.5%		MORTGAGE SECURITIES	FGLMC COLLATERAL
9 MICROSOFT CORP	\$ 141,679,130	0.4%	7) 50B+	TECHNOLOGY	SOFTWARE
10 JOHNSON & JOHNSON	\$ 137,212,253	0.4%	7) 50B+	CONSUMER NON-CYCLICAL	PHARMACEUTICALS
11 VANGUARD TOTAL STOCK MARKET ET	\$ 127,067,741	0.4%	6) 10B - 50B	FUNDS	EQUITY FUND
12 CHEVRON CORP	\$ 123,479,672	0.4%	7) 50B+	ENERGY	OIL&GAS
13 ISHARES MSCI USA VALUE FACTOR ET	\$ 122,079,800	0.4%	2) 100M - 500M	FUNDS	EQUITY FUND
14 ISHARES MSCI USA QUALITY FACTOR I	\$ 122,012,500	0.4%	2) 100M - 500M	FUNDS	EQUITY FUND
15 ISHARES MSCI USA MOMENTUM FACTO	\$ 119,480,000	0.4%	2) 100M - 500M	FUNDS	EQUITY FUND
16 ISHARES MSCI USA SIZE FACTOR ETF	\$ 118,960,000	0.4%	2) 100M - 500M	FUNDS	EQUITY FUND
17 PFIZER INC	\$ 117,287,906	0.4%	7) 50B+	CONSUMER NON-CYCLICAL	PHARMACEUTICALS
18 VANGUARD FTSE DEVELOPED MARKE	\$ 110,107,282	0.3%	6) 10B - 50B	FUNDS	EQUITY FUND
19 AT&T INC	\$ 103,039,715	0.3%	7) 50B+	COMMUNICATIONS	TELECOMMUNICATIONS
20 PROCTER & GAMBLE CO/THE	\$ 99,191,537	0.3%	7) 50B+	CONSUMER NON-CYCLICAL	COSMETICS/PERSONAL CARE

*Blended TOTAL BM: 26% SP500, 5% SP400, 5% SP600, 5% R2000, 14% MSCI EAFE, 6% MSCI EM, 3% MSCI Sml Cap, 17% BC US AGG, 5% BC US HY, 6% FTSE NAREIT GLOBAL, 4% DJ-UBS COMMODITY, 4% JPM EMBI.

**Blended US BM: 72% SP500, 14% SP400, 14% SP600.

***Cash does not represent an IMD tactical view; Cash includes the ASRS Master Cash balance, manager-level portfolio cash & equivalents and cash collateralizing sundry portfolio-level futures contracts.

ARIZONA STATE RETIREMENT SYSTEM

As of April 30, 2014

Sector (Public Intl Equity Only)	\$ Value	% Value	*Blended NON-US BM	Difference
BASIC MATERIALS	\$ 469,798,398	6.5%	7.7%	(1.2%)
CASH	\$ 92,105,783	1.3%	0.0%	1.3%
COMMUNICATIONS	\$ 617,213,577	8.6%	8.3%	0.3%
CONSUMER CYCLICAL	\$ 833,962,511	11.6%	11.8%	(0.2%)
CONSUMER NON-CYCLICAL	\$ 1,384,101,849	19.3%	18.5%	0.8%
DIVERSIFIED	\$ 78,321,845	1.1%	1.1%	(0.0%)
ENERGY	\$ 508,370,421	7.1%	7.4%	(0.3%)
FINANCIAL	\$ 1,693,220,687	23.6%	24.9%	(1.3%)
FX	\$ 17,507	0.0%	0.0%	0.0%
INDEX	\$ 43,517,450	0.6%	0.0%	0.6%
INDUSTRIAL	\$ 898,112,125	12.5%	11.9%	0.6%
TECHNOLOGY	\$ 337,751,389	4.7%	4.9%	(0.2%)
UTILITIES	\$ 218,762,633	3.0%	3.3%	(0.3%)
GRAND TOTAL	\$ 7,175,256,173	100.0%	100.0%	0.0%

INTERNATIONAL EQUITY EXPOSURE OVERVIEW

Country Category (Public Intl Equity Only)	\$ Value	% Value	*Blended NON-US BM	Difference
AFRICA	\$ 175,584,355	2.4%	2.1%	0.3%
ASIA DEVELOPED	\$ 1,791,190,524	25.0%	29.2%	(4.3%)
ASIA EMERGING	\$ 937,570,424	13.1%	13.0%	0.1%
EUROPE DEVELOPED	\$ 3,478,187,191	48.5%	49.5%	(1.0%)
EUROPE EMERGING	\$ 81,199,114	1.1%	0.6%	0.5%
LATIN AMERICA	\$ 410,958,093	5.7%	5.0%	0.7%
MIDDLE EAST	\$ 95,959,870	1.3%	0.5%	0.9%
NORTH AMERICA	\$ 204,606,602	2.9%	0.1%	2.8%
GRAND TOTAL	\$ 7,175,256,173	100.0%	100.0%	0.0%

Top 20 Industry Groups (Public Intl Only)	\$ Value	% Value	*Blended NON-US BM	Difference
1 BANKS	\$ 879,292,822	12.3%	13.7%	(1.5%)
2 OIL&GAS	\$ 446,551,359	6.2%	6.6%	(0.4%)
3 PHARMACEUTICALS	\$ 443,240,278	6.2%	6.2%	(0.0%)
4 TELECOMMUNICATIONS	\$ 433,596,811	6.0%	5.6%	0.4%
5 INSURANCE	\$ 399,201,338	5.6%	4.6%	0.9%
6 FOOD	\$ 365,051,164	5.1%	4.7%	0.4%
7 RETAIL	\$ 252,056,697	3.5%	3.2%	0.3%
8 CHEMICALS	\$ 210,195,769	2.9%	3.4%	(0.4%)
9 AUTO MANUFACTURERS	\$ 206,238,788	2.9%	3.2%	(0.3%)
10 SEMICONDUCTORS	\$ 183,979,762	2.6%	2.8%	(0.2%)
11 COMMERCIAL SERVICES	\$ 173,027,687	2.4%	1.8%	0.6%
12 MINING	\$ 158,519,601	2.2%	2.7%	(0.5%)
13 DIVERSIFIED FINAN SERV	\$ 150,376,535	2.1%	2.5%	(0.4%)
14 ELECTRIC	\$ 146,543,418	2.0%	2.2%	(0.2%)
15 REAL ESTATE	\$ 146,420,222	2.0%	2.0%	0.1%
16 BEVERAGES	\$ 135,369,530	1.9%	2.1%	(0.2%)
17 ENGINEERING&CONSTRUCTIC	\$ 134,393,926	1.9%	1.8%	0.1%
18 TRANSPORTATION	\$ 119,167,603	1.7%	1.5%	0.2%
19 MACHINERY-DIVERSIFIED	\$ 106,663,542	1.5%	1.1%	0.4%
20 AGRICULTURE	\$ 106,585,253	1.5%	1.3%	0.2%

Market Cap** (Public Intl Equities Only)	\$ Value	% Value	*Blended NON-US BM	Difference
1) 0 - 100M	\$ 3,652,458	0.1%	0.0%	0.0%
2) 100M - 500M	\$ 111,663,213	1.6%	0.8%	0.8%
3) 500M - 1B	\$ 245,616,933	3.5%	1.9%	1.5%
4) 1B - 5B	\$ 1,323,593,852	18.8%	15.4%	3.4%
5) 5B - 10B	\$ 860,158,793	12.2%	12.2%	0.0%
6) 10B - 50B	\$ 2,372,786,220	33.8%	35.1%	(1.4%)
7) >50B	\$ 2,112,719,096	30.1%	34.5%	(4.4%)
GRAND TOTAL	\$ 7,030,190,566	100.0%	100.0%	100.0%

**Excludes cash and non-traded securities

*Blended NON-US BM: 61% MSCI EAFE, 26% MSCI EM, 13% MSCI Sml Cap.

ARIZONA STATE RETIREMENT SYSTEM

TOTAL FIXED INCOME EXPOSURE OVERVIEW

As of April 30, 2014

Sector (Public Fixed Income Only)	\$ Value	% Value	*Blended FI BM	Difference
ASSET BACKED SECURITIES	\$ 7,982,793	0.2%	0.3%	(0.2%)
BASIC MATERIALS	\$ 66,958,054	1.4%	2.4%	(1.0%)
CASH	\$ 102,398,115	2.2%	0.0%	2.2%
COMMUNICATIONS	\$ 344,106,162	7.3%	5.5%	1.8%
CONSUMER CYCLICAL	\$ 215,730,799	4.6%	3.6%	0.9%
CONSUMER NON-CYCLICAL	\$ 306,966,695	6.5%	5.4%	1.1%
DIVERSIFIED	\$ 5,825,046	0.1%	0.2%	(0.1%)
ENERGY	\$ 260,248,049	5.5%	6.6%	(1.1%)
FINANCIAL	\$ 336,041,568	7.1%	8.6%	(1.5%)
FIXED INCOME	\$ 188,932	0.0%	0.0%	0.0%
FUNDS	\$ 9,189,408	0.2%	0.0%	0.2%
FX	\$ 1,475,954	0.0%	0.0%	0.0%
GOVERNMENT	\$ 1,542,679,544	32.5%	40.8%	(8.3%)
INDEX	\$ 560,825,451	11.8%	0.0%	11.8%
INDUSTRIAL	\$ 154,407,802	3.3%	3.1%	0.1%
LOAN	\$ 20,207,010	0.4%	0.0%	0.4%
MORTGAGE SECURITIES	\$ 644,513,008	13.6%	19.9%	(6.3%)
SWAP	\$ (136,322)	(0.0%)	0.0%	(0.0%)
TECHNOLOGY	\$ 85,727,367	1.8%	1.4%	0.4%
UTILITIES	\$ 74,747,864	1.6%	2.1%	(0.5%)
GRAND TOTAL	\$ 4,740,083,299	100.0%	100.0%	0.0%

Top 20 Industry Groups (Public Fixed Income Only)	\$ Value	% Value	*Blended FI BM	Difference
1 SOVEREIGN	\$ 1,486,206,159	31.4%	38.8%	(7.5%)
2 FNMA COLLATERAL	\$ 496,441,246	10.5%	8.7%	1.8%
3 TELECOMMUNICATIONS	\$ 194,756,917	4.1%	3.2%	0.9%
4 OIL&GAS	\$ 185,261,746	3.9%	4.8%	(0.9%)
5 MEDIA	\$ 124,329,124	2.6%	2.0%	0.6%
6 BANKS	\$ 120,899,756	2.6%	4.8%	(2.3%)
7 DIVERSIFIED FINAN SERV	\$ 119,401,843	2.5%	2.3%	0.2%
8 Cash	\$ 102,398,115	2.2%	0.0%	2.2%
9 HEALTHCARE-SERVICES	\$ 76,417,888	1.6%	1.1%	0.5%
10 RETAIL	\$ 74,604,286	1.6%	1.3%	0.3%
11 ELECTRIC	\$ 73,377,492	1.5%	2.0%	(0.4%)
12 COMMERCIAL SERVICES	\$ 71,524,745	1.5%	0.9%	0.6%
13 FGLMC COLLATERAL	\$ 70,945,397	1.5%	5.1%	(3.6%)
14 COMMERCIAL MBS	\$ 64,142,754	1.4%	1.1%	0.2%
15 SOFTWARE	\$ 53,270,446	1.1%	0.7%	0.5%
16 PIPELINES	\$ 48,598,788	1.0%	1.1%	(0.1%)
17 PHARMACEUTICALS	\$ 45,805,455	1.0%	1.0%	(0.0%)
18 INSURANCE	\$ 40,099,111	0.8%	0.8%	0.1%
19 MUNICIPAL	\$ 39,296,630	0.8%	0.6%	0.2%
20 CHEMICALS	\$ 37,829,944	0.8%	0.7%	0.1%

Credit Rating Group** (Public Fixed Income Only)	\$ Value	% Value	*Blended FI BM	Difference
01) AAA	\$ 1,605,427,417	33.9%	47.2%	(13.4%)
02) AA	\$ 123,846,934	2.6%	3.6%	(1.0%)
03) A	\$ 1,063,139,016	22.4%	9.4%	13.0%
04) BBB	\$ 563,922,400	11.9%	15.1%	(3.2%)
05) BB	\$ 554,516,801	11.7%	11.9%	(0.2%)
06) B	\$ 525,631,111	11.1%	9.0%	2.1%
07) CCC	\$ 195,153,705	4.1%	3.1%	1.0%
08) CC	\$ -	0.0%	0.0%	(0.0%)
09) C	\$ 90,391	0.0%	0.1%	(0.1%)
10) D	\$ -	0.0%	0.0%	0.0%
11) Not Rated	\$ 108,355,523	2.3%	0.6%	1.7%
GRAND TOTAL	\$ 4,740,083,299	100.0%	100.0%	0.0%

Maturity Bucket (Public Fixed Income Only)	\$ Value	% Value	*Blended FI BM	Difference
0-1Y	\$ 349,082,586	8.4%	0.3%	8.0%
1Y-3Y	\$ 406,581,975	9.7%	18.2%	(8.5%)
3Y-5Y	\$ 667,399,611	16.0%	16.8%	(0.8%)
5Y-10Y	\$ 1,725,642,515	41.4%	30.6%	10.7%
10Y-15Y	\$ 155,894,428	3.7%	5.9%	(2.2%)
15Y+	\$ 866,922,451	20.8%	28.1%	(7.4%)
GRAND TOTAL	\$ 4,171,523,567	100.0%	100.0%	100.0%

*Blended TOTAL BM: 66% BC US AGG, 19% BC US HY, 15% JPM EMBI.

ARIZONA STATE RETIREMENT SYSTEM

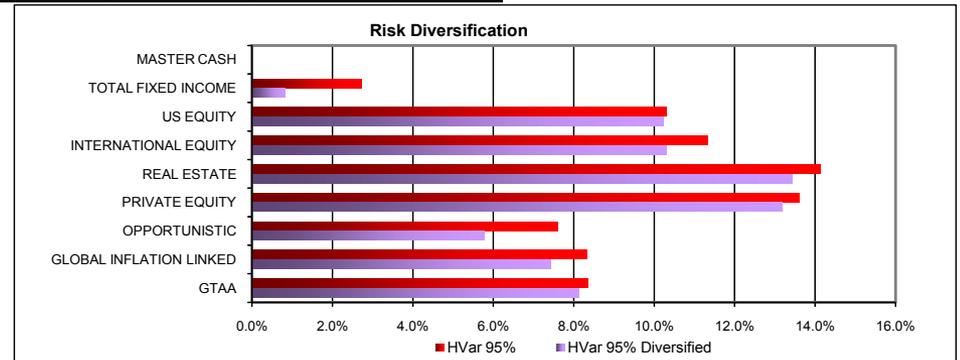
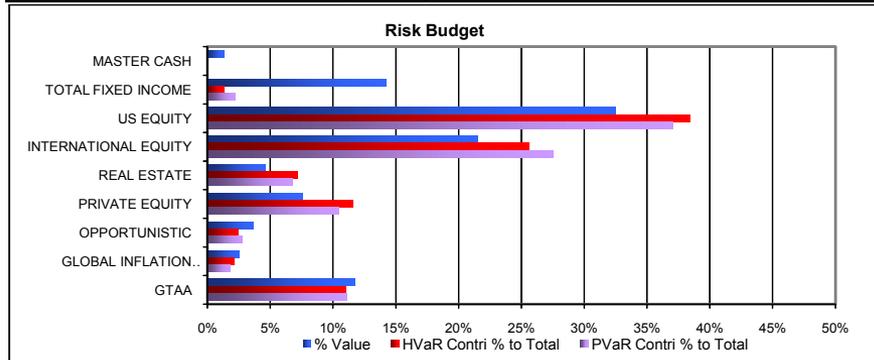
TOTAL PLAN RISK OVERVIEW

As of April 30, 2014

Strategy	\$ Value	% Value	Historical VaR 95%	HVaR Contri 95%	HVaR Contri % to Total	Parametric VaR 95%	PVaR Contri 95%	PVaR Contri % to Total	Exp Tail Loss 95%	Exp Tail Loss Contri 95%	Exp Tail Loss Contri % to Total	Max Loss	Std Dev	Downside Risk (8%)	Downside Risk Contri (8%)	Downside Risk Contri (8%) to Total
MONTHLY RISK																
MASTER CASH	\$ 455,478,123	1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	(0.6%)	(0.0%)	0.0%
TOTAL FIXED INCOME	\$ 4,740,083,299	14%	(2.7%)	(0.1%)	1.4%	(2.3%)	(0.2%)	2.2%	(4.1%)	(0.3%)	2.1%	(6.1%)	1.4%	(1.5%)	(0.1%)	2.4%
US EQUITY	\$ 10,822,573,008	33%	(10.3%)	(3.3%)	38.5%	(9.2%)	(2.9%)	37.1%	(16.5%)	(5.2%)	37.8%	(30.6%)	6.4%	(4.7%)	(1.5%)	37.0%
INTERNATIONAL EQUITY	\$ 7,175,256,173	22%	(11.3%)	(2.2%)	25.7%	(10.5%)	(2.2%)	27.5%	(17.1%)	(3.6%)	26.2%	(37.0%)	7.1%	(5.1%)	(1.1%)	26.8%
REAL ESTATE	\$ 1,546,582,910	5%	(14.1%)	(0.6%)	7.2%	(12.3%)	(0.5%)	6.8%	(21.7%)	(0.9%)	6.7%	(39.5%)	8.0%	(6.1%)	(0.3%)	6.7%
PRIVATE EQUITY	\$ 2,535,393,015	8%	(13.6%)	(1.0%)	11.6%	(11.5%)	(0.8%)	10.5%	(20.1%)	(1.5%)	10.8%	(36.3%)	7.5%	(5.8%)	(0.4%)	10.6%
OPPORTUNISTIC	\$ 1,234,572,333	4%	(7.6%)	(0.2%)	2.5%	(6.6%)	(0.2%)	2.8%	(13.0%)	(0.5%)	3.3%	(25.7%)	4.5%	(3.6%)	(0.1%)	3.0%
GLOBAL INFLATION LINKED	\$ 852,254,024	3%	(8.4%)	(0.2%)	2.2%	(8.1%)	(0.1%)	1.8%	(13.2%)	(0.3%)	2.0%	(26.7%)	5.2%	(4.1%)	(0.1%)	2.0%
GTAA	\$ 3,922,614,008	12%	(8.4%)	(1.0%)	11.1%	(7.6%)	(0.9%)	11.2%	(13.4%)	(1.5%)	11.2%	(28.7%)	4.9%	(4.0%)	(0.5%)	11.5%
GRAND TOTAL	\$ 33,284,806,892	100%	(8.7%)	(8.7%)	100.0%	(7.9%)	(7.9%)	100.0%	(13.9%)	(13.9%)	100.0%	(28.4%)	5.3%	(4.0%)	(4.0%)	100.0%
INTERIM POLICY BENCHMARK			(7.9%)			(7.4%)			(12.7%)			(25.8%)	6.6%	(3.7%)		

ANNUALIZED RISK																
MASTER CASH	\$ 455,478,123	1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	N/A	0.0%	(2.2%)	(0.0%)	0.0%
TOTAL FIXED INCOME	\$ 4,740,083,299	14%	(9.4%)	(0.4%)	1.4%	(8.1%)	(0.6%)	2.2%	(14.3%)	(1.0%)	2.1%	N/A	4.9%	(5.1%)	(0.3%)	2.4%
US EQUITY	\$ 10,822,573,008	33%	(35.8%)	(11.5%)	38.5%	(31.9%)	(10.1%)	37.1%	(57.3%)	(18.1%)	37.8%	N/A	22.1%	(16.1%)	(5.2%)	37.0%
INTERNATIONAL EQUITY	\$ 7,175,256,173	22%	(39.3%)	(7.7%)	25.7%	(36.3%)	(7.5%)	27.5%	(59.2%)	(12.6%)	26.2%	N/A	24.4%	(17.6%)	(3.7%)	26.8%
REAL ESTATE	\$ 1,546,582,910	5%	(49.0%)	(2.2%)	7.2%	(42.8%)	(1.9%)	6.8%	(75.1%)	(3.2%)	6.7%	N/A	27.7%	(21.0%)	(0.9%)	6.7%
PRIVATE EQUITY	\$ 2,535,393,015	8%	(47.1%)	(3.5%)	11.6%	(39.8%)	(2.9%)	10.5%	(69.8%)	(5.2%)	10.8%	N/A	26.1%	(19.9%)	(1.5%)	10.6%
OPPORTUNISTIC	\$ 1,234,572,333	4%	(26.4%)	(0.7%)	2.5%	(22.8%)	(0.8%)	2.8%	(45.1%)	(1.6%)	3.3%	N/A	15.7%	(12.5%)	(0.4%)	3.0%
GLOBAL INFLATION LINKED	\$ 852,254,024	3%	(28.9%)	(0.7%)	2.2%	(28.0%)	(0.5%)	1.8%	(45.9%)	(0.9%)	2.0%	N/A	17.9%	(14.2%)	(0.3%)	2.0%
GTAA	\$ 3,922,614,008	12%	(29.0%)	(3.3%)	11.1%	(26.3%)	(3.1%)	11.2%	(46.4%)	(5.4%)	11.2%	N/A	17.1%	(13.8%)	(1.6%)	11.5%
GRAND TOTAL	\$ 33,284,806,892	100%	(30.0%)	(30.0%)	100.0%	(27.4%)	(27.4%)	100.0%	(48.0%)	(48.0%)	100.0%	N/A	18.5%	(14.0%)	(14.0%)	100.0%
INTERIM POLICY BENCHMARK			(27.5%)			(25.5%)			(43.9%)			N/A	23.0%	(12.9%)		

Strategy	\$ Value	% Value	Beta SP500	Corr SP500	Beta MSCI EAFE	Corr MSCI EAFE	Duration	Convexity	Notional Exposure	Gross Exposure	Gross Leverage
MASTER CASH	\$ 455,478,123	1%	0.00		0.00				\$ 455,478,123	\$ 455,478,123	100.0%
TOTAL FIXED INCOME	\$ 4,740,083,299	14%	0.22	0.73	0.20	0.78	4.76	0.108	\$ 4,461,471,680	\$ 5,469,727,424	115.4%
US EQUITY	\$ 10,822,573,008	33%	1.08	0.99	0.83	0.91	0.54	0.003	\$ 10,963,033,752	\$ 10,824,143,407	100.0%
INTERNATIONAL EQUITY	\$ 7,175,256,173	22%	1.10	0.90	1.01	0.98	0.01	0.000	\$ 7,176,174,572	\$ 7,219,052,776	100.6%
REAL ESTATE	\$ 1,546,582,910	5%	1.23	0.89	1.05	0.90			\$ 1,546,582,910	\$ 1,546,582,910	100.0%
PRIVATE EQUITY	\$ 2,535,393,015	8%	1.25	0.96	0.95	0.86			\$ 2,535,393,015	\$ 2,535,393,015	100.0%
OPPORTUNISTIC	\$ 1,234,572,333	4%	0.70	0.89	0.56	0.85	0.59	0.005	\$ 1,236,188,951	\$ 1,234,572,333	100.0%
GLOBAL INFLATION LINKED	\$ 852,254,024	3%	0.30	0.67	0.26	0.69	0.33	0.001	\$ 1,714,119,734	\$ 852,254,024	100.0%
GTAA	\$ 3,922,614,008	12%	0.46	0.96	0.39	0.96	5.24	(0.192)	\$ 7,585,436,857	\$ 7,839,610,885	199.9%
GRAND TOTAL	\$ 33,284,806,892	100%	0.81	0.97	0.68	0.96	4.15	0.061	\$ 37,673,879,593	\$ 37,976,814,898	114.1%



GLOSSARY	DEFINITION	INTERPRETATION
Historical VaR 95%	A risk metric that is derived from a full revaluation historical simulation of the risk factors impacting a portfolio, <u>making no assumption of the tail distribution</u> , and reporting the largest loss likely to be suffered over a holding period (1Month for ASRS) 5 times out of 100, or 1 month out of 20	Value at Risk is a number, measured in price units or as percentage of portfolio value, which tells you that in a defined large percentage of cases (usually 95% or 99%) your portfolio is likely to not lose more than that amount of money. Or said the other way around, in a defined small percentage of cases (5% or 1%) your loss is expected to be greater than that number.
HVaR Contri 95%	This is the decomposition of the VaR, making it an additive measure, showing positive values where risk is decreased and correlations are negative.	
HVaR Contri % to Total	This is the VaR contribution displayed in percent.	
Parametric VaR 95%	A risk metric that is derived from a full revaluation historical simulation of the risk factors impacting a portfolio, <u>making a Normal distribution assumption of the tail distribution</u> , and reporting the largest loss likely to be suffered over a holding period (1Month for ASRS) 5 times out of 100, or 1 month out of 20.	Value at Risk is a number, measured in price units or as percentage of portfolio value, which tells you that in a defined large percentage of cases (usually 95% or 99%) your portfolio is likely to not lose more than that amount of money. Or said the other way around, in a defined small percentage of cases (5% or 1%) your loss is expected to be greater than that number.
PVaR Contri 95%	This is the decomposition of the VaR, making it an additive measure, showing positive values where risk is decreased and correlations are negative.	
PVaR Contri % to Total	This is the VaR contribution displayed in percent.	
Exp Tail Loss 95%	Also known as Conditional VaR or ETL, it is derived by taking a weighted average between the VaR and losses exceeding the VaR. If VaR is reported at 95.0%, then ETL will average the losses between 95.1% to 99.9%. It is a risk measure that assesses the risk beyond VaR and into the tail end of the distribution of loss.	A measure that produces better incentives for traders than VaR is expected shortfall. This is also sometimes referred to as Conditional VaR, or tail loss. <u>Where VaR asks the question 'how bad can things get?', expected shortfall asks 'if things do get bad, what is our expected loss?'</u>
Exp Tail Loss Contri 95%	This is the decomposition of the ETL making it an additive measure, showing positive values where risk is decreased and correlations are negative.	
Exp Tail Loss Contri % to Total	This is the ETL contribution displayed in percent.	
Max Loss	The maximum projected loss.	
Downside Risk (8.7%)	A risk metric that distinguishes between "good" and "bad" returns by assigning risk only to those returns below a return specified by an investor. Downside risk is considered a more effective risk measure than standard deviation (volatility) for two important reasons: 1) it is investor specific, and 2) it identifies return distributions that have higher probabilities for negative ("left tail") market events. Downside risk is also referred to as downside deviation or target semi-deviation.	A 5% downside risk with an 8.7% MAR means that the conditional average underperformance (below 8.7% annual) is 5%, adjusted for a positive skew (greater than the MAR). Effectively, downside risk amplifies a big loss (by squaring the distance of that loss to the target) and smoothes out the risk measure by taking into account the gains setting them up to be equal to the target MAR.
Downside Risk Contri (8.7%)	This is the decomposition of the downside risk, making it an additive measure, showing positive values where risk is decreased and correlations are negative.	
Downside Risk Contri (8.7%) to Total	This is the downside risk contribution displayed in percent.	

Securities Lending Risk Metrics

	2 – Year Swap Spread (bps)	S&P/ISDA U.S. Financials Select 10 Index	5-Year Financial OAS (bps)	TED Spread (bps)	CBOE VIX Index (vol)	Windham Systemic Risk	Windham Turbulence
5/31/2014	14	54	99	20	11	Low	Low
4/30/2014	12	56	99	20	13	Low	Low
3/31/2014	13	61	103	20	14	Low	Low
2/28/2014	13	60	104	19	14	Low	Low
1/31/2014	13	71	111	22	18	Low	Low
12/31/2013	11	60	109	18	14	Low	Low
11/30/2013	9	68	118	18	14	Low	Low
10/31/2013	12	79	125	21	14	Low	Moderate
9/30/2013	14	90	139	24	17	Low	Moderate
8/31/2013	16	89	142	24	17	Low	High
7/31/2013	17	91	142	23	13	Low	High
6/30/2013	16	106	158	24	17	Low	High
5/31/2013	16	84	134	25	16	Low	Moderate
4/30/2013	14	91	137	23	14	Low	Moderate
3/31/2013	18	101	142	21	13	Low	Low
2/28/2013	15	99	141	18	16	Low	Low
1/31/2013	17	101	146	23	14	Low	Low
12/31/2012	14	116	155	27	18	Low	Low
11/30/2012	12	126	163	23	16	Low	Moderate
10/31/2012	10	130	158	21	19	Low	Moderate
9/30/2012	13	142	179	27	16	Low	Moderate
8/31/2012	18	164	206	35	17	Low	High
7/31/2012	20	179	223	35	19	Low	High
6/30/2012	25	191	253	38	17	Low	Moderate
5/31/2012	35	221	272	40	24	Low	Moderate
4/30/2012	29	179	239	37	17	Low	Moderate
3/31/2012	25	158	227	40	16	Low	Moderate
2/29/2012	26	171	245	41	18	Low	Moderate
1/31/2012	30	186	278	49	19	High	Moderate
12/31/2011	48	248	337	57	23	High	Moderate
11/30/2011	42	263	349	53	28	High	Moderate
10/31/2011	33	219	281	44	30	High	Moderate
9/30/2011	33	268	332	35	43	High	Moderate

RISK FACTORS		Green	Yellow	Red
1	2 – Year Swap Spread	< 40 bps	40 - 60 bps	> 60 bps
2	S&P/ISDA US Financial Select 10	< 100 bps	100 - 200 bps	> 200 bps
3	5-Year Financial OAS	< 125 bps	125 - 200 bps	> 200 bps
4	TED Spread	< 50 bps	50 - 100 bps	> 100 bps
5	CBOE VIX Index	< 25 Vol	25 - 35 Vol	> 35 Vol
6	Windham Systemic Risk	Low	n/a	High
7	Windham Turbulence	Low	Moderate	High

LEGEND	
2 – Year Swap Spread	The spread paid by the fixed-rate payer of an interest rate swap over the rate of the 2-year Treasury. The reported 2-year swap spread from Bloomberg is a composite price - calculated average of best bid/ask pricing.
S&P/ISDA US Financial Select 10	The S&P/ISDA US Financial Select 10 tracks major domestic financial 5-year CDS rates. The Index uses an average weighting methodology of the current liquid, "on the run" active contract.
5-Year Financial OAS	The Barclay's U.S. Aggregate Financial Average Option Adjusted Spread; the option adjusted investment grade financial corporate bond spread over 5-year Treasury bonds.
TED Spread	The TED Spread is calculated as the difference between three-month LIBOR expressed in USD and the corresponding yield on 3-month Treasury Bills, expressed in basis points.
CBOE VIX Index	The Chicago Board Options Exchange VIX Index measures the weighted average implied volatility of the S&P 500 using call and put prices over the front two months with a wide range of strike prices.
Windham Systemic Risk	Windham Capital's proprietary measure of the extent to which markets are unified or tightly coupled, called the absorption ratio. When markets are tightly coupled, they are more fragile and negative shocks propagate more quickly and broadly than when markets are loosely linked. Windham reports Systemic Risk as High or Low; there is no Moderate designation for Systemic Risk.
Windham Turbulence	Windham Capital's proprietary measure of the statistical unusualness of a set of returns given their historical pattern of behavior; including extreme price moves, decoupling of correlated assets and convergence of uncorrelated assets. Windham reports Turbulence as High, Moderate, or Low.



NEPC, LLC

To: The Arizona State Retirement System (ASRS) Investment Committee (IC)

From: Mr. Allan Martin, Partner, Consultant, NEPC
Mr. Dan LeBeau, Consultant, NEPC

Date: June 16, 2014

Subject: Agenda Item #4: Presentation, Discussion and Appropriate Action Regarding Independent Reporting, Monitoring and Oversight of the ASRS Investment Program – Includes Total Fund and Investment Performance Report Q1-14

Purpose

To present and discuss information regarding the independent reporting, monitoring and oversight of the ASRS Investment Program.

In addition to the Total Fund Report, NEPC and IMD Staff will provide a detailed review of the quarterly ASRS Investment Performance Report (IPR).

Recommendation

Informational only; no action required.

Notice

Regarding this agenda item, pursuant to A.R.S. § 38-431.03(A)(2) and A.R.S. § 38-718(P) notice is hereby given to Trustees of the ASRS Investment Committee and the general public that the ASRS Investment Committee may vote to go into executive session, in the event specific manager data is discussed that is deemed confidential/non-public information.

Background

NEPC is responsible for providing an independent reporting, monitoring and oversight function from the Investment Program information which is presented by the CIO and IMD.

As a result, NEPC has developed reports for both the IC and Board designed to 1) provide the appropriate level of investment information for the purposes of independent oversight (ASRS SAAP compliance, Asset Class Committee minutes review, investment selection due diligence packet compliance, etc.); 2) provide ASRS investment program performance relative to its goals/objectives (presented quarterly); and 3) communicate NEPC's perspectives on the market environment, investment outlook or other initiatives or topics they believe are important to convey to the IC and Board.

More specific to the IC, NEPC will provide the IC with an ASRS Investment Performance Report (IPR) on a quarterly basis, which will provide investment manager-level detail information for discussion by NEPC and IMD staff. In addition, IMD will provide one or more staff reports related to ASRS private investments or other asset class/managers. These



reports will be marked as confidential/non-public and, prior to a discussion of individual manager performance, the IC will move to executive session.

As of March 31, 2014 the Total Fund's market value was approximately \$33.7 billion.

For the one-year period ending March 31, 2014, the Total Fund returned 13.8% (net of fees), underperforming the Interim SAA Policy by 0.1%. For the three-year period, the Total Fund produced a return of 9.6% per annum, outperforming the Interim SAA Policy by 0.1%. Over the past ten years, the Total Fund has returned 7.0% per annum, and since inception, the portfolio's performance is 10.0%.

Attachments:

- NEPC's Independent Reporting, Monitoring and Oversight reports
- ASRS Investment Performance Report (IPR) for period ending March 31, 2014. (Confidential/Non-Public) – distributed at the meeting

Arizona State Retirement System

Independent ASRS Investment Program Oversight for the Period Ending March 31, 2014

June 23, 2014

Allan Martin, Partner, NEPC
Dan LeBeau, Consultant, NEPC



- ASRS Investment Objectives/Performance
- Independent Oversight/Compliance
 - SAA Policy Compliance
 - Total Fund and Asset Class Analysis
 - Asset Class Committee Monitoring
- Market Environment Update and Outlook
- Appendix: SAA Policy History

ASRS Investment Objectives/Performance

Note: All of the data shown on the following pages is as of March 31, 2014 and reflects the deduction of investment manager fees, unless otherwise noted.



Macro

- Objective #1: Achieve a twenty-year rolling annual total fund net rate of return equal to or greater than the actuarial assumed interest rate.
- Objective #2: Achieve one- and three-year rolling annual total fund net rates of return equal to or greater than the return of the ASRS Strategic Asset Allocation Policy (SAAP) Benchmark.
- Objective #3: Achieve one- and three-year rolling annual net rates of return for ASRS strategic asset classes that are equal to or greater than their respective strategic asset class benchmarks.
- Objective #4: Ensure sufficient monies are available to meet pension benefits, health insurance, member refunds, administrative payments, and other cash flow requirements.

Micro

Source: ASRS Strategic Plan, March 2013

- Objective #1: Achieve a twenty-year rolling annual total fund net rate of return equal to or greater than the actuarial assumed interest rate.

	<u>20 Year Annualized Return</u>
Total Fund	8.6%
Constant 8%	<u>8.0%</u>
Excess Return	0.6%

Goal Met: Yes

- Objective #2: Achieve one- and three-year rolling annual total fund net rates of return equal to or greater than the return of the ASRS Strategic Asset Allocation Policy (SAAP) Benchmark.

	Quarter	1 Year	3 Years	5 Years	10 Years	Since Inception (6/30/75)
Total Fund	2.3%	13.8%	9.6%	15.9%	7.0%	10.0%
Interim SAA Policy¹	2.4%	13.9%	9.5%	15.7%	6.9%	9.8%
Excess Return	-0.1%	-0.1%	0.1%	0.2%	0.1%	0.2%

1 Year Goal Met: No
3 Year Goal Met: Yes

¹Composition of SAA Policy can be found in the appendix.

Arizona State Retirement System
Total Fund Attribution Analysis

Total Plan	1 Year	3 Years	5 Years
Allocation Effect ¹	1.08%	0.27%	0.07%
Manager Selection Effect ²	-1.34%	-0.19%	0.03%
Interaction Effect ³	0.11%	0.08%	0.24%
Residual ⁴	0.06%	-0.02%	-0.10%
Excess Return	-0.09%	0.14%	0.24%

The Brinson-Fachler Attribution model explains excess return by identifying the size of contributors or detractors from excess return based on the three effects defined below:

1. Allocation Effect: Measures the impact of the decision to over/under weight assets classes relative to Interim SAAP weights. (Return Asset Class Index – Total Interim Policy Index Return) × (Weight Asset Class Portfolio – Weight Asset Class Interim Policy Index)

2. Manager Selection Effect: Measures the impact of over/under performance of asset classes in the portfolio relative to the asset class benchmarks in the Interim SAAP benchmark. [Weight Asset Class Benchmark × (Return Portfolio Asset Class – Return Asset Class in Interim Policy Index)]

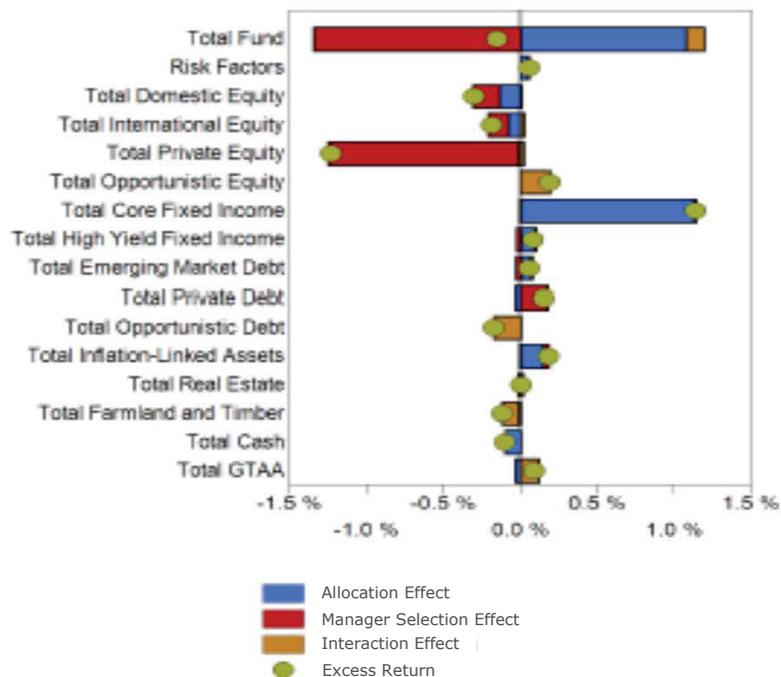
3. Interaction Effect: Measures the impact of over/under weighting decisions and over/under performance. (Return Asset Class Portfolio (Weight Asset Class Portfolio – Weight Asset Class Policy Index)) – (Return Asset Class Index (Weight Asset Class Portfolio – Weight Asset Class Index))

4. Residual: Contribution to excess return not captured in Allocation Effect, Manager Selection Effect and Interaction Effect.

Arizona State Retirement System

Total Fund Attribution Detail

Attribution Effects
1 Year Ending March 31, 2014



1 Year Excess Return: -0.09%

- Allocation Effect: +1.08%
 - Public Markets Fixed Income tactical underweight (+1.30%)
 - Commodities tactical underweight (+0.15%)
 - Domestic Equity tactical underweight (-0.14%)
 - International Equity tactical underweight (-0.08%)
- Manager Selection Effect: -1.34%
 - Private Equity underperformed due to various managers (-1.23%)
 - Domestic Equity underperformed due to small cap managers (-0.17%)
 - Private Debt outperformed due to various managers (+0.18%)
- Interaction Effect: +0.11%
 - Opportunistic Equity outperformed due to various managers (+0.19%)
 - GTAA outperformed due to Bridgewater (+0.12%)
 - Opportunistic Debt underperformed due to various managers (-0.17%)
- Residual: 0.06%

The Brinson-Fachler Attribution model explains excess return by identifying the size of contributors or detractors from excess return based on the three effects defined below:

Allocation Effect: Measures the impact of the decision to over/under weight assets classes relative to Interim SAAP benchmark weights. $(\text{Return Asset Class Index} - \text{Total Interim Policy Index Return}) \times (\text{Weight Asset Class Portfolio} - \text{Weight Asset Class Interim Policy Index})$

Manager Selection Effect: Measures the impact of over/under performance of asset classes in the portfolio relative to the asset class benchmarks in the Interim SAAP benchmark. $[\text{Weight Asset Class Benchmark} \times (\text{Return Portfolio Asset Class} - \text{Return Asset Class in Interim Policy Index})]$

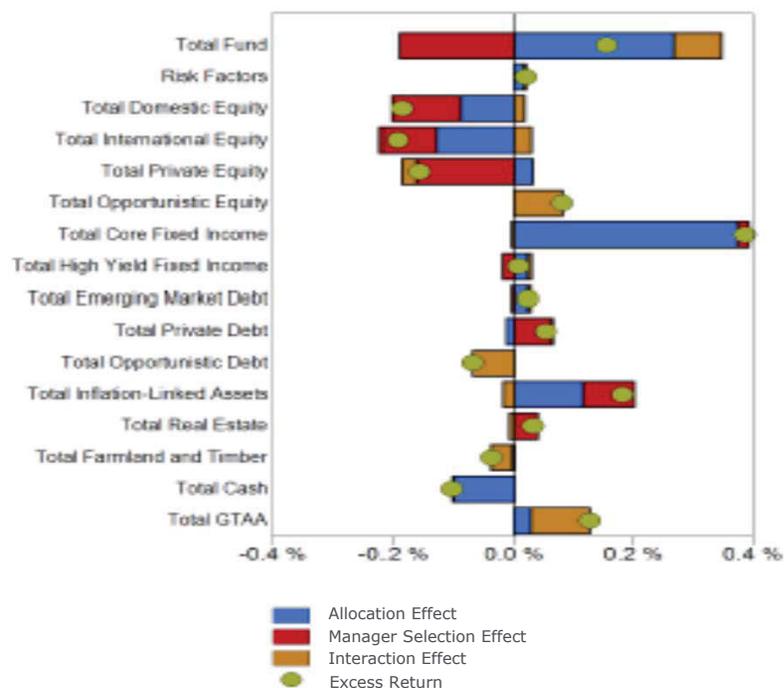
Interaction Effect: Measures the impact of over/under weighting decisions and over/under performance. $(\text{Return Asset Class Portfolio} (\text{Weight Asset Class Portfolio} - \text{Weight Asset Class Policy Index})) - (\text{Return Asset Class Index} (\text{Weight Asset Class Portfolio} - \text{Weight Asset Class Index}))$

Residual: Contribution to excess return not captured in Allocation Effect, Manager Selection Effect and Interaction Effect.

Arizona State Retirement System

Total Fund Attribution Detail

Attribution Effects
3 Years Ending March 31, 2014



3 Year Excess Return: +0.14%

- Allocation Effect: +0.27%
 - Public Markets Fixed Income tactical underweight (+0.41%)
 - Commodities tactical underweight (+0.12%)
 - International Equity tactical underweight (-0.13%)
- Manager Selection Effect: -0.19%
 - Private Equity underperformed due to various managers (-0.17%)
 - Domestic Equity underperformed due to various managers (-0.11%)
 - International Equity underperformed due to various managers (-0.09%)
 - Commodities outperformed due to Gresham (+0.08%)
- Interaction Effect: +0.08%
 - GTAA outperformed due to Bridgewater (+0.10%)
 - Opportunistic Equity outperformed due to various managers (+0.08%)
 - Opportunistic Debt underperformed due to various managers (-0.07%)
- Residual: -0.02%

The Brinson-Fachler Attribution model explains excess return by identifying the size of contributors or detractors from excess return based on the three effects defined below:

Allocation Effect: Measures the impact of the decision to over/under weight assets classes relative to Interim SAAP benchmark weights. $(\text{Return Asset Class Index} - \text{Total Interim Policy Index Return}) \times (\text{Weight Asset Class Portfolio} - \text{Weight Asset Class Interim Policy Index})$

Manager Selection Effect: Measures the impact of over/under performance of asset classes in the portfolio relative to the asset class benchmarks in the Interim SAAP benchmark. $[\text{Weight Asset Class Benchmark} \times (\text{Return Portfolio Asset Class} - \text{Return Asset Class in Interim Policy Index})]$

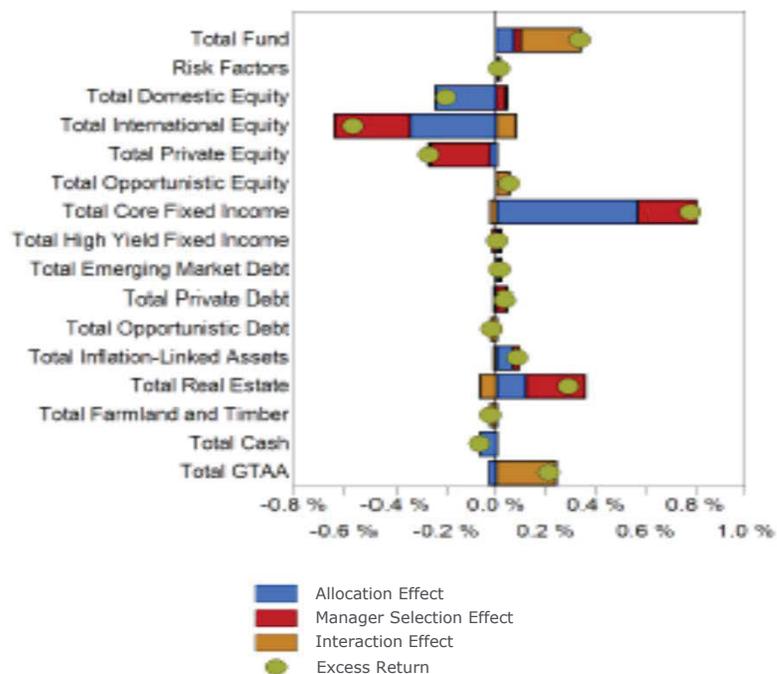
Interaction Effect: Measures the impact of over/under weighting decisions and over/under performance. $(\text{Return Asset Class Portfolio} (\text{Weight Asset Class Portfolio} - \text{Weight Asset Class Policy Index})) - (\text{Return Asset Class Index} (\text{Weight Asset Class Portfolio} - \text{Weight Asset Class Index}))$

Residual: Contribution to excess return not captured in Allocation Effect, Manager Selection Effect and Interaction Effect.

Arizona State Retirement System

Total Fund Attribution Detail

Attribution Effects
5 Years Ending March 31, 2014



5 Year Excess Return: +0.24%

- Allocation Effect: +0.07%
 - Public Markets Fixed Income tactical underweight (+0.59%)
 - Real Estate underweight (+0.12%)
 - International Equity tactical underweight (-0.35%)
 - Domestic Equity tactical underweight (-0.24%)
- Manager Selection Effect: +0.03%
 - Public Markets Fixed Income outperformed due to various managers (+0.24%)
 - Real Estate outperformed due to various managers (+0.24%)
 - International Equity underperformed due to various managers (-0.29%)
 - Private Equity underperformed due to various managers (-0.24%)
- Interaction Effect: +0.24%
 - GTAA outperformed due to Bridgewater (+0.24%)
- Residual: -0.10%

The Brinson-Fachler Attribution model explains excess return by identifying the size of contributors or detractors from excess return based on the three effects defined below:

Allocation Effect: Measures the impact of the decision to over/under weight assets classes relative to Interim SAAP benchmark weights. $(\text{Return Asset Class Index} - \text{Total Interim Policy Index Return}) \times (\text{Weight Asset Class Portfolio} - \text{Weight Asset Class Interim Policy Index})$

Manager Selection Effect: Measures the impact of over/under performance of asset classes in the portfolio relative to the asset class benchmarks in the Interim SAAP benchmark. $[\text{Weight Asset Class Benchmark} \times (\text{Return Portfolio Asset Class} - \text{Return Asset Class in Interim Policy Index})]$

Interaction Effect: Measures the impact of over/under weighting decisions and over/under performance. $(\text{Return Asset Class Portfolio} (\text{Weight Asset Class Portfolio} - \text{Weight Asset Class Policy Index})) - (\text{Return Asset Class Index} (\text{Weight Asset Class Portfolio} - \text{Weight Asset Class Index}))$

Residual: Contribution to excess return not captured in Allocation Effect, Manager Selection Effect and Interaction Effect.

Asset Class Performance vs. Benchmark – Public Markets

- Objective #3: Achieve one- and three-year rolling annual net rates of return for ASRS strategic asset classes that are equal to or greater than their respective strategic asset class benchmarks.

	1 Year Return	3 Year Return
ASRS Total Domestic and Int'l Equity ¹	18.5%	11.2%
ASRS Custom Total Equity Benchmark	18.8%	11.5%
Excess Return	-0.3%	-0.3%
ASRS Domestic Equity	22.1%	14.3%
ASRS Custom Domestic Equity Benchmark	22.7%	14.7%
Excess Return	-0.6%	-0.4%
ASRS International Equity	12.9%	5.2%
ASRS Custom Int'l Equity Benchmark	13.4%	5.4%
Excess Return	-0.5%	-0.2%
ASRS Public Markets Fixed Income	-0.3%	4.3%
ASRS Custom Fixed Income Benchmark	0.4%	4.3%
Excess Return	-0.7%	0.0%
ASRS Inflation-Linked	-1.3%	-5.2%
ASRS Custom Inflation-Linked Benchmark	-2.1%	-6.9%
Excess Return	0.8%	1.7%
ASRS GTAA	14.6%	10.6%
ASRS Custom GTAA Benchmark	13.6%	9.7%
Excess Return	1.0%	0.9%

¹Performance of ASRS Total Domestic and Int'l Equity includes the performance of the ASRS Domestic Equity and ASRS International Equity asset classes and the Equity Risk Factor Portfolio with an inception date of 6/1/2013.

Note: Composition of ASRS Custom Asset Class Benchmarks can be found in the appendix.

**Goal Met:
Partially**

Asset Class Performance vs. Benchmark – Private Markets¹

- Objective #3: Achieve one- and three-year rolling annual net rates of return for ASRS strategic asset classes that are equal to or greater than their respective strategic asset class benchmarks.

	1 Year Return	3 Year Return	IRR Since Inception	Inception Date
ASRS Private Equity	15.0%	15.4%	12.9%	Oct-07
Russell 2000	38.8%	15.7%	17.3%	
Excess Return	-23.8%	-0.3%	-4.4%	
ASRS Opportunistic Equity ²	43.5%	--	40.7%	Apr-11
ASRS Private Debt	17.8%	--	17.2%	Jul-12
S&P/LSTA Levered Loan Index + 250 bps	7.8%	--	8.4%	
Excess Return	10.0%	--	8.8%	
ASRS Opportunistic Debt ²	8.4%	8.5%	12.1%	Jan-08
ASRS Real Estate	13.2%	13.2%	5.6%	Oct-05
NFI - ODCE Index	12.9%	12.5%	4.8%	
Excess Return	0.3%	0.7%	0.8%	
ASRS Farmland and Timber	--	--	1.1%	Jul-13
CPI ex-Food and Energy + 350 bps	--	--	1.2%	
Excess Return	--	--	-0.1%	

¹Performance of private markets portfolios and corresponding benchmarks is reported on a one quarter lag. Performance shown as of December 31, 2013.

²Net absolute rate of return expectations range from 10-14% per annum.

Note: Time-weighted performance of private markets portfolios shown for the one- and three-year periods to reconcile Total Fund performance as it is reported on a time-weighted basis. Due to the drawdown nature of private markets portfolios in which the investment managers call capital over time, dollar-weighted performance, or internal rate of return (IRR) is a more appropriate measure of the performance of ASRS private markets portfolios.

**Goal Met:
Partially**

Cash Management

- Objective #4: Ensure sufficient monies are available to meet pension benefits, health insurance, member refunds, administrative payments, and other cash flow requirements.

Month	Cash In	Cash Out	Balance as of 1st Business Day
Apr-13	\$223,752,576	(\$182,003,067)	\$65,075,125
May-13	\$466,869,533	(\$182,469,344)	\$285,187,177
Jun-13	\$357,254,932	(\$182,835,622)	\$212,223,877
Jul-13	\$490,407,958	(\$185,679,872)	\$307,287,872
Aug-13	\$364,853,179	(\$188,310,189)	\$205,962,942
Sep-13	\$303,470,007	(\$189,505,809)	\$95,194,585
Oct-13	\$404,897,845	(\$190,046,089)	\$200,202,122
Nov-13	\$213,012,636	(\$190,661,495)	\$126,730,318
Dec-13	\$560,544,992	(\$190,590,864)	\$317,630,570
Jan-14	\$386,764,591	(\$190,949,369)	\$352,809,530
Feb-14	\$210,787,413	(\$191,680,149)	\$189,010,112
Mar-14	\$679,587,225	(\$192,454,469)	\$486,243,101

All Pension Obligations, Capital Calls and Other Requirements Met with Available Cash

Goal Met: Yes

Note:

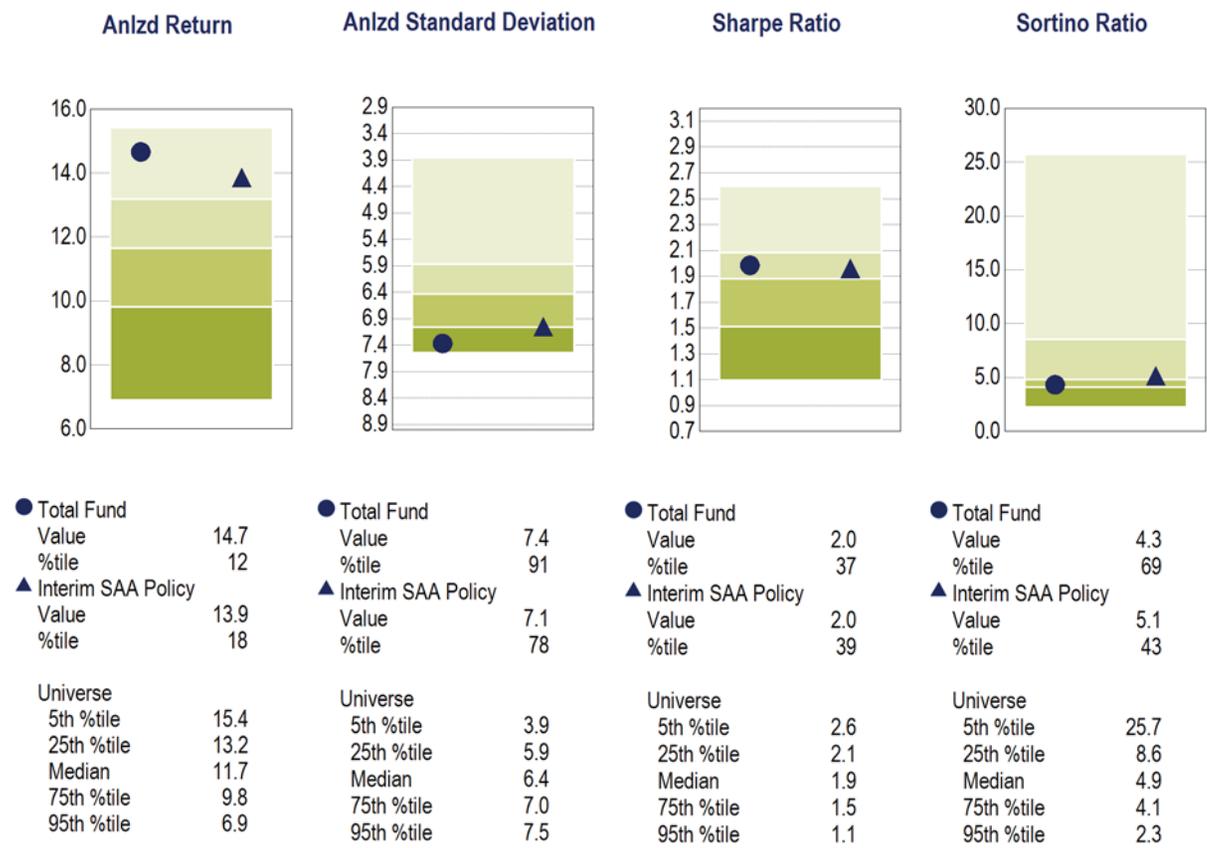
Cash In - The balance as of the business day prior to the monthly pension run payment, comprised of month-to-date contributions and excess cash held to fund manager(s) or as a tactical allocation.

Cash Out - The monthly pension run payment.

Total Fund Risk Statistics vs. Peer Universe

Total Fund vs. IFx Public DB > \$1B Gross(USD)(peer)

1 Year



Note: The information contained herein is for comparison purposes only and is not a Total Fund benchmark. Peer universe comparisons are subject to several limitations, including: peer groups are not comprehensive; several funds are included in multiple peer groups; peer groups are constructed using gross of fee returns; and survivorship bias in that poorly performing funds may not longer report results.

Universes are constructed using gross of fee returns; therefore, ASRS rank is based on gross of fee returns.

Rankings are from highest (1) to lowest (100) in the InvestorForce Public Funds > \$1 Billion Universe.

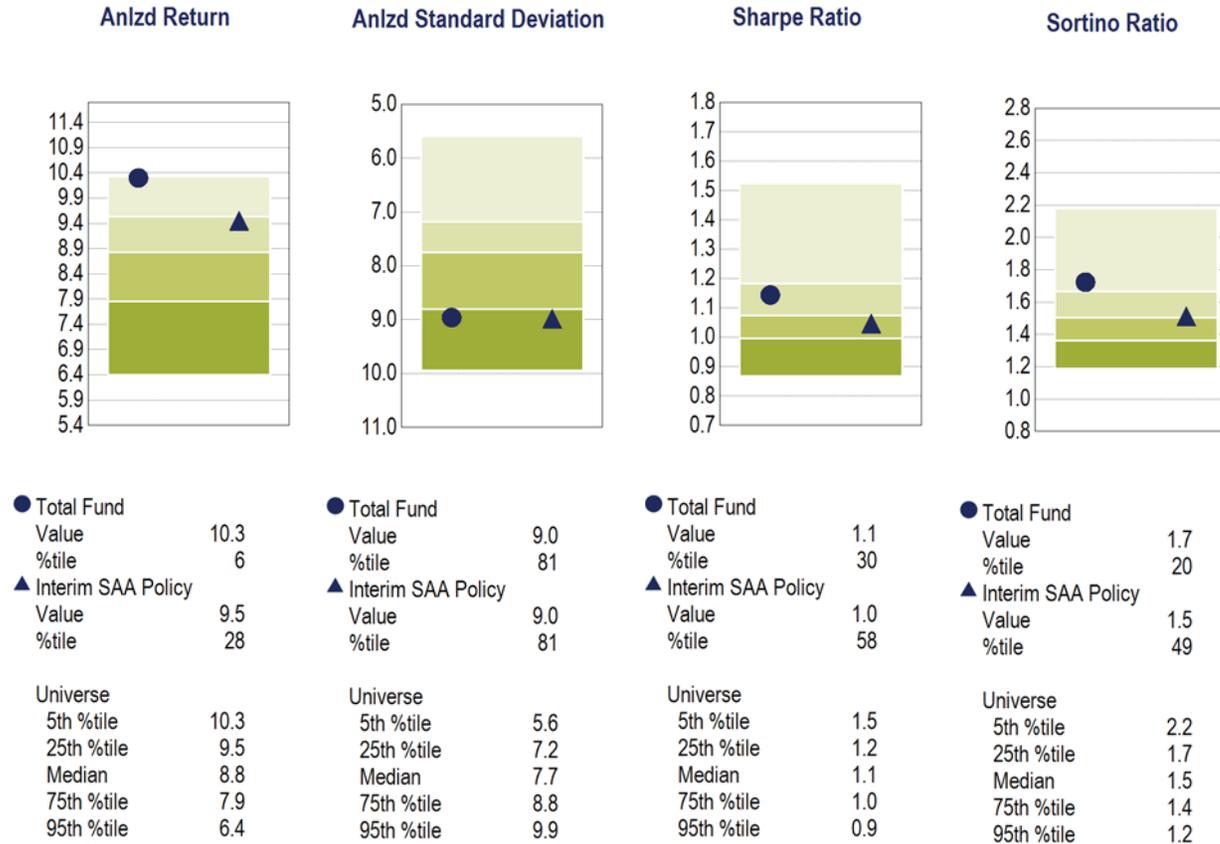
The InvestorForce Public Funds > \$1 Billion Universe contains 56 observations for the one-year period ending March 31, 2014, with total assets of \$512.8 billion.

Composition of Interim SAA Policy can be found in the appendix.

Total Fund Risk Statistics vs. Peer Universe

Total Fund vs. IFx Public DB > \$1B Gross(USD)(peer)

3 Year



Note: The information contained herein is for comparison purposes only and is not a Total Fund benchmark. Peer universe comparisons are subject to several limitations, including: peer groups are not comprehensive; several funds are included in multiple peer groups; peer groups are constructed using gross of fee returns; and survivorship bias in that poorly performing funds may not longer report results.

Universes are constructed using gross of fee returns; therefore, ASRS rank is based on gross of fee returns.

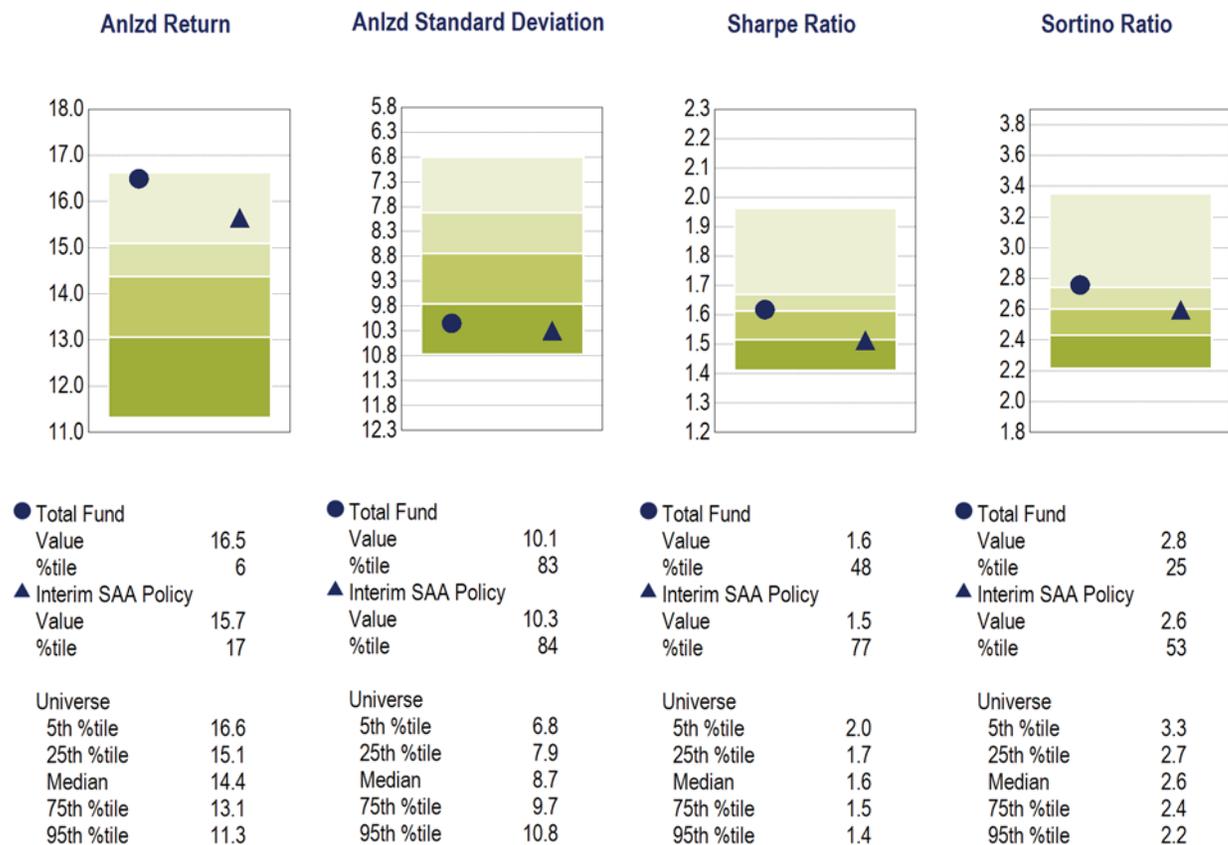
Rankings are from highest (1) to lowest (100) in the InvestorForce Public Funds > \$1 Billion Universe.

The InvestorForce Public Funds > \$1 Billion Universe contains 56 observations for the three-year period ending March 31, 2014, with total assets of \$512.8 billion.

Composition of Interim SAA Policy can be found in the appendix.

Total Fund Risk Statistics vs. Peer Universe

Total Fund vs. IFx Public DB > \$1B Gross(USD)(peer)
5 Year



Note: The information contained herein is for comparison purposes only and is not a Total Fund benchmark. Peer universe comparisons are subject to several limitations, including: peer groups are not comprehensive; several funds are included in multiple peer groups; peer groups are constructed using gross of fee returns; and survivorship bias in that poorly performing funds may not longer report results.

Universes are constructed using gross of fee returns; therefore, ASRS rank is based on gross of fee returns.

Rankings are from highest (1) to lowest (100) in the InvestorForce Public Funds > \$1 Billion Universe.

The InvestorForce Public Funds > \$1 Billion Universe contains 56 observations for the five-year period ending March 31, 2014, with total assets of \$512.8 billion.

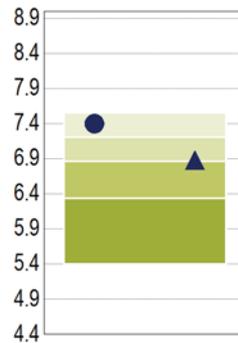
Composition of Interim SAA Policy can be found in the appendix.

Total Fund Risk Statistics vs. Peer Universe

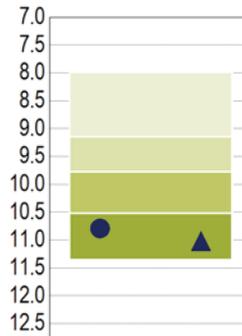
Total Fund vs. IFx Public DB > \$1B Gross(USD)(peer)

10 Year

Anlzd Return



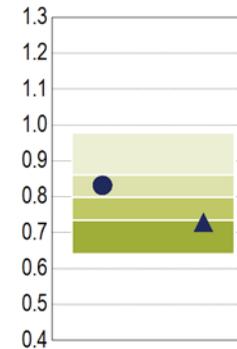
Anlzd Standard Deviation



Sharpe Ratio



Sortino Ratio



● Total Fund

Value 7.4
%tile 11
▲ Interim SAA Policy
Value 6.9
%tile 50

Universe
5th %tile 7.5
25th %tile 7.2
Median 6.9
75th %tile 6.3
95th %tile 5.4

● Total Fund

Value 10.8
%tile 84
▲ Interim SAA Policy
Value 11.0
%tile 89

Universe
5th %tile 8.0
25th %tile 9.1
Median 9.8
75th %tile 10.5
95th %tile 11.3

● Total Fund

Value 0.5
%tile 49
▲ Interim SAA Policy
Value 0.5
%tile 77

Universe
5th %tile 0.7
25th %tile 0.6
Median 0.5
75th %tile 0.5
95th %tile 0.4

● Total Fund

Value 0.8
%tile 38
▲ Interim SAA Policy
Value 0.7
%tile 77

Universe
5th %tile 1.0
25th %tile 0.9
Median 0.8
75th %tile 0.7
95th %tile 0.6

Note: The information contained herein is for comparison purposes only and is not a Total Fund benchmark. Peer universe comparisons are subject to several limitations, including: peer groups are not comprehensive; several funds are included in multiple peer groups; peer groups are constructed using gross of fee returns; and survivorship bias in that poorly performing funds may not longer report results.

Universes are constructed using gross of fee returns; therefore, ASRS rank is based on gross of fee returns.

Rankings are from highest (1) to lowest (100) in the InvestorForce Public Funds > \$1 Billion Universe.

The InvestorForce Public Funds > \$1 Billion Universe contains 53 observations for the ten-year period ending March 31, 2014, with total assets of \$512.8 billion.

Composition of Interim SAA Policy can be found in the appendix.

Independent Oversight/Compliance

Note: All of the data shown on the following pages is as of March 31, 2014 and reflects the deduction of investment manager fees, unless otherwise noted.

Arizona State Retirement System

SAA Policy Compliance



	Current Mkt Value	Current Allocation	Interim SAAP	Difference	Policy Range	Within Range
Total Domestic and International Equity¹	\$20,149,786,746	59.8%	59.0%	0.8%		
Domestic Equity³	\$11,563,664,969	34.3%	35.0%	-0.7%	26% - 38%	Yes
U.S. Large Cap ²	\$8,426,785,387	25.0%	25.0%	0.0%		
U.S. Mid Cap	\$1,562,975,541	4.6%	5.0%	-0.4%		
U.S. Small Cap	\$1,573,904,041	4.7%	5.0%	-0.3%		
International Equity³	\$8,099,076,991	24.0%	23.0%	1.0%	16% - 28%	Yes
Developed Large Cap ²	\$4,935,470,654	14.6%	14.0%	0.6%		
Developed Small Cap	\$1,290,418,965	3.8%	3.0%	0.8%		
Emerging Markets	\$1,873,187,373	5.6%	6.0%	-0.4%		
Private Equity⁴	\$1,971,690,807	5.9%	6.0%	-0.1%	5% - 9%	Yes
Opportunistic Equity^{4,6}	\$289,397,630	0.9%	0.0%	0.9%	0% - 3%	Yes
Total Equity	\$22,410,875,183	66.5%	64.0%	2.5%	53% - 70%	Yes
U.S. Fixed Income	\$4,658,662,454	13.8%	20.0%	-6.2%	8% - 28%	Yes
Core ²	\$3,430,525,494	10.2%	15.0%	-4.8%		
High Yield	\$1,228,136,960	3.6%	5.0%	-1.4%		
Emerging Market Debt	\$880,235,877	2.6%	4.0%	-1.4%		
Private Debt⁴	\$914,859,250	2.7%	2.0%	0.7%		
Opportunistic Debt^{4,6}	\$835,678,506	2.5%	0.0%	2.5%	0% - 10%	Yes
Total Fixed Income	\$7,289,436,087	21.6%	26.0%	-4.4%	15% - 35%	Yes
Commodities²	\$1,168,169,375	3.5%	4.0%	-0.5%	1% - 7%	Yes
Real Estate^{2,4}	\$2,038,460,914	6.0%	6.0%	0.0%	6% - 10%	Yes
Infrastructure	\$0	0.0%	0.0%	0.0%	0% - 3%	Yes
Farmland and Timber⁴	\$95,259,926	0.3%	0.0%	0.3%	0% - 3%	Yes
Opportunistic Inflation-Linked⁶	\$0	0.0%	0.0%	0.0%	0% - 3%	Yes
Total Inflation-Linked	\$3,301,890,215	9.8%	10.0%	-0.2%	8% - 16%	Yes
Cash⁵	\$693,672,800	2.1%	0.0%	2.1%		
Total	\$33,695,874,285	100.0%	100.0%	0.0%		
Global Tactical Asset Allocation (GTAA)²	\$3,632,165,447	10.8%	10.0%	0.8%	5% - 15%	Yes

¹Total Domestic and International Equity includes Equity Risk Factor Portfolio with assets of \$487.0 million.

²GTAA allocation distributed into U.S. Large Cap Equity, Int'l Developed Large Cap Equity, Core Fixed Income, Commodities and Real Estate.

³Domestic and International Equity market values include residual values remaining in terminated manager accounts.

⁴Values shown for private markets portfolios include cash flows that occurred during 1Q2014.

⁵Cash includes money for the upcoming monthly pension distribution. Value shown also includes assets in liquidating GTAA account.

⁶Aggregate Opportunistic asset classes not to exceed 10%.

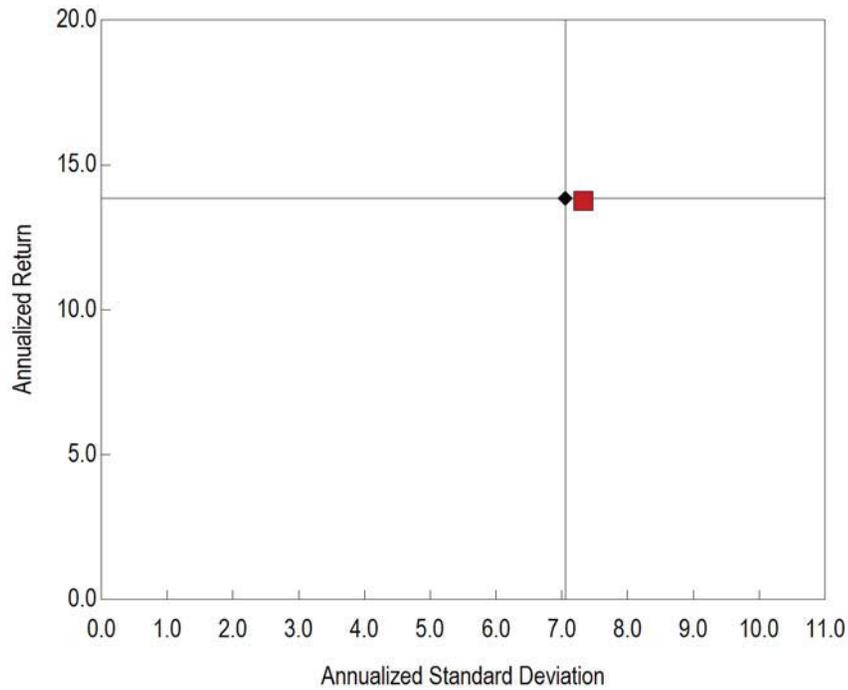
Note: Interim SAA Policy includes proration of 1% Private Equity, 1% Private Debt and 2% Real Estate, which are unfunded.

Policy Ranges shown are relative to the long-term SAAP, causing some asset classes to be out of range while implementation of the long-term SAAP is in process.

Market values include manager held cash.

Total Fund Analysis

1 Year Ending March 31, 2014

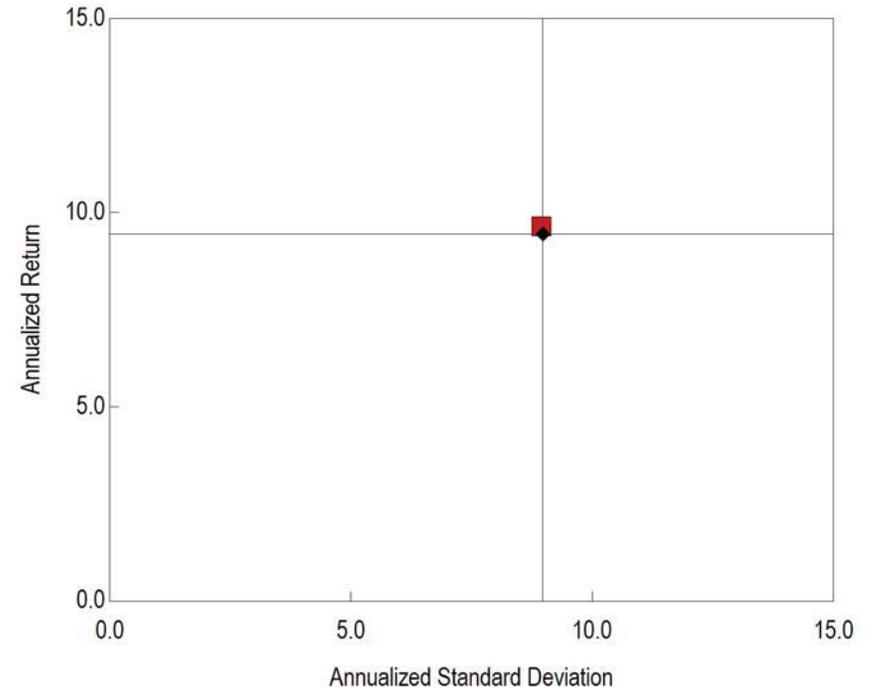


■ Total Fund
◆ Interim SAA Policy

1 Year Ending March 31, 2014

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Sortino Ratio
Total Fund	13.8%	7.3%	1.9	4.0
Interim SAA Policy	13.9%	7.1%	2.0	5.1

3 Years Ending March 31, 2014



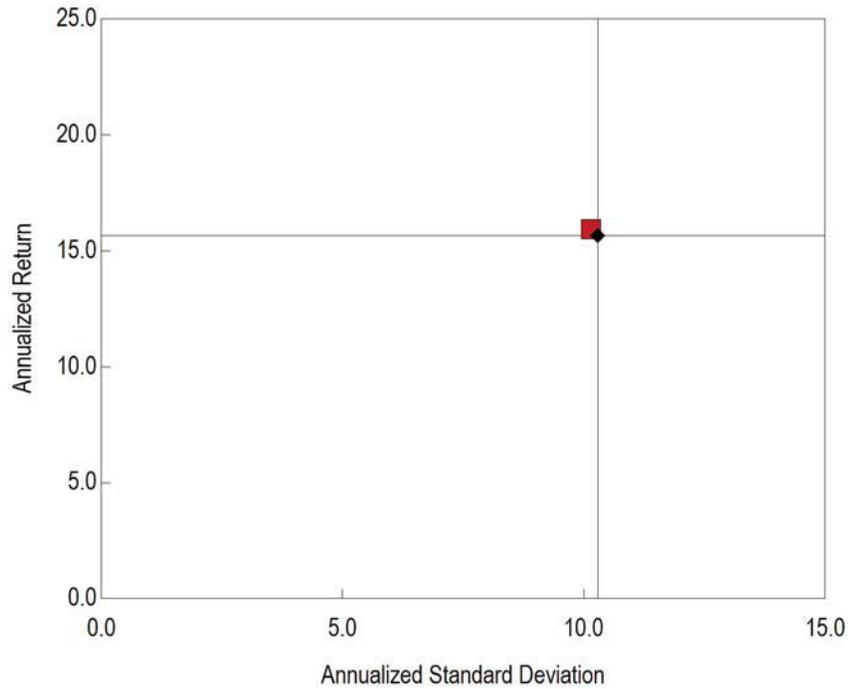
■ Total Fund
◆ Interim SAA Policy

3 Years Ending March 31, 2014

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Sortino Ratio
Total Fund	9.6%	8.9%	1.1	1.6
Interim SAA Policy	9.5%	9.0%	1.0	1.5

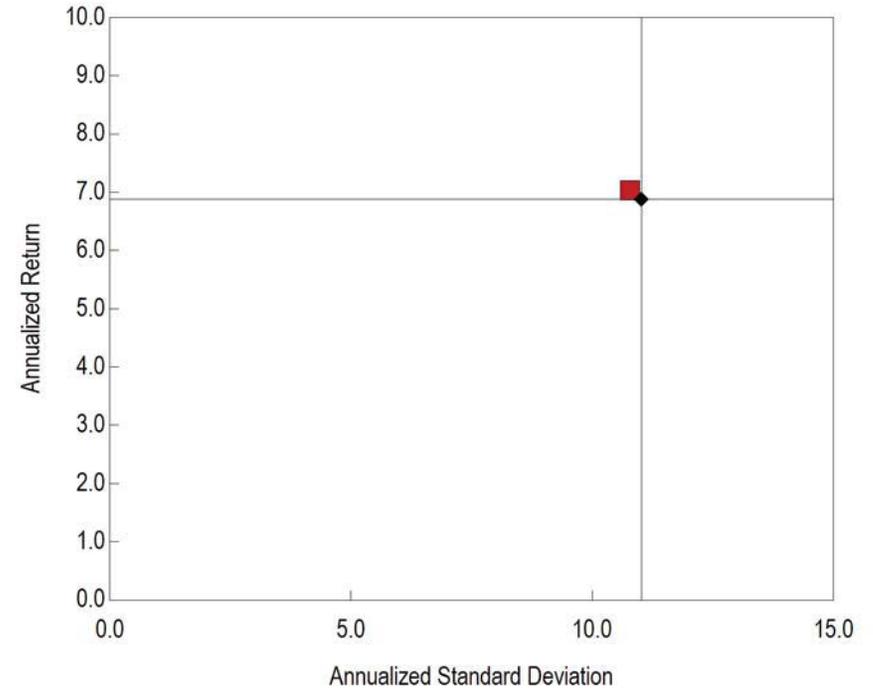
Total Fund Analysis

5 Years Ending March 31, 2014



■ Total Fund
◆ Interim SAA Policy

10 Years Ending March 31, 2014



■ Total Fund
◆ Interim SAA Policy

5 Years Ending March 31, 2014

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Sortino Ratio
Total Fund	15.9%	10.1%	1.6	2.7
Interim SAA Policy	15.7%	10.3%	1.5	2.6

10 Years Ending March 31, 2014

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Sortino Ratio
Total Fund	7.0%	10.8%	0.5	0.8
Interim SAA Policy	6.9%	11.0%	0.5	0.7

Arizona State Retirement System

Asset Class Performance Summary - Public Markets

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	9 Mo (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Since
Total Fund	33,695,874,285	100	2.3	--	13.9	--	13.8	--	9.6	--	15.9	--	7.0	--	10.0	Jul-75
<i>Interim SAA Policy</i>			<u>2.4</u>	--	<u>13.8</u>	--	<u>13.9</u>	--	<u>9.5</u>	--	<u>15.7</u>	--	<u>6.9</u>	--	<u>9.8</u>	<i>Jul-75</i>
Over/Under			-0.1		0.1		-0.1		0.1		0.2		0.1		0.2	
<i>Actual Benchmark</i>			2.5	--	14.4	--	14.8	--	9.7	--	15.2	--	6.9	--	--	<i>Jul-75</i>
Total Domestic and International Equity¹	18,049,361,124	53.6	1.5	--	17.9	--	18.5	--	11.2	--	20.0	--	7.5	--	6.9	Jan-98
<i>ASRS Custom Total Equity Benchmark</i>			<u>1.4</u>	--	<u>18.3</u>	--	<u>18.8</u>	--	<u>11.5</u>	--	<u>20.3</u>	--	<u>7.6</u>	--	<u>6.2</u>	<i>Jan-98</i>
Over/Under			0.1		-0.4		-0.3		-0.3		-0.3		-0.1		0.7	
Total Domestic Equity	10,458,781,171	31.0	1.8	48	19.0	63	22.1	62	14.3	42	22.5	49	8.3	60	11.4	Jul-75
<i>ASRS Custom Domestic Equity Benchmark</i>			<u>1.9</u>	45	<u>19.4</u>	60	<u>22.7</u>	57	<u>14.7</u>	36	<u>22.4</u>	50	<u>8.0</u>	67	<u>11.4</u>	<i>Jul-75</i>
Over/Under			-0.1		-0.4		-0.6		-0.4		0.1		0.3		0.0	
<i>eA All US Equity Net Median</i>			1.7		20.2		23.5		13.8		22.4		8.7		12.6	<i>Jul-75</i>
Total International Equity	7,103,535,168	21.1	1.0	34	16.3	55	12.9	67	5.2	70	15.2	75	6.3	86	6.5	Apr-87
<i>ASRS Custom Int'l Equity Benchmark</i>			<u>0.8</u>	40	<u>16.8</u>	52	<u>13.4</u>	65	<u>5.4</u>	61	<u>16.5</u>	56	<u>7.5</u>	66	<u>6.2</u>	<i>Apr-87</i>
Over/Under			0.2		-0.5		-0.5		-0.2		-1.3		-1.2		0.3	
<i>eA All ACWI ex-US Equity Net Median</i>			0.4		16.8		14.6		6.1		16.8		8.0		7.9	<i>Apr-87</i>
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
<i>ASRS Custom Fixed Income Benchmark</i>			<u>2.2</u>	35	<u>3.5</u>	38	<u>0.4</u>	56	<u>4.3</u>	48	<u>5.2</u>	58	<u>4.6</u>	45	--	<i>Jul-75</i>
Over/Under			-0.3		-0.1		-0.7		0.0		0.9		0.3		--	
<i>eA All US Fixed Inc Net Median</i>			1.8		2.6		0.5		4.1		5.9		4.5		8.3	<i>Jul-75</i>
Total Inflation-Linked Assets	845,433,279	2.5	5.1	--	8.1	--	-1.3	--	-5.2	--	--	--	--	--	1.6	Feb-10
<i>ASRS Custom Inflation-Linked Benchmark</i>			<u>7.0</u>	--	<u>8.1</u>	--	<u>-2.1</u>	--	<u>-6.9</u>	--	<u>1.4</u>	--	<u>2.8</u>	--	<u>0.0</u>	<i>Feb-10</i>
Over/Under			-1.9		0.0		0.8		1.7						1.6	
Total GTAA	3,632,165,447	10.8	2.1	15	15.3	3	14.6	4	10.6	2	17.7	2	8.1	41	8.2	Jan-04
<i>ASRS Custom GTAA Benchmark</i>			<u>1.8</u>	19	<u>13.5</u>	12	<u>13.6</u>	11	<u>9.7</u>	6	<u>15.4</u>	12	<u>6.5</u>	64	<u>6.6</u>	<i>Jan-04</i>
Over/Under			0.3		1.8		1.0		0.9		2.3		1.6		1.6	
<i>eA Global TAA Net Median</i>			1.2		8.1		5.4		4.9		10.3		7.5		7.7	<i>Jan-04</i>

¹Performance of ASRS Total Domestic and International Equity includes the performance of the ASRS Domestic and International Equity asset classes and the Equity Risk Factor Portfolio with an inception date of 6/1/2013. NEPC began calculating Total Domestic and International Equity performance in January 2009. Monthly performance data from January 1998 - December 2008 was provided by State Street. 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 Interim SAA Policy and ASRS Custom Asset Class Benchmarks can be found in the appendix.

Arizona State Retirement System

Asset Class Performance Summary - Private Markets

	Market Value (\$)	% of Portfolio	3 Mo (%)	1 Yr (%)	3 Yrs (%)	Inception (%)	IRR (%)	Since
Total Fund	33,695,874,285	100	2.3	13.8	9.6	10.0	--	Jul-75
Interim SAA Policy			<u>2.4</u>	<u>13.9</u>	<u>9.5</u>	<u>9.8</u>	--	Jul-75
Over/Under			-0.1	-0.1	0.1	0.2	--	
Actual Benchmark			2.5	14.8	9.7	--	--	Jul-75
Total Private Equity	1,962,038,935	5.8	5.2	15.0	15.4	3.9	12.9	Oct-07
Russell 2000 1 QTR Lagged			<u>8.7</u>	<u>38.8</u>	<u>15.7</u>	<u>7.5</u>	<u>17.3</u>	Oct-07
Over/Under			-3.5	-23.8	-0.3	-3.6	-4.4	
Total Opportunistic Equity¹	279,127,091	0.8	27.9	43.5	--	25.1	40.7	Apr-11
Total Private Debt	853,164,094	2.5	4.1	17.8	--	17.3	17.2	Jul-12
S&P/LSTA Leveraged Loan Index + 250 bps 1 QTR Lagged			<u>2.3</u>	<u>7.8</u>	<u>--</u>	<u>9.3</u>	<u>8.4</u>	Jul-12
Over/Under			1.8	10.0	--	8.0	8.8	
Total Opportunistic Debt¹	884,564,294	2.6	1.8	8.4	8.5	8.7	12.1	Jan-08
Total Real Estate	1,874,277,985	5.6	3.8	13.2	13.2	3.4	5.6	Oct-05
NCREIF ODCE 1 QTR Lagged			<u>2.9</u>	<u>12.9</u>	<u>12.5</u>	<u>4.8</u>	<u>4.8</u>	Oct-05
Over/Under			0.9	0.3	0.7	-1.4	0.8	
Total Farmland and Timber	80,323,879	0.2	3.9	--	--	-46.6	1.1	Jul-13
CPI ex-Food and Energy + 350 bps 1 QTR Lagged			<u>1.3</u>	<u>--</u>	<u>--</u>	<u>2.6</u>	<u>1.2</u>	Jul-13
Over/Under			2.6	--	--	-49.2	-0.1	

¹Net absolute rate of return expectations range from 10-14% per annum.

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

Performance data for Total Private Equity, Total Opportunistic Equity, Total Private Debt, Total Opportunistic Debt, Total Real Estate, and Total Farmland and Timber and corresponding benchmarks is lagged by one quarter. Performance data and market values provided by Credit Suisse Fund Group.

Prior to 3Q 2012, the performance of the Total Private Debt and Total Opportunistic Debt asset classes was reported in aggregate. Effective 6/30/2012, the Fund's allocations to Private Debt and Opportunistic Debt were separated and will be reported separately going forward.

Time-weighted performance of private markets portfolios shown to reconcile Total Fund performance as it is reported on a time-weighted basis. Due to the drawdown nature of private markets portfolios in which the investment managers call capital over time, dollar-weighted performance, or internal rate of return (IRR) is a more appropriate measure of ASRS private markets portfolios.

Composition of Interim SAA Policy can be found in the appendix.

Arizona State Retirement System

Public Market Asset Class Analysis

3 Years Ending March 31, 2014

	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Tracking Error	Rank	Info Ratio	Rank	Sharpe Ratio	Rank	Beta	Rank	Anlzd Alpha
Total Fund	9.6%	22	8.9%	81	1.1%	48	0.2	57	1.1	53	1.0	26	0.3%
Interim SAA Policy	9.5%	28	9.0%	81	--	--	--	--	1.0	58	--	--	--
Total Domestic and International Equity	11.2%	--	13.9%	--	0.6%	--	-0.4	--	0.8	--	1.0	--	-0.2%
ASRS Custom Total Equity Benchmark	11.5%	--	14.0%	--	--	--	--	--	0.8	--	--	--	--
Total Domestic Equity	14.3%	42	13.4%	32	0.5%	1	-0.7	82	1.1	33	1.0	39	-0.5%
ASRS Custom Domestic Equity Benchmark	14.7%	36	13.3%	29	--	--	--	--	1.1	27	--	--	--
Total International Equity	5.2%	70	16.4%	40	0.8%	1	-0.3	86	0.3	66	1.0	48	-0.1%
ASRS Custom Int'l Equity Benchmark	5.4%	61	16.8%	52	--	--	--	--	0.3	64	--	--	--
Total Public Markets Fixed Income	4.3%	48	3.6%	66	0.5%	1	0.1	44	1.2	79	1.1	86	-0.3%
ASRS Custom Public Markets Fixed Income Benchmark	4.3%	48	3.3%	62	--	--	--	--	1.3	71	--	--	--
Total Inflation-Linked Assets	-5.2%	--	14.6%	--	2.3%	--	0.7	--	-0.4	--	1.0	--	1.5%
ASRS Custom Inflation-Linked Benchmark	-6.9%	--	15.1%	--	--	--	--	--	-0.5	--	--	--	--
Total GTAA	10.6%	2	9.6%	72	1.8%	6	0.5	2	1.1	22	1.0	76	0.7%
ASRS Custom GTAA Benchmark	9.7%	6	9.3%	63	--	--	--	--	1.0	24	--	--	--

Note: Performance is reported net of fees.

Ranks for statistics shown above are based on the respective universe against which the portfolio is ranked on the asset class performance summary that precedes this section of the analysis. Rankings are from highest (1) to lowest (100) in the eVestment Alliance Universe.

Composition of Interim SAA Policy and ASRS Custom Benchmarks can be found in the appendix.

Arizona State Retirement System

Public Market Asset Class Analysis

5 Years Ending March 31, 2014

	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Tracking Error	Rank	Info Ratio	Rank	Sharpe Ratio	Rank	Beta	Rank	Anlzd Alpha
Total Fund	15.9%	12	10.1%	83	1.1%	20	0.3	60	1.6	66	1.0	40	0.6%
Interim SAA Policy	15.7%	17	10.3%	84	--	--	--	--	1.5	77	--	--	--
Total Domestic and International Equity	20.0%	--	15.3%	--	0.9%	--	-0.4	--	1.3	--	1.0	--	0.1%
ASRS Custom Total Equity Benchmark	20.3%	--	15.6%	--	--	--	--	--	1.3	--	--	--	--
Total Domestic Equity	22.5%	49	14.9%	33	0.5%	1	0.2	36	1.5	27	1.0	42	0.0%
ASRS Custom Domestic Equity Benchmark	22.4%	50	14.8%	31	--	--	--	--	1.5	26	--	--	--
Total International Equity	15.2%	75	17.9%	39	1.5%	1	-0.9	99	0.8	71	1.0	48	-0.6%
ASRS Custom Int'l Equity Benchmark	16.5%	56	18.7%	57	--	--	--	--	0.9	60	--	--	--
Total Public Markets Fixed Income	6.1%	49	3.4%	57	0.9%	1	1.1	31	1.8	65	1.0	87	0.8%
ASRS Custom Public Markets Fixed Income Benchmark	5.2%	58	3.1%	52	--	--	--	--	1.6	74	--	--	--
Total Inflation-Linked Assets	--	--	--	--	--	--	--	--	--	--	--	--	--
ASRS Custom Inflation-Linked Benchmark	1.4%	--	12.8%	--	--	--	--	--	0.1	--	--	--	--
Total GTAA	17.7%	2	10.7%	79	2.0%	9	1.2	1	1.6	9	1.0	80	2.2%
ASRS Custom GTAA Benchmark	15.4%	12	10.5%	76	--	--	--	--	1.5	42	--	--	--

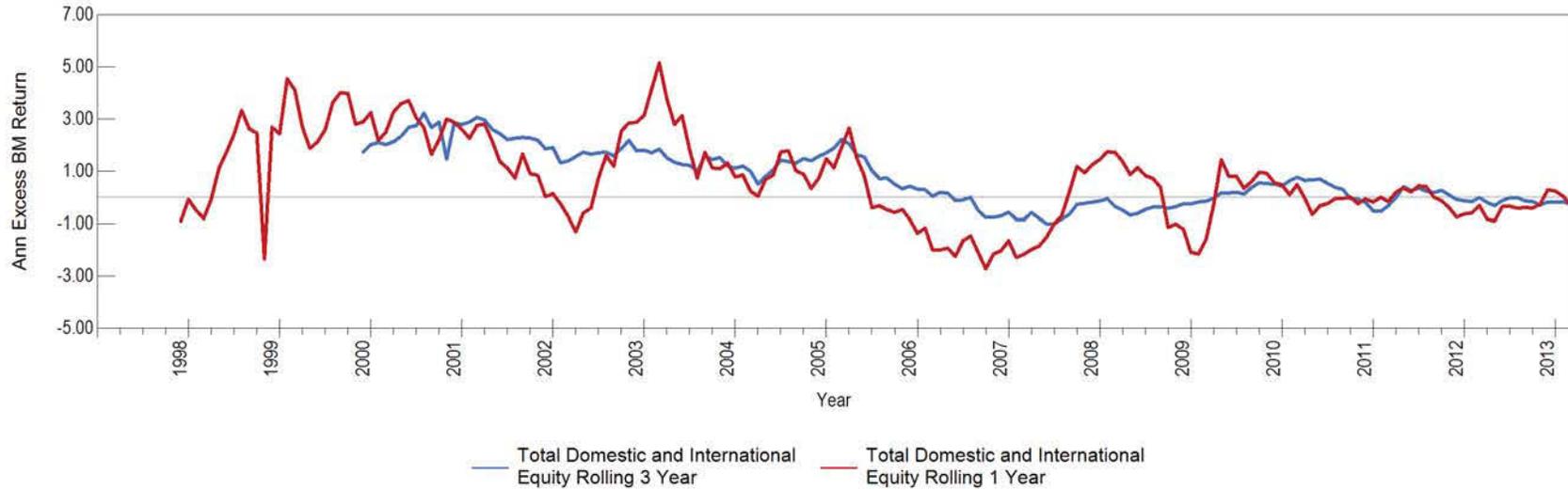
Note: Performance is reported net of fees.

Ranks for statistics shown above are based on the respective universe against which the portfolio is ranked on the asset class performance summary that precedes this section of the analysis. Rankings are from highest (1) to lowest (100) in the eVestment Alliance Universe.

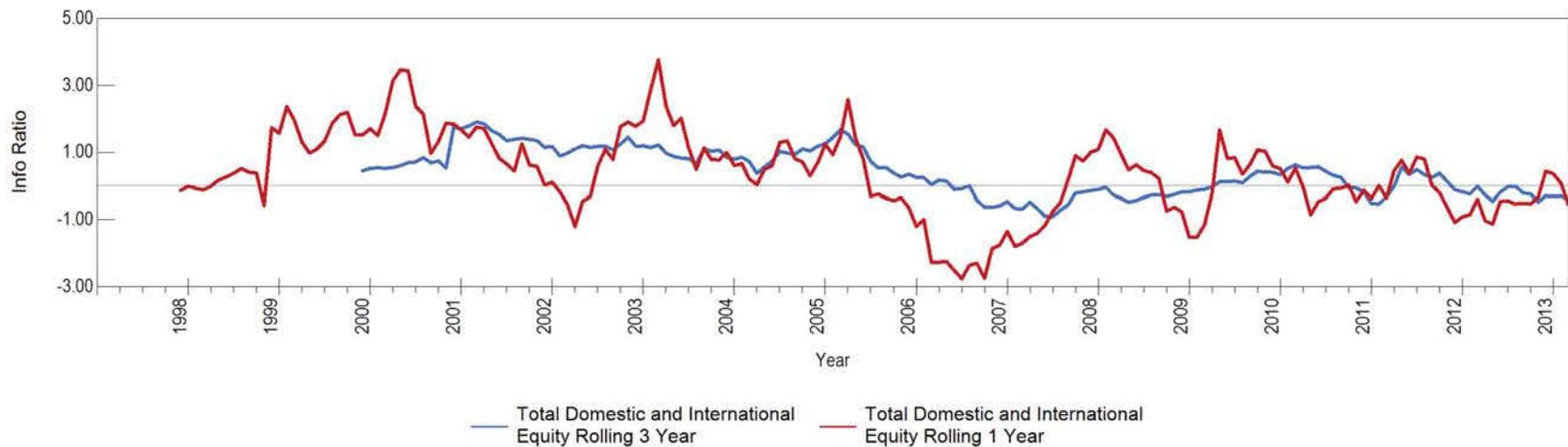
Composition of Interim SAA Policy and ASRS Custom Benchmarks can be found in the appendix.

Asset Class Analysis - Total Domestic and International Equity

Rolling Annual Excess Benchmark Return

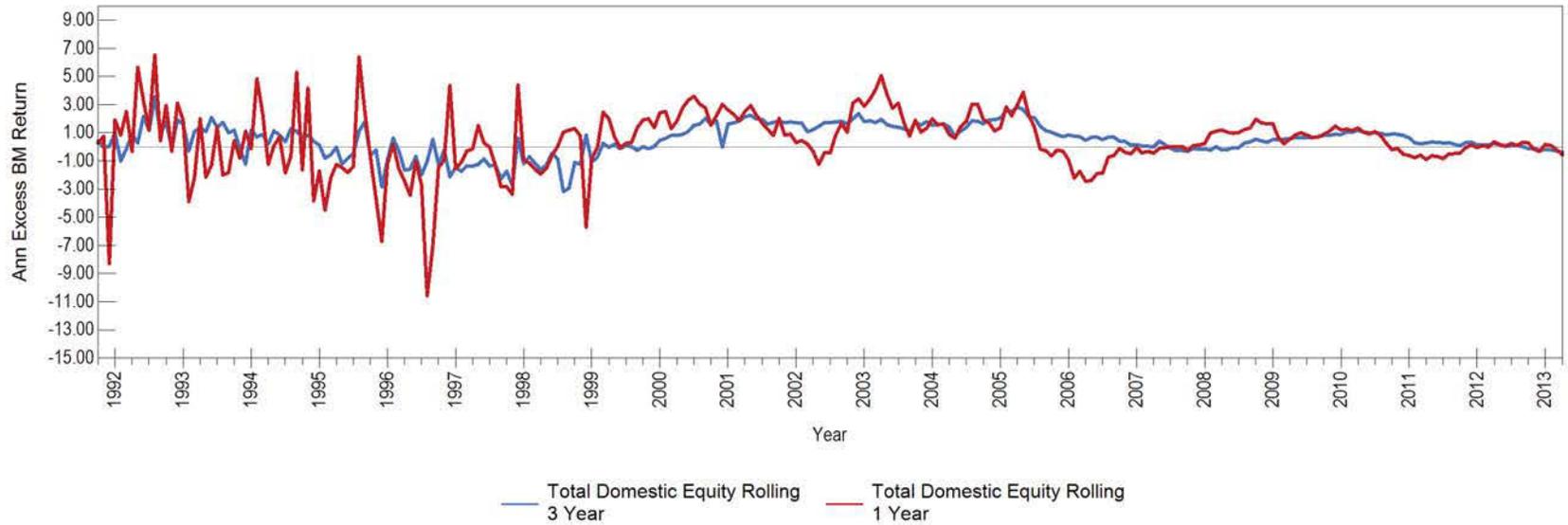


Rolling Information Ratio



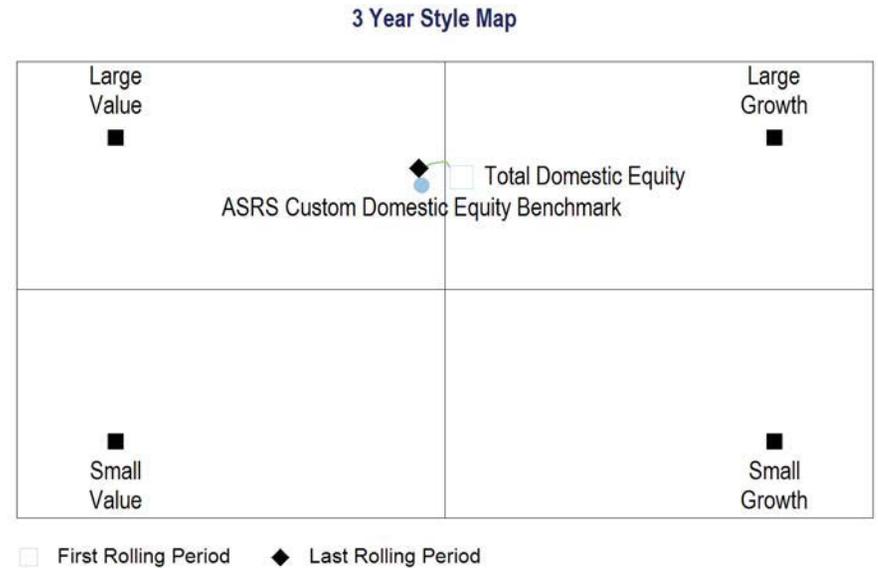
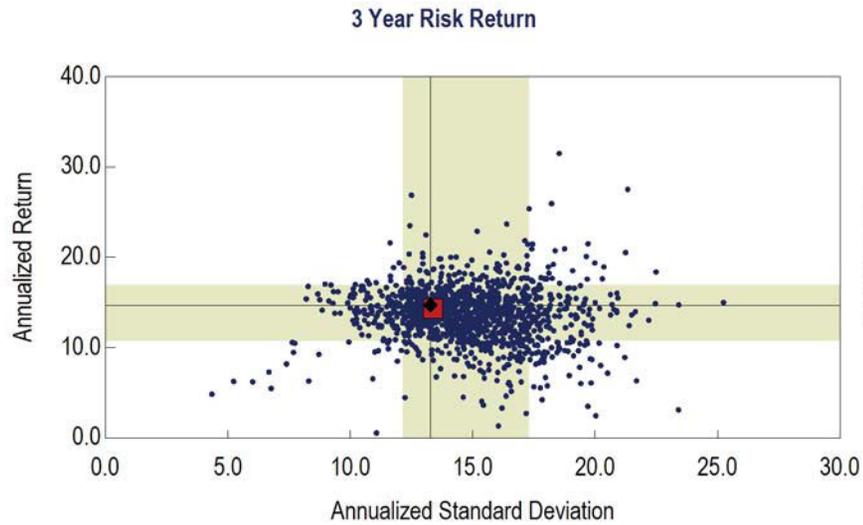
Asset Class Analysis - Total Domestic Equity

Rolling Annual Excess Benchmark Return



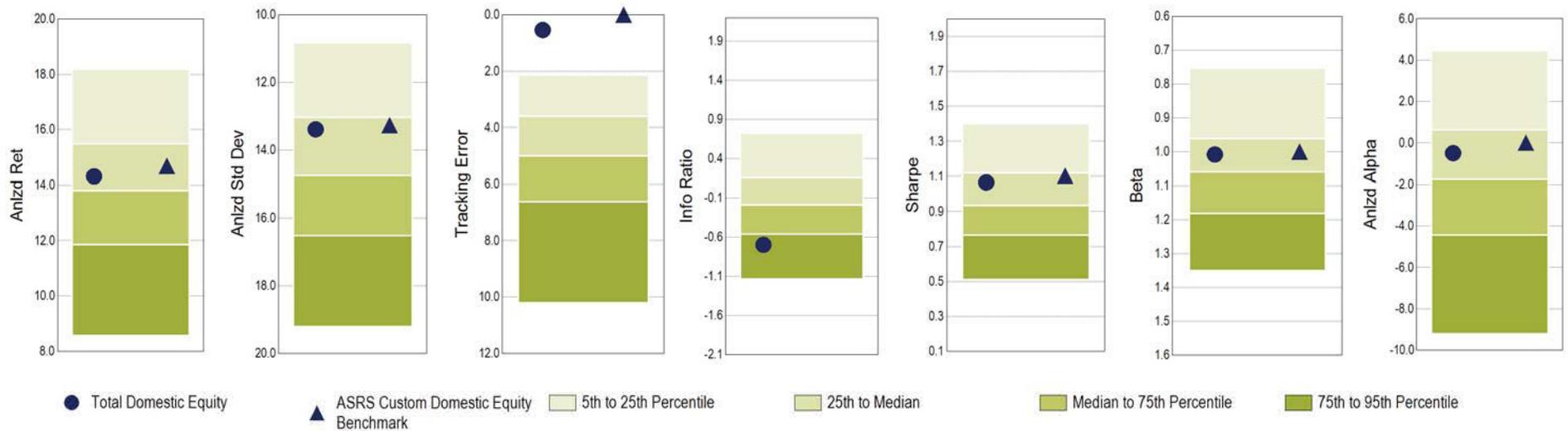
eA All US Equity Net Accounts



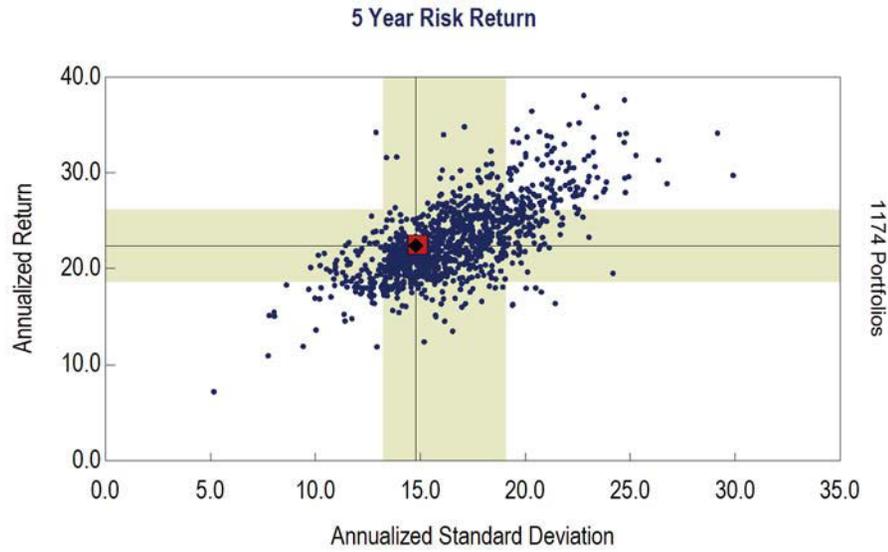


- Total Domestic Equity
- ◆ ASRS Custom Domestic Equity Benchmark
- 68% Confidence Interval
- eA All US Equity Net

*Style map is returns based.



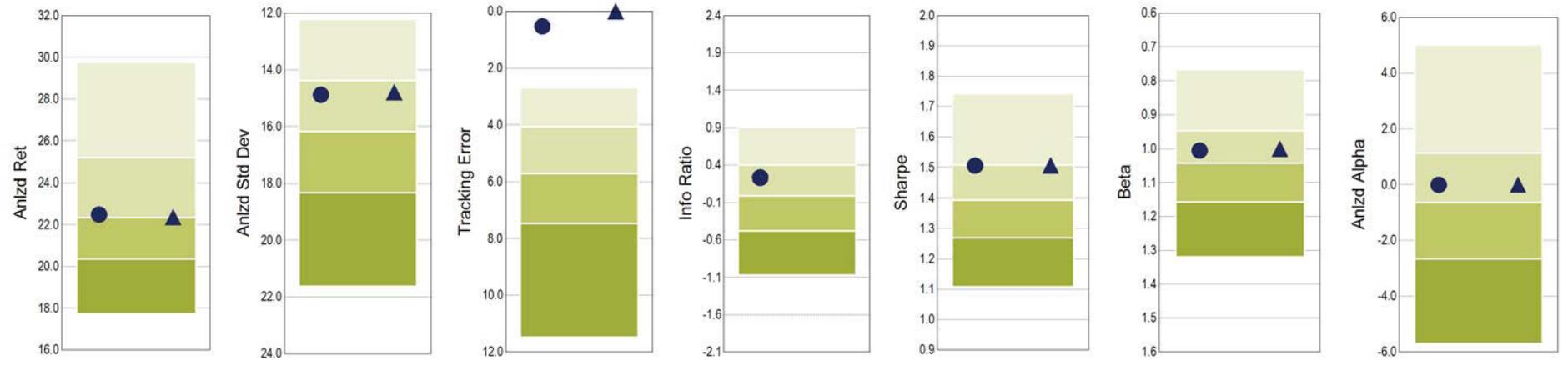
Asset Class Analysis - Total Domestic Equity



- Total Domestic Equity
- ◆ ASRS Custom Domestic Equity Benchmark
- 68% Confidence Interval
- eA All US Equity Net

- First Rolling Period
- ◆ Last Rolling Period

*Style map is returns based.



- Total Domestic Equity
- ▲ ASRS Custom Domestic Equity Benchmark
- 5th to 25th Percentile
- 25th to Median
- Median to 75th Percentile
- 75th to 95th Percentile

Asset Class Analysis - Total International Equity

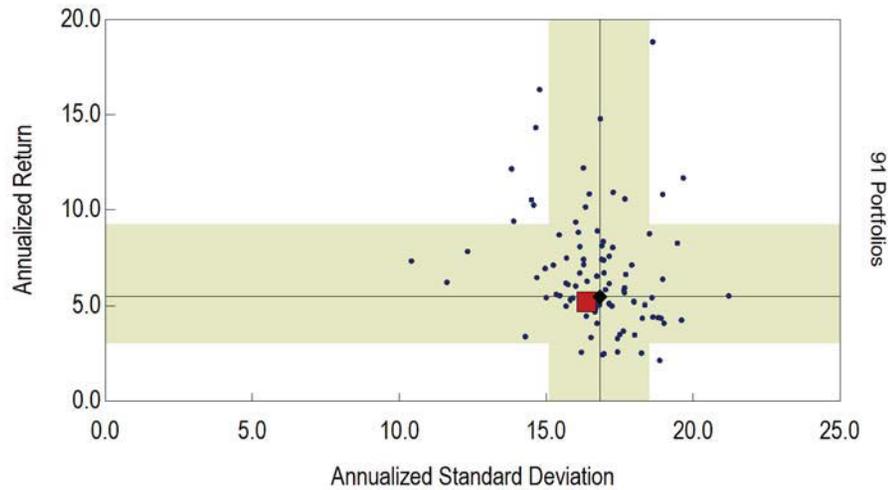
Rolling Annual Excess Benchmark Return



eA All ACWI ex-US Equity Net Accounts

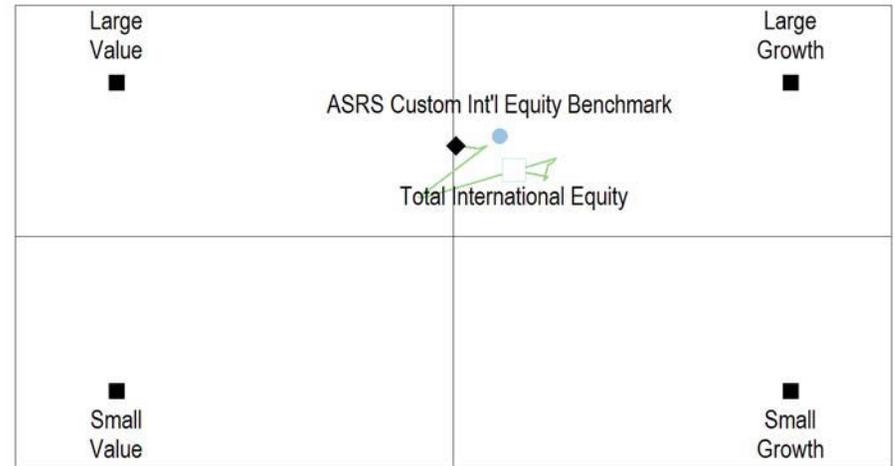


3 Year Risk Return



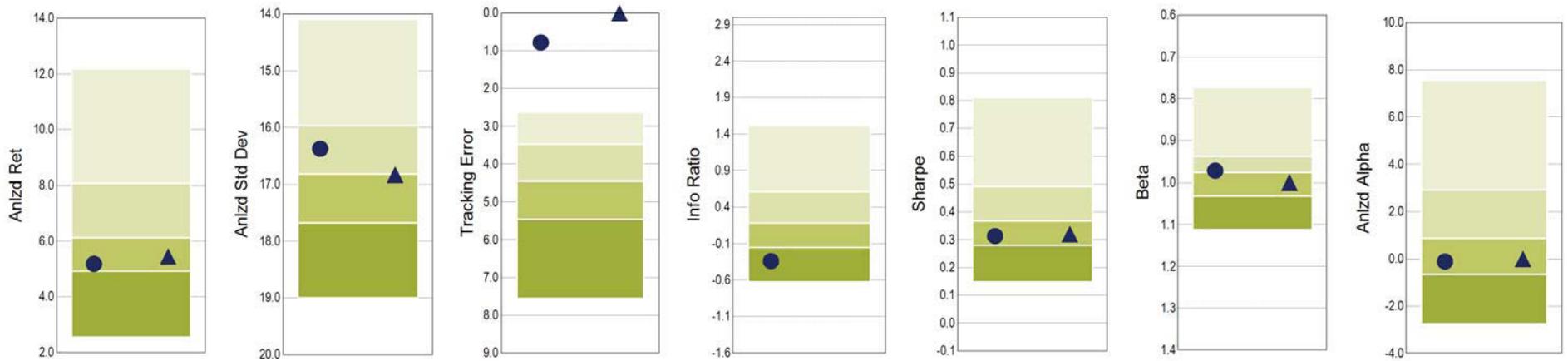
- Total International Equity
- ◆ ASRS Custom Int'l Equity Benchmark
- 68% Confidence Interval
- eA All ACWI ex-US Equity Net

3 Year Style Map



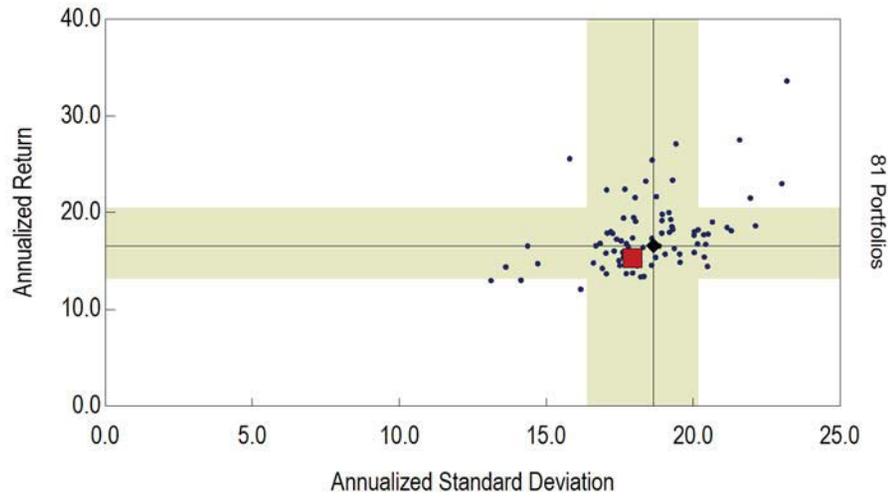
- First Rolling Period
- ◆ Last Rolling Period

*Style map is returns based.



- Total International Equity
- ▲ ASRS Custom Int'l Equity Benchmark
- 5th to 25th Percentile
- 25th to Median
- Median to 75th Percentile
- 75th to 95th Percentile

5 Year Risk Return

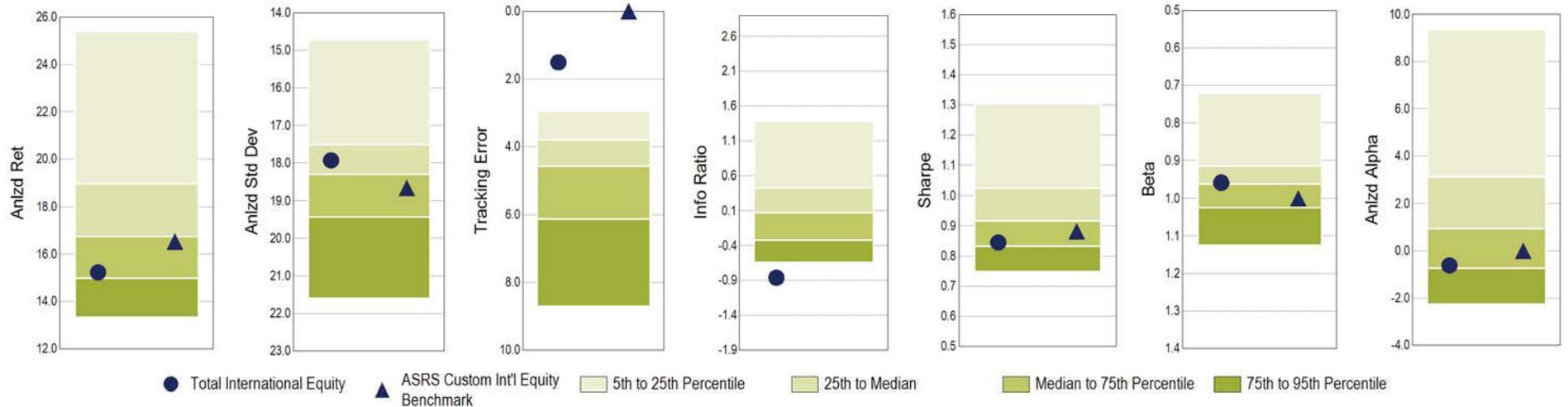


- Total International Equity
- ◆ ASRS Custom Int'l Equity Benchmark
- 68% Confidence Interval
- eA All ACWI ex-US Equity Net

5 Year Style Map



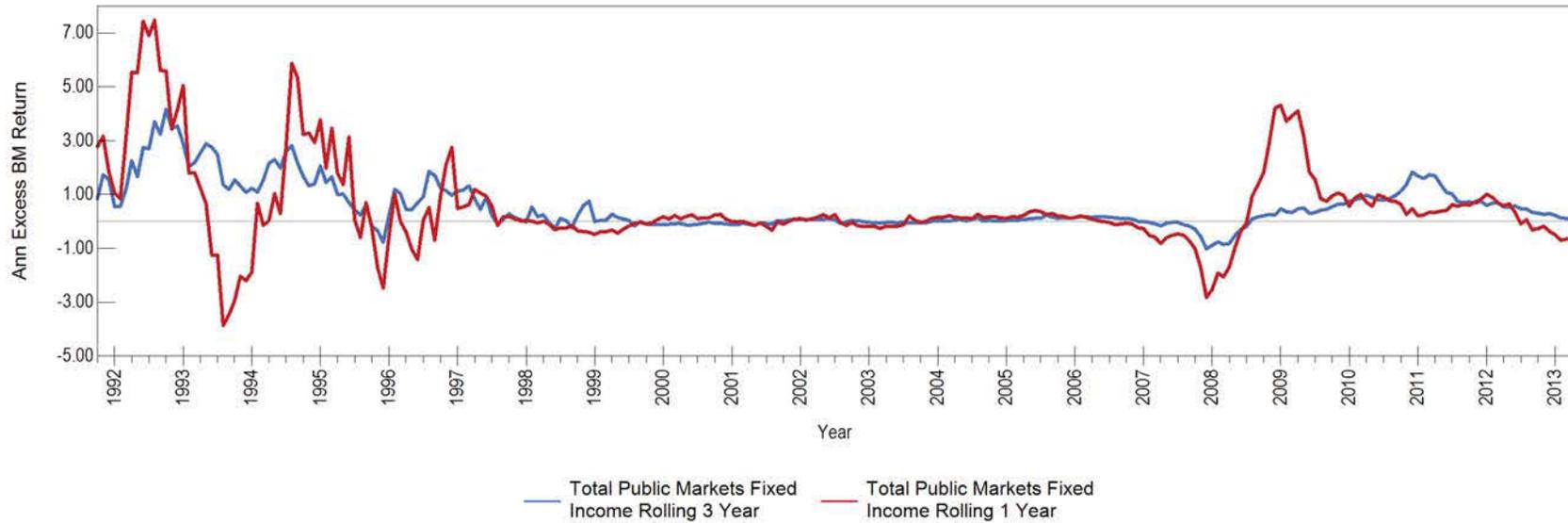
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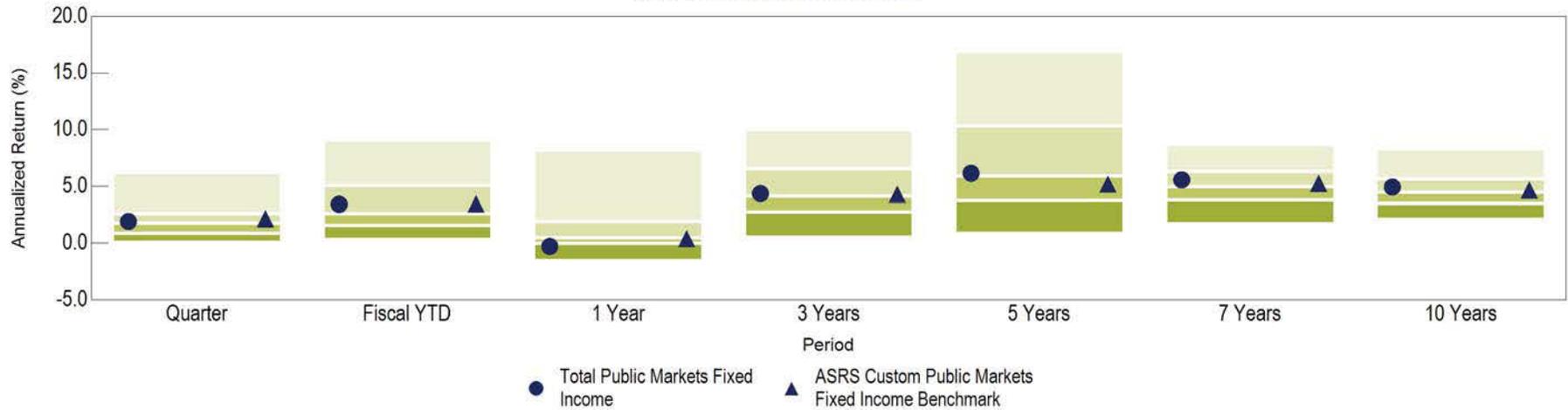
- Total International Equity
- ▲ ASRS Custom Int'l Equity Benchmark
- 5th to 25th Percentile
- 25th to Median
- Median to 75th Percentile
- 75th to 95th Percentile

Asset Class Analysis - Total Public Markets Fixed Income

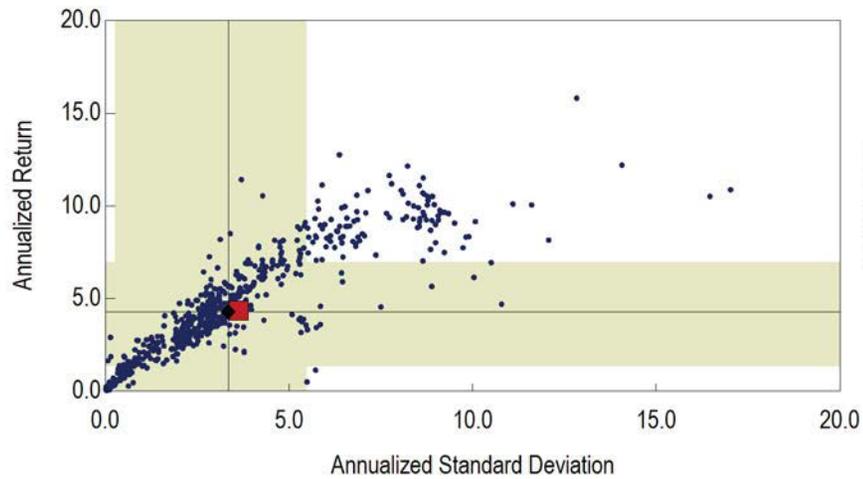
Rolling Annual Excess Benchmark Return



eA All US Fixed Inc Net Accounts



3 Year Risk Return



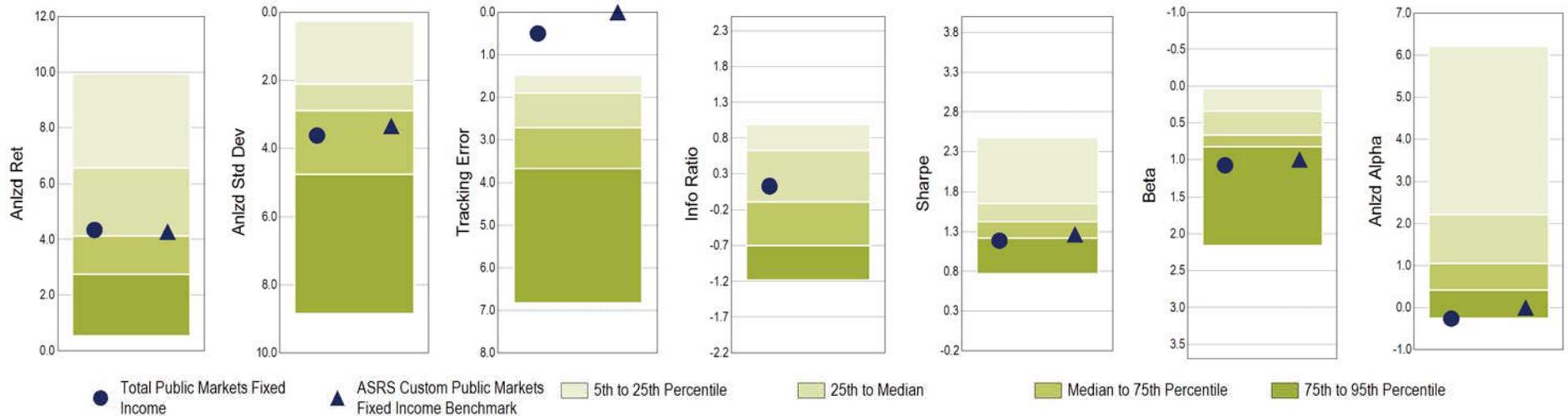
- Total Public Markets Fixed Income
- ◆ ASRS Custom Public Markets Fixed Income Benchmark
- 68% Confidence Interval
- eA All US Fixed Inc Net

3 Year Style Map

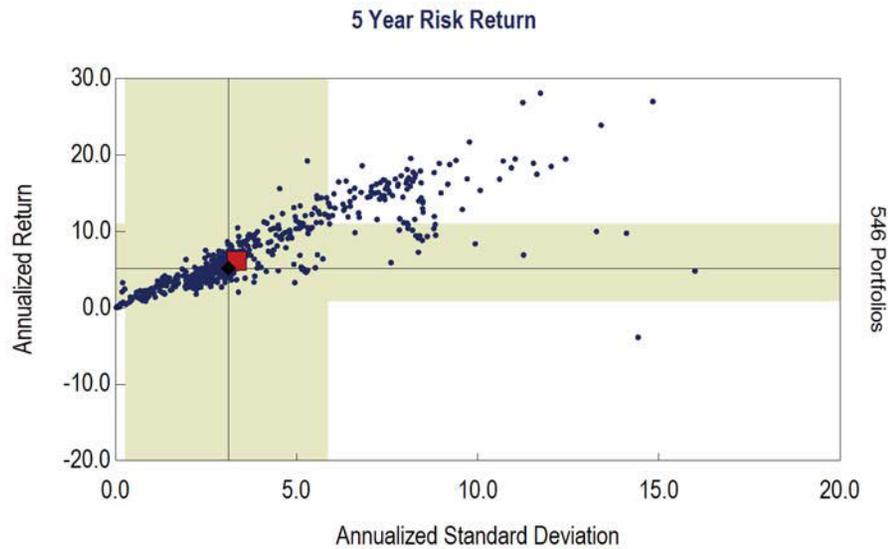


- First Rolling Period
- ◆ Last Rolling Period

*Style map is returns based.



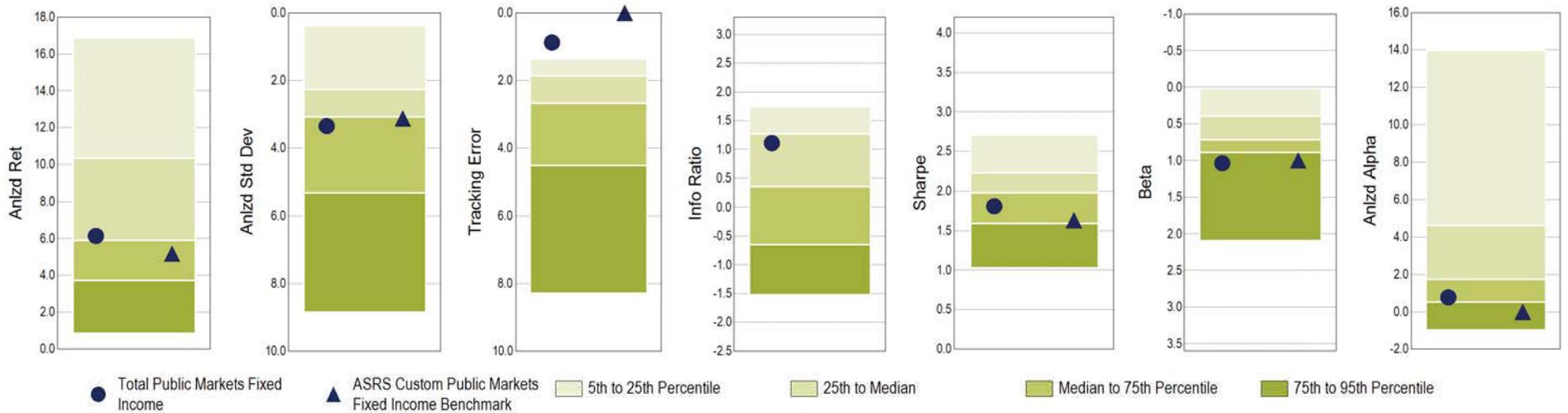
- Total Public Markets Fixed Income
- ▲ ASRS Custom Public Markets Fixed Income Benchmark
- 5th to 25th Percentile
- 25th to Median
- Median to 75th Percentile
- 75th to 95th Percentile



- Total Public Markets Fixed Income
- ◆ ASRS Custom Public Markets Fixed Income Benchmark
- 68% Confidence Interval
- eA All US Fixed Inc Net

- First Rolling Period
- ◆ Last Rolling Period

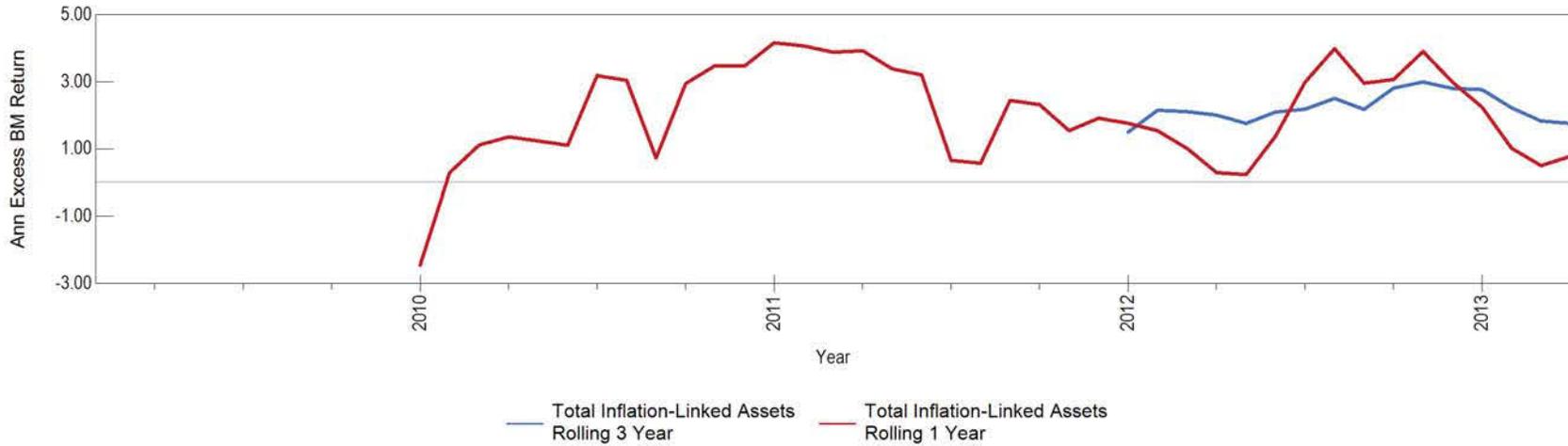
*Style map is returns based.



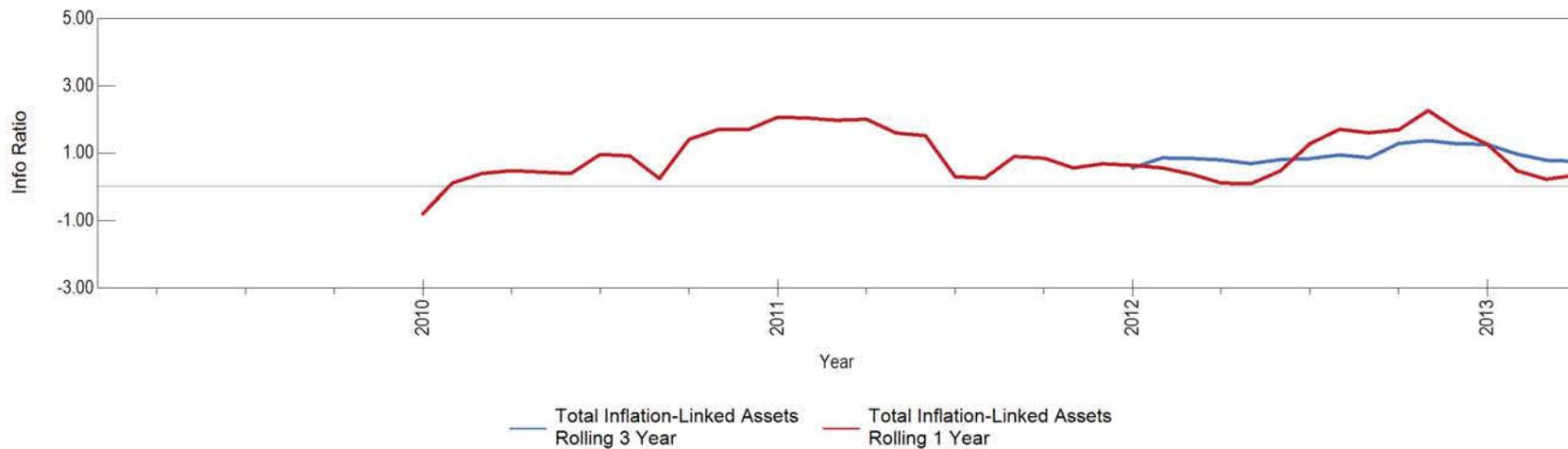
- Total Public Markets Fixed Income
- ▲ ASRS Custom Public Markets Fixed Income Benchmark
- 5th to 25th Percentile
- 25th to Median
- Median to 75th Percentile
- 75th to 95th Percentile

Asset Class Analysis - Total Inflation-Linked Assets

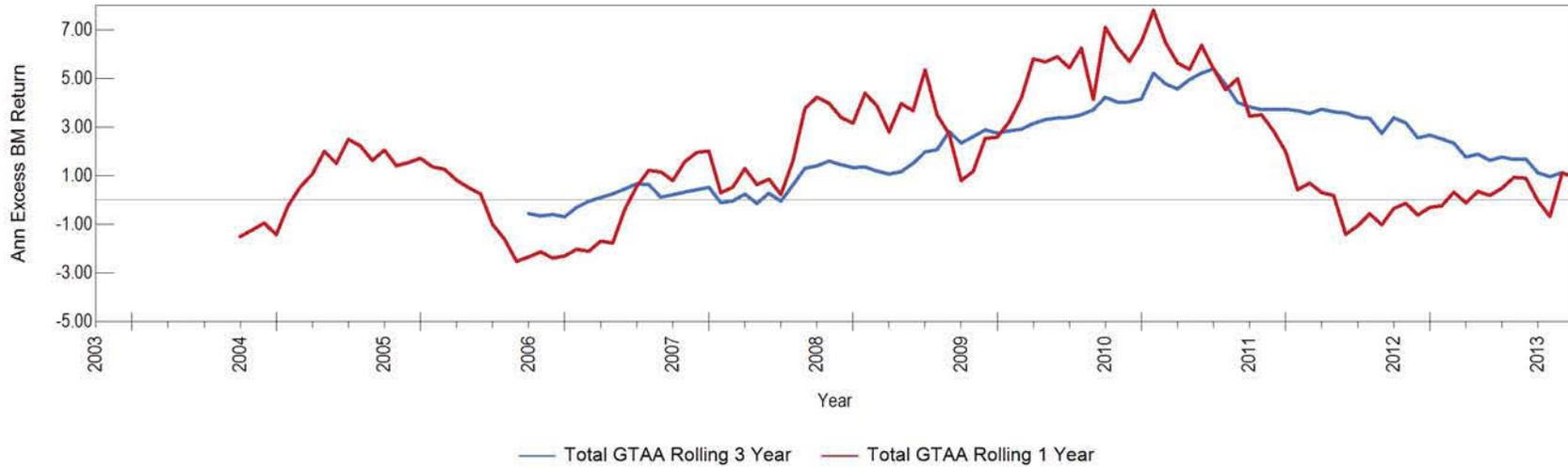
Rolling Annual Excess Benchmark Return



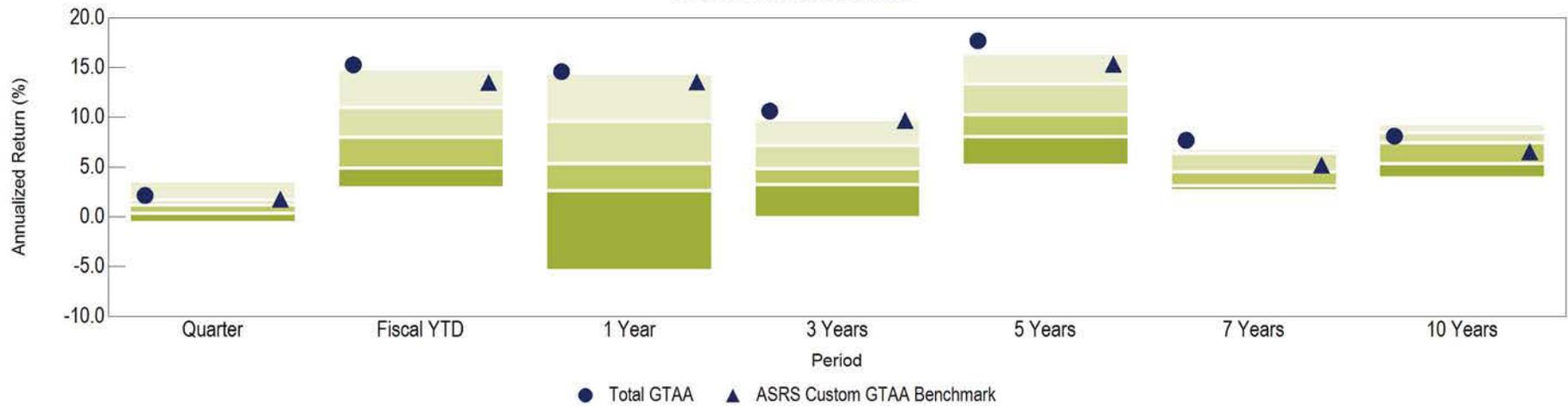
Rolling Information Ratio

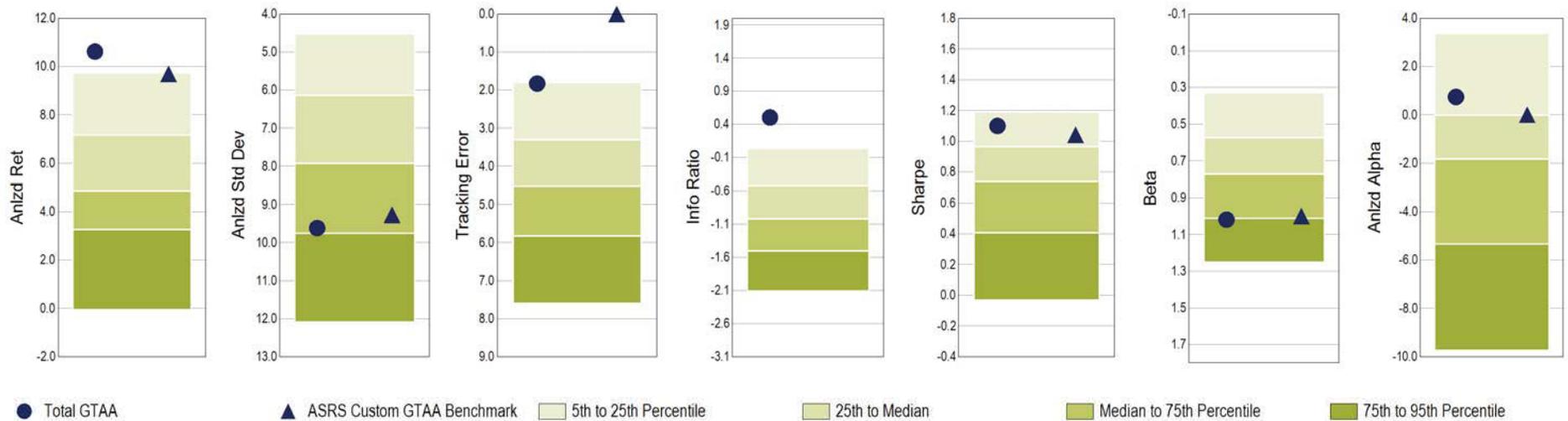
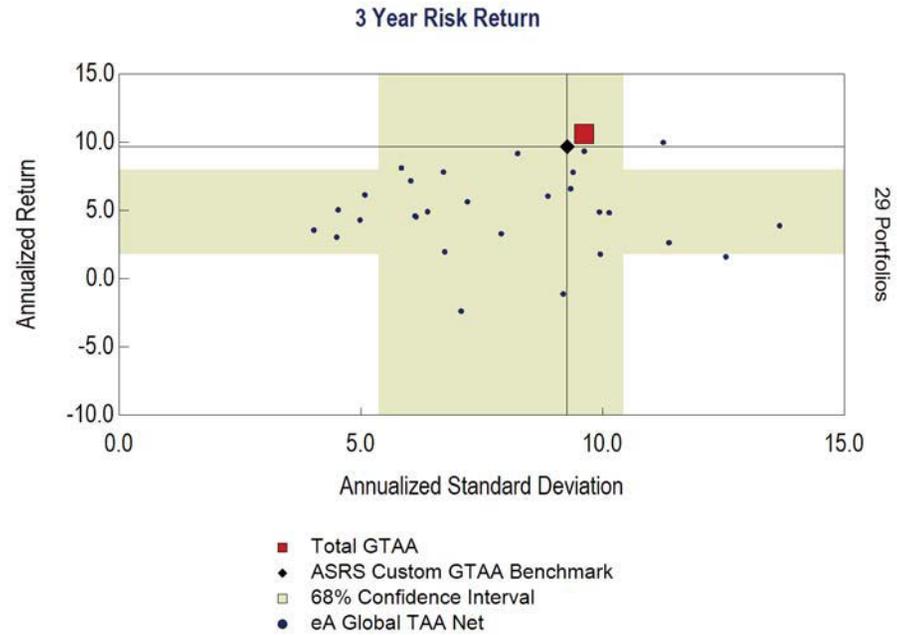


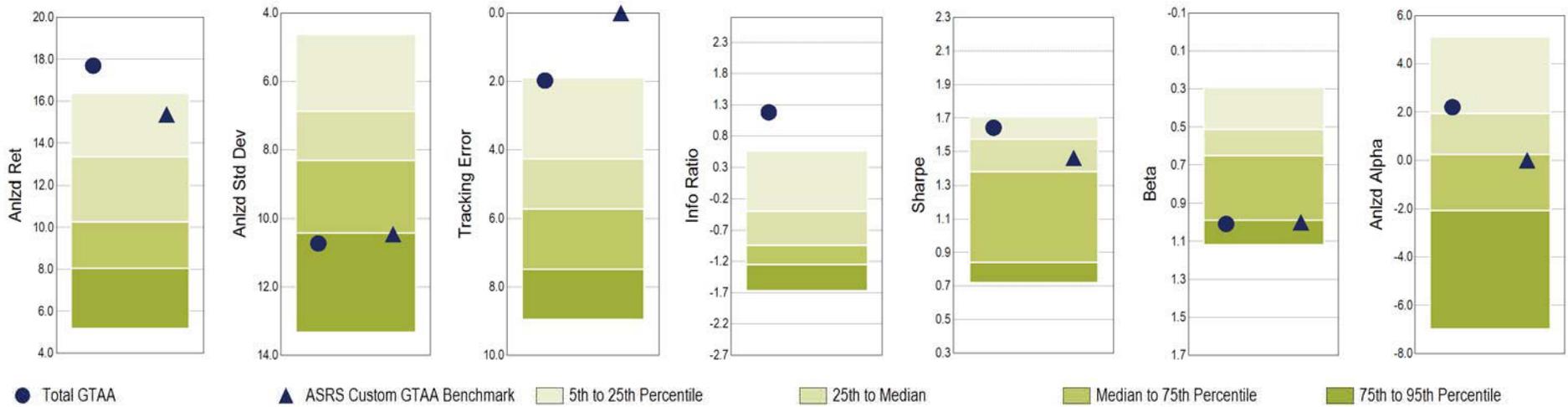
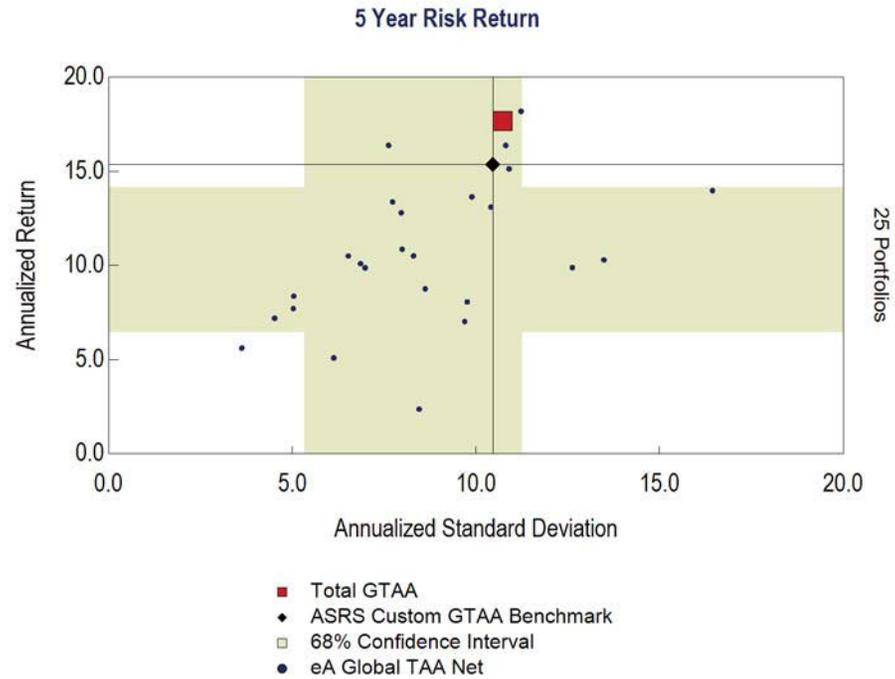
Rolling Annual Excess Benchmark Return



eA Global TAA Net Accounts







- **Eight Asset Class Committee meetings have been held since the last time we provided an update on the ASRS Asset Class Committee Meetings.**

- **February 21, 2014 – Private Markets Committee**
 - Review of Private Markets Program Staff Report
 - General Discussion on Future Agenda Items and Deal Flow
 - Private Equity Manager Recommendation (\$75 million)
 - Consistent with strategic plan at the Total Fund level (SAAP Target to Private Equity is 7%)
 - The ASRS has invested with this manager in a prior fund and has also approved co-investment with this manager and is in the process of finalizing the legal documents to begin co-investing.
 - Due diligence process was followed in accordance with SIP006 – Investment Manager, Partner, and Co-Investment Selection and Oversight.
 - Committee approved the recommendation.
 - Private Equity Manager Recommendation (\$50 million)
 - Consistent with strategic plan at the Total Fund level (SAAP Target to Private Equity is 7%)
 - The ASRS has invested with this manager in a prior fund.
 - Due diligence process was followed in accordance with SIP 006 – Investment Manager, Partner, and Co-Investment Selection and Oversight.
 - Committee approved the recommendation.

- **February 21, 2014 – Private Markets Committee (continued)**

- Niche and Tactical Real Estate Discussion
 - The Committee previously approved a \$350 million program of niche and tactical real estate investments and authorized RCLCO, the Plan's real estate advisor, to develop a detailed plan for implementation and a preliminary pipeline.
 - The Committee authorized the ASRS private markets team and RCLCO to proceed with implementation of the niche and tactical real estate program over what is estimated to be a two year period.
 - There is no requirement to invest the entire \$350 million.
 - Investments will be approved in a two-step process by the PRIVMC, first as a preliminary presentation and second, if further work is authorized, as a final, more detailed presentation.
 - Several specific investment criteria were established, subject to modifications, including expected return targets, minimum size of investments, location of investments (all U.S.), use of leverage (65% max), the structure of the investments and additional partners.
 - A financial reporting and monitoring process will be established.
 - Consistent with strategic plan at the Total Fund level (SAAP Target to Real Estate is 8%)
- Residential Land Discussion
 - The 2014 real estate pacing and implementation plan included a recommendation from RCLCO for the ASRS to consider investments in residential land as an opportunistic equity investment.
 - The recommendation was not approved, but the Committee authorized RCLCO to perform additional work on the topic to provide a more detailed explanation of the market opportunity.
 - The Committee authorized the ASRS private markets team and RCLCO to proceed with implementation of the residential land strategy to invest \$100 million.
 - There is no requirement to invest the entire \$100 million. Program is designed to return all capital within three years.
 - Investments will be approved in a two-step process by the PRIVMC, first as a preliminary presentation and second, if further work is authorized, as a final, more detailed presentation.
 - Several specific investment criteria were established, subject to modifications, including expected return targets, minimum size of investments, location of investments (all U.S.) and geographic diversification, use of leverage (50% max for any one property; 30% max at the portfolio level), the structure of the investments and additional partners.
 - A financial reporting and monitoring process will be established.
 - Consistent with strategic plan at the Total Fund level (SAAP Target to Opportunistic Equity is 0% with a range of 0-3%)

- **March 24, 2014 – Private Markets Committee**

- Review of Private Markets Program Staff Report
- General Discussion on Future Agenda Items and Deal Flow
- Private Equity Manager Recommendation (\$75 million)
 - Consistent with strategic plan at the Total Fund level (SAAP Target to Private Equity is 7%)
 - Due diligence process was followed in accordance with SIP006 – Investment Manager, Partner, and Co-Investment Selection and Oversight.
 - Committee approved the recommendation.
- Private Equity Manager Recommendation (\$50 million)
 - Consistent with strategic plan at the Total Fund level (SAAP Target to Private Equity is 7%)
 - Due diligence process was followed in accordance with SIP006 – Investment Manager, Partner, and Co-Investment Selection and Oversight.
 - Committee approved the recommendation.

- **March 27, 2014 – Public Markets Committee**

- Review of Public Equity Program Staff Report
- Non-U.S. Developed Markets Large Cap Equity Re-Structure and Manager Recommendation (\$1.0 billion)
 - Staff recommended the termination of three non-U.S. developed markets large cap equity managers and to transition those assets to three new managers, with a residual amount (\$5 million) allocated to the remaining active manager (Brandes).
 - New managers are growth (\$525 million), concentrated core (\$350 million) and value (\$155 million) strategies to complement the existing value portfolio managed by Brandes (\$523 million).
 - Consistent with strategic plan at the Total Fund level (SAAP Target to Int'l Dev. Mkts Large Cap is 14%)
 - Due diligence process was followed in accordance with SIP 006 – Investment Manager, Partner, and Co-Investment Selection and Oversight.
 - Committee approved the recommendation.

- **April 17, 2014 – Public Markets Committee**

- Committee approved termination of active core fixed income mandate managed by PIMCO.
 - Portfolio Manager responsible for ASRS portfolio left PIMCO during the first quarter.
 - BlackRock US Debt mandate reengaged to manage the assets going forward.
- Committee approved termination of active high yield fixed income mandate managed by Shenkman.
 - This results in a 1.5% underweight to high yield fixed income vs. SAAP.
 - IMD currently favors opportunistic and private debt mandates over high yield fixed income.
- Emerging Markets Discussion
 - With regard to emerging market debt, IMD expressed concerns with volatility levels in the asset class, noting that currency volatility has significantly detracted from performance and is larger than anticipated.
 - Currency volatility is a concern regardless of whether it has a positive or negative impact.
 - IMD is currently underweight emerging market debt vs. SAAP (2.7% vs. 4% SAAP target)
 - Within equities, each of the ASRS active emerging market equity managers are outperforming the benchmark since inception and volatility has stabilized; however, significant outflows from emerging market equities has negatively impacted performance.

- **April 22, 2014 – Private Markets Committee**

- Review of Private Markets Program Staff Report
- General Discussion on Future Agenda Items and Deal Flow
 - Update on the status of back office provider search.
 - Discussion of 'covenant light' lending and impact on ASRS private debt allocation.
 - Private Equity benchmarking was discussed but no action was taken.
 - Update on residential land strategy search.
- Private Equity Manager Recommendation (\$40 million)
 - Consistent with strategic plan at the Total Fund level (SAAP Target to Private Equity is 7%).
 - Due diligence process was followed in accordance with SIP006 – Investment Manager, Partner, and Co-Investment Selection and Oversight.
 - Committee approved the recommendation.

- **May 12, 2014 – Ad Hoc Private Markets Committee**

- Opportunistic Equity Manager Recommendation(\$100 million)
 - Separately managed portfolio to invest in residential land pursuant to 2/21/2014 PRIVMC meeting discussion. There is no requirement that the entire \$100 million be invested.
 - Consistent with strategic plan at the Total Fund level (SAAP Target to Opportunistic Equity is 0% with a range of 0-3%; Aggregate Opportunistic asset classes not to exceed 10%).
 - Due diligence process was followed in accordance with SIP006 – Investment Manager, Partner, and Co-Investment Selection and Oversight.
 - Committee approved the recommendation.

- **May 27, 2014 – Private Markets Committee**

- Review of Private Markets Program Staff Report
- General Discussion on Future Agenda Items and Deal Flow
 - \$600 million in commitments targeted for 2014.
- Private Equity Manager Recommendation (\$40 million)
 - Consistent with strategic plan at the Total Fund level (SAAP Target to Private Equity is 7%).
 - Due diligence process was followed in accordance with SIP006 – Investment Manager, Partner, and Co-Investment Selection and Oversight.
 - Committee approved the recommendation.
- Private Equity Manager Recommendation (\$25 million)
 - Consistent with strategic plan at the Total Fund level (SAAP Target to Private Equity is 7%).
 - Due diligence process was followed in accordance with SIP006 – Investment Manager, Partner, and Co-Investment Selection and Oversight.
 - Committee approved the recommendation.

- **May 28, 2014 – Private Markets Committee**

- Niche and Tactical Real Estate Discussion

- At the 2/21/2014 PRIVMC meeting, the Committee approved the pursuit of niche and tactical investments in the real estate asset class in accordance with a documented procedure that includes approval by the Committee before conducting a full due diligence review.
- IMD presented five potential investments and the Committee authorized further due diligence on each.

General Observations

- **The Fund continues to make significant progress moving the portfolio from the Interim SAAP toward the long-term SAAP.**
 - Full implementation results in a further reduction of 2% within U.S. Equities and 2% within U.S. Core Fixed Income and an increase of 1% to Private Equity, 1% to Private Debt, and 2% to Real Estate.
- **Strong absolute and relative Total Fund performance driven largely by the Fund's exposure to global equities.**
 - The Fund's volatility ranks in the bottom quartile of its peer group over all time periods reported herein due to its overweight to equities relative to peers. However, risk-adjusted measures of performance show the Fund is generating more return per unit of risk taken than approximately half of its peers over all time periods reported and more than one third of its peers over the three-year period.
 - Continued build-out of private debt and opportunistic debt asset classes provides an opportunity to generate equity-like returns with less volatility.
- **Restructuring of non-U.S. developed markets large cap equity allocation eliminates three underperforming actively managed strategies and replaces them with three new actively managed strategies.**
 - Goal of smoothing the volatility and return profile of the Fund's allocation to non-U.S. developed markets equities as the existing managers had experienced unusually large tracking error and poor relative performance over the short to intermediate term, which negated all of the value add that had been added relative to respective benchmarks since their inception.
- **Emerging markets, both equities and debt, have significantly trailed developed markets over the past year.**
 - We continue to advise clients to gain exposure to emerging markets through both debt and equity based on our belief in the long-term growth prospects of emerging markets countries relative to developed markets.
 - Critical to recognize that higher return expectations come with higher levels of volatility.
 - Individual emerging market countries are likely to behave in a more idiosyncratic fashion going forward.
 - A top-down active manager could potentially alleviate some of the macro challenges.
 - Current valuations present a compelling entry point or potential opportunity to add to allocations.

General Observations

- **\$355 million in commitments to Private Equity strategies in line with strategic plan and pacing model for the asset class.**
- **\$100 million commitment to Opportunistic Equity strategy increases total commitments to Opportunistic asset classes to \$1.8 billion, or approximately 5.5% of the Total Fund. Aggregate Opportunistic asset classes not to exceed 10% per the SAAP.**
 - Total \$435 million in commitments to Opportunistic Equity strategies = 1.3% of the Total Fund (SAAP Target to Opportunistic Equity is 0% with a range of 0-3%).
 - Total \$1.4 billion in commitments to Opportunistic Debt strategies = 4.2% of the Total Fund (SAAP Target to Opportunistic Debt is 0% with a range of 0-10%).
 - Current actual exposure to Opportunistic investments is 3.4% of the Total Fund, which is largely comprised of investments in Opportunistic Debt strategies.
- **Tactical positioning consistent with IMD House Views**

Market Environment Update and Outlook

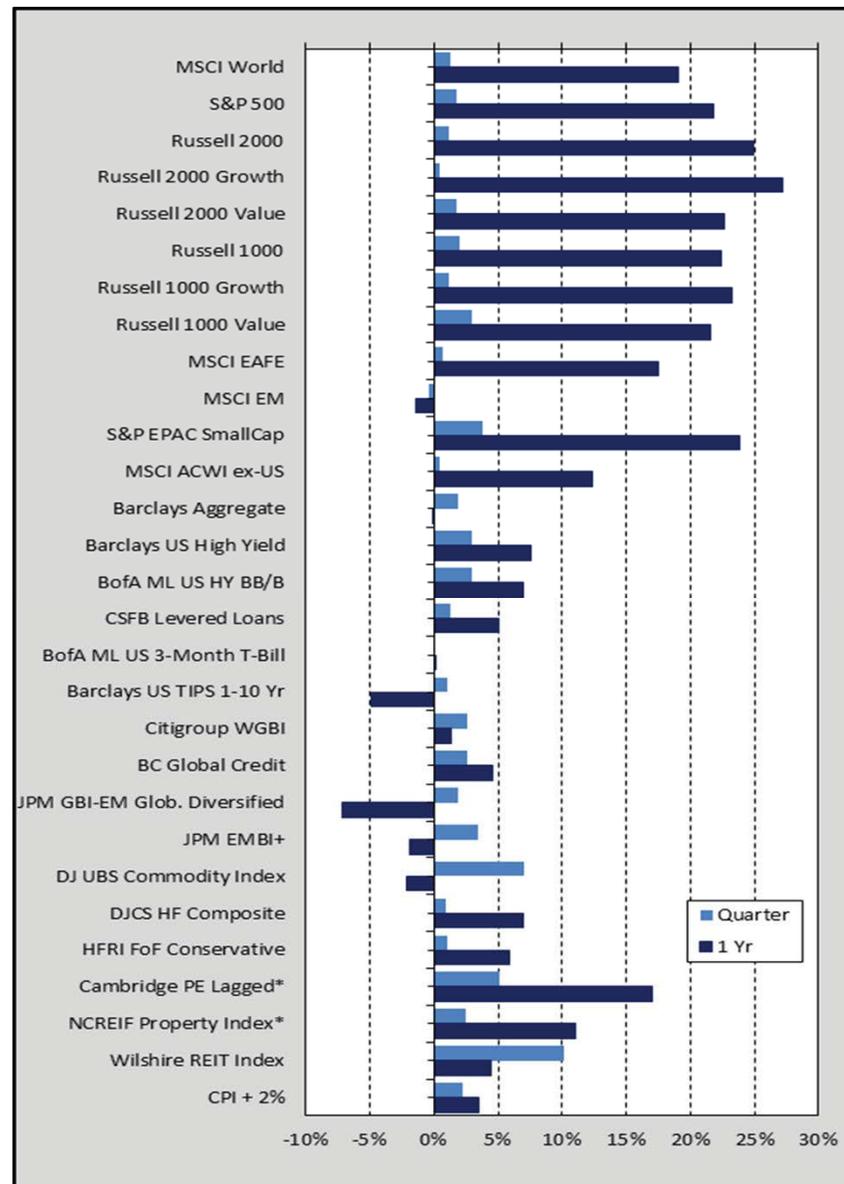


- **First quarter GDP growth was slower at 0.1% principally due to severe winter weather. Potential for second quarter rebound in growth?**
 - Retail sales (ended March) rose to 2.2% on a year-over-year growth rate basis.
 - The inventory-to-sales ratio has remained mostly flat since early 2010 and closed at 1.31% in February.
 - Corporate profits as a percent of GDP remained near secular highs at 12.7% at the end of Q4 2013.
 - The trade deficit increased in February.
- **The unemployment rate stayed flat at 6.7% in March; U-6, a broader measure of unemployment, rose to 12.7% during the first quarter.**
 - JP Morgan has stated that sustained GDP growth of 1.5% is needed for positive job creation, and closer to 3% growth is needed to decrease the unemployment rate.
- **Consumer confidence fell to 82.3 in March; the Case-Schiller Home Price Index (as of 12/31) dipped slightly to 150.39 from its highest level (150.92) since the financial crisis.**
- **Rolling 12-month CPI increased to 1.5% at the end of March; Capacity Utilization rose slightly to 79.2% in the month.**
- **Fed Funds rate remains at 0.25%, while the 10-year Treasury Yield finished March at 2.72%.**
- **Fed balance sheets increased in early 2014, while European Central Bank balance sheets decreased.**
 - Large economies continue easing (Japan to the extreme), while the ECB tightens.
- **S&P valuations rose in March and remained above the 10-year and long-term averages, which are nearly equal at 16.4x, using current price/earnings ratios.**
 - Cyclically adjusted Shiller PE ratios, however, are well above the long-term average of 17.6x and above the 10-year average of 23.0x.

Market Environment – Q1 2014 Performance Summary

		Qtr.	1 Yr.	3 Yr.	5 Yr.	10 Yr.
World Equity Benchmarks						
MSCI World	World	1.3%	19.1%	10.2%	18.3%	6.8%
		Qtr.	1 Yr.	3 Yr.	5 Yr.	10 Yr.
Domestic Equity Benchmarks						
S&P 500	Large Core	1.8%	21.9%	14.7%	21.2%	7.4%
Russell 2000	Small Core	1.1%	24.9%	13.2%	24.3%	8.5%
Russell 2000 Growth	Small Growth	0.5%	27.2%	13.6%	25.2%	8.9%
Russell 2000 Value	Small Value	1.8%	22.6%	12.7%	23.3%	8.1%
Russell 1000	Large Core	2.0%	22.4%	14.7%	21.7%	7.8%
Russell 1000 Growth	Large Growth	1.1%	23.2%	14.6%	21.7%	7.9%
Russell 1000 Value	Large Value	3.0%	21.6%	14.8%	21.8%	7.6%
		Qtr.	1 Yr.	3 Yr.	5 Yr.	10 Yr.
International Equity Benchmarks						
MSCI EAFE	International Developed	0.7%	17.6%	7.2%	16.0%	6.5%
MSCI EM	Emerging Equity	-0.4%	-1.4%	-2.9%	14.5%	10.1%
S&P EPAC SmallCap	Small Cap Int'l	3.8%	23.9%	9.6%	21.2%	9.4%
MSCI ACWI ex-US	World ex-US	0.5%	12.3%	4.1%	15.5%	7.1%
		Qtr.	1 Yr.	3 Yr.	5 Yr.	10 Yr.
Domestic Fixed Income Benchmarks						
Barclays Aggregate	Core Bonds	1.8%	-0.1%	3.7%	4.8%	4.5%
Barclays US High Yield	High Yield	3.0%	7.5%	9.0%	18.2%	8.7%
BofA ML US HY BB/B	High Yield	3.0%	7.0%	8.5%	15.8%	7.9%
CSFB Levered Loans	Bank Loans	1.3%	5.0%	5.3%	12.2%	5.0%
BofA ML US 3-Month T-Bill	Cash	0.0%	0.1%	0.1%	0.1%	1.7%
Barclays US TIPS 1-10 Yr	Inflation	1.0%	-4.9%	2.2%	4.0%	4.0%
		Qtr.	1 Yr.	3 Yr.	5 Yr.	10 Yr.
Global Fixed Income Benchmarks						
Citigroup WGBI	World Gov. Bonds	2.7%	1.4%	1.9%	3.8%	4.2%
BC Global Credit	Global Bonds	2.6%	4.6%	5.8%	9.9%	5.6%
JPM GBI-EM Glob. Div.	Em. Mkt. Bonds (Local)	1.9%	-7.1%	1.1%	9.8%	9.3%
JPM EMBI+	Em. Mkt. Bonds	3.5%	-1.9%	6.7%	10.9%	8.3%
		Qtr.	1 Yr.	3 Yr.	5 Yr.	10 Yr.
Alternative Benchmarks						
DJ UBS Commodity Index	Commodity	7.0%	-2.1%	-7.4%	4.2%	0.4%
DJCS HF Composite	Hedge Fund	0.9%	7.0%	4.4%	8.7%	6.1%
HFRI FoF Conservative	Fund of Funds	1.1%	5.9%	2.7%	4.6%	2.6%
Cambridge PE Lagged*	Private Equity	5.1%	17.0%	15.5%	10.6%	15.2%
NCREIF Property Index*	Real Estate	2.5%	11.0%	11.9%	5.7%	8.4%
Wilshire REIT Index	REIT	10.1%	4.4%	10.5%	29.2%	8.2%
CPI + 2%	Inflation/Real Assets	2.3%	3.5%	3.9%	4.2%	4.6%

*As of 12/31/2013



Positives

- **Continued slow and steady economic growth**
 - A bit slower in the first quarter due to weather (maybe offset in Q2?)
 - Deleveraging continuing
- **Early stages of Taper generally accepted by marketplace**
 - Though priced in, “normalization” of rates appears optimistic
- **Developed world inflation is low**
 - Allows Fed continued flexibility to work through Taper
- **Emerging markets made some progress on adjustments**
 - Finally experiencing positive flows and early signs of positive performance
- **Volatility remains subdued and markets relatively stable**

Negatives

- **Potential geopolitical instability**
 - Russian invasion of Crimea has minimal economic impact
 - But tensions between Russia and West could have spillover effects
- **Benign market environment in Europe obscures challenging underlying economic conditions**
- **Inflation is low... maybe too low**
 - Global monetary stimulation has offset deflationary pressures
- **Continued slowing growth in China has global implications**
 - Could bring Chinese credit issues to forefront
- **Valuations beginning to stretch above long-term averages**
 - Developed Equity P/Es above median
 - Credit spreads approaching 2006-07 levels

Market Environment

Global Equity

- **U.S. stocks oscillated back and forth in the first quarter amid further guidance from the Federal Reserve.**
- **The S&P 500 Index rose 1.8%, while the Russell 2000 gained a modest 1.1%.**
- **International equities lagged U.S. markets, returning 0.7%, as measured by the MSCI ACWI ex-U.S. Index.**
 - Developed markets returned 0.7% as measured by the MSCI EAFE Index
 - Emerging markets returned -0.4% as measured by the MSCI Emerging Markets Index
- **Europe led non-U.S. equities as France and peripheral countries recorded robust gains. Italy and Ireland were two of the best markets for the quarter, with stocks returning roughly 14% so far this year.**
- **Despite rallying in March, emerging markets ended the quarter down 0.4% following Russia's takeover of Crimea and the continuing economic slowdown in China. Russia was the worst performing market with a -14.4% return, while Indonesia gained a hefty 21.3%.**

Private Equity

- **Private equity fund raising got off to a strong start in the first quarter with new commitments—at around \$75.6 billion—keeping pace with commitments made in 2013.**
- **Asian fundraising totaled \$10.8 billion in the first quarter, getting a shot in the arm as three firms raised over \$1.0 billion each; Europe saw \$12.0 billion of new commitments, of which 60% is to be invested in buyout and growth equity funds.**
- **Globally, buyout and growth equity commitments totaled \$33.3 billion during the quarter, representing 44% of all funds raised so far this year, while energy, natural resources and infrastructure accounted for 19%.**
- **Venture capital fundraising hit \$13.2 billion powered by five firms raising over \$5 billion.**
- **Mezzanine funds, at \$3.2 billion, accounted for only 4% of all new capital raised.**
- **Secondary funds raised only \$3.1 billion in the first quarter, but we expect this number to increase to more than \$20 billion as the year progresses with several large funds coming to market.**

Market Environment

Fixed Income

- **Bond markets rallied in the first quarter as investors snapped up safer, higher quality assets amid concerns around the crisis in Ukraine, an economic slowdown in China, and the unseasonably harsh winter in the U.S.**
- **The 10-year U.S. Treasury yield decreased 31 basis points to end the first quarter at 2.72%.**
- **The U.S. Credit Index gained 2.9% and the Long Duration Credit Index returned 6.3% in the first quarter. High yield bonds returned 3.0%.**
- **Investment grade credit spreads narrowed to 103 basis points, the lowest they have been since before the financial crisis. The yield spread on high yield bonds over Treasuries fell to a near record low of 3.58%.**
- **Intermediate-term Treasury Inflation-Protected Securities, or TIPS, gained 1.0% during the quarter.**
- **The Credit Suisse Leveraged Loan Index gained 1.3% during the first quarter.**
- **Local currency debt, as measured by the JP Morgan GBI-EM Index, gained 1.9%. Hard currency debt, boosted by declining Treasury yields, outperformed local currency debt during the quarter, posting returns of 3.5%.**

Market Environment

Commodities

- **Commodities started the year with a bang, with the DJ-UBS Index returning 7.2% in the first quarter.**
- **Fears of a grain shortage following Russia's invasion of Ukraine powered returns of 8.4% in the grain sector.**
- **Heating oil rallied early in the quarter on the heels of unseasonably cold weather but subsequently retreated in March as temperatures returned to more normal levels, resulting in losses of 1.8% for energy.**
- **Precious metals declined 4% as copper prices fell amid the slowdown in China.**

Real Estate

- **NEPC continues to be neutral on core real estate in the U.S. and remains positive on non-core real estate, that is, value-add and opportunistic strategies, particularly in Europe.**
- **Within U.S. core real estate, fundamentals continue to improve with decreasing vacancy rates, increasing rents, limited new construction (outside of the apartment sector), and still attractive if narrowing income spreads relative to interest rates.**
- **In Europe, undervalued non-core properties and capital structure distress remain, creating more appealing prospects than in the U.S.**
- **Real estate debt strategies are appealing, particularly in Europe's distressed lending environment, although currency risk is a potential consideration.**

Real Assets/Inflation-Linked Assets

- **NEPC believes that energy, specifically in North America, represents an attractive opportunity in the up-stream and mid-stream parts of the energy value chain.**
- **Agriculture and metals/mining opportunities seem appealing based on long-term demographic trends despite a less certain short-term outlook.**
- **Timber is an area of portfolios where we would recommend underweight positions as total return targets are low with a relatively small market opportunity and managers seeking deals outside the U.S.**



- **Markets have generally shown resiliency so far in 2014**
 - Withstood adjustments in balance of payment challenged EM countries
 - Limited market reaction to Russia/Ukraine issues
- **U.S. taper has generally been accepted by markets**
 - Already reduced from \$85 billion to \$55 billion in monthly purchases
 - Rates remain low and accommodating
- **Slow and steady economic growth continues**
 - Inflation remains subdued
- **Continued low volatility may obscure underlying economic challenges**
 - European peripheral countries continue to face high unemployment
 - Many EM countries face further balance of payment adjustments
 - China faces slowing growth and potential credit issues
- **Valuations beginning to move beyond fair value**
 - While not stretched, equity P-E ratios are now above long-term averages
 - Credit spreads continue to move tighter
 - Ex: European peripheral debt
- **NEPC themes remain consistent**
 - Rebalance – remain diversified and balanced
 - Look for opportunities to be dynamic – particularly in credit
 - Allocate to emerging markets and private markets for higher returns in low return world

Highlights of First Quarter Happenings at NEPC

NEPC Research Recent White Papers Posted

- *4Q Market Thoughts — "1997, 2007, or Something Else Altogether?"* (January 2014)
- *Moving in Different Directions: NEPC's 2014 Asset Allocation Letter* (January 2014), NEPC's Asset Allocation Committee
- *Annual Chairman's Letter* (March 2014), Richard M. Charlton, Chairman
- *Overlay Strategies: Increasing Portfolio Diversification Through Derivatives* (March 2014), Brian Roberts, CAIA, Senior Consultant
- *The Alternative Route: A Smoother Ride for Defined Contribution Plans* (April 2014), Rob J. Fishman, CFA, Partner; Aaron S. Keel, CFA, Senior Analyst; Deirdre L. Pomerleau, Analyst



Professional Staff Updates

- Tim McCusker, CFA, CAIA, FSA named Chief Investment Officer



NEPC's 19th Annual Client Conference

- May 13 and May 14, 2014
- Boston Convention Center
- Headline Speakers:
 - David M. Rubenstein, Co-Founder and Co-CEO, The Carlyle Group
 - Perry M. Traquina, CFA, Chairman and CEO, Managing Partner, Wellington Management Company

Appendix: SAA Policy History

Strategic Asset Allocation Policy (SAAP) History

- 7/1/75 – 12/31/79 – 40% S&P 500/60% Barclays Capital Aggregate
- 1/1/80 – 12/31/83 – 50% S&P 500/50% Barclays Capital Aggregate
- 1/1/84 – 12/31/91 – 60% S&P 500/40% Barclays Capital Aggregate
- 1/1/92 – 12/31/94 – 50% S&P 500/10% MSCI EAFE/40% Barclays Capital Aggregate
- 1/1/95 – 6/30/97 – 45% S&P 500/15% MSCI EAFE/40% Barclays Capital Aggregate
- 7/1/97 – 12/31/99 – 50% S&P 500/15% MSCI EAFE/35% Barclays Capital Aggregate
- 1/1/00 – 9/30/03 – 53% S&P 500/17% MSCI EAFE/30% Barclays Capital Aggregate
- 10/1/03 – 12/31/06 – 53% S&P 500/15% MSCI EAFE/ACWI ex-U.S.¹/26% Barclays Capital Aggregate/6% NCREIF ODCE (lagged one quarter)
- 1/1/07 – 10/31/2009 – 31% S&P 500/7% S&P 400/7% S&P 600/18% MSCI ACWI ex-U.S./5% Russell 2000 (lagged one quarter)/26% Barclays Capital Aggregate/6% NCREIF ODCE (lagged one quarter)
- 11/1/2009 – 6/30/2012 – 28% S&P 500/6% S&P 400/6% S&P 600/13% MSCI EAFE/2% MSCI EAFE Small Cap/3% MSCI Emerging Markets/7% Russell 2000 (lagged one quarter)/24% Barclays Capital Aggregate/2% Barclays Capital High Yield/6% NCREIF ODCE (lagged one quarter)/3% Dow Jones/UBS Commodities Index
- **7/1/2012 – Present – 23% S&P 500/5% S&P 400/5% S&P 600/14% MSCI EAFE/3% MSCI EAFE Small Cap/6% MSCI Emerging Markets/7% Russell 2000 (lagged one quarter)/13% Barclays Capital Aggregate/5% Barclays Capital High Yield/4% JP Morgan GBI-EM Global Diversified/3% S&P/LSTA Levered Loan Index + 250 basis points (lagged one quarter)/8% NCREIF ODCE (lagged one quarter)/4% Dow Jones/UBS Commodities Index**
- *Interim SAA Policy: 25% S&P 500/5% S&P 400/5% S&P 600/14% MSCI EAFE/3% MSCI EAFE Small Cap/6% MSCI Emerging Markets/6% Russell 2000 (lagged one quarter)/15% Barclays Capital Aggregate/5% Barclays Capital High Yield/4% JP Morgan GBI-EM Global Diversified/2% S&P/LSTA Levered Loan Index + 250 basis points (lagged one quarter)/6% NCREIF ODCE (lagged one quarter)/4% Dow Jones/UBS Commodities Index

Note: Interim SAA Policy includes a proration of 1% Private Equity, 1% Private Debt, and 2% Real Estate, which are unfunded. Private Equity was prorated to domestic equity; Real Estate was prorated to domestic equity and fixed income; Private Debt was prorated to fixed income. Recently approved Strategic Asset Allocation Policy effective July 1, 2012.

¹MSCI EAFE/ACWI ex-U.S. Benchmark is the MSCI EAFE Index prior to 10/1/2005 and the MSCI ACWI ex-U.S. thereafter.

Note: All MSCI indices changed from Gross to Net of dividend withholding taxes effective 1/1/2014.



ASRS Custom Asset Class Benchmark History

- **ASRS Custom Total Equity Benchmark** was 77% S&P 500, 23% MSCI EAFE through 12/31/1999; 76% S&P 500, 24% MSCI EAFE through 9/30/2003; 78% S&P 500, 22% MSCI EAFE/ACWI ex-U.S.¹ through 12/31/2006; 49% S&P 500, 11% S&P 400, 11% S&P 600, 29% MSCI ACWI ex-U.S. through 10/31/2009; 48% S&P 500, 10% S&P 400, 10% S&P 600, 23% MSCI EAFE, 4% MSCI EAFE Small Cap, 5% MSCI Emerging Markets through 6/30/2012; 41% S&P 500, 9% S&P 400, 9% S&P 600, 25% MSCI EAFE, 5% MSCI EAFE Small Cap, 11% MSCI Emerging Markets thereafter.
- **ASRS Custom Domestic Equity Benchmark** was S&P 500 through 12/31/2006; 74% S&P 500, 13% S&P 400, 13% S&P 600 through 12/31/2010; 70% S&P 500, 15% S&P 400, and 15% S&P 600 thereafter.
- **ASRS Custom International Equity Benchmark** was MSCI EAFE through 9/30/2005; MSCI ACWI ex-U.S. through 12/31/2010; 72% MSCI EAFE, 11% MSCI EAFE Small Cap and 17% MSCI Emerging Markets through 6/30/2012; 61% MSCI EAFE, 13% MSCI EAFE Small Cap and 26% MSCI Emerging Markets thereafter.
- **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 thereafter.
- **ASRS Custom GTAA Benchmark** was 56% S&P 500, 16% MSCI EAFE, 28% Barclays Capital Aggregate through 9/30/2011; 50% S&P 500, 19% MSCI EAFE, 28% Barclays Capital Aggregate, and 3% DJ UBS Commodities Index through 06/30/2012; 43% S&P 500, 25% MSCI EAFE, 28% Barclays Capital Aggregate, and 4% DJ UBS Commodities Index thereafter.
- **ASRS Custom Inflation-Linked Benchmark** was 100% Barclays Capital U.S. TIPS through 7/31/2010; 50% Barclays Capital U.S. TIPS, 50% DJ UBS Commodities Index through 8/31/2010; 30% Barclays Capital U.S. TIPS, 70% DJ UBS Commodities Index through 5/31/2011; 100% DJ UBS Commodities Index thereafter.

¹MSCI EAFE/ACWI ex-U.S. Benchmark is the MSCI EAFE Index prior to 10/1/2005 and the MSCI ACWI ex-U.S. thereafter.

Note: All MSCI indices changed from Gross to Net of dividend withholding taxes effective 1/1/2014.

- **The client's custodian bank is NEPC's preferred data source unless otherwise directed. NEPC reconciles custodian data to manager data. If the custodian cannot provide accurate data, manager data may be used.**
- **Trailing time period returns are determined by geometrically linking the holding period returns, from the first full month after inception to the report date. Rates of Return are annualized when the time period is longer than a year. Performance is presented gross and/or net of fees as indicated.**
- **For managers funded in the middle of a month, the 'since inception' return will start with the first full month, although actual inception dates and cash flows are included in all respective Composite calculations.**
- **This report may contain forward-looking statements that are based on NEPC's estimates, opinions and beliefs, but NEPC cannot guarantee that any plan will achieve its targeted return or meet other goals.**

- **Past performance is no guarantee of future results.**
- **All investments carry some level of risk. Diversification and other asset allocation techniques are not guaranteed to ensure profit or protect against losses.**
- **Some index returns displayed in this report or used in calculation of a policy, allocation or custom benchmark may not be available from the source or may be preliminary and subject to change.**
- **NEPC's source for portfolio pricing, calculation of accruals, and transaction information is the Plan's custodian bank. Information on market indices and security characteristics is received from other sources external to NEPC. While NEPC has exercised reasonable professional care in preparing this report, we cannot guarantee the accuracy of all source information contained herein.**
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ARIZONA STATE RETIREMENT SYSTEM

3300 NORTH CENTRAL AVENUE • PO BOX 33910 • PHOENIX, AZ 85067-3910 • PHONE (602) 240-2000
7660 EAST BROADWAY BOULEVARD • SUITE 108 • TUCSON, AZ 85710-3776 • PHONE (520) 239-3100
TOLL FREE OUTSIDE METRO PHOENIX AND TUCSON 1 (800) 621-3778
EMAIL ADDRESS: ASKMAC@AZASRS.GOV • WEB ADDRESS: WWW.AZASRS.GOV

Paul Matson
Director

MEMORANDUM

TO: The Arizona State Retirement System (ASRS) Investment Committee (IC)

FROM: Mr. Paul Matson, Director
Mr. Gary R. Dokes, Chief Investment Officer
Mr. Al Alaimo, Fixed Income Portfolio Manager

DATE: June 23, 2014

RE: **Agenda Item #5:** Presentation, Discussion, and Appropriate Action Regarding Total Fixed Income (Private and Public) Asset Class Presentation

Purpose

To present and discuss the annual formal review of the ASRS Total Fixed Income Program.

Recommendations

Informational only, no action required.

Background

As part of the annual asset class presentations to the IC, the CIO, IMD Portfolio Manager and NEPC will review the ASRS Total Fixed Income Program, i.e., program strategies, portfolio structure, performance, etc.

Attachments:

Fixed Income Asset Class Review

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

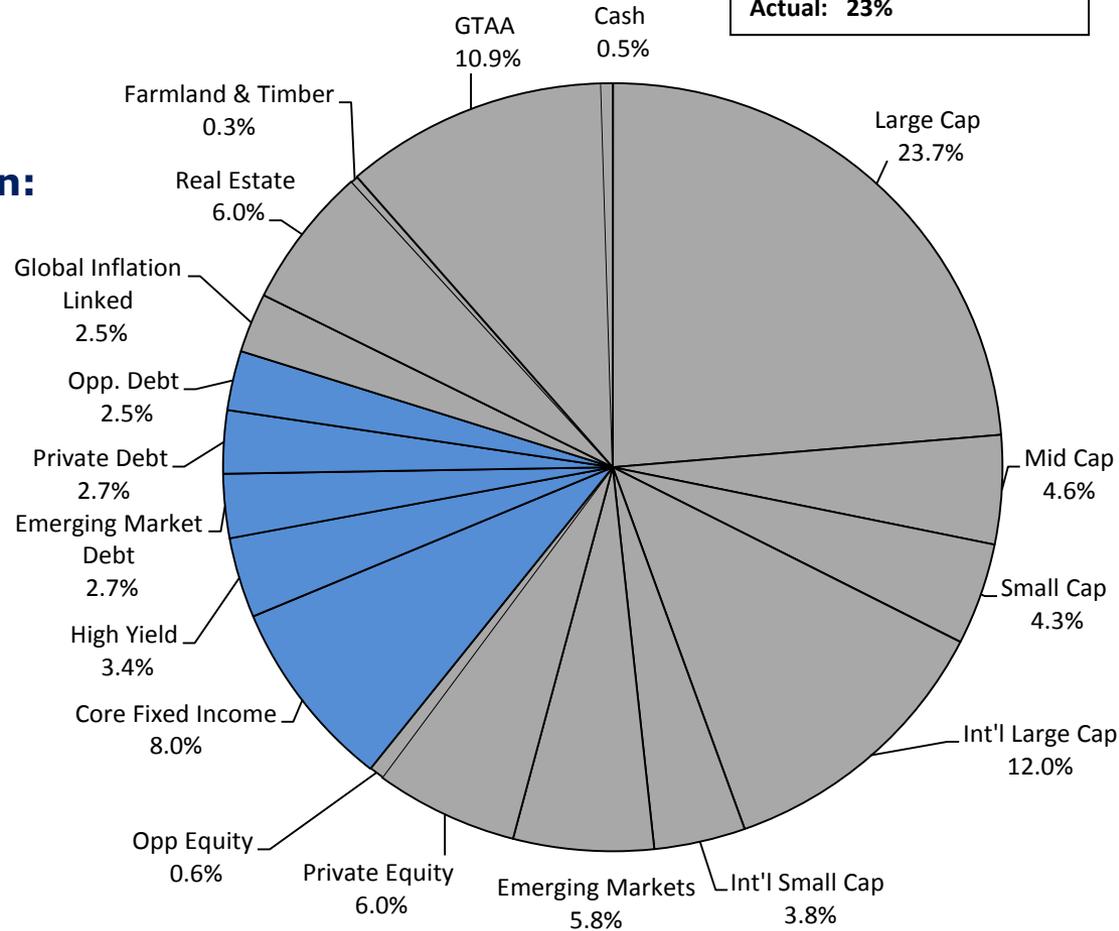
Total Fund: \$33.9 B

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.

Arizona State Retirement System

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.

Arizona State Retirement System

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
Total Core Fixed Income	2,265,584,297	6.7	1.7	73	2.3	68	0.0	61	3.8	64	5.6	57	4.7	51	8.5	Jul-75
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
Active Core Fixed Income																
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
Enhanced Passive Core Fixed Income																
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
Passive Intermediate Gov't/Credit Fixed Income																
BlackRock Intermediate Gov't/Credit Bond Index ¹	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 Interm 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.

Arizona State Retirement System

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
Total High Yield Fixed Income	1,228,136,960	3.6	2.8	51	8.7	45	7.1	47	8.5	46	--	--	--	--	10.6	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			-0.2		-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
Active High Yield Fixed Income																
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.

Arizona State Retirement System

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
Total Emerging Market Debt	880,235,877	2.6	1.7	78	0.3	79	-7.5	80	--	--	--	--	--	--	-6.0	Jan-13
<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
Ashmore Emerging Market Blended Debt	543,719,313	1.6	1.5	84	1.3	65	-5.1	63	--	--	--	--	--	--	-3.7	Jan-13
<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
PIMCO Emerging Market Debt LC	336,516,564	1.0	2.4	63	-0.4	82	-8.6	89	--	--	--	--	--	--	-6.9	Jan-13
<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.



NEPC, LLC

March 31, 2014

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: Underweight¹

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

¹ASRS 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 ⁽³⁾	IRR ⁽⁴⁾					
Total ASRS Private Debt Portfolio^{(1),(2)}	853,164,094	4.1	17.8	17.8	N/A	17.3	17.2	Jul-12
Blackstone / GSO Capital Solutions Fund LP ⁽⁵⁾	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&P/LSTA Index + 250bps QTR Lagged⁽⁶⁾</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

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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.

Actual Weighting vs. SAAP Policy Target:	Overweight
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 ⁽³⁾	IRR ⁽⁵⁾					
Total ASRS Opportunistic Portfolio^{(1),(2)}	884,564,294	1.8	8.4	8.4	8.5	8.7	12.1	
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

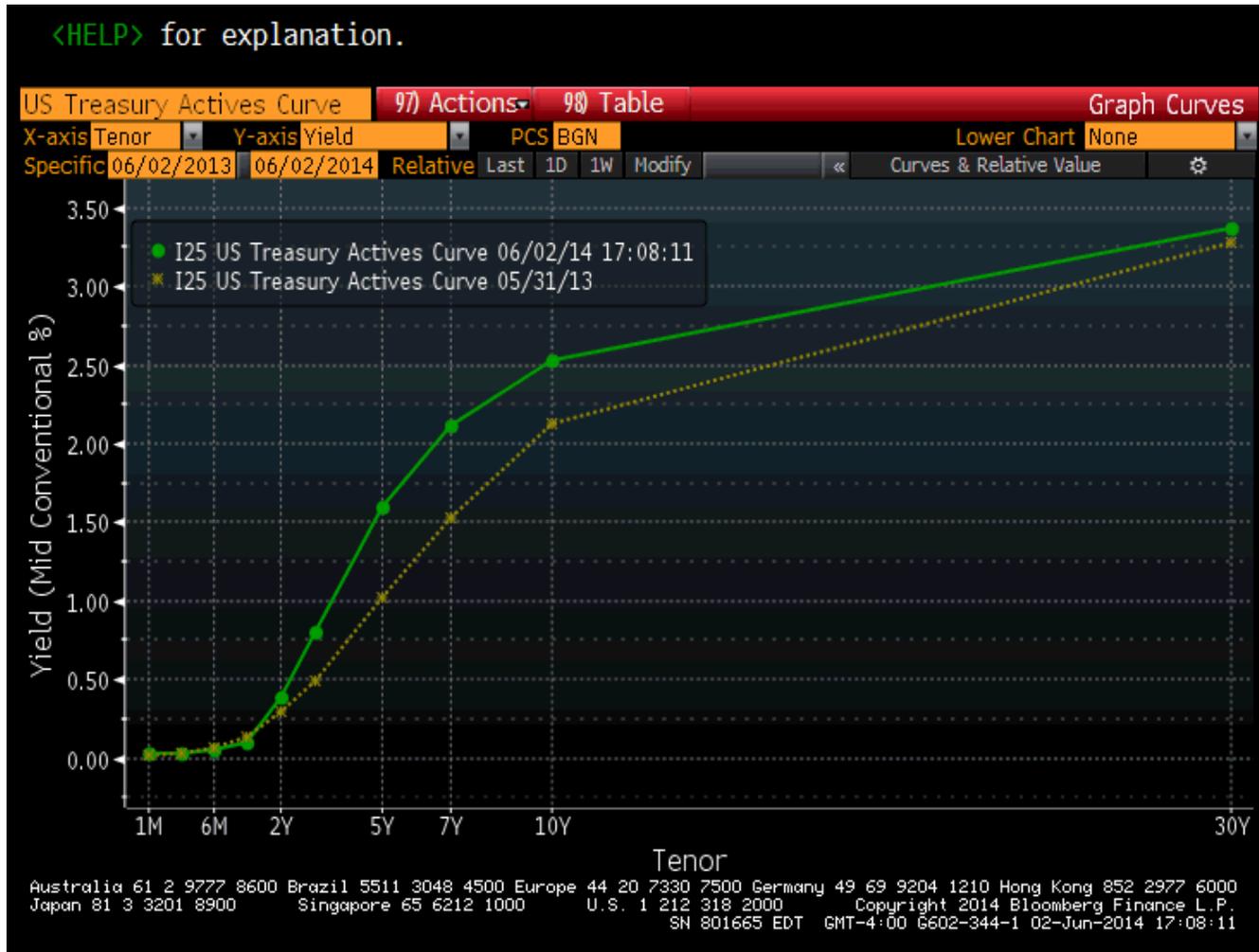
FIXED INCOME MARKET ENVIRONMENT

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	<u>5%</u>		S&P 600	
US Equity	33%	(26 - 38%)		Min 50%
Developed Large Cap	14%		MSCI EAFE	
Developed Small Cap	3%		MSCI EAFE Small Cap	
Emerging Markets	<u>6%</u>		MSCI EM	
Non-US Equity	23%	(16 - 28%)		Min 30%
Private Equity	7%	(5 - 9%)	Russell 2000	
Opportunistic Equity*	<u>0%</u>	(0 - 3%)	Investment Specific	
Total Equity	63%	(53 - 70%)		
Core	13%		Barclays Aggregate	Min 50%
High Yield	<u>5%</u>		Barclays HY	
US Fixed Income	18%	(8 - 28%)		
Emerging Market Debt	4%		JP Morgan GBI-EM Global Diversified	
Opportunistic Debt*	0%	(0 - 10%)	Investment Specific	
Private Debt	<u>3%</u>		S&P /LSTA Leveraged Loan Index + 2.5%	
Total Fixed Income	25%	(15 - 35%)		
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*	<u>0%</u>	(0 - 3%)	Investment Specific	
Total Inflation Linked Assets	12%	(8 - 16%)		
TOTAL	100%			
Global Tactical Asset Allocation (GTAA)	10%	(5 - 15%)	Total Fund Benchmark	
*Note: Aggregate Opportunistic asset classes not to exceed 10%				



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3300 NORTH CENTRAL AVENUE • PO BOX 33910 • PHOENIX, AZ 85067-3910 • PHONE (602) 240-2000
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Paul Matson
Director

MEMORANDUM

TO: The Arizona State Retirement System (ASRS) Investment Committee (IC)

FROM: Mr. Paul Matson, Director
Mr. Gary Dokes, Chief Investment Officer (CIO)
Mr. Micheal Copeland, Investment Analyst

DATE: June 23, 2014

RE: **Agenda Item #6:** Presentation, Discussion and Appropriate Action Regarding ASRS IMD Investment Dashboard

Purpose

To present and discuss implementation and dissemination of the IMD Investment Dashboard

Recommendation

Information item only; no action required.

Background

The intention of this agenda item is to discuss the Dashboard Report, solicit input from the IC, and the subsequent dissemination of reports in the future to the IC and Board Trustees.

As part of the ongoing effort to increase communication to the IC, IMD has recently developed a "dashboard" report that quickly conveys relevant economic and market information that IMD follows to help develop the house views. In addition, IMD generates a Market Information Report which is updated weekly and provides market and fund returns that are utilized internally.

Attachments:

- Investment Dashboard
- Market Info Report

Executive Dashboard

Economic and Financial Markets

Economic Environment

As of June 2, 2014

	GDP			Inflation	
	Last Year	Forecast 2014	20 Yr Avg	CPI	PPI
US	2.0 %	2.5 %	2.6 %	2.0 %	2.1 %
Germany	2.5 %	2.0 %	1.4 %	0.9 %	(0.9 %)
UK	0.8 %	2.9 %	2.4 %	2.5 %	0.6 %
Japan	5.9 %	1.4 %	0.9 %	3.4 %	1.3 %
China	7.4 %	7.3 %	9.2 %	1.8 %	(2.0 %)

Note: With the exception of the average, all are the most recently reported year over year change

Bond Markets

US Active Treasury Curve						
	2 Year	3 Year	5 Year	7 Year	10 Year	30 Year
Yield	0.37 %	0.74 %	1.48 %	1.99 %	2.44 %	3.29 %

US Fixed Income	Yield to Maturity	Duration	OAS*	Avg Quality
US Treasuries	1.30 %	5.11 Years	-	-
US Investment Grade	2.21 %	5.62 Years	99 bps	AA1/AA2
US High Yield	5.82 %	4.07 Years	355 bps	B1/B2

**OAS is the option adjusted spread between the YTM and US treasuries*

Emerging Mkt Debt	Yield	Duration	Avg Quality
Emerging Market Local Currency	6.84 %	4.63 Years	BBB+
Emerging Market Sovereign (USD)	5.46 %	6.9 Years	BBB-
Emerging Market Corporate (USD)	5.38 %	5.13 Years	BBB

Equity Markets

	Trailing P/E	Forward P/E	Div Yield	Earnings Growth*
US Large Cap	17.7 x	16.3 x	1.93 %	8.25 %
US Mid Cap	22.5 x	19.3 x	1.43 %	10.14 %
US Small Cap	25.6 x	20.3 x	1.25 %	11.05 %
International Large Cap Developed	18.8 x	14.9 x	3.35 %	7.69 %
International Small Cap Developed	24.3 x	16.1 x	2.43 %	13.85 %
Emerging Markets	13.2 x	11.4 x	2.62 %	3.65 %

**Bloomberg estimates for the compounded annual growth rate over the next full business cycle (typically 3-5 years)*

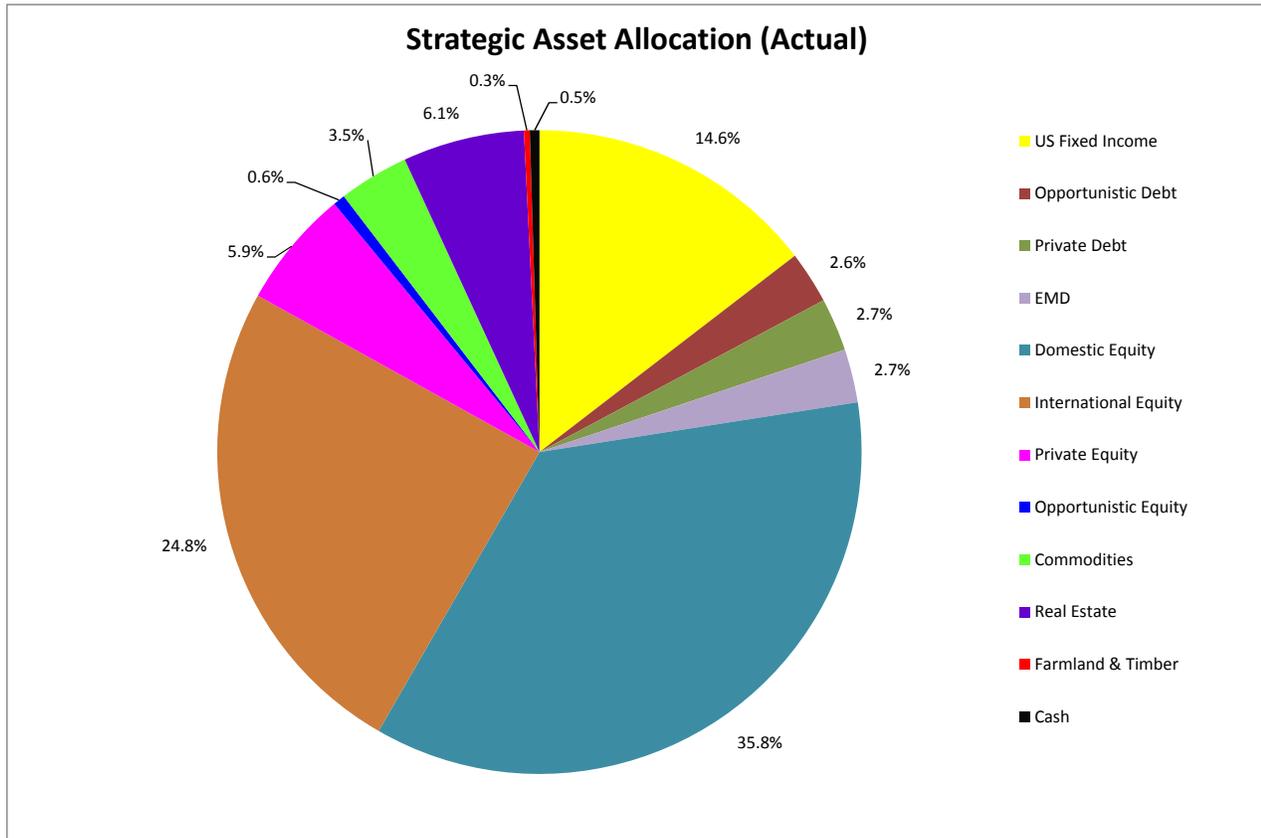
Long Term Expected Returns on Various Asset Classes

	NEPC		JP Morgan	BoNY Mellon
	5-7 yr Forecast	30 yr Forecast	10-15 yr Forecast	10 yr Forecast
Large Cap Equities	6.25 %	7.75 %	7.50 %	7.20 %
Small/ Mid Cap Equities	6.25 %	8.00 %	7.50 %	8.40 %
Int'l Equities	7.25 %	8.25 %	7.75 %	7.00 %
Emerging Int'l Equities	9.50 %	9.50 %	9.00 %	9.80 %
US Core Bonds	2.53 %	4.46 %	4.25 %	2.70 %
US High Yield Bonds	4.50 %	6.00 %	6.00 %	4.80 %
EMD Local Currency	5.75 %	7.25 %	7.00 %	6.00 %
Private Equity	8.75 %	9.75 %	8.00 %	10.70 %
Private Debt	8.00 %	8.25 %	N/A	N/A
Real Estate	6.25 %	6.50 %	7.75 %	5.80 %
Commodities	5.00 %	6.00 %	3.75 %	2.30 %

2014 Expected Returns at 12/31/13						
	S&P 500	Europe Ex-UK	UK	Japan	Pacific ex-Japan	EM Equity
Goldman Sachs	1% - 5%	6% - 13%	8% - 13%	0% - 6%	N/A	4% - 12%
Barclays	4.00%	20%	20%	15%	11%	21%
Nomura	5.58%	N/A	N/A	N/A	N/A	N/A
Citigroup	8.07%	N/A	N/A	N/A	N/A	N/A
JP Morgan	15.47%	N/A	N/A	N/A	N/A	N/A

Executive Dashboard ASRS Investment Program Summary

As of June 2, 2014



Total Fund Net Return History*					
	1	3	5	10	20
Total Fund	17.9%	10.5%	13.5%	7.1%	8.3%
Benchmark	16.9%	10.2%	13.2%	6.9%	8.0%
Excess	1.0%	0.3%	0.3%	0.2%	0.3%

*Returns are as of 12/31/13; will be updated when quarterly returns are finalized

Note: Primary Performance objective is for the Total Fund net ROR to meet or exceed 8%

House Views				
	Fundamentals	Valuations	Sentiment	Posture
US Equities	↑	↑	↑	Overweight
Non - US Equities	↑	↑	↑	Equal Weight
Fixed Income	→	↓	→	Underweight
Real Estate	↑	→	↑	Underweight*
Private Equity	↑	→	→	Underweight*
Commodities	↓	→	→	Underweight

*In program funding/ build-out phase

Market Information Report

May 30, 2014

ASRS 1 Year ROR Ending May 31, 2014 (Est.)	14.06%
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ASRS Fiscal YTD ROR	
FY14 - 07/01/13 to 05/30/14 (Est.)	15.88%
FY13 - 07/01/12 to 06/30/13 (Final)	13.10%
FY12 - 07/01/11 to 06/30/12 (Final)	1.30%
FY11 - 07/01/10 to 06/30/11 (Final)	24.60%
FY10 - 07/01/09 to 06/30/10 (Final)	14.90%
FY09 - 07/01/08 to 06/30/09 (Final)	-18.10%
ASRS Calendar YTD ROR	
CY14 - 01/01/14 to 05/30/14 (Est.)	4.05%
CY13 - 01/01/13 to 12/31/13 (Final)	17.85%
CY12 - 01/01/12 to 12/31/12 (Final)	13.40%
CY11 - 01/01/11 to 12/31/11 (Final)	1.04%
CY10 - 01/01/10 to 12/31/10 (Final)	14.70%

Next FOMC Meeting 06/18/2014

Rates	COB 5/30/2014
Primary Credit Rate (Discount Rate)	0.75%
Fed Fund Rate (target)	0.25%
Prime Rate	3.25%

Fixed Income Yields (current coupons)

30-day T.Bill	0.03%
6-Month T.Bill	0.05%
2-Year Note	0.38%
5-Year Note	1.54%
10-Year Note	2.48%
30-Year Bond	3.33%
2-Year to 10-Year Curve in bps	210
2-Year to 30-Year Curve in bps	295
10-Year to 30-Year Curve in bps	85

Index Levels:

SPX	1,924
INDU	16,717
DJ UBS INDEX	270
NASDAQ COMP	4,243
NASDAQ 100	3,737

Currency Levels:

JPY	101.77
GBP	1.68
AUD	0.93
CAD	1.08
EUR	1.36
DXY (Calendar 2013 YTD % Change)	0.42%

Blackrock and State Street STIF Rates: May 30, 2014

Blackrock	0.19%
State Street G-STIF	0.00%

Economic Indicators

	Annualized
Unemployment	
CPI (Consumer Price Index)	Month over Month
CPI Core (excluding Food & Energy)	Month over Month
CPI (Consumer Price Index)	Year over Year
CPI Core (excluding Food & Energy)	Year over Year
PPI (Producer Price Index)	Month over Month
PPI Core (excluding Food & Energy)	Month over Month
PPI (Producer Price Index)	Year over Year
PPI Core (excluding Food & Energy)	Year over Year
Real GDP QOQ % CHANGE	Annualized

5% SP600, 14% MSCI EAFE, 3% EAFE Small Cap,

INDICES	Fiscal YTD 2014	Calendar YTD 2014	Calendar Year					
	RORs	RORs	2013	2012	2011	2010	2009	2008
	6/30/2013 - 5/30/2014	12/31/2013 - 5/30/2014	RORs	RORs	RORs	RORs	RORs	RORs
INDU	14.71%	1.92%	29.65%	10.24%	8.38%	14.06%	22.68%	-31.93%
S&P 500	22.07%	4.96%	32.38%	16.00%	2.11%	15.06%	26.47%	-37.00%
S&P 500 G	24.54%	5.11%	32.75%	14.71%	4.69%	15.09%	31.58%	-34.91%
S&P 500 V	19.51%	4.81%	31.97%	17.77%	-0.48%	12.41%	21.17%	-39.21%
S&P 400	20.23%	3.21%	33.46%	17.88%	-1.73%	26.64%	37.38%	-36.23%
S&P 400 G	18.49%	1.11%	32.68%	17.62%	-0.95%	30.35%	41.23%	-37.57%
S&P 400 V	22.06%	5.44%	34.25%	19.10%	-2.39%	22.80%	33.77%	-34.77%
NASDAQ COMP	26.20%	2.12%	40.17%	17.75%	-0.79%	18.15%	45.36%	-39.98%
NASDAQ 100 (QQQ)	30.15%	4.64%	36.94%	18.35%	3.68%	20.15%	54.63%	-41.57%

S&P 600	19.88%	-1.43%	41.31%	16.33%	1.01%	26.31%	25.57%	-31.07%
S&P 600 G	18.93%	-3.50%	42.68%	15.27%	3.65%	28.43%	28.34%	-32.84%
S&P 600 V	20.68%	0.52%	39.98%	18.88%	-1.33%	25.01%	22.86%	-29.48%
RUSSELL 3000	22.15%	4.32%	33.57%	16.41%	1.03%	16.93%	28.36%	-37.71%
RUSSELL 2500	19.83%	1.11%	36.90%	18.41%	-2.75%	26.98%	34.27%	-37.27%
RUSSELL 2500 G	19.93%	-1.24%	40.64%	16.66%	-1.71%	29.15%	41.39%	-41.75%
RUSSELL 2000	17.40%	-2.02%	38.82%	16.35%	-4.17%	26.86%	27.17%	-33.79%
RUSSELL MICRO	19.07%	-3.27%	45.66%	20.62%	-9.53%	29.47%	29.22%	-40.35%

MSCI EAFE	23.20%	4.21%	23.57%	17.87%	-11.67%	8.38%	32.18%	-43.09%
MSCI ACWI ex-US	20.43%	4.15%	15.92%	17.33%	-13.10%	11.70%	42.05%	-45.34%
MSCI EAFE Small Cap	27.73%	4.25%	29.78%	20.64%	-15.57%	22.65%	47.27%	-46.74%
MSCI EM	11.64%	3.35%	-2.41%	18.47%	-18.37%	19.04%	78.29%	-53.50%

BarCap Agg	4.32%	3.87%	-2.02%	4.22%	7.84%	6.54%	5.93%	5.24%
BarCap Intermediate Agg	3.43%	2.80%	-1.02%	3.56%	5.97%	6.14%	6.46%	4.86%
BarCap U.S. Corp High Yield	10.80%	4.59%	7.44%	15.81%	4.98%	7.16%	8.60%	2.38%
JPM GBI-EM Global Div. (LC)	2.88%	4.94%	-8.98%	16.76%	-1.75%	15.68%	21.98%	-5.22%
JPM EMBI-Global (HC Sov.)	11.23%	8.28%	-5.25%	17.44%	7.35%	12.24%	29.82%	-12.03%
JPM CEMBI (HC Corp)	8.85%	5.66%	-0.60%	15.01%	2.32%	13.08%	34.88%	-15.86%
S&P Leveraged Loans	5.00%	2.00%	5.29%	9.67%	1.51%	10.13%	51.62%	-29.10%

NCREIF ODCE Index	10.21%	2.94%	8.34%	7.74%	12.65%	6.89%	-21.31%	2.00%
NAREIT US	12.28%	16.58%	2.46%	17.98%	7.75%	28.09%	28.61%	-39.56%
NAREIT Global	12.84%	10.70%	4.39%	28.65%	-5.82%	20.40%	38.26%	-47.72%

DJUBS Commodity	7.53%	6.43%	-9.58%	-1.14%	-13.37%	16.67%	18.72%	-35.65%
S&P GSCI	8.11%	3.52%	-1.22%	0.77%	-1.18%	9.02%	13.49%	-46.49%

FTSE 100 Index (USD)	25.98%	4.59%	21.56%	15.84%	-2.06%	9.12%	41.71%	-47.06%
Nikkei 225 Index (USD)	6.05%	-6.51%	30.48%	12.22%	-10.41%	11.52%	18.31%	-26.51%
DJ EUR STOCK ex-UK	33.83%	7.43%	30.26%	18.59%	-17.89%	0.14%	30.30%	-47.34%

ASRS ROR (Estimate)	15.88%	4.05%	Fund MKV (\$ in MM)		\$33,925	5/30/2014
Actual Benchmark*	15.74%	4.11%	Plan Funding Snapshot			

	6/30/10	6/30/11	6/30/12	6/30/13
Actuarial Assets				
Actuarial Liabilities	76.7%	75.1%	75.3%	75.90%

Difference	0.14%	-0.06%	Market Value Assets	
Most Recent	6.3%	6/6/2014	6.1%	6/30/12
Next Release Date	0.3%	6/17/2014	6.8%	6/30/13
Next Release Period	0.2%	6/17/2014	6.7%	6/30/13
	2.0%	6/17/2014	6.8%	6/30/13
	1.8%	6/17/2014	6.7%	6/30/13
	0.6%	6/13/2014	6.8%	6/30/13
	0.5%	6/13/2014	6.7%	6/30/13
	2.1%	6/13/2014	6.8%	6/30/13
	1.9%	6/13/2014	6.7%	6/30/13
	-1.0%	6/25/2014	6.8%	6/30/13

System Funding Snapshot				
Market Value Assets				
Actuarial Liabilities	61.6%	72.0%	68.7%	73.2%

Market Value Assets				
Actuarial Liabilities	80.5%	90.4%	83.4%	80.5%

LTD Funding Snapshot				
Market Value Assets				
Actuarial Liabilities	52.5%	60.8%	58.5%	79.0%



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Paul Matson
Director

MEMORANDUM

TO: The Arizona State Retirement System (ASRS) Investment Committee (IC)

FROM: Mr. Bernard Glick, Chief Internal Auditor
Mr. Jeff Volzka, Internal Auditor

DATE: June 10, 2014

RE: **Agenda Item #7:** Presentation, Discussion, and Appropriate Action Regarding the Audit of the Investment Management Division's (IMD) use of the Bloomberg "AIM" Order Management and Trade Execution System used for the Internally Managed Equity and Fixed Income Portfolios

Purpose

To present and discuss with members of the Investment Committee the findings and recommendations of an internal audit of the newly implemented IMD trading system for equities and fixed income securities.

Recommendation

Information item only; no action required.

Background

The ASRS has a percentage (statutorily limited to 50%) of its fund assets managed internally by our IMD. These internal portfolios cover fixed income and equity holdings and are benchmarked to specific related indexes. Returns and deviations from the indexes are closely tracked against quantitative goals.

Prior to the introduction of AIM as an order management system the transactions processes were manually generated and input. This was a time consuming process that sometimes resulted in errors from input and inadvertent short selling.

The acquisition of the Bloomberg AIM order management system has mitigated many issues associated with the efficiency and accuracy of trade processing. It also has the capability to test each trade against an established set of compliance rules before trade execution, thereby avoiding short sales and ensuring adherence to dollar limits on trades and other agency criteria. Additionally, the system maintains a history of trades for at least two years, providing users and management with a reference of trade activity.

Attachments:

- IMD Audit Report
- IMD Audit Findings and Recommendations

**A REPORT TO THE
ARIZONA STATE RETIREMENT SYSTEM
OPERATIONS AND AUDIT COMMITTEE**

**ARIZONA STATE RETIREMENT SYSTEM
INTERNAL AUDIT**

**BLOOMBERG'S ASSET & INVESTMENT MANAGER (AIM)
ORDER MANAGEMENT SYSTEM**

May, 2014

ARIZONA STATE RETIREMENT SYSTEM
BLOOMBERG'S ASSET & INVESTMENT MANAGER (AIM)
MAY 2014

The Internal Audit Division completed the audit of the Investment Management Division's (IMD) Order Management System, which is Bloomberg's Asset and Investment Manager (AIM) program and related processes on May 8, 2014.

Our audit objectives were:

- 1) The reliability and integrity of information.
- 2) Compliance with policies, plans, procedures, laws, and regulations.
- 3) The safeguarding of assets.
- 4) The economical and efficient use of resources.
- 5) The accomplishment of established objectives and goals for operations and programs.

The scope of our audit encompassed the examination and evaluation of the internal control structure and the quality of performance in carrying out assigned responsibilities for the audited area. The tests were designed to obtain sufficient, competent, and relevant evidence to provide a reasonable basis for our conclusions.

The Arizona State Retirement System administration is responsible for establishing and maintaining the internal control structure. Because of the inherent limitations in any internal control structure, errors or irregularities may occur and not be detected.

Based on the results of work performed to meet the audit objectives, the following statements summarize the results of our testing and the internal recommendations presented to the Arizona State Retirement System administration with the Internal Recommendations Supplement.

Bloomberg's AIM Order Management System has reduced errors, expedited trade processing and compliance review, and portfolio holdings are electronically linked to market data as well as the custodial bank. However, there are potential segregation of duties (SOD) conflicts with regard to AIM system administration and equity trades being approved by equity staff rather than fixed income staff.

BACKGROUND

The ASRS has a percentage (statutorily limited to 50%) of its fund assets managed internally by our IMD. These internal portfolios cover fixed income and equity holdings and are benchmarked to specific related indexes. Returns and deviations from the indexes are closely tracked against quantitative goals.

Prior to the introduction of AIM as an order management system the transactions processes were manually generated and input. This was a time consuming process that sometimes resulted in errors from input and inadvertent short selling.

The acquisition of the Bloomberg AIM order management system has mitigated many issues associated with the efficiency and accuracy of trade processing. It also has the capability to test each trade against an established set of compliance rules before trade execution, thereby avoiding short sales and ensuring adherence to dollar limits on trades and other agency criteria.

Additionally, the system maintains a history of trades for at least two years, providing users and management with a reference of trade activity.

DESCRIPTION OF AUDIT WORK PERFORMED

The audit work performed during this engagement was conducted in conformance with the *International Standards for the Professional Practice of Internal Auditing*. Internal Audit (IA) reviewed the internal control structure, interviewed personnel, obtained and reviewed documentation, and performed analytic reviews when appropriate. IA performed tests of the existing systems to provide sufficient evidence that controls were in place and being monitored, or were needed.

Some of the tests performed were:

- Review of IMD SOPs, practices, and related statutes.
- Review of automated compliance rules established within the AIM system.
- Review of past rule violation reporting.
- Review of segregation of duties (SOD) for trade initiation and approval.
- Review of mitigating controls for potential inadequate SOD controls.
- Sample testing of rules with fake trades for violation alerts.
- Review content of internally managed Equity and Fixed Income portfolios.
- Interviews with IMD users of the AIM Order Management System.
- Interview IMD management

**A REPORT TO THE
ARIZONA STATE RETIREMENT SYSTEM
OPERATIONS AND AUDIT COMMITTEE**

**ARIZONA STATE RETIREMENT SYSTEM
INTERNAL AUDIT**

**BLOOMBERG'S ASSET & INVESTMENT MANAGER (AIM)
ORDER MANAGEMENT SYSTEM**

INTERNAL RECOMMENDATION SUPPLEMENT

MAY, 2014

INTERNAL FINDINGS AND RECOMMENDATIONS:

1. **Bloomberg's AIM Order Management System has reduced errors, expedited trade processing and compliance review, and portfolio holdings are electronically linked to market data as well as the custodial bank. However, there are potential segregation of duties (SOD) conflicts with regard to AIM system administration and equity trades being approved by equity staff rather than fixed income staff.**

Our testing and interviews revealed the following:

- 1) Currently, there are only two Investment Management Division (IMD) staff members from the equity side and two from the fixed income side who have access to AIM to conduct and approve trades, and do administrative tasks and compliance rule set-up.
- 2) AIM system administration is being done by a member of the IMD trading desk for equities. Ideally, this function should be separate from involvement with the trading environment.
- 3) AIM compliance rule creation and maintenance is done by IMD staff for equities and fixed income, respectively. Ideally, trading staff should not be creating and maintaining their own compliance rules.
- 4) Equity trades have been routinely approved by equity staff rather than fixed income staff, which is the establish norm.
- 5) Agency Standard Operating Procedures (SOP) and controls at the custodial bank provide mitigation of the risk associated with these separation of duties (SOD) conflicts, but best practices dictate they should be avoided if at all possible.
- 6) IMD management indicated they are in the process of expanding AIM access to other IMD staff to have more personnel available for appropriate trade approvals.
- 7) IMD management indicated they will be conducting cross-training sessions to ensure all IMD staff are aware of approval responsibilities in the areas of equity and fixed income trading.

RECOMMENDATION(S):

Management should:

- 1) Enforce established SOD for trade approvals to the extent possible with limited staff.
- 2) Expedite expansion of AIM user access to appropriate IMD staff to ensure availability of approvals when needed.
- 3) Establish strict and verifiable oversight over AIM administrative activities and compliance rules. Given the existing SOD limitations, implement high level authority of access granting and changes to the system, with periodic monitoring to confirm compliance.

ADMINISTRATIVE RESPONSE:

Management concurs with the findings and will implement the noted recommendations by July 1, 2014.



Arizona State Retirement System

Investment Beliefs

FRAME OF REFERENCE

The following *Investment Beliefs* have been established to ensure the development of congruent and synergistic investment strategies, and to ensure the effective and efficient allocation of resources. These *Investment Beliefs* determine the general paradigm within which investment strategies are developed, investment ideas are reviewed, and investment decisions are implemented.

Modifications to these *Investment Beliefs* will occur if experiential, academic, conceptual, and/or practical perspectives suggest that a superior belief system exists.

INVESTMENT BELIEFS

1. Asset Class Decisions are Key

In general, decisions with respect to which asset classes and sub-asset classes to invest in, and the allocations to these asset classes and sub-asset classes, have a greater impact on total fund investment returns than decisions in which specific securities to invest.

2. Theories and Concepts Must be Sound

Over longer periods of time, investment outcomes (e.g. rates of return, volatility) conform to logical theories and concepts. Significant deviations (e.g. internet bubble, pre-subprime erosion of risk premiums) from theoretically and conceptually sound investment constructs are usually not sustainable and are typically self-reverting.

3. House Capital Market Views Are Imperative

The development and articulation of sound *House Views* (e.g. views on interest rates, corporate spreads, asset valuations) will ensure consistency among investment decisions, clarity of investment direction, baselines for debates, and conformity of understanding.

4. Investment Strategies Must be Forward Looking

Investment strategies will be developed based on forward-looking insights, rather than simply on successful strategies of the past.

Asset class valuations and security valuations are significantly affected by endogenous outcomes (e.g. earnings, GDP growth rates, competitive barriers) that are probabilistic, and these outcomes are typically well analyzed by the investment industry.

Asset class valuations and security valuations are also significantly affected by random outcomes (e.g. natural disasters, certain supply & demand shocks) that are virtually unpredictable, and these outcomes are typically not analyzed directly by the investment industry.

Asset class valuations and security valuations are also significantly affected by exogenous outcomes (e.g. foreign policies, global cultural interactions) that can possibly be modeled, and these outcomes are typically not analyzed by the investment industry.

5. Public Markets are Generally Informationally Efficient

Asset Class Valuations

Asset class valuations (e.g. stock market levels versus interest rate levels) are often in equilibrium with one another, but anomalous situations do occur which result in disequilibria between asset class valuations. These disequilibria offer valuable investment opportunities which we will pro-actively seek and capitalize on.

Security Valuations

Security valuations (e.g. IBM versus Cisco) are often in equilibrium with one another, but private markets and anomalous public market situations do occur which result in disequilibria between security valuations. These disequilibria offer valuable investment opportunities which we will pro-actively seek and capitalize on.

The extent of informational efficiency varies across asset classes.

Private markets offer significant opportunities for asset mispricing and manager excellence which we will pro-actively seek and capitalize on.

6. Market Frictions are Highly Relevant

Market frictions (e.g. management fees, carried interest, revenue sharing, expenses, costs, transaction spreads, market impacts, taxes, commissions) can be significantly detrimental to investment performance and as a result transactions will be initiated only to the extent there is a strong level of conviction that they will result in increased investment returns or decreased risks net of all market frictions.

7. Internal Investment Professionals are the Foundation of a Successful Investment Program

In-house investment management capability engaged in direct portfolio management results in superior investment decision-making.

In-house investment management pro-actively monitors capital markets in order to determine mispricing opportunities & allocate capital and will successfully increase risk adjusted returns.

In-house investment professionals are more closely aligned with, and have a better understanding of, the purpose and risk & reward tolerance of the ASRS than external parties.

In-house investment professionals will impact direct investment negotiations, better align economic interests, and influence investment industry conditions (e.g. private deal structures, fee levels, introduction of innovative products & strategies).

8. External Investment Management is Beneficial

External investment organizations can often offer greater expertise, resources, and/or flexibility than internal personnel for various investment strategies.

9. Investment Consultants

Investment consultants will be effectively utilized in the following four general categories, and utilization of consultants will be focused on situations where there is a demonstrable need in at least one of the four areas:

- Independence: When oversight or controls should be enhanced
- Perspective: When internal perspectives are not broad enough
- Special Skills: When internal skills are not deep enough
- Resource Allocation: When internal resources are not broad enough

10. Trustee Expertise

Trustees often have expertise in various areas of investment management, and this expertise should be utilized while ensuring separation between Board oversight and staff management.