How...

ASRS Employees Deliver Service With PRIDE!

PROFESSIONALISM

We promote, strive for and expect individuals, teams, and divisions to possess professional qualities and skills to lead the organization.

- Displays a friendly, respectful and courteous demeanor even when confronted by adversity
- Has proactive and responsive approach to internal and external customer needs
- Possesses good communication and active listening skills
- Is a trusted contributor (manager, leader, SME, analyst, teammate)
- Takes personal accountability • Has subject matter expertise
- Has critical thinking skills • Has an honest, fair, non-judgmental mind-set
- Is adaptable to beneficial change • Adheres to the ASRS Code of Conduct

RESULTS

We treasure the achievements of individuals, teams, divisions and the agency that energize the organization.

- Meets goals and objectives
- Completes projects
- Produces quality work products
- Satisfies customers
- Attains individual accomplishments
- Manages risks successfully

IMPROVEMENT

We appreciate individuals, teams or divisions who drive the agency forward with new,innovative ideas and solutions.

- Promotes new ideas
- Enhances outcomes and performance
- Solves problems
- Enhances morale
- Improves relationships
- Increases efficiency, effectiveness or reduces costs

DIVERSITY

We recognize that utilizing different talents, strengths and points of view, strengthens the agency and helps propel outcomes greater than the sum of individual contributors.

- Encourages an attitude of openness and a free flow of ideas and opinions
- Treats others with dignity and respect
- Works effectively to accomplish goals with teams comprised of dissimilar individuals
- Recognizes and promotes skills in others attained on and off the job

EXCELLENCE

We celebrate individuals, teams and divisions who exceed expectations and deliver service with a PRIDE that permeates the organization.

- Surpasses member, stakeholder and associate expectations
- Demonstrates a willingness to go the extra mile to engender a positive public image
- Embraces change in a manner that inspires others
- Accepts responsibility and challenges with enthusiasm
- Takes a personal interest in promoting teamwork through effective use of communication (verbal, non-verbal, written and technological techniques)
- Creates a motivated, healthy and productive work environment that celebrates and rewards the accomplishments of others

ARIZONA STATE
RETIREMENT SYSTEM

ARIZONA STATE RETIREMENT SYSTEM

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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, April 20, 2015
1:00 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 April 20, 2015 beginning at 1:00 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.)..Mr. Tom Connelly
   Chair, Investment Committee

2. Approval of Minutes of the February 9, 2015 and February 23, 2015 Investment Committee Meeting (Action item; estimated time 1 min.)...Mr. Tom Connelly

3. Presentation, Discussion, and Appropriate Action Regarding ASRS Investment Program Updates (Informational and discussion item; estimated time 20 min.) .... Mr. Paul Matson
Director, ASRS
.... Mr. Gary Dokes
Chief Investment Officer, ASRS
.... Mr. Dave Underwood
Assistant Chief Investment Officer, ASRS
.... Mr. Al Alaimo
Portfolio Manager of Fixed Income, 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 (Informational and discussion item; estimated time 30 min.) .... Mr. Allan Martin
Partner, NEPC
.... Mr. Dan LeBeau
Consultant, NEPC

5. Presentation, Discussion, and Appropriate Action Regarding Total Equities Asset Class Presentation (Informational and discussion item; estimated time 45 min.) ...... Mr. Gary Dokes
.... Mr. Dave Underwood
.... Mr. Karl Polen

6. Presentation, Discussion, and Appropriate Action Regarding the Investment Policy Statement (IPS) (Action item; estimated time 15 min.) .... Mr. Paul Matson
.... Mr. Gary Dokes

7. Presentation, Discussion, and Appropriate Action Regarding Proposed Modifications to the ASRS Long Term Disability (LTD) Strategic Asset Allocation (SAA) (Action item; estimated time 20 min.) .... Mr. Paul Matson
.... Mr. Gary Dokes
.... Ms. Lupita Breland
Portfolio Analyst, ASRS
.... Mr. Micheal Copeland
Investment Analyst, ASRS

8. Presentation, Discussion, and Appropriate Action Regarding Proposed Modifications to the ASRS System Strategic Asset Allocation (SAA) (Action item; estimated time 20 min.) ....
.... Mr. Paul Matson
.... Mr. Gary Dokes
.... Ms. Lupita Breland
.... Mr. Micheal Copeland

9. Presentation, Discussion, Update and Appropriate Action with Respect to New Investment Strategies and Industry Investment Trends (Informational and discussion item; estimated time 5 min.) .... Mr. Tom Connelly
.... Mr. Paul Matson
.... Mr. Gary Dokes

10. Requests for Future Agenda Items (Informational and discussion item; estimated time 5 min.) .... Mr. Tom Connelly
.... Mr. Gary Dokes

11. Call to the Public .... Mr. 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(H) 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.

12. The next ASRS Investment Committee Meeting is scheduled for Monday, June 22, 2015 at 2:30 p.m., at 3300 N. Central Avenue, 14th Floor Conference room, Phoenix, Arizona.

13. 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 April 14, 2015

ARIZONA STATE RETIREMENT SYSTEM

Gloria Trujillo Committee Administrator	Gary R. Dokes Chief Investment Officer

Agenda Item #2

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, February 9, 2015
3:00 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 3:02 p.m.

1. Call to Order; Roll Call; Opening Remarks

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

A quorum was present for the purpose of conducting business.

Also in attendance was Board Trustee Dr. Richard Jacob.

2. Presentation, Discussion, Update and Appropriate Action Regarding the Asset Allocation Study

Mr. Paul Matson, ASRS Director, provided the Committee with an update on the Asset Allocation Study and the recommended changes to the Asset Allocation Policy. He provided a detailed explanation of the process utilized to develop the model for the recommendations of the study and further noted the key outcomes of the analysis conducted by NEPC and the Investment Management staff.

Mr. Gary Dokes, ASRS Chief Investment Officer, addressed the Committee with the key takeaways of the study, noting the study's primary focus was to position the fund strategically and tactically consistent with where value is perceived over a shorter period versus a longer period of time.

Mr. Martin and Mr. Chris Levell, NEPC Consultants, presented the Committee with the dynamics associated with the Asset Allocation Study approach, noting the major themes linked to the study. Themes referenced included:

- Increased diversification
- Capture tactical opportunities available as a result of market dislocations
- Optimize risk-adjusted returns in a possibly lower expected return environment
- Maintain significant liquidity
- Remain fee and cost conscious

Mr. Levell provided the Committee with a detailed analysis of how each theme directly affected recommendations to the Asset Allocation Policy.

Motion: Professor Dennis Hoffman moved to approve the recommended changes to the Asset Allocation Policy. Mr. Tom Connelly seconded the motion.

By a vote of 2 in favor, 0 opposed, 0 abstentions, 0 excused, 1 vacancy, the motion was approved.

3. Requests for Future Agenda Items

There were no requests for future agenda items.

4. Call to the Public

No members of the public requested to speak.

5. Adjournment

The meeting adjourned at 5:38 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

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

**HELD ON
Monday, February 23, 2015
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, called the meeting to order at 2:32 p.m.

1. Call to Order; Roll Call; Opening Remarks

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

A quorum was present for the purpose of conducting business.

2. Approval of Minutes of the December 21, 2014 Investment Committee Meeting Minutes

Motion: Prof. Dennis Hoffman moved to approve the minutes of the December 21, 2014 Public Meeting. Mr. Tom Connelly seconded the motion.

By a vote of 2 in favor, 0 opposed, 0 abstentions, 0 excused, and 1 vacancy, the motion was approved.

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

Mr. Gary Dokes, ASRS Chief Investment Officer (CIO), provided an overview of the agenda item and briefly reviewed current and ongoing activities within the Investment Management Division (IMD). He then turned the meeting over to IMD Portfolio Managers (PM) to discuss their perspectives on the market, House Views and provide an update on their respective asset classes.

Mr. Kien Trinh, State Street Investment Analytics, presented the State Street Risk Report. He discussed the monthly reallocation summary, month-end risk profile and total plan overview exposure. He explained the reallocation from Emerging Market Debt to Global Tactical Asset Allocation (GTAA) and turned the meeting over to John Doran, ASRS Assistant Portfolio Manager, who elaborated on the transition.

4. Presentation, Discussion, and Appropriate Action Regarding Independent Reporting, Monitoring and Oversight of the ASRS Investment Program – Includes Total Fund and Investment Performance Report Q3-14

Mr. Dan LeBeau, New England Pension Consultants (NEPC) Consultant, presented information on the investment performance and monitoring/oversight of ASRS investment program.

Performance result: (as of December 31, 2014)

- 8.7% (20-year annualized net return) vs. 8% (actuarial assumer interest rate.)

	Quarter	**1 Year**	**3 Years**	5 Years	10 Years	Since Inception
Total Fund	1.1%	**6.2%**	**12.4%**	10.5%	6.6%	9.9%
Interim SAA Policy*	0.4%	**4.3%**	**11.7%**	9.8%	6.3%	9.6%
Excess Return	0.7%	**1.9%**	**0.7%**	0.7%	0.3%	0.3%

**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)/14% 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)/6% NCREIF ODCE (lagged one quarter)/4% Dow Jones/UBS Commodities Index.

Note: Interim SAA Policy includes a proration of 1% Private Equity and 2% Real Estate, which are unfunded. Private Equity was prorated to domestic equity; Real Estate was prorated to domestic equity and fixed income.

Mr. LeBeau further provided detailed information on NEPC's perspective on the market environment and fund performance with respect to the allocation effect, manager selection effect, interaction effect and residual effect as described in their presentation report, in addition an analysis of each asset class.

Mr. Connelly questioned if NEPC's market outlook and recommendations were in line with that of IMD and if there were any conflicts. Mr. LeBeau replied stating both IMD's and NEPC's market outlook and recommendations were consistent with no conflicts present.

5. Presentation, Discussion, and Appropriate Action Regarding the Cash Management Program

Mr. Dokes provided a brief overview of the Cash Management Program and turned the meeting over to Mr. Doran. Mr. Doran provided the committee with the methods in which ASRS manages and oversees both external and internal cash flows. He further provided a detailed explanation of the overall structure and implementation of the program, in addition to the program's key objectives.

6. Presentation, Discussion, and Appropriate Action Regarding the Investment Policy Statement (IPS)

Mr. Dokes provided detailed information relating the IPS and the recommended changes for approval. He noted review of the IPS is an annual requirement as referenced in the Board Governance Policy Handbook. Mr. Connelly suggested the range of the capital market assumption referenced in the "Time Constraints" section of Exhibit 1 be more consistent with the range listed in the current Schematic Asset Allocation Policy (SAAP). Mr. Dokes made note of his comment and stated he would work with Mr. Matson to review the verbiage referenced and make the recommended changes.

7. Requests for Future Agenda Items

Mr. Connelly suggested a future agenda item centered around the idea of a fire drill to ensure a plan is in place by IMD in the event of a significant decline in the market.

8. Call to the Public

Mr. Marwood Clement provided input with respect to contribution rates and related ideas.

9. Adjournment

The meeting adjourned at 4:40 p.m.

Respectfully submitted,

ARIZONA STATE RETIREMENT SYSTEM

Gloria Trujillo	Date	Gary R. Dokes	Date
Investment Committee Administrator		Chief Investment Officer	

Agenda Item #3

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: April 13, 2015

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 February 28, 2015

From ASRS
- Securities Lending Risk Metrics – as of March 31, 2015

Arizona State Retirement System

Investment Committee

Investment Program Updates

April 20, 2015

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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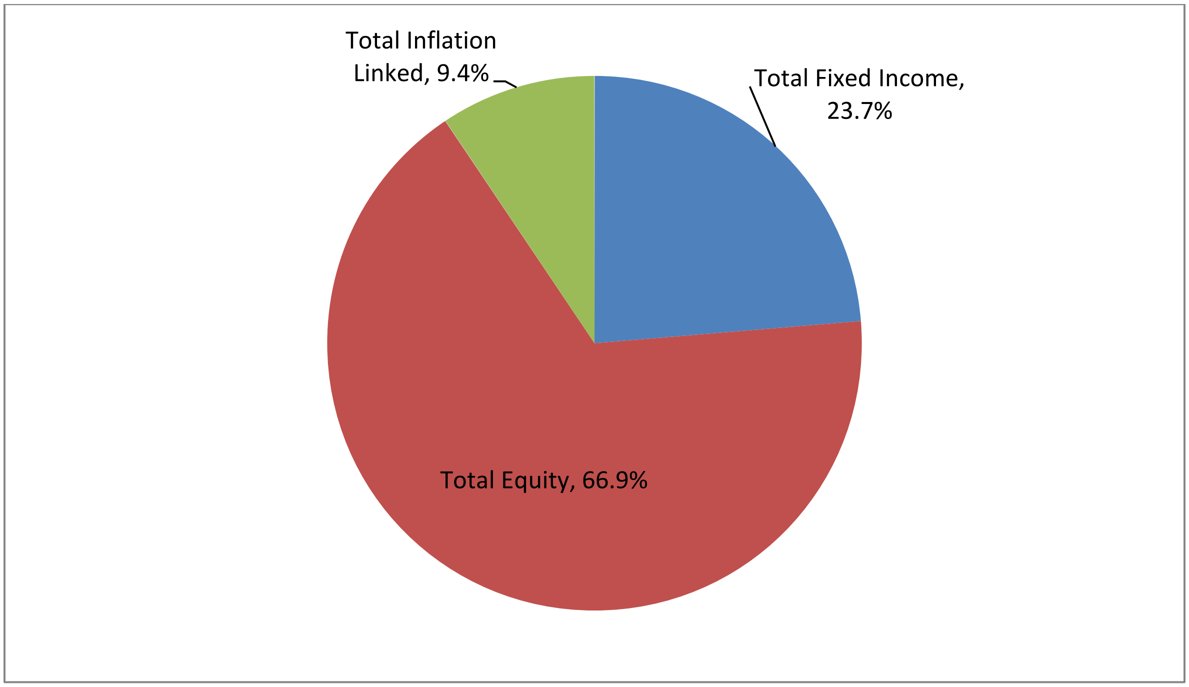
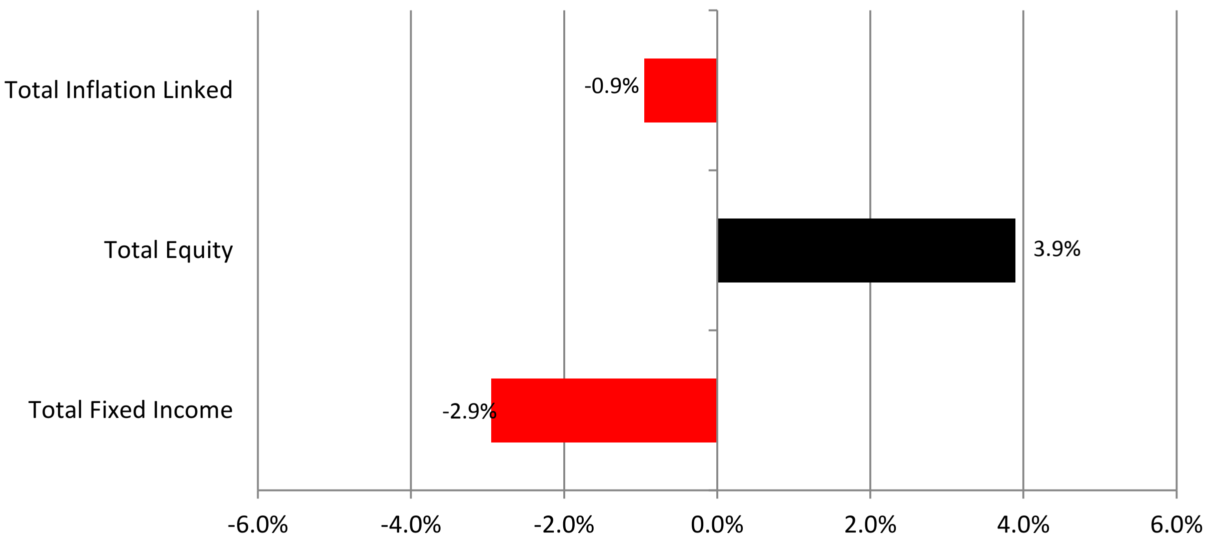
TOTAL FUND POSITIONING – 03/31/2015

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: Tuesday, March 31, 2015**

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	Operating Cash (non-assetized)		100,828,001					100,828,001	0.29%
	Operating Cash (assetized)		318,268,545					318,268,545	0.92%
	Cash Total							**$419,096,546**	1.21%
								Cash Policy Range	**0.00%**
GTAA Managers (2)	Active GTAA	1,312,120,950						1,312,120,950	3.78%
Blackrock: San Francisco	Passive (Intermediate Gov Credit)		24,418,976					24,418,976	0.07%
ASRS: Phoenix	Enhanced Passive F2		1,904,720,163					1,904,720,163	5.48%
Blackrock: San Francisco	Passive (US Debt Index)		669,943,277					669,943,277	1.93%
	Core Fixed Income Total							**$3,911,203,366**	11.26%
								Core Fixed Income Policy	**13.00%**
Columbia: Minneapolis	Active	815,093,132						815,093,132	2.35%
JP Morgan: Indianapolis	Active	484,638,218						484,638,218	1.40%
	High Yield Fixed Income Total							**$1,299,745,105**	3.74%
								High Yield Fixed Income Policy	**5.00%**
	US Fixed Income Total							**$5,210,948,470**	15.00%
								US Fixed Income Policy Range: 8% - 28%	**18.00%**
	EM Debt Total							**$3,115,375**	0.01%
								EM Debt Policy	**4.00%**
	Opportunistic Debt							**$1,076,562,804**	3.10%
								Opportunistic Debt Policy Range: 0% - 10%	**0.00%**
	Private Debt Total							**$1,516,300,726**	4.36%
								Private Debt Policy	**3.00%**
	Fixed Income Total							**$8,226,023,922**	23.68%
								Total Fixed Income Policy Range: 15% - 35%	**25.00%**
Intech: FL	Active (Growth)			495,171,188				495,171,188	1.43%
LSV: Chicago	Active (Value)			844,804,655				844,804,655	2.43%
GTAA Managers (2)	Active GTAA			858,900,390				858,900,390	2.47%
ASRS: Phoenix	Passive E2				5,211,448,756			5,211,448,756	15.00%
ASRS: Phoenix	Enhanced Passive E7				789,270,592			789,270,592	2.27%
ASRS: Phoenix	Enhanced Passive E8				551,467,896			551,467,896	1.59%
ASRS: Phoenix	Risk Factor Portfolio				557,093,777			557,093,777	1.60%
	Large Cap Equity Total							**$9,308,179,961**	26.79%
								Large Cap Policy	**23.00%**
Wellington: Boston	Active (Core)			446,769,591				446,769,591	1.29%
CRM: New York	Active (Value)			106,371,843				106,371,843	0.31%
ASRS: Phoenix	Passive E3 (Growth)				554,938,915			554,938,915	1.60%
ASRS: Phoenix	Passive E4 (Value)				544,505,891			544,505,891	1.57%
	Mid Cap Equity Total							**$1,652,586,240**	4.76%
								Mid Cap Policy	**5.00%**
TimesSquare: New York	Active SMID (Growth)			491,344,144				491,344,144	1.41%
DFA: Santa Monica	Active (Value)			403,585,072				403,585,072	1.16%
Champlain:Vermont	Active (Core)			99,309,136				99,309,136	0.29%
ASRS: Phoenix	Passive E6				513,297,070			513,297,070	1.48%
	Small Cap Equity Total							**$1,507,535,422**	4.34%
								Small Cap Policy	**5.00%**
	U.S. Equity Total							**$12,468,301,623**	35.89%
								US Equity Policy Range: 26% - 38%	**33.00%**
Brandes: San Diego	Active (Value)			583,785,875				583,785,875	1.68%
GTAA Managers (2)	Active GTAA			959,747,665				959,747,665	2.76%
American Century	Active (EAFE)			517,678,217				517,678,217	1.49%
Trinity Street	Active (EAFE)			325,265,553				325,265,553	0.94%
Thompson Siegel Walmsley	Active (EAFE)			155,196,533				155,196,533	0.45%
Blackrock: San Francisco	Passive (EAFE)				2,356,220,677			2,356,220,677	6.78%
	Large Cap Developed Non-US Equity Total							**$4,899,889,032**	14.10%
								Large Cap Developed Policy	**14.00%**
AQR: Greenwich	Active (EAFE SC)			175,679,964				175,679,964	0.51%
DFA: Santa Monica	Active (EAFE SC)			206,721,084				206,721,084	0.60%
Franklin Templeton: San Mateo	Active (EAFE SC)			396,478,416				396,478,416	1.14%
Blackrock: San Francisco	Passive (EAFE SC)				457,150,394			457,150,394	1.32%
	Small Cap Developed Non-US Equity Total							**$1,236,032,226**	3.56%
								Small Cap Developed Policy	**3.00%**
William Blair: Chicago	Active (EM)			467,695,438				467,695,438	1.35%
Eaton Vance: Boston	Active (EM)			464,919,096				464,919,096	1.34%
LSV: Chicago	Active (EM)			291,967,908				291,967,908	0.84%
Blackrock: San Francisco	Passive (EM)				654,419,872			654,419,872	1.88%
	Emerging Markets Equity Total							**$1,879,002,314**	5.41%
								Emerging Markets Policy	**6.00%**
	Non-US Equity Total							**$8,014,923,572**	23.07%
								Non-US Equity Policy Range: 16% - 28%	**23.00%**
	Private Equity Total							**$2,381,642,099**	6.86%
								Private Equity Policy Range: 5% - 9%	**7.00%**
	Opportunistic Equity							**$378,357,676**	1.09%
								Opportunistic Equity Policy Range: 0% - 3%	**0.00%**
	Equity Total							**$23,243,224,970**	66.91%
								Total Equity Policy Range: 53% - 73%	**63.00%**
Gresham: New York						538,609,503		538,609,503	1.55%
GTAA Managers (2)	Active GTAA					212,622,662		212,622,662	0.61%
	Commodities Total							**$751,232,165**	2.16%
								Commodities Policy Range: 1% - 7%	**4.00%**
GTAA Manager (1)	Active GTAA					34,997,561		34,997,561	0.10%
	Real Estate Total							**$2,068,637,770**	5.95%
								Real Estate Policy Range: 6% - 10%	**8.00%**
	Infrastructure Total							**$300,000,000**	0.86%
								Infrastructure Policy Range: 0% - 3%	**0.00%**
	Farmland & Timber Total					149,770,674		**$149,770,674**	0.43%
								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							**$3,269,640,609**	9.41%
								Inflation Linked Policy Range: 7%-15%	**12.00%**
	TOTAL Amounts	$4,131,282,155	$4,094,741,767	$11,053,388,423	$12,189,836,547	$3,419,411,283	$0	**$34,738,889,501**	**Total Fund**
	TOTAL Percent	11.89%	11.79%	31.82%	35.09%	9.84%	0.00%		

Asset Class	Actual Portfolio	SAA Policy: Target (Range)	Rebalancing: Assumed Port	Rebalancing: Adj Policy	Assumed - Adjusted: % diff	Assumed - Adjusted: $ diff	Policy Band check Actual - Adj	Passive Min	Passive Actual
Cash	1.21%	0%	0.00%		0.00%				
Core	11.26%	13%						50%	73%
High Yield	3.74%	5%							
US Fixed Income	15.00%	18% (8-28%)	15.15%	18.57% (9-29%)	-3.42%	-$1,188,059,609	OK		
EM Debt	0.01%	4%		4.00%					
Opportunistic Debt	3.10%	0% (0-10%)	3.10%	0% (0-10%)	3.10%	$1,076,562,804	OK		
Private Debt	4.36%	3%		3.00%					
Total Fixed Income	**23.68%**	**25% (15-35%)**	**22.63%**	**25.57% (16-36%)**	**-2.95%**	**-$1,023,802,969**	**OK**		
Large Cap	26.79%	23%							
Mid Cap	4.76%	5%							
Small Cap	4.34%	5%							
US Equity	**35.89%**	**33% (26-38%)**	**37.60%**	**34.02% (27-39%)**	**3.58%**	**$1,242,691,341**	**OK**	**50%**	**67%**
Developed Large Cap	14.10%	14%							
Developed Small Cap	3.56%	3%							
Emerging Markets	5.41%	6%							
Non-US Equity	**23.07%**	**23% (16-28%)**	**22.74%**	**23.51% (17-29%)**	**-0.77%**	**-$267,789,719**	**OK**	**30%**	**50%**
Private Equity	6.86%	7% (5-9%)	6.86%	6.86% (5-9%)	0.00%	$0	OK		
Opportunistic Equity	1.09%	0% (0-3%)	1.09%	0% (0-3%)	1.09%	$378,357,676	OK		
Total Equity	**66.91%**	**63% (53-70%)**	**68.29%**	**64.39% (54-71%)**	**3.90%**	**$1,353,259,298**	**OK**		
Commodities	2.16%	4% (1-7%)	1.94%	4.08% (1-7%)	-2.14%	-$744,229,443	OK		
Real Estate	5.95%	8% (6-10%)	5.85%	5.95% (4-8%)	-0.10%	-$34,997,561	OK		
Infrastructure	0.86%	0% (0-3%)	0.86%	0% (0-3%)	0.86%	$300,000,000	OK		
Farmland & Timber	0.43%	0% (0-3%)	0.43%	0% (0-3%)	0.43%	$149,770,674	OK		
Opportunistic I/L	0.00%	0% (0-3%)	0.00%	0% (0-3%)	0.00%	$0	OK		
Total Inflation Linked	**9.41%**	**12% (8-16%)**	**9.09%**	**10.04% (6-14%)**	**-0.95%**	**-$329,456,330**	**OK**		
Total	**100.00%**	**100%**	**100%**	**100%**	**0.00%**	**$0**		**30%**	**44%**
								Internally Managed Portfolios:	
Total GTAA								**$10,069,649,283**	**29%**
Bridgewater	$2,793,145,734	8.0%					**Opportunistic definitions:**		
Windham	$585,243,494	1.7%					An investment in a category that is not included in the ASRS Asset Allocation		
Total	**$3,378,389,228**	**9.7%**					policy and represents an investment opportunity that is tactical in nature.		
Policy	**10% ±5%**	**OK**							

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

APRIL 2015

U.S. EQUITIES

Primary Market Metrics & Indicators:

1. Fundamentals: **POSITIVE**
   - Economic data still shows stable, sub-trend growth in 2015.
   - U.S. unemployment, is displaying sustained improvement. Income growth has not, although some localized instances of upward pressure has begun to surface.
   - At risk longer term due to stimulus measures, inflation remains generally subdued.
   - Liquidity remains ample; Federal Reserve policy remains accommodative without its asset purchases program.
   - Overall U.S. corporate profits growth has decelerated, mostly due to the impact of lower energy prices; revenues are still in a modest uptrend; high profit margins are no longer expanding.

2. Valuations: **NEUTRAL**
   - US equity markets reached new highs in March but have been trendless in 2015 in the wake of mixed macro data, downward revisions to earnings estimates and anxiety over the timing and scale of the first upward reset to interest rates and more volatility in foreign exchange markets.
   - Though marginally rich, price/earnings multiples remain near historic averages: S&P 500, 15.3x-17.4x; S&P MID, 16.9x-19.4x; S&P SC600, 17.0x-19.9x.
   - 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, whereas those of mid- and small-caps are around 4.0%.

3. Sentiment: **NEUTRAL**
   - Short-term caution has moved up a notch following the sustained advance of equity markets without a significant pullback throughout 2013 and 2014.
   - Lessened near-term equity market volatility (i.e., VIX Index) still reflects growing acceptance of risk-oriented assets.
   - The relative strength of the U.S. Dollar continues to encourage assets into U.S. equities.

Commentary:

The "NEUTRAL" opinions on Sentiment and Valuations are unchanged as is the "POSITIVE" opinion on Fundamentals

IMD is in the process of reducing ASRS allocation of U.S. equities to align toward the newly adopted Strategic Asset Allocation Policy (SAA) and our Investment House Views.

Long term prospects for the U.S. equities markets remain constructive even if the current phase of price fluctuations appears to weaken that case. The major indexes of U.S. stocks have responded generally as anticipated. Robust, macro-driven momentum of the past two years was overdue for some deceleration, even a downright pause, if only to allow fundamentals time to catch up with prices. Having reached an all-time high, prices have backed off a bit, snuffing out positive year-to-date returns and eroding investor confidence.

There is a positive macro environment for domestic equities, with an essentially sound U.S. economy in a setting of unusually low interest rates. Although some stumbling is likely as the cycle of rising interest rates gets underway, and perhaps the markets have prematurely telescoped-in some of that already this year, history has shown that stocks tend to fare reasonably well as interest rates ascend. The Federal Reserve Open Market Committee, underscored most recently in a speech by Chairperson Yellen, has been clear that it expects to normalize the level of the federal funds rate only gradually and reflect the slow, but continuing diminution of economic headwinds. Thus any interest rates increases will be a function of sustained improvement in the U.S. economy, not because the FOMC wants to forestall an overheated economy and induce recession. That's hardly a precursor for falling corporate earnings and stock prices.

Almost perversely, analysts have been taking down 2015 earnings estimates since last November, coinciding with a period in which the both the rise of the exchange rate of the U.S. Dollars and the decline in oil prices accelerated. Reductions in estimates for energy sector earnings and the effects of the higher USD exchange rate account for the 2015 year-on-year growth rate of S&P 500 earnings tumbling to 2%. Viewed at the index level and not necessarily from a top-down context, nor sector by sector, the markets seemed to have inferred that business was undergoing a widespread weakening. However, the benefits derived from quantitative easing provoking global reflation haven't been translated into the present cohort of non-energy corporate earnings estimates. They are apt to be meaningful catalysts to stocks as 2015 rolls on.

Misconceptions about the speed and magnitude by which the FOMC will move interest rates upward compounded by apprehension over the direction of earnings estimates revisions have triggered the latest bout of relatively minor volatility in the equities markets. This is likely to go on until visible signs appear later this year from the positive combined follow-on effects of ex-U.S. QE programs, of the favorable relative exchange rates engendered by those programs, and from low energy prices. As those signs appear, widespread U.S. corporate earnings growth rates should also turn up.

CURRENT PORTFOLIO POSTURE: OVERWEIGHT vs. SAA target

NON – U.S. EQUITIES

Primary Market Metrics & Indicators:

1. Fundamentals: **POSITIVE**
   - Eurozone and Japanese economic conditions are firming; they remain soft in lesser-developed economies.
   - Relatively inexpensive and available money supports a shift toward risk assets.
   - Monetary and economic policies are focused on promoting economic growth and stemming disinflation.

2. Valuations: **POSITIVE**
   - Reasonable global valuations relative to U.S.; price-to-book values of 1.5x - 1.9x; P/Es of 13. 2x – 16.6x on trend earnings.
   - Dividend yields are incrementally more favorable -ranging from 1.5x to 1.6x that of the S&P500.

3. Sentiment: **POSITIVE**
   - Money flows continue toward both U.S. and developed markets non-U.S. equities; excepting the emerging economies markets investors are less guarded and remain constructive on global risks despite some near tern risk aversion volatility.
   - Major non-U.S. markets performance has strengthened in 2015.

Commentary:

The "POSITIVE" opinions on Sentiment and Valuations are unchanged; the opinion on Fundamentals has been upgraded to "POSITIVE".

IMD is reducing it underweight to policy allocation to the Non-U.S. Equities class so to more closely match its SAAP policy target, and may exceeds it slightly given its relative attractiveness vs US markets. We prefers to underweight the Emerging Markets sub-class and overweight the EAFE and EAFE/Small-cap asset sub-classes. Overall Non-U.S. equities allocations have been more neutral to the (previous) SAA policy since late 4Q2013, awaiting sustainably stronger ex-U.S. economic growth before moving to increase the proportion relative to that of U.S. equities. These preconditions have begun to materialize.

The case for global equities is still upbeat on the back of the global reflationary effort. Flow-driven major markets remain capable of posting high, single digit returns (in USD terms) by year- end. Both the distant past and recent history have shown that liquidity injections, when delivered in sufficient size and duration, can greatly surpass most other market influences. ECB quantitative easing of over a trillion Euros certainly meets those criteria.

Some risks still threaten, e.g.: Investor leverage, threats to profitability, crowding of trades and mounting geopolitical risks. The effects of moving foreign exchange rates dominate most factors and have led to Japanese and European equities responding to profitability-driven margin expansion. The markets don't seem to have priced this in completely, yet momentum risk-on, and reflation oriented strategies, especially in the European markets, seem to be prevailing. Support from robust liquidity in Europe, and a stronger than expected economy, are impressive enticements to under-owned, low-leverage equities. Upside potential remains, although an overly strong rise too early in the process could burn that out. The impact of quantitative and qualitative easing in Japan has effectively collared the downside of its markets even as overall returns on corporate equity are normalizing further to the upside.

A negative consequence in the US from a stronger USD is that large, globally-exposed corporations now face more significant revenue and earnings headwinds. In contrast, the weakening of currencies against the USD should help augment the revenues of large, multinational equities based outside the U.S. Similarly, European corporate earnings are destined to grow at a double-digit pace, despite lingering weakness in the peripheral regional economies. European equities currently benefit from three significant tailwinds: the fall in the EUR exchange rate; a reduction in borrowing costs; and the resulting boost to growth from protracting lower oil prices. The European Central Bank's quantitative easing program should continue to support the first two tailwinds in the near term, while oil prices should continue to fall in year-on-year terms for several months, even should the clearing price cease falling further, which supports the third tailwind.

UK equities have fallen out of favor since the Scottish referendum in September last year. Over the last few months, political uncertainty in the UK has risen is expected to continue up to the general election in early May 2015, and possibly afterward. None of the current election outcomes seem market friendly. The risks emerging from the UK election range from higher taxes to speculation that the UK will leave the EU. The markets seem to be underpricing these political risks, though the UK market faces a zero expected return in 2015.

Emerging market economies are still beset by political interference, intractable labor markets and structural problems with what drives those economies. Despite sustained liquidity coursing through their capital markets, the stocks are largely unresponsive. Moreover, capital flows into the USD will continue weighing on the EMs.

A persistently rising USD is not a common theme in markets. It appears to be less prevalent during a "risk on" trend – driven by economics and fundamentals – rather than during a "risk-off' mode. Still, the ramifications of a strong USD in 2015 will be important globally and across assets. Many of the first-round consequences of a strong USD have already been felt. The strength of the USD has helped to push commodity prices and inflation down, restraining bond yields and leading to increased flows into U.S. equities and bonds. These trends should persist and even second-round influences may emerge. The latter might surface as financial conditions in some EM economies tighten further and should any further firming in U.S. consumption elevate the rate of GDP growth. Again, this bolsters the case for multinational non-U.S. companies with sizeable revenues from exports to the U.S.

Also, a rising USD has significant effect on the global flows of capital. The implications are substantial for financial conditions globally and probably felt most acutely by those countries running current account deficits and where a higher proportion of debt is issued in USD. Economic, asset price and currency outperformance in the U.S. may hinder domestic investors from aggressively deploying assets abroad. Meanwhile, investors in weak economies where currencies are depreciating and asset price performance is equally meager are apt to invest the U.S. These potential secondary forces suggest to us that the significant outperformance of U.S, and of developed non-U.S., equity markets relative to those of emerging economies is a multi-year, structural theme.

CURRENT PORTFOLIO POSTURE: UNDERWEIGHT 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 ended for the most part in 2014. The fear for bond investors had been that the cessation of quantitative easing by the Fed would lead to higher long-term rates. Despite the effective end of quantitative easing by the Fed and the possibility of further tightening in monetary policy later this year through the raising of the

Fed Funds rate from near zero levels, long-term U.S. interest rates have recently fallen to record lows and may remain low by historical standards for quite some time for a number of reasons. These include slowing growth and disinflationary (or deflationary) pressures in many regions of the world including Europe and China, accommodative monetary policies in other countries including most notably the recent adoption of quantitative easing by the European Central Bank ("ECB"), and exceptionally low competing long-term interest rates in other developed countries.

2. Valuations: **NEGATIVE**
   - The core fixed income market is likely to generate low returns due to low overall yields as Treasury rates remain at low levels and investment-grade credit spreads are relatively tight. 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 (excluding the energy sector of the high yield market) and an overall demand in the market for yield, the valuation of high yield bonds is less attractive than in the immediate years after the credit crisis of 2008-2009. However, in the fourth quarter of 2014, both spreads and yields spiked in the high yield market as due to technical selling pressure and a sharp drop in oil prices which hurt the outlook for bonds in the energy sector. Despite the potential for defaults in the energy sector, the outlook for the vast majority of industries the high yield market remains quite favorable and we believe the high yield market will likely achieve low to mid-single-digit returns this year.
   - 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 Total Fixed Income relative to its SAAP policy. Core fixed income offers important defensive characteristics which help to balance out the overall risks of the total fund portfolio however the current low levels of U.S. Treasuries and tight spreads in the investment-grade bond markets are relatively unattractive compared to other select credit markets -- particularly private debt and opportunistic debt -- where compelling yield and total return opportunities exist. Opportunistic debt includes a number of mandates mostly in distressed debt and that are not included in SAAP.

CURRENT PORTFOLIO POSTURE: UNDERWEIGHT vs. SAA target

REAL ESTATE

Primary Market Metrics & Indicators:

1. Fundamentals: **POSITIVE**
   - Improved levels of demand and easing credit conditions, combined with broad improvement in the economy, are supportive of continued expansion of commercial lending and building. Better levels of occupancy while there is a lack of construction has resulted in rising rents.
   - 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 continues to exhibit tight supply and moderate demand driven by healing household balance sheets, improved employment conditions, and continued affordability. This should lead to reacceleration of new construction and continued moderate price increases. 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 5% 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.
   - At the end of February, REITs are trading at a 6% premium to NAV with an average dividend yield of 3.5%. This reflects a 136bps spread to the 10 year treasury, which is a bit higher than the historical average of 109bps.
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 2015 real estate pacing plan called for $700 million to $1.2 billion in new commitments; including $500 to $750M allocated to new managers, $100M to $200M in closed-end funds, and $100M to $300M to existing separate account managers.

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

PRIVATE EQUITY

Primary Market Metrics & Indicators:

1. Fundamentals: **POSITIVE**
   - The U.S. economy continues to show steady improvement.
     - ◊ Oil has recently undergone a significant price correction which will reduce service costs and temper production growth in the medium term. Debt markets have locked up and equity transactions will take time to sort out. We expect industry consolidation at the margin favoring low cost producers with less leverage and more production hedged.
     - ◊ 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 with the ECB increasing its stimulus efforts by buying €60B per month. 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.

1. Valuations: **NEUTRAL**
   - US median purchase price multiples in 2014 were 8.9x, down from the 10.0x 2013 levels (which were close to the previous peak).
   - The leveraged loan and high yield debt markets were active in 2014 but down from 2013 highs. Single B high yield spreads have widened to ~530bps.
   - The US median Debt/EBITDA ratio of 5.8x in 2014 was down from 6.5X in 2013 (slightly above the previous peak).

2. Sentiment: **NEUTRAL**
   - Globally, $495B (994 funds) have closed in 2014 compared to $528B (1,187 funds) in 2013. Dry powder of nearly $1.2T globally has remained flat.
   - The global number of buyout deals rose from 3,260 in 2013 to 3,423 in 2014 while the aggregate value of deals increased from $302B to $332B.
   - Exits were up in 2014 to 1,691 from 1,622 in 2013 while the 2014 aggregate value of $441B was considerably higher than the $330B in 2013.
   - The IPO market in 2014 remained strong ($87B) but was down slightly from the 2013 level ($91B).

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 and continue to monitor Europe for a favorable reentry point and look for opportunities to capitalize upon distress. IMD's pacing plan called for $600M in commitments for 2015.

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

COMMODITIES

Primary Market Metrics & Indicators:

1. Fundamentals: **NEGATIVE**
   - The Fed ended its tapering program in November but reiterated that inflation continues to run below the FOMC's long-term objective. As Europe has begun to deal with its economic weakness with stimulus, the US dollar has strengthened on a relative basis.
   - Most commodity sectors appear well supplied, particularly for the current global growth environment.
   - The decision by Saudi Arabia not to reduce production in spite of increased global supply growth has roiled the energy markets with the short term effect of rig lay downs in the US while the budgetary impacts globally begin to add up.
   - Corn and wheat stockpiles have recently hit multi-year highs while world food prices continue to slide. Energy markets reflect the continued growth in US production as WTI and Brent prices have fallen by more than $50 from their June highs. Metals have weakened as precious metals have suffered from US dollar strength while industrial metals still exhibit weak demand.
2. Valuations: **NEUTRAL**
   - The DJ Commodities Index fell to a low of 195 in March 2015, the lowest since June 2003.
   - On a trailing 12 months (TTM), cattle and zinc have been the leaders while the energy complex has been the biggest laggard.
   - On a calendar YTD (TTM) basis the Index is down 4.3% (25.8%) as all Index sub-groups have posted negative returns with energy posting the largest decline.
3. Sentiment: **NEGATIVE**
   - The moderate growth and weak inflation environment in the U.S. has tempered investor enthusiasm for commodities and resulted in outflows from commodities.
   - Exogenous geopolitical shocks have not resulted in price spikes. Weather has been favorable for crops; harsh NE winter had no material impact on energy prices nationally.
   - Looking across the individual commodities, most remain well supplied, which has been reflected in prices as inflationary fears have abated.

Commentary:

IMD has maintained a tactical underweight relative to the SAAP in 2013 and so far in 2014 after recognizing the potential effects of Fed tapering and Chinese transition. IMD recognizes that Fed's actions will be data dependent but the QE program has ended. As a result of the changing dynamics in the energy markets IMD reduced its exposure to commodities in December and will continue to monitor the situation closely.

The North American shale play has resulted in increased US energy production and represents a long-term phenomenon. China's growth rate is also moderating and the era of infrastructure build-out which fueled a portion of the demand for commodities (particularly industrial metals) is abating. Precious metals may also be challenged as the US has moved to the front of the global recovery and other countries' stimulus should result in US dollar strength at the margin. While grains are currently well supplied, the unpredictability of weather inhibits long-term forecasting.

IMD will maintain a tactical underweight relative to the new SAAP while closely monitoring the growth and inflation dynamics globally. Improving economic conditions and inflationary pressures would serve as a catalyst to initiate a neutral position should the conditions arise.

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 investments with favorable capital market dynamics. Opportunistic investments are tactical in nature AND are outside ASRS SAAP benchmarks or absolute return oriented.

CURRENT PORTFOLIO POSTURE: Approx. 5.5% 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.

2015 ASSET CLASS COMMITEE AND IC MEETINGS

2015		Asset Class Committees				Board Committee		Grand Totals
		Private Market Committee (PRIVMC)		Public Market Committee (PUBMC)		Investment Committee (IC)		
Quarter	Month	Dates	Total	Dates	Total	Dates	Total	
1st	January	01/23 01/29	2					7
	February	02/27	1			02/23	1	
	March	03/19 03/20 03/27	3					
2nd	April							
	May							
	June							
3rd	July							
	August							
	September							
4th	October							
	November							
	December							
Totals			6				1	7

02/27/2015

- **Real Estate Investments**

  - The Committee approved a $100 million commitment to Blackstone Real Estate Partners (BREP) VIII. ASRS has previously invested in BREP VI and BREP VII and BREP is among the highest performers in the ASRS portfolio.

  - The Committee approved a $50 to $75 million commitment to a Canadian private equity fund with a hard asset oriented style focused on building products, natural resources, manufacturing and similar industries. Legal negotiations are pending.

- **Private Debt**

  - The Committee approved an amendment to an investment contract allowing up to $75 million of ASRS capital to be invested in entities with a cross-collateralized bank loan limited to an amount no greater than 45% loan to cost. Legal negotiations are pending.

  - The Committee approved an increase in the allocation to $1 billion from $600 million commitment to a senior secured direct lending mandate with a firm in which ASRS has prior investment experience. Final legal negotiations are pending.

  - The Committee approved an increase to $500 million from $300 million in the allocation to the Related account, separately allocating $100 million of the increase to K Series investing and $100 million to Related/Highbridge mezzanine oriented venture, and permitting the origination of loans in the London, UK.

  - The Committee confirmed the following future meeting dates: March 20, 2015 and May 18, 2015. The meeting scheduled April 23, 2015 was rescheduled to April 21, 2015.

03/19/2015

- **Private Debt Program**

  - The Committee approved a $350 million commitment to a private asset-backed lending partnership. Legal negotiations are pending.

  - The Committee approved a $350 million commitment to a small, middle market direct lending firm. Legal negotiations are pending.

03/20/2015

- **Private Equity**

  - The Committee approved an increase to $200 million from $100 million in an investment focused on urban retail. Legal negotiations are pending.

  - The Committee approved a $350 million commitment to an account focused on European distressed debt as part of the opportunistic fixed income portfolio. Legal negotiations are pending.

  - The Committee approved a $100 million commitment in a private equity firm focused on distressed and troubled assets. Legal negotiation are pending.

  - The Committee approved a $80 million commitment in a private equity firm in which ASRS has prior investment experience. Legal negotiations are pending.

  - The Committee approved a $100 million commitment in an energy fund manager in which ASRS has prior investment experience. Legal negotiations are pending.

  - The Committee approved a $30 million investment with a leading firm providing receivables factoring services to lower middle market companies. Legal negotiations are pending.

  - The Committee approved granting Ventas a variance permitting an investment in a project located in Foster City, CA.

  - The Committee approved a $350 million commitment to a small, middle market direct lending firm. Legal negotiations are pending.

03/27/2015

- **Private Equity Program**

  - The Committee approved to increase the commitment to $200 million from $100 million in an open fund investing in core plus properties. Legal negotiations are pending

  - The Committee approved a $300 million commitment to a separate account to in invest in grocery anchored shopping centers. Legal negotiations are pending.

TACTICAL PORTFOLIO POSITIONING

IMD is in the process of migrating ASRS Total Fund Portfolio consistent with the Board approved Strategic Asset Allocation (SAAP) Policy and ASRS Investment House Views. The new SAAP will be effective April 1, 2015 and be incorporated in Fund positioning, performance/attribution and risk reports. In short, most or all public asset classes (equities, fixed income and commodities) have been repositioned and the unfunded private market policy commitments prorated to appropriate public asset classes which are reflected in the interim SAAP policy. The interim SAAP changes over time as private investment capital are called which is anticipated to be invested over the next 2 years.

From an Investment House Views perspective and post-new SAAP transition, the Fund remains net underweight in total fixed income vs policy with a bias to private/opportunistic over public debt; net overweight in total equity with a marginal policy overweight in U.S equity and underweight in non-U.S. equity; slightly underweight net inflation-linked; and hold a policy weight in the multi-asset strategies.

The CIO will discuss the implementation of the SAAP and Investment House Views is 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

- IMD staff hosted two investment informational sessions since the prior IC meeting. One was a legal seminar related to the impact of Dodd Frank on private equity investing; the other focused on academic research covering equity volatility management strategies. In both cases, IMD leveraged the available resources of the ASRS investment management relationships.

- ASRS Securities Lending Program cap for agency lending was increased to $2.5 billion from $2 billion. This increase is consistent with IMD's current view of ASRS security lending program and market risks and to participate in euro dividend season securities lending opportunities. ASRS opportunistic lending (one-off individual lending transactions) remains capped at $2 billion with approximately $500 million currently on loan. In March, State Street, on ASRS behalf, negotiated and executed the sale of the remaining small residual securities lending cash collateral holdings that was managed by BNY Mellon, ASRS previous custody bank. IMD expects ASRS to post securities lending income of approximately $5.5 million for FY2015.

- Given attractive relative value within fixed income and an increase in ASRS SAAP to private debt, the Private Markets Committee has begun to evaluate and increase select ASRS commitments to existing private debt managers in addition to making new commitments to debt partnerships. Maintaining favorable investment structures and terms continue to be of paramount importance to IMD as this provide flexible to modify future private debt commitments as the market risk/return profile changes.

- ASRS Cash Management Program has been implemented, is now standard operating procedure and will be discussed as part of the CIO's review of Total Fund. The goals of program are to provide Fund liquidity, mitigate cash drag, minimize transaction costs and optimize manager portfolios rebalancing.

- 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 87 investment managers: Private markets (RE, PE, Debt) – 66 and Public markets (Equity and Debt) – 21.

- IMD internally manages 7 public equities and fixed income portfolios which had an approximate aggregate market value of over $10 billion or 30% of Total Fund. On a calendar YTD through Feb 28, 2015 4 of 7 met or exceeded their benchmarks, and 7 of 7 portfolios met or exceeded their benchmarks on an inception-to-date basis.

STATE STREET GLOBAL SERVICES

STATE STREET INVESTMENT ANALYTICS

Executive Presentation

To: Arizona State Retirement System

truView Risk Report February 28, 2015

Produced by State Street Investment Analytics, Risk Services

Monthly Reallocation Summary*

Month Ending January 31, 2015

Portfolio Reductions

- TOTAL MASTER CASH
  - $86M – MASTER CASH

- **TOTAL REDUCTIONS****
  - **$86M**

Portfolio Additions

- TOTAL CASH EQUITIZATION
  - $86M – CASH EQUITIZATION

- **TOTAL ADDITIONS****
  - **$86M**

***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 February 28, 2015

Portfolio Reductions

- TOTAL US EQUITY
  - $20.5M – E2 US Large Cap)
  - $4.4M – E7 (US Large Cap)
  - $2.5M – E8 (US Large Cap)
  - $1.4M – E3 (US Mid Cap)
  - $3.8M – E4 (US MidCap)
  - $2.4M – E6 (US Small Cap)
- TOTAL CASH EQUITIZATION
  - $34.5M – CASH EQUITIZATION
- **TOTAL REDUCTIONS****
  - **$69.5M**

Portfolio Additions

- TOTAL MASTER CASH
  - $69.5M – MASTER CASH
- **TOTAL ADDITIONS****
  - **$69.5M**

***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 February 28, 2015

Month-end Risk Profile

- Historical Risk (95% VaR) for all asset classes remain relatively constant from prior months with minimal changes. Following an overall risk reduction trend, Total Plan risk increased a marginal 3bps while the Policy Benchmark decreased 1bps. A steady market environment has helped produce a stable risk profile since the beginning of last year.

- Excess risk over the Policy Benchmark remains unchanged at -0.5%.

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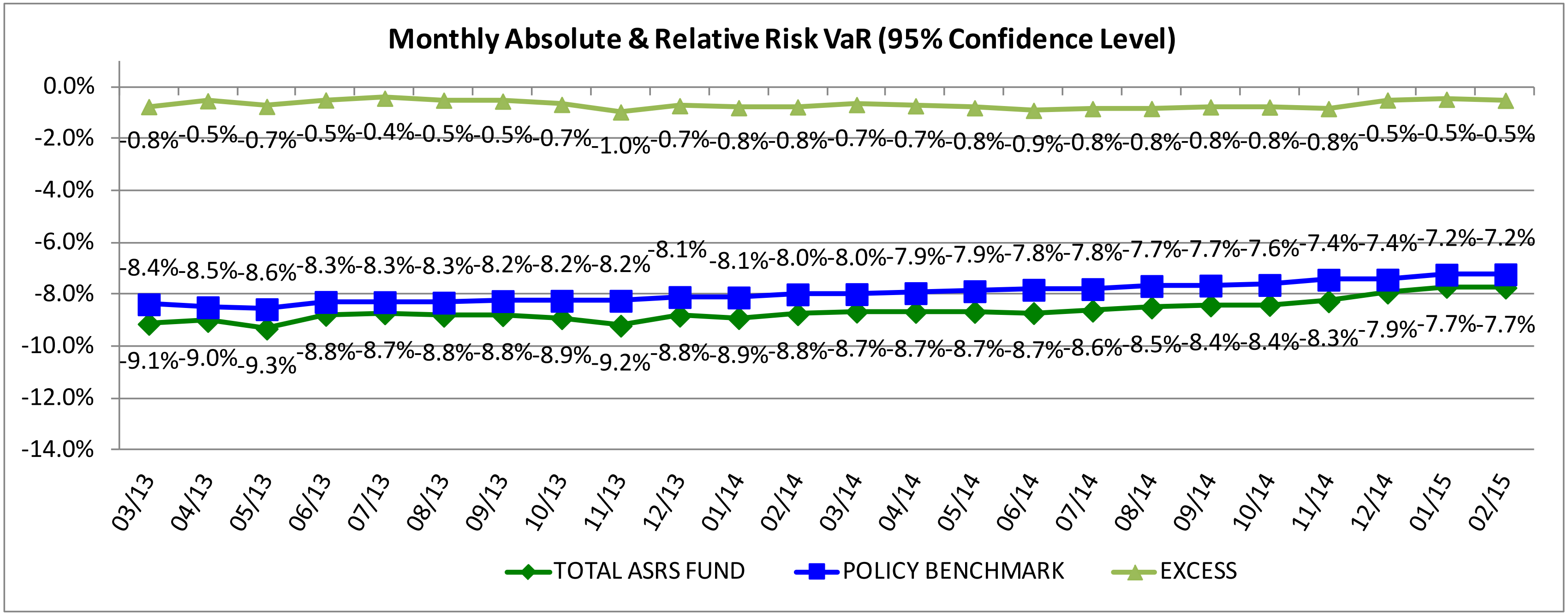


ARIZONA STATE RETIREMENT SYSTEM
As of February 28, 2015

TOTAL PLAN EXPOSURE OVERVIEW

Sector (Public US Equity Only)		$ Value	% Value	**Blended US BM	Difference
CONSUMER NON-CYCLICAL	$	2,709,208,805	23.2%	23.3%	(0.1%)
FINANCIAL	$	1,852,725,651	15.9%	16.4%	(0.6%)
TECHNOLOGY	$	1,385,360,574	11.9%	13.7%	(1.9%)
INDUSTRIAL	$	1,323,652,977	11.3%	10.5%	0.8%
CONSUMER CYCLICAL	$	1,195,898,491	10.2%	10.2%	0.1%
COMMUNICATIONS	$	975,707,251	8.4%	11.7%	(3.4%)
ENERGY	$	806,859,616	6.9%	8.1%	(1.2%)
FUNDS	$	556,960,095	4.8%	0.0%	4.8%
UTILITIES	$	392,302,508	3.4%	2.9%	0.4%
BASIC MATERIALS	$	353,501,545	3.0%	3.0%	0.1%
CASH	$	87,948,689	0.8%	0.0%	0.8%
GOVERNMENT	$	28,112,561	0.2%	0.0%	0.2%
INDEX	$	8,087,539	0.1%	0.0%	0.1%
DIVERSIFIED	$	2,122,353	0.0%	0.0%	(0.0%)
GRAND TOTAL	**$**	**11,678,448,653**	**100.0%**	**100.0%**	**0.0%**

Country Category (Total Plan)		$ Value	% Value	*Blended TOTAL BM	Difference
NORTH AMERICA	$	26,287,605,929	77.1%	66.8%	10.3%
EUROPE DEVELOPED	$	3,778,373,748	11.1%	14.3%	(3.3%)
ASIA DEVELOPED	$	1,916,564,649	5.6%	9.0%	(3.4%)
ASIA EM	$	1,191,817,000	3.5%	4.6%	(1.1%)
LATIN AMERICA	$	473,262,616	1.4%	2.9%	(1.5%)
AFRICA	$	224,719,141	0.7%	1.0%	(0.3%)
EUROPE EM	$	113,671,234	0.3%	0.9%	(0.5%)
MIDDLE EAST	$	104,314,357	0.3%	0.4%	(0.1%)
GRAND TOTAL	**$**	**34,090,328,673**	**100.0%**	**100.0%**	**0.0%**

Market Cap^ (Public Equities Only)		$ Value	% Value	*Blended TOTAL BM	Difference
1) 0 - 100M	$	3,767,054	0.0%	0.0%	0.0%
2) 100M - 500M	$	314,168,479	1.5%	1.3%	0.3%
3) 500M - 1B	$	630,485,647	3.1%	3.0%	0.1%
4) 1B - 5B	$	3,554,487,084	17.5%	22.3%	(4.8%)
5) 5B - 10B	$	2,176,812,848	10.7%	10.6%	0.1%
6) 10B - 50B	$	6,085,149,511	29.9%	28.8%	1.1%
7) >50B	$	7,597,566,176	37.3%	34.1%	3.2%
GRAND TOTAL	**$**	**20,362,436,800**	**100.0%**	**100.0%**	**0.0%**

^Excludes cash and non-traded securities

	Top 20 Issuer (Total Plan)		$ Value	% Value	Market Cap	Sector	Industry Group
1	CASH***	$	1,620,468,042	4.8%		CASH	CASH
2	SPDR S&P 500 ETF TRUST	$	1,071,648,486	3.1%	7) 50B+	FUNDS	EQUITY FUND
3	US TREASURY N/B	$	770,896,391	2.3%		GOVERNMENT	SOVEREIGN
4	FANNIE MAE	$	723,095,234	2.1%		MORTGAGE SECURITIES	COMMERCIAL MBS
5	TREASURY BILL	$	491,361,869	1.4%		GOVERNMENT	SOVEREIGN
6	APPLE INC	$	257,408,022	0.8%	7) 50B+	TECHNOLOGY	COMPUTERS
7	FREDDIE MAC	$	187,830,967	0.6%		GOVERNMENT	SOVEREIGN
8	MICROSOFT CORP	$	177,623,741	0.5%	7) 50B+	TECHNOLOGY	SOFTWARE
9	EXXON MOBIL CORP	$	168,273,457	0.5%	7) 50B+	ENERGY	OIL&GAS
10	ISHARES MSCI USA MOMENTUM FACT(	$	143,660,160	0.4%	3) 500M - 1B	FUNDS	EQUITY FUND
11	ISHARES MSCI USA QUALITY FACTOR I	$	141,599,975	0.4%	4) 1B - 5B	FUNDS	EQUITY FUND
12	JOHNSON & JOHNSON	$	136,723,468	0.4%	7) 50B+	CONSUMER NON-CYCLICAL	PHARMACEUTICALS
13	ISHARES MSCI USA VALUE FACTOR ET	$	136,191,760	0.4%	3) 500M - 1B	FUNDS	EQUITY FUND
14	ISHARES MSCI USA SIZE FACTOR ETF	$	135,508,200	0.4%	2) 100M - 500I	FUNDS	EQUITY FUND
15	PFIZER INC	$	131,967,183	0.4%	7) 50B+	CONSUMER NON-CYCLICAL	PHARMACEUTICALS
16	ISHARES MSCI EMERGING MARKETS E	$	118,436,069	0.4%	6) 10B - 50B	FUNDS	EQUITY FUND
17	CHEVRON CORP	$	106,888,890	0.3%	7) 50B+	ENERGY	OIL&GAS
18	PROCTER & GAMBLE CO/THE	$	104,144,925	0.3%	7) 50B+	CONSUMER NON-CYCLICAL	COSMETICS/PERSONAL CARE
19	JPMORGAN CHASE & CO	$	102,998,650	0.3%	7) 50B+	FINANCIAL	BANKS
20	AT&T INC	$	101,613,128	0.3%	7) 50B+	COMMUNICATIONS	TELECOMMUNICATIONS

*__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 February 28, 2015

INTERNATIONAL EQUITY EXPOSURE OVERVIEW

Sector (Public Intl Equity Only)		$ Value	% Value	*Blended NON-US BM	Difference
FINANCIAL	$	1,795,362,420	25.2%	25.6%	(0.4%)
CONSUMER NON-CYCLICAL	$	1,317,422,352	18.5%	19.5%	(1.0%)
CONSUMER CYCLICAL	$	946,093,220	13.3%	12.1%	1.2%
INDUSTRIAL	$	889,679,874	12.5%	11.7%	0.8%
COMMUNICATIONS	$	586,690,855	8.2%	8.9%	(0.7%)
BASIC MATERIALS	$	394,317,053	5.5%	6.8%	(1.3%)
TECHNOLOGY	$	386,945,575	5.4%	5.4%	0.0%
ENERGY	$	381,913,821	5.4%	5.8%	(0.4%)
UTILITIES	$	205,128,995	2.9%	3.2%	(0.3%)
CASH	$	94,467,903	1.3%	0.0%	1.3%
DIVERSIFIED	$	67,752,447	1.0%	1.0%	(0.0%)
INDEX	$	48,729,352	0.7%	0.0%	0.7%
FX	$	22,268	0.0%	0.0%	0.0%
GRAND TOTAL	**$**	**7,114,526,136**	**100.0%**	**100.0%**	**0.0%**

Country Category (Public Intl Equity Only)		$ Value	% Value	*Blended NON-US BM	Difference
EUROPE DEVELOPED	$	3,342,542,198	47.0%	47.3%	(0.3%)
ASIA DEVELOPED	$	1,888,766,394	26.5%	31.2%	(4.6%)
ASIA EM	$	1,064,164,539	15.0%	13.8%	1.2%
LATIN AMERICA	$	322,448,239	4.5%	4.0%	0.5%
AFRICA	$	179,350,402	2.5%	2.2%	0.3%
NORTH AMERICA	$	166,706,104	2.3%	0.1%	2.3%
MIDDLE EAST	$	89,406,653	1.3%	0.8%	0.4%
EUROPE EM	$	61,141,606	0.9%	0.5%	0.3%
GRAND TOTAL	**$**	**7,114,526,136**	**100.0%**	**100.0%**	**0.0%**

	Top 20 Industry Groups (Public Intl Only		$ Value	% Value	*Blended NON-US BM	Difference
1	BANKS	$	925,909,874	13.0%	13.4%	(0.4%)
2	PHARMACEUTICALS	$	430,428,333	6.0%	6.6%	(0.6%)
3	TELECOMMUNICATIONS	$	372,806,479	5.2%	5.8%	(0.6%)
4	INSURANCE	$	367,735,691	5.2%	4.9%	0.3%
5	OIL&GAS	$	350,288,473	4.9%	5.2%	(0.2%)
6	FOOD	$	333,010,648	4.7%	4.5%	0.2%
7	RETAIL	$	264,027,974	3.7%	3.0%	0.7%
8	AUTO MANUFACTURERS	$	232,230,802	3.3%	3.3%	(0.0%)
9	SEMICONDUCTORS	$	207,112,014	2.9%	3.0%	(0.1%)
10	DIVERSIFIED FINAN SERV	$	185,261,369	2.6%	2.7%	(0.1%)
11	CHEMICALS	$	185,208,123	2.6%	3.2%	(0.6%)
12	REAL ESTATE	$	176,695,500	2.5%	2.3%	0.2%
13	COMMERCIAL SERVICES	$	167,503,179	2.4%	1.8%	0.6%
14	ELECTRIC	$	146,554,126	2.1%	2.2%	(0.1%)
15	MINING	$	127,229,780	1.8%	2.3%	(0.5%)
16	BEVERAGES	$	127,191,203	1.8%	2.1%	(0.3%)
17	ENGINEERING&CONSTRUCTI(	$	126,574,322	1.8%	1.7%	0.1%
18	BUILDING MATERIALS	$	124,881,456	1.8%	1.3%	0.5%
19	TRANSPORTATION	$	122,422,258	1.7%	1.7%	0.1%
20	ELECTRONICS	$	108,149,947	1.5%	1.5%	0.0%

Market Cap** (Public Intl Equities Only)		$ Value	% Value	*Blended NON-US BM	Difference
1) 0 - 100M	$	3,268,057	0.0%	0.0%	0.0%
2) 100M - 500M	$	127,155,188	1.8%	0.8%	1.0%
3) 500M - 1B	$	230,144,367	3.3%	2.0%	1.4%
4) 1B - 5B	$	1,316,188,439	18.9%	15.3%	3.6%
5) 5B - 10B	$	881,130,542	12.7%	12.6%	0.1%
6) 10B - 50B	$	2,597,900,370	37.3%	36.7%	0.7%
7) >50B	$	1,803,499,054	25.9%	32.7%	(6.8%)
GRAND TOTAL	**$**	**6,959,286,018**	**100.0%**	**100.0%**	**0.0%**

**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 February 28, 2015

Sector (Public Fixed Income Only)	$ Value	% Value	*Blended FI BM	Difference
GOVERNMENT	$ 1,254,091,363	30.5%	40.5%	(10.0%)
MORTGAGE SECURITIES	$ 729,563,327	17.8%	19.7%	(2.0%)
COMMUNICATIONS	$ 373,403,095	9.1%	5.6%	3.5%
FINANCIAL	$ 345,341,908	8.4%	8.5%	(0.0%)
CONSUMER NON-CYCLICAL	$ 316,835,692	7.7%	5.2%	2.5%
ENERGY	$ 235,530,389	5.7%	6.2%	(0.4%)
CONSUMER CYCLICAL	$ 229,207,590	5.6%	4.0%	1.6%
INDUSTRIAL	$ 160,090,695	3.9%	3.2%	0.7%
CASH	$ 107,503,531	2.6%	0.0%	2.6%
TECHNOLOGY	$ 95,416,272	2.3%	1.4%	0.9%
BASIC MATERIALS	$ 83,349,378	2.0%	2.3%	(0.3%)
UTILITIES	$ 77,656,838	1.9%	2.2%	(0.4%)
BANK LOANS	$ 43,653,157	1.1%	0.0%	1.1%
INDEX	$ 31,450,848	0.8%	0.6%	0.2%
DIVERSIFIED	$ 11,441,828	0.3%	0.2%	0.1%
ASSET BACKED SECURITIES	$ 7,536,826	0.2%	0.3%	(0.2%)
FUNDS	$ 2,840,387	0.1%	0.0%	0.1%
FX	$ 1,361,240	0.0%	0.0%	0.0%
SWAP	$ 82,532	0.0%	0.0%	0.0%
GRAND TOTAL	**$ 4,106,356,897**	**100.0%**	**100.0%**	**0.0%**

	Top 20 Industry Groups (Public Fixed Income Only)	$ Value	% Value	*Blended FI BM	Difference
1	SOVEREIGN	$ 1,184,295,431	28.8%	38.9%	(10.0%)
2	FNMA COLLATERAL	$ 524,125,204	12.8%	8.4%	4.3%
3	TELECOMMUNICATIONS	$ 199,179,193	4.9%	3.1%	1.8%
4	OIL&GAS	$ 159,975,264	3.9%	4.6%	(0.7%)
5	BANKS	$ 139,220,615	3.4%	4.9%	(1.5%)
6	MEDIA	$ 137,128,070	3.3%	2.0%	1.3%
7	DIVERSIFIED FINAN SERV	$ 125,672,865	3.1%	2.0%	1.1%
8	CASH	$ 107,503,531	2.6%	0.0%	2.6%
9	HEALTHCARE-SERVICES	$ 101,820,055	2.5%	1.2%	1.2%
10	FGLMC COLLATERAL	$ 94,212,868	2.3%	5.0%	(2.7%)
11	ELECTRIC	$ 76,910,138	1.9%	2.1%	(0.2%)
12	RETAIL	$ 67,602,324	1.6%	1.3%	0.3%
13	COMMERCIAL MBS	$ 65,349,674	1.6%	1.3%	0.3%
14	PIPELINES	$ 64,752,951	1.6%	1.2%	0.4%
15	SOFTWARE	$ 62,237,832	1.5%	0.6%	0.9%
16	PHARMACEUTICALS	$ 56,042,819	1.4%	0.9%	0.4%
17	CHEMICALS	$ 54,529,718	1.3%	0.7%	0.6%
18	COMMERCIAL SERVICES	$ 51,300,799	1.2%	0.8%	0.5%
19	BANK LOANS	$ 43,653,157	1.1%	0.0%	1.1%
20	MUNICIPAL	$ 43,252,943	1.1%	0.6%	0.4%

Credit Rating Group** (Public Fixed Income Only)	$ Value	% Value	*Blended FI BM	Difference
01) AAA	$ 1,772,320,400	43.2%	47.3%	(4.1%)
02) AA	$ 147,933,181	3.6%	3.8%	(0.2%)
03) A	$ 377,733,999	9.2%	9.1%	0.1%
04) BBB	$ 457,785,624	11.1%	14.6%	(3.4%)
05) BB	$ 594,802,802	14.5%	12.4%	2.1%
06) B	$ 543,850,945	13.2%	9.8%	3.4%
07) CCC	$ 142,837,823	3.5%	2.6%	0.9%
08) CC	$ -	0.0%	0.0%	(0.0%)
09) C	$ -	0.0%	0.0%	0.0%
10) D	$ 6,803,213	0.2%	0.0%	0.2%
11) Not Rated	$ 62,288,911	1.5%	0.5%	1.0%
GRAND TOTAL	**$ 4,106,356,897**	**100.0%**	**100.0%**	**0.0%**

Maturity Bucket (Public Fixed Income Only)	$ Value	% Value	*Blended FI BM	Difference
0-1Y	$ 224,201,723	5.5%	0.7%	4.8%
1Y-3Y	$ 509,254,709	12.5%	18.1%	(5.7%)
3Y-5Y	$ 610,701,495	15.0%	16.1%	(1.1%)
5Y-10Y	$ 1,597,893,375	39.2%	30.2%	9.0%
10Y-15Y	$ 170,439,486	4.2%	5.6%	(1.4%)
15Y+	$ 968,474,968	23.7%	29.3%	(5.6%)
GRAND TOTAL	**$ 4,080,965,755**	**100.0%**	**100.0%**	**0.0%**

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

ARIZONA STATE RETIREMENT SYSTEM **TOTAL PLAN RISK OVERVIEW**

As of February 28, 2015

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																
CASH - UNASSETIZED	$ 74,305,713	0%	(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%
CASH - ASSETIZED	$ 6,125,265	0%	(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	$ 4,106,356,897	12%	(2.1%)	(0.1%)	1.2%	(1.8%)	(0.1%)	1.2%	(3.1%)	(0.1%)	1.0%	(5.0%)	1.1%	(1.2%)	(0.1%)	1.4%
US EQUITY	$ 11,678,448,653	34%	(9.1%)	(3.3%)	42.8%	(8.6%)	(2.9%)	39.6%	(15.5%)	(5.3%)	40.9%	(30.5%)	6.1%	(4.4%)	(1.5%)	39.7%
INTERNATIONAL EQUITY	$ 7,114,526,136	21%	(10.4%)	(1.9%)	24.1%	(10.0%)	(2.0%)	27.3%	(16.0%)	(3.2%)	25.1%	(36.7%)	6.7%	(4.8%)	(1.0%)	26.4%
REAL ESTATE	$ 1,701,928,228	5%	(12.0%)	(0.6%)	7.8%	(11.0%)	(0.5%)	7.2%	(19.8%)	(0.9%)	7.3%	(38.6%)	7.3%	(5.5%)	(0.3%)	7.1%
FARMLAND & TIMBER	$ 151,503,689	0%	(9.2%)	(0.0%)	0.6%	(8.3%)	(0.0%)	0.5%	(15.1%)	(0.1%)	0.5%	(29.8%)	5.5%	(4.4%)	(0.0%)	0.5%
PRIVATE EQUITY	$ 2,201,707,921	6%	(12.0%)	(0.8%)	9.8%	(10.8%)	(0.7%)	9.1%	(19.0%)	(1.2%)	9.3%	(36.0%)	7.1%	(5.4%)	(0.3%)	9.2%
PRIVATE DEBT	$ 1,495,679,557	4%	(2.9%)	(0.0%)	0.3%	(3.9%)	(0.1%)	1.4%	(8.0%)	(0.2%)	1.9%	(16.1%)	2.7%	(2.2%)	(0.1%)	1.6%
OPPORTUNISTIC EQUITY	$ 315,302,082	1%	(11.1%)	(0.1%)	1.3%	(9.9%)	(0.1%)	1.2%	(17.6%)	(0.2%)	1.2%	(33.9%)	6.5%	(5.0%)	(0.0%)	1.2%
OPPORTUNISTIC DEBT	$ 1,059,825,689	3%	(6.8%)	(0.2%)	2.1%	(9.2%)	(0.2%)	3.0%	(15.2%)	(0.4%)	3.2%	(28.6%)	5.9%	(4.3%)	(0.1%)	3.0%
GLOBAL INFLATION LINKEI	$ 571,462,647	2%	(8.5%)	(0.1%)	1.3%	(8.2%)	(0.1%)	1.3%	(12.6%)	(0.2%)	1.3%	(25.9%)	5.0%	(4.1%)	(0.1%)	1.4%
GTAA	$ 3,613,156,196	11%	(6.2%)	(0.7%)	8.6%	(5.7%)	(0.6%)	8.2%	(10.1%)	(1.1%)	8.2%	(22.6%)	3.8%	(3.1%)	(0.3%)	8.5%
GRAND TOTAL	**$ 34,090,328,673**	**100%**	**(7.7%)**	**(7.7%)**	**100.0%**	**(7.3%)**	**(7.3%)**	**100.0%**	**(12.9%)**	**(12.9%)**	**100.0%**	**(27.6%)**	**5.0%**	**(3.7%)**	**(3.7%)**	**100.0%**
INTERIM POLICY BENCHMARK			***(7.2%)***			***(6.8%)***			***(11.8%)***			**(25.4%)**	**6.0%**	***(3.5%)***		
ANNUALIZED RISK																
CASH - UNASSETIZED	$ 74,305,713	0%	(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%
CASH - ASSETIZED	$ 6,125,265	0%	(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	$ 4,106,356,897	12%	(7.4%)	(0.3%)	1.2%	(6.3%)	(0.3%)	1.2%	(10.6%)	(0.5%)	1.0%	N/A	3.8%	(4.3%)	(0.2%)	1.4%
US EQUITY	$ 11,678,448,653	34%	(31.6%)	(11.5%)	42.8%	(29.9%)	(10.0%)	39.6%	(53.8%)	(18.3%)	40.9%	N/A	21.0%	(15.2%)	(5.2%)	39.7%
INTERNATIONAL EQUITY	$ 7,114,526,136	21%	(35.9%)	(6.5%)	24.1%	(34.5%)	(6.9%)	27.3%	(55.6%)	(11.2%)	25.1%	N/A	23.2%	(16.7%)	(3.4%)	26.4%
REAL ESTATE	$ 1,701,928,228	5%	(41.6%)	(2.1%)	7.8%	(38.2%)	(1.8%)	7.2%	(68.6%)	(3.3%)	7.3%	N/A	25.1%	(19.1%)	(0.9%)	7.1%
FARMLAND & TIMBER	$ 151,503,689	0%	(31.9%)	(0.1%)	0.6%	(28.6%)	(0.1%)	0.5%	(52.2%)	(0.2%)	0.5%	N/A	19.1%	(15.1%)	(0.1%)	0.5%
PRIVATE EQUITY	$ 2,201,707,921	6%	(41.4%)	(2.6%)	9.8%	(37.5%)	(2.3%)	9.1%	(65.7%)	(4.2%)	9.3%	N/A	24.7%	(18.8%)	(1.2%)	9.2%
PRIVATE DEBT	$ 1,495,679,557	4%	(10.1%)	(0.1%)	0.3%	(13.6%)	(0.4%)	1.4%	(27.5%)	(0.8%)	1.9%	N/A	9.3%	(7.6%)	(0.2%)	1.6%
OPPORTUNISTIC EQUITY	$ 315,302,082	1%	(38.4%)	(0.4%)	1.3%	(34.1%)	(0.3%)	1.2%	(60.9%)	(0.6%)	1.2%	N/A	22.6%	(17.4%)	(0.2%)	1.2%
OPPORTUNISTIC DEBT	$ 1,059,825,689	3%	(23.7%)	(0.6%)	2.1%	(32.0%)	(0.8%)	3.0%	(52.7%)	(1.4%)	3.2%	N/A	20.5%	(14.9%)	(0.4%)	3.0%
GLOBAL INFLATION LINKEI	$ 571,462,647	2%	(29.5%)	(0.4%)	1.3%	(28.3%)	(0.3%)	1.3%	(43.8%)	(0.6%)	1.3%	N/A	17.2%	(14.3%)	(0.2%)	1.4%
GTAA	$ 3,613,156,196	11%	(21.4%)	(2.3%)	8.6%	(19.9%)	(2.1%)	8.2%	(35.1%)	(3.7%)	8.2%	N/A	13.0%	(10.7%)	(1.1%)	8.5%
GRAND TOTAL	**$ 34,090,328,673**	**100%**	**(26.8%)**	**(26.8%)**	**100.0%**	**(25.3%)**	**(25.3%)**	**100.0%**	**(44.7%)**	**(44.7%)**	**100.0%**	**N/A**	**17.2%**	**(13.0%)**	**(13.0%)**	**100.0%**
INTERIM POLICY BENCHMARK			***(25.0%)***			***(23.6%)***			***(40.7%)***			**N/A**	***20.7%***	***(12.0%)***		

Strategy	$ Value	% Value	Beta SP500	Corr SP500	Beta MSCI EAFE	Corr MSCI EAFE	Duration	Convexity	Notional Exposure	Gross Exposure	Gross Leverage
CASH - UNASSETIZED	$ 74,305,713	0%	(0.00)	(0.01)	(0.00)	(0.01)			$ 74,305,713	$ 74,305,713	100.0%
CASH - ASSETIZED	$ 6,125,265	0%	(0.00)	(0.01)	(0.00)	(0.01)			$ 6,125,265	$ 6,125,267	100.0%
TOTAL FIXED INCOME	$ 4,106,356,897	12%	0.06	0.30	0.07	0.40	4.96	0.195	$ 3,848,011,385	$ 4,519,988,116	110.1%
US EQUITY	$ 11,678,448,653	34%	1.07	0.99	0.82	0.90	0.86	0.007	$ 11,850,691,903	$ 11,690,504,194	100.1%
INTERNATIONAL EQUITY	$ 7,114,526,136	21%	1.09	0.90	1.01	0.98	0.82	0.007	$ 7,114,766,943	$ 7,146,793,272	100.5%
REAL ESTATE	$ 1,701,928,228	5%	1.20	0.92	1.00	0.90			$ 1,701,928,228	$ 1,701,928,228	100.0%
FARMLAND & TIMBER	$ 151,503,689	0%	1.00	1.00	0.77	0.90			$ 151,503,689	$ 151,503,689	100.0%
PRIVATE EQUITY	$ 2,201,707,921	6%	1.24	0.96	0.94	0.86			$ 2,201,707,921	$ 2,201,707,972	100.0%
PRIVATE DEBT	$ 1,495,679,557	4%	0.29	0.60	0.24	0.58	0.61	0.005	$ 1,495,687,958	$ 1,496,289,469	100.0%
OPPORTUNISTIC EQUITY	$ 315,302,082	1%	1.16	0.98	0.88	0.88			$ 315,302,082	$ 315,302,082	100.0%
OPPORTUNISTIC DEBT	$ 1,059,825,689	3%	0.75	0.70	0.65	0.71			$ 1,059,825,689	$ 1,059,825,689	100.0%
GLOBAL INFLATION LINKEI	$ 571,462,647	2%	0.30	0.65	0.26	0.69	0.20	0.001	$ 1,134,964,027	$ 571,462,647	100.0%
GTAA	$ 3,613,156,196	11%	0.45	0.97	0.38	0.97	4.79	(0.655)	$ 5,326,392,053	$ 4,739,799,958	131.2%
GRAND TOTAL	**$ 34,090,328,673**	**100%**	**0.82**	**0.97**	**0.68**	**0.95**	**4.35**	**0.119**	**$ 36,281,212,855**	**$ 35,675,536,296**	**104.7%**

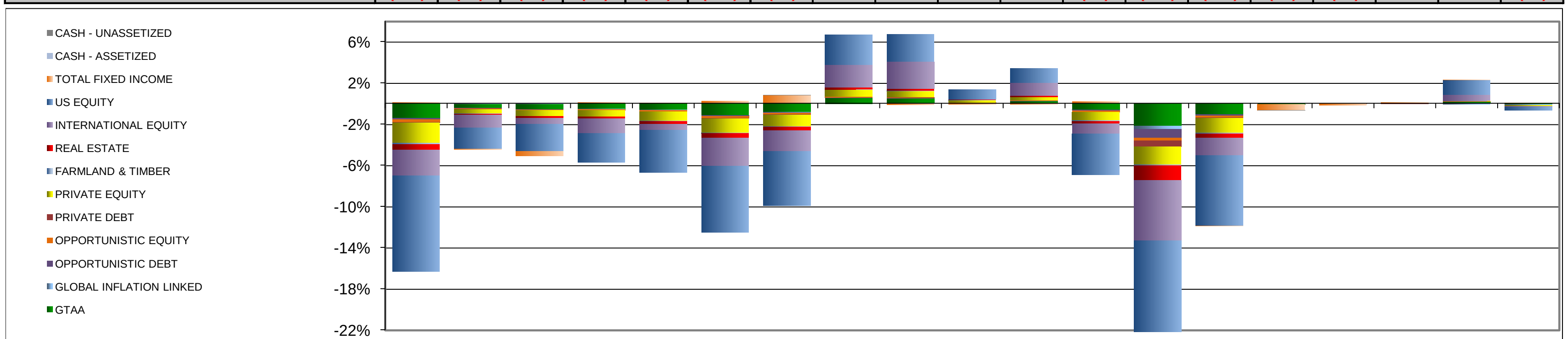
ARIZONA STATE RETIREMENT SYSTEM

As of February 28, 2015

TOTAL PLAN STRESS TESTS

Strategy	$ Value	% Value	Black Monday - 5 Day	Gulf War - 5 Day	Bond Crash: Feb 94 - May 94	Asian Crisis 97-98 - 5 day	Russian Crisis - 5 Day	Nasdaq Correction: July 98 - Aug 98	Russian Debt Crisis Aug-Oct	IR Steepening: Sept 98 - Nov 98	Emerging Markets Rally: Jan 99 - May 99	Fed Tightening: April - June 99	Nasdaq Rally: Nov 99 - Jan 00	9/11 Attack - 5 Day	09-10-2008	S&P 500 -20%	IR Parallel Shift +100bps	Spread Up 100bps	Inflation +1%	Gold Shock -20%	Oil Shock -20%
			Historical Scenarios													Predictive Scenarios					
Stress Test Stand Alone																					
CASH - UNASSETIZED	$ 74,305,713	0.2%	0.0	(0.0)	(0.0)	0.0	0.0	0.0	0.0	0.0	(0.0)	(0.0)	(0.0)	0.0	(0.0)	0.0	(0.0)	0.0	(0.0)	0.0	0.0
CASH - ASSETIZED	$ 6,125,265	0.0%	0.0	(0.0)	(0.0)	0.0	0.0	0.0	0.0	0.0	(0.0)	(0.0)	(0.0)	0.0	(0.0)	0.0	(0.0)	0.0	(0.0)	0.0	0.0
TOTAL FIXED INCOME	$ 4,106,356,897	12.0%	0.8	(0.5)	(4.1)	0.7	0.5	1.7	6.7	(0.3)	(1.2)	(0.7)	(1.0)	1.3	(4.1)	(0.1)	(5.0)	(0.2)	0.4	0.0	0.1
US EQUITY	$ 11,678,448,653	34.3%	(27.2)	(6.0)	(7.7)	(8.2)	(12.1)	(18.9)	(15.5)	8.5	7.8	2.8	4.1	(11.6)	(26.5)	(20.0)	(0.0)	0.0	0.0	4.0	(1.0)
INTERNATIONAL EQUITY	$ 7,114,526,136	20.9%	(12.0)	(6.0)	(2.8)	(7.0)	(3.0)	(13.2)	(9.8)	10.4	12.6	(0.1)	5.9	(4.9)	(28.3)	(8.1)	0.0	0.0	(0.0)	3.1	(0.4)
REAL ESTATE	$ 1,701,928,228	5.0%	(11.4)	(2.5)	(3.3)	(3.4)	(5.0)	(8.0)	(6.5)	3.6	3.3	1.2	1.7	(4.8)	(27.8)	(8.4)	(0.0)	0.0	(0.0)	0.0	(0.1)
FARMLAND & TIMBER	$ 151,503,689	0.4%	(27.2)	(6.0)	(7.8)	(8.2)	(12.0)	(19.1)	(15.4)	8.6	7.8	2.8	4.1	(11.6)	(27.0)	(20.0)	0.0	0.0	0.0	0.0	(0.9)
PRIVATE EQUITY	$ 2,201,707,921	6.5%	(30.9)	(6.8)	(8.9)	(9.4)	(13.7)	(21.8)	(17.6)	9.8	8.9	3.2	4.7	(13.2)	(26.9)	(22.8)	(0.0)	0.0	(0.0)	0.0	(1.2)
PRIVATE DEBT	$ 1,495,679,557	4.4%	(1.0)	(0.2)	(0.3)	(0.3)	(0.5)	(0.7)	(0.5)	0.3	0.3	0.1	0.2	(0.4)	(14.3)	(0.8)	(0.1)	(0.0)	0.0	0.0	(0.0)
OPPORTUNISTIC EQUITY	$ 315,302,082	0.9%	(29.8)	(6.6)	(8.5)	(9.0)	(13.2)	(21.0)	(16.9)	9.4	8.6	3.1	4.5	(12.7)	(27.1)	(21.9)	0.0	0.0	0.0	0.1	(1.2)
OPPORTUNISTIC DEBT	$ 1,059,825,689	3.1%	(4.2)	(0.9)	(1.2)	(1.3)	(1.8)	(2.9)	(2.4)	1.3	1.2	0.4	0.6	(1.8)	(27.3)	(3.1)	0.0	0.0	0.0	0.0	(0.1)
GLOBAL INFLATION LINKEI	$ 571,462,647	1.7%	(0.0)	0.0	0.0	(0.0)	(0.0)	(0.0)	(0.1)	(0.0)	0.0	0.0	0.0	(0.0)	(16.9)	0.0	0.1	0.0	0.0	(4.8)	(5.2)
GTAA	$ 3,613,156,196	10.6%	(12.9)	(3.9)	(4.9)	(4.7)	(5.6)	(10.5)	(7.7)	5.4	4.9	0.7	2.5	(5.7)	(20.5)	(9.9)	(0.7)	0.0	0.1	2.0	(0.6)
GRAND TOTAL	**$ 34,090,328,673**	**100.0%**	**(16.2)**	**(4.5)**	**(5.1)**	**(5.6)**	**(6.7)**	**(12.3)**	**(9.1)**	**6.6**	**6.6**	**1.2**	**3.3**	**(6.8)**	**(22.9)**	**(11.9)**	**(0.7)**	**(0.2)**	**0.1**	**2.2**	**(0.7)**
INTERIM POLICY BENCHMARK			**(14.6)**	**(4.3)**	**(5.7)**	**(5.4)**	**(5.7)**	**(11.6)**	**(7.3)**	**6.7**	**6.7**	**1.0**	**3.1**	**(5.9)**	**(20.4)**	**(10.6)**	**(1.4)**	**(0.6)**	**0.1**	**2.3**	**(0.6)**

Strategy	$ Value	% Value	Black Monday - 5 Day	Gulf War - 5 Day	Bond Crash: Feb 94 - May 94	Asian Crisis 97-98 - 5 day	Russian Crisis - 5 Day	Nasdaq Correction: July 98 - Aug 98	Russian Debt Crisis Aug-Oct	IR Steepening: Sept 98 - Nov 98	Emerging Markets Rally: Jan 99 - May 99	Fed Tightening: April - June 99	Nasdaq Rally: Nov 99 - Jan 00	9/11 Attack - 5 Day	09-10-2008	S&P 500 -20%	IR Parallel Shift +100bps	Spread Up 100bps	Inflation +1%	Gold Shock -20%	Oil Shock -20%
Stress Test Contribution																					
CASH - UNASSETIZED	$ 74,305,713	0.2%	0.0	(0.0)	(0.0)	0.0	0.0	0.0	0.0	0.0	(0.0)	(0.0)	(0.0)	0.0	(0.0)	0.0	(0.0)	0.0	(0.0)	0.0	0.0
CASH - ASSETIZED	$ 6,125,265	0.0%	0.0	(0.0)	(0.0)	0.0	0.0	0.0	0.0	0.0	(0.0)	(0.0)	(0.0)	0.0	(0.0)	0.0	(0.0)	0.0	(0.0)	0.0	0.0
TOTAL FIXED INCOME	$ 4,106,356,897	12.0%	0.1	(0.1)	(0.5)	0.1	0.1	0.2	0.8	(0.0)	(0.1)	(0.1)	(0.1)	0.2	(0.5)	(0.0)	(0.6)	(0.2)	0.1	0.0	0.0
US EQUITY	$ 11,678,448,653	34.3%	(9.3)	(2.1)	(2.6)	(2.8)	(4.1)	(6.5)	(5.3)	2.9	2.7	0.9	1.4	(4.0)	(9.1)	(6.9)	(0.0)	0.0	0.0	1.4	(0.3)
INTERNATIONAL EQUITY	$ 7,114,526,136	20.9%	(2.5)	(1.3)	(0.6)	(1.5)	(0.6)	(2.8)	(2.0)	2.2	2.6	(0.0)	1.2	(1.0)	(5.9)	(1.7)	0.0	0.0	(0.0)	0.6	(0.1)
REAL ESTATE	$ 1,701,928,228	5.0%	(0.6)	(0.1)	(0.2)	(0.2)	(0.3)	(0.4)	(0.3)	0.2	0.2	0.1	0.1	(0.2)	(1.4)	(0.4)	(0.0)	0.0	(0.0)	0.0	(0.0)
FARMLAND & TIMBER	$ 151,503,689	0.4%	(0.1)	(0.0)	(0.0)	(0.0)	(0.1)	(0.1)	(0.1)	0.0	0.0	0.0	0.0	(0.1)	(0.1)	(0.1)	0.0	0.0	0.0	0.0	(0.0)
PRIVATE EQUITY	$ 2,201,707,921	6.5%	(2.0)	(0.4)	(0.6)	(0.6)	(0.9)	(1.4)	(1.1)	0.6	0.6	0.2	0.3	(0.9)	(1.7)	(1.5)	(0.0)	0.0	(0.0)	0.0	(0.1)
PRIVATE DEBT	$ 1,495,679,557	4.4%	(0.0)	(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)	(0.0)	0.0	0.0	(0.0)
OPPORTUNISTIC EQUITY	$ 315,302,082	0.9%	(0.3)	(0.1)	(0.1)	(0.1)	(0.1)	(0.2)	(0.2)	0.1	0.1	0.0	0.0	(0.1)	(0.3)	(0.2)	0.0	0.0	0.0	0.0	(0.0)
OPPORTUNISTIC DEBT	$ 1,059,825,689	3.1%	(0.1)	(0.0)	(0.0)	(0.0)	(0.1)	(0.1)	(0.1)	0.0	0.0	0.0	0.0	(0.1)	(0.8)	(0.1)	0.0	0.0	0.0	0.0	(0.0)
GLOBAL INFLATION LINKEI	$ 571,462,647	1.7%	(0.0)	0.0	0.0	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	0.0	0.0	0.0	(0.0)	(0.3)	0.0	0.0	0.0	0.0	(0.1)	(0.1)
GTAA	$ 3,613,156,196	10.6%	(1.4)	(0.4)	(0.5)	(0.5)	(0.6)	(1.1)	(0.8)	0.6	0.5	0.1	0.3	(0.6)	(2.2)	(1.0)	(0.1)	0.0	0.0	0.2	(0.1)
GRAND TOTAL	**$ 34,090,328,673**	**100.0%**	**(16.2)**	**(4.5)**	**(5.1)**	**(5.6)**	**(6.7)**	**(12.3)**	**(9.1)**	**6.6**	**6.6**	**1.2**	**3.3**	**(6.8)**	**(22.9)**	**(11.9)**	**(0.7)**	**(0.2)**	**0.1**	**2.2**	**(0.7)**
INTERIM POLICY BENCHMARK			**(14.6)**	**(4.3)**	**(5.7)**	**(5.4)**	**(5.7)**	**(11.6)**	**(7.3)**	**6.7**	**6.7**	**1.0**	**3.1**	**(5.9)**	**(20.4)**	**(10.6)**	**(1.4)**	**(0.6)**	**0.1**	**2.3**	**(0.6)**



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, making no assumption of the tail distribution, 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, making a Normal distribution assumption of the tail distribution, 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. Where VaR asks the question 'how bad can things get?', expected shortfall asks 'if things do get bad, what is our expected loss?
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 Turbulance
3/31/2015	25	62	118	25	15	High	High
2/28/2015	25	56	112	25	13	High	High
1/31/2015	24	62	123	25	21	High	High
12/31/2014	23	58	117	22	19	High	High
11/30/2014	22	55	113	22	13	Low	Moderate
10/31/2014	21	59	112	23	14	Low	Moderate
9/30/2014	25	67	107	22	16	Low	Low
8/31/2014	22	53	99	21	12	Low	Low
7/31/2014	20	59	95	22	17	Low	Low
6/30/2014	13	53	96	21	12	Low	Low
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

LEGEND

	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

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 and 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.

Agenda Item #4

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: April 14, 2015

Subject: Agenda Item #4: Presentation, Discussion and Appropriate Action Regarding Independent Reporting, Monitoring and Oversight of the ASRS Investment Program

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Purpose

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

Recommendation

Informational only; no action required.

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.

As of March 31, 2015, the Total Fund's market value was approximately $34.7 billion.

Attachments:

- NEPC's Independent Reporting, Monitoring and Oversight reports

Arizona State Retirement System

Independent ASRS Investment Program Oversight

April 20, 2015

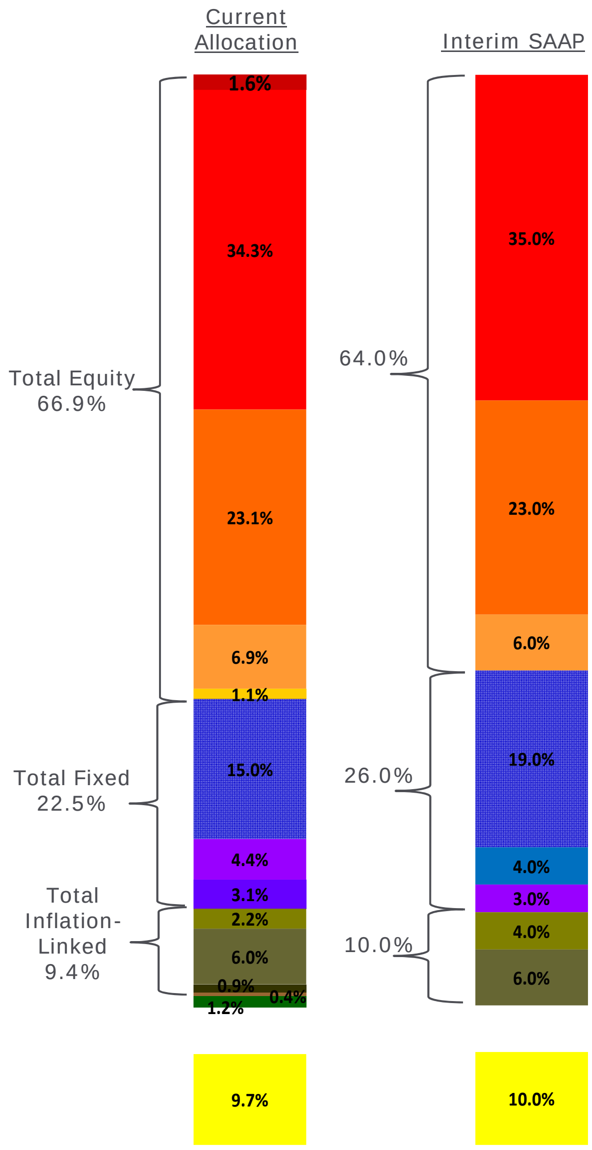
Dan LeBeau, Consultant, NEPC

NEPC, LLC

Contents

Independent Oversight/Compliance

SAA Policy Compliance



	Current Mkt Value	Current Allocation	Interim SAAP	Difference	Policy Range	Within Range
Total Domestic and International Equity[1]	**$20,483,225,195**	**59.0%**	**58.0%**	**1.0%**		
Domestic Equity[3]	**$11,911,207,846**	**34.3%**	**35.0%**	**-0.7%**	**26% - 38%**	**Yes**
U.S. Large Cap[2]	*$8,751,086,184*	*25.2%*	*25.0%*	*0.2%*		
U.S. Mid Cap	*$1,652,586,240*	*4.8%*	*5.0%*	*-0.2%*		
U.S. Small Cap	*$1,507,535,422*	*4.3%*	*5.0%*	*-0.7%*		
International Equity[3]	**$8,014,923,572**	**23.1%**	**23.0%**	**0.1%**	**16% - 28%**	**Yes**
Developed Large Cap[2]	*$4,899,889,032*	*14.1%*	*14.0%*	*0.1%*		
Developed Small Cap	*$1,236,032,226*	*3.6%*	*3.0%*	*0.6%*		
Emerging Markets	*$1,879,002,314*	*5.4%*	*6.0%*	*-0.6%*		
Private Equity[4]	**$2,381,642,099**	**6.9%**	**6.0%**	**0.9%**	**5% - 9%**	**Yes**
Opportunistic Equity[4,6]	**$378,357,676**	**1.1%**	**0.0%**	**1.1%**	**0% - 3%**	**Yes**
Total Equity	**$23,243,224,970**	**66.9%**	**64.0%**	**2.9%**	**53% - 70%**	**Yes**
U.S. Fixed Income	**$5,210,948,471**	**15.0%**	**19.0%**	**-4.0%**	**8% - 28%**	**Yes**
Core[2]	*$3,911,203,366*	*11.3%*	*14.0%*	*-2.7%*		
High Yield	*$1,299,745,105*	*3.7%*	*5.0%*	*-1.3%*		
Emerging Market Debt	**$3,115,375**	**0.0%**	**4.0%**	**-4.0%**		
Private Debt[4]	**$1,516,300,726**	**4.4%**	**3.0%**	**1.4%**		
Opportunistic Debt[4,6]	**$1,076,562,804**	**3.1%**	**0.0%**	**3.1%**	**0% - 10%**	**Yes**
Total Fixed Income	**$7,806,927,376**	**22.5%**	**26.0%**	**-3.5%**	**15% - 35%**	**Yes**
Commodities[2]	**$751,232,165**	**2.2%**	**4.0%**	**-1.8%**	**1% - 7%**	**Yes**
Real Estate[2,4]	**$2,068,637,770**	**6.0%**	**6.0%**	**0.0%**	**6% - 10%**	**Yes**
Infrastructure	**$300,000,000**	**0.9%**	**0.0%**	**0.9%**	**0% - 3%**	**Yes**
Farmland and Timber	**$149,770,674**	**0.4%**	**0.0%**	**0.4%**	**0% - 3%**	**Yes**
Opportunistic Inflation-Linked[5]	**$0**	**0.0%**	**0.0%**	**0.0%**	**0% - 3%**	**Yes**
Total Inflation-Linked	**$3,269,640,609**	**9.4%**	**10.0%**	**-0.6%**	**8% - 16%**	**Yes**
Cash[5]	**$419,096,546**	**1.2%**	**0.0%**	**1.2%**		
Operating Cash (Non-Assetized)	*$100,828,001*	*0.3%*	*0.0%*	*0.3%*		
Operating Cash (Assetized)	*$318,268,545*	*0.9%*	*0.0%*	*0.9%*		
Total	**$34,738,889,501**	**100.0%**	**100.0%**	**0.0%**		
Global Tactical Asset Allocation (GTAA)[2]	**$3,378,389,228**	**9.7%**	**10.0%**	**-0.3%**	**5% - 15%**	**Yes**

[1]Total Domestic and International Equity includes Equity Risk Factor Portfolio with assets of $557.1 million.

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

[3]Domestic Equity, International Equity, U.S. Fixed Income and Emerging Market Debt market values include residual values remaining in terminated manager accounts.

[4]Values shown for private markets portfolios include cash flows that occurred during 1Q 2015.

[5]Cash includes money for the upcoming monthly pension distribution.

[6]Aggregate Opportunistic asset classes not to exceed 10%.

Note: Interim SAA Policy includes proration of 1% Private Equity and 2% Real Estate, which are unfunded. Policy Ranges shown are relative to the long-term SAAP, which can cause some asset classes to be out of range while implementation of the long-term SAAP is in process.

Current Market Value and Current Allocation are based on unaudited values as of March 31, 2015. Data shown above will differ from what is presented in the 1Q 2015 Board Report that is scheduled to be presented at the June 26, 2015 Board meeting.

Market values include manager held cash.

Asset Class Committee Monitoring

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

- **February 27, 2015 – Private Markets Committee**
  - Monthly Status Report, General Discussion and Deal Flow
  - Real Estate Pipeline Discussion
    - Informational item to provide an update on real estate investment pipeline and to solicit guidance as necessary
  - Real Estate Manager Recommendation ($100 million)
    - Consistent with strategic plan at the Total Fund level (SAAP Target to Real Estate is 10%)
    - The ASRS is currently invested with this manager in multiple funds across the ASRS private markets landscape
    - Due diligence process was followed in accordance with SIP 006 – Investment Manager, Partner, and Co-Investment Selection and Oversight
    - Committee approved the recommendation
  - Variance Request
    - RCLCO and the ASRS private markets team recommended the ASRS approve a variance request from an existing real estate manager to amend the financing criteria required to make an investment
      - Availability of bank debt remains highly constrained, and in order to obtain debt for this particular account, cross collateralized fund level debt is required
    - Committee approved the variance request, allowing up to $75 million of ASRS capital to be invested in entities with a cross collateralized bank loan limited to an amount no greater than 45% loan to cost
  - Private Equity Manager Recommendation ($50-$75 million)
    - Consistent with strategic plan at the Total Fund level (SAAP Target to Private Equity is 8%)
    - The ASRS is currently 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 for $50 million, delegating authority for the private markets team to increase the size of the investment up to $75 million after an evaluation of the potential benefit of a fee break for increasing the size of the commitment

Asset Class Committee Monitoring

- **February 27, 2015 – Private Markets Committee (continued)**
  - Private Debt Manager Recommendation – Additional Commitment ($400 million; $600 million original commitment)
    - Consistent with strategic plan at the Total Fund level (SAAP Target to Private Debt is 10%)
    - Due diligence process was followed in accordance with SIP 006 – Investment Manager, Partner, and Co-Investment Selection and Oversight
    - Committee approved the recommendation
  - Private Debt Manager Recommendation – Additional Commitment ($200 million; $300 million original commitment)
    - Consistent with strategic plan at the Total Fund level (SAAP Target to Private Debt is 10%)
    - Due diligence process was followed in accordance with SIP 006 – Investment Manager, Partner, and Co-Investment Selection and Oversight
    - Committee approved the recommendation

- **March 19, 2015 – Ad Hoc Private Markets Committee**
  - Private Debt Manager Recommendation ($350 million)
    - Consistent with strategic plan at the Total Fund level (SAAP Target to Private Debt is 10%)
    - Due diligence process was followed in accordance with SIP 006 – Investment Manager, Partner, and Co-Investment Selection and Oversight
    - Committee approved the recommendation, subject to the concurrence of the Director, who was not present for the discussion. The Director subsequently concurred at the March 20, 2015 PRIVMC meeting.
  - Private Debt Manager Recommendation ($350 million)
    - Consistent with strategic plan at the Total Fund level (SAAP Target to Private Debt is 10%)
    - Due diligence process was followed in accordance with SIP 006 – Investment Manager, Partner, and Co-Investment Selection and Oversight
    - No recommendation was made at this meeting

Asset Class Committee Monitoring

- **March 20, 2015 – Private Markets Committee**
  - Monthly Status Report, General Discussion and Deal Flow
  - Real Estate Pipeline Discussion
    - Informational item to provide an update on real estate investment pipeline and to solicit guidance where appropriate
  - Real Estate Manager Recommendation – Additional Commitment ($100 million; $100 million original commitment)
    - Consistent with strategic plan at the Total Fund level (SAAP Target to Real Estate is 10%)
    - Due diligence process was followed in accordance with SIP 006 – Investment Manager, Partner, and Co-Investment Selection and Oversight
    - Committee approved the recommendation
  - Private Debt Manager Recommendation ($350 million)
    - Consistent with strategic plan at the Total Fund level (SAAP Target to Private Debt is 10%)
    - Due diligence process was followed in accordance with SIP 006 – Investment Manager, Partner, and Co-Investment Selection and Oversight
    - Committee approved the recommendation
  - Private Equity Manager Recommendation ($100 million)
    - Consistent with strategic plan at the Total Fund level (SAAP Target to Private Equity is 8%)
    - The ASRS is currently invested with this manager in prior funds
    - Due diligence process was followed in accordance with SIP 006 – Investment Manager, Partner, and Co-Investment Selection and Oversight
    - Committee approved the recommendation
  - Private Equity Manager Recommendation ($80 million)
    - Consistent with strategic plan at the Total Fund level (SAAP Target to Private Equity is 8%)
    - The ASRS is currently invested with this manager in multiple funds across the ASRS private markets landscape
    - Due diligence process was followed in accordance with SIP 006 – Investment Manager, Partner, and Co-Investment Selection and Oversight
    - Committee approved the recommendation

Asset Class Committee Monitoring

- **March 20, 2015 – Private Markets Committee (continued)**
  - Private Equity Manager Recommendation ($100 million)
    - Consistent with strategic plan at the Total Fund level (SAAP Target to Private Equity is 8%)
    - The ASRS is currently 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
  - Opportunistic Equity Manager Recommendation ($30 million co-investment)
    - Consistent with strategic plan at the Total Fund level (SAAP Target to Opportunistic Equity is 0%, with a range of 0%-3%)
    - Due diligence process was followed in accordance with SIP 006 – Investment Manager, Partner, and Co-Investment Selection and Oversight
    - Committee approved the recommendation
  - Variance Request
    - RCLCO recommended the ASRS approve a variance request from an existing real estate manager to allow for the continued development of a property that will require a longer period of time to achieve stabilization than the investment guidelines require
      - Investment in question will require 4-5 years to achieve stabilization, while investment criteria require stabilization within 3 years
      - This was an error in the investment criteria language, which should have read that these types of investments will 'achieve stabilization within 3 years of completion of construction' rather than 3 years from the date of the initial investment in the asset
    - The Committee did not approve the variance request, but instead amended the investment criteria language accordingly
  - Private Debt Manager Recommendation ($350 million) – Follow Up from March 19, 2015 PRIVMC meeting
    - Consistent with strategic plan at the Total Fund level (SAAP Target to Private Debt is 10%)
    - Due diligence process was followed in accordance with SIP 006 – Investment Manager, Partner, and Co-Investment Selection and Oversight
    - Committee approved the recommendation

Asset Class Committee Monitoring

- **March 27, 2015 – Private Markets Committee**
  - Real Estate Pipeline Discussion
    - Informational item to provide an update on real estate investment pipeline and to solicit guidance where appropriate
  - Real Estate Manager Recommendation – Additional Commitment ($100 million; $100 million original commitment)
    - Consistent with strategic plan at the Total Fund level (SAAP Target to Real Estate is 10%)
    - The ASRS is currently invested with this manager in multiple funds across the ASRS private markets landscape
    - Due diligence process was followed in accordance with SIP 006 – Investment Manager, Partner, and Co-Investment Selection and Oversight
    - Committee approved the recommendation
  - Real Estate Manager Recommendation – ($300 million)
    - Consistent with strategic plan at the Total Fund level (SAAP Target to Real Estate is 10%)
    - Due diligence process was followed in accordance with SIP 006 – Investment Manager, Partner, and Co-Investment Selection and Oversight
    - Committee approved the recommendation

General Observations

- **The Fund continues to make significant progress moving the portfolio from the Interim SAAP toward the long-term SAAP.**
  - Current Interim SAAP includes proration of 1% Private Equity and 2% Real Estate, which are unfunded.
  - Continued build out of private markets asset classes provides opportunity to take advantage of illiquidity premium to produce expected returns in excess of what we believe can be achieved in the public markets.

- **IMD has already taken significant steps to move the Fund toward implementation of the recently approved SAAP.**
  - The largest single underweight position in the Fund is Private Debt, which was increased from a 3% SAAP target to a 10% SAAP target (current actual is 4.4%).
    - $3.7 billion in estimated exposure (9/30/2014 NAV + unfunded commitments) to private debt strategies equates to approximately 10.7% of Total Fund assets vs. the SAAP target of 10%.
  - Emerging Market Debt investment managers have been liquidated as the asset class was removed from the SAAP.
  - Multi-Asset Class Strategies (formerly GTAA) has been restructured and moved 'above the line' and now has an explicit 5% target within the SAAP.

- **Cash Assetization Program implemented:**
  - To facilitate fund liquidity by decreasing the settlement times and market frictions related to overall investment management.
  - To retain unleveraged Total Fund market (beta) exposure, and concurrently offset the hindrance on investment performance from maintaining sizeable transitional cash balances intended to meet fund payment obligations (e.g., pension, health supplement, LTD, fees, accounts payable and associated capital calls).

- **Tactical positioning consistent with IMD House Views.**

Market Environment Update

Market Commentary – March 2015

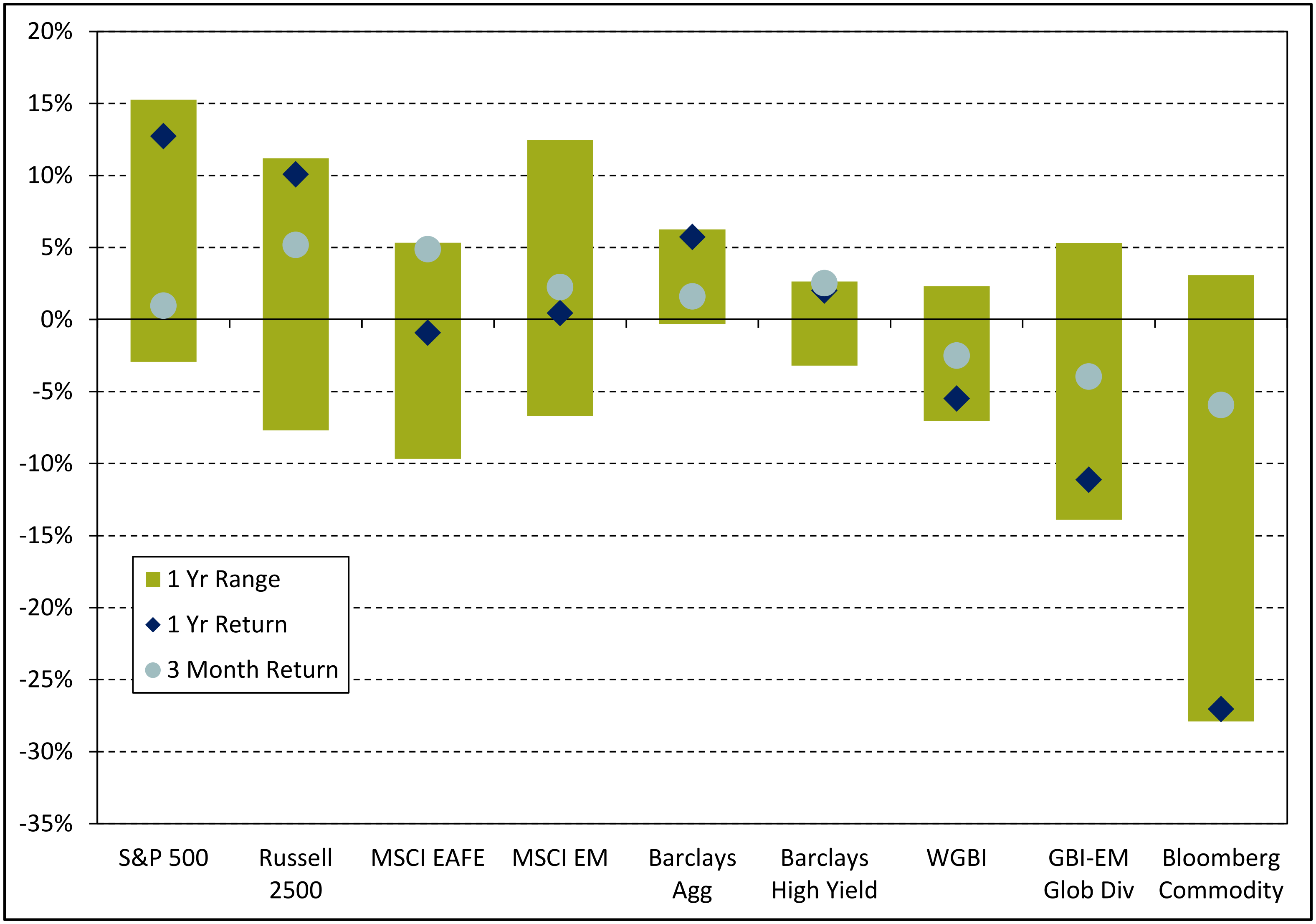
- **Global equities were mostly negative on the month outside of U.S. small cap issues**
  - Economic growth concerns weighed on many developed markets while a strong U.S. dollar appeared to challenge large U.S.-based multinationals
- **Commodity prices remained in flux, driven by a further decline in oil as crude fell to $47.60 per barrel at month end**
  - Persistent low energy prices along with currency weakness weighed on the emerging markets, driving losses in both equity and fixed income indices
- **The 10 year Treasury yield fell from 2.00% to 1.94% over the course of the month, providing a modest tailwind to broad U.S. fixed income markets**
- **The Federal Reserve struck a cautiously optimistic tone in its mid-March statement, indicating it will wait on further employment and inflation indicators before raising rates**
  - Fourth quarter GDP growth was revised down to 2.2% with concerns of a strong dollar softening economic growth projections

Index Performance Summary as of 3/31/2015

	2008	2009	2010	2011	2012	2013	2014	JAN	FEB	MAR	YTD
Barclays US Strips 20+	59.5%	-36.0%	10.9%	58.5%	3.0%	-21.0%	46.4%	13.8%	-8.5%	1.4%	5.5%
Russell 2500	-36.8%	34.4%	26.7%	-2.5%	17.9%	36.8%	7.1%	-2.1%	6.0%	1.3%	5.2%
MSCI EAFE	-43.4%	31.8%	7.8%	-12.1%	17.3%	22.8%	-4.9%	0.5%	6.0%	-1.5%	4.9%
FTSE NAREIT Equity REITs	-37.7%	28.0%	28.0%	8.3%	18.1%	2.5%	30.1%	6.7%	-3.5%	1.7%	4.8%
Russell 2000	-33.8%	27.2%	26.9%	-4.2%	16.4%	38.8%	4.9%	-3.2%	5.9%	1.7%	4.3%
Barclays US Govt/Credit Long	8.4%	1.9%	10.2%	22.5%	8.8%	-8.8%	19.3%	6.4%	-3.4%	0.5%	3.4%
Barclays US Long Credit	-3.9%	16.8%	10.7%	17.1%	12.7%	-6.6%	16.4%	5.2%	-2.3%	0.2%	3.1%
Barclays US Corp High Yield	-26.2%	58.2%	15.1%	5.0%	15.8%	7.4%	2.5%	0.7%	2.4%	-0.6%	2.5%
MSCI EM	-53.3%	78.5%	18.9%	-18.4%	18.2%	-2.6%	-2.2%	0.6%	3.1%	-1.4%	2.2%
Credit Suisse Lev Loan	-28.8%	44.9%	10.0%	1.8%	9.4%	6.2%	2.1%	0.3%	1.4%	0.4%	2.1%
JPM EMBI Global Div	-12.0%	29.8%	12.2%	7.4%	17.4%	-5.3%	7.4%	0.9%	0.9%	0.2%	2.0%
Credit Suisse Hedge Fund	-19.1%	18.6%	11.0%	-2.5%	7.7%	9.7%	4.1%	0.8%	1.1%	1.1%	1.9%
Barclays US Agg Bond	5.2%	5.9%	6.5%	7.8%	4.2%	-2.0%	6.0%	2.1%	-0.9%	0.5%	1.6%
Russell 1000	-37.6%	28.4%	16.1%	1.5%	16.4%	33.1%	13.2%	-2.8%	5.8%	-1.3%	1.6%
Barclays US Govt/Credit Interm	5.1%	5.2%	5.9%	5.8%	3.9%	-0.9%	3.1%	1.7%	-0.7%	0.5%	1.5%
Barclays US Agg Interm	4.9%	6.5%	6.2%	6.0%	3.6%	-1.0%	4.1%	1.4%	-0.5%	0.5%	1.3%
Barclays Municipal	-2.5%	12.9%	2.4%	10.7%	6.8%	-2.6%	9.1%	1.8%	-1.0%	0.3%	1.0%
Barclays Govt/Credit 1-5 Yr	5.1%	4.6%	4.1%	3.1%	2.2%	0.3%	1.4%	1.0%	-0.4%	0.4%	1.0%
S&P 500	-37.0%	26.5%	15.1%	2.1%	16.0%	32.4%	13.7%	-3.0%	5.8%	-1.6%	1.0%
Barclays US Govt/Credit 1-3 Yr	5.0%	3.8%	2.8%	1.6%	1.3%	0.6%	0.8%	0.5%	-0.2%	0.2%	0.6%
Citi WGBI	10.9%	2.6%	5.2%	6.4%	1.7%	-4.0%	-0.5%	-0.3%	-1.1%	-1.1%	-2.5%
JPM GBI EM Global Div	-5.2%	22.0%	15.7%	-1.8%	16.8%	-9.0%	-5.7%	0.3%	-1.3%	-3.0%	-4.0%
Alerian MLP	-36.9%	76.4%	35.9%	13.9%	4.8%	27.6%	4.8%	-3.1%	2.1%	-4.2%	-5.2%
Bloomberg Commodity	-35.7%	18.9%	16.8%	-13.3%	-1.1%	-9.5%	-17.0%	-3.3%	2.6%	-5.1%	-5.9%

Source: Morningstar Direct

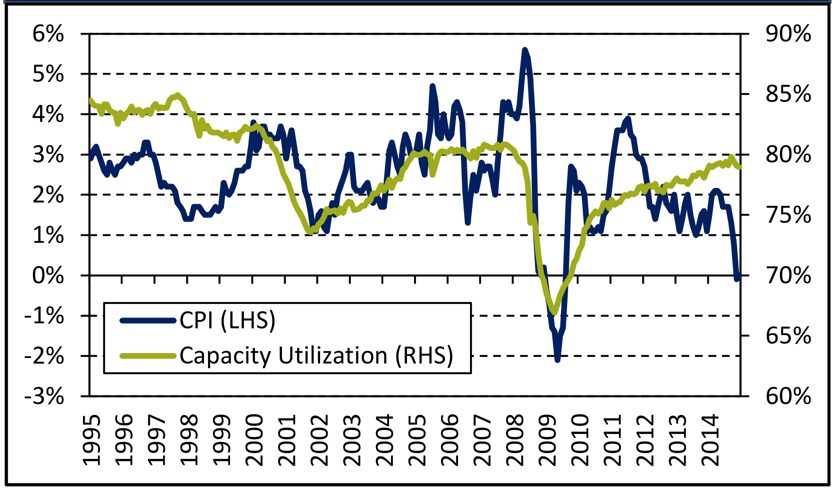
Broad Market Performance Summary as of 3/31/2015



Source: Bloomberg, Standard and Poors, Russell, MSCI, Barclays, Citigroup, JP Morgan
**1 Yr Range: Represents range of cumulative high/low daily index returns for an investment made one year ago*

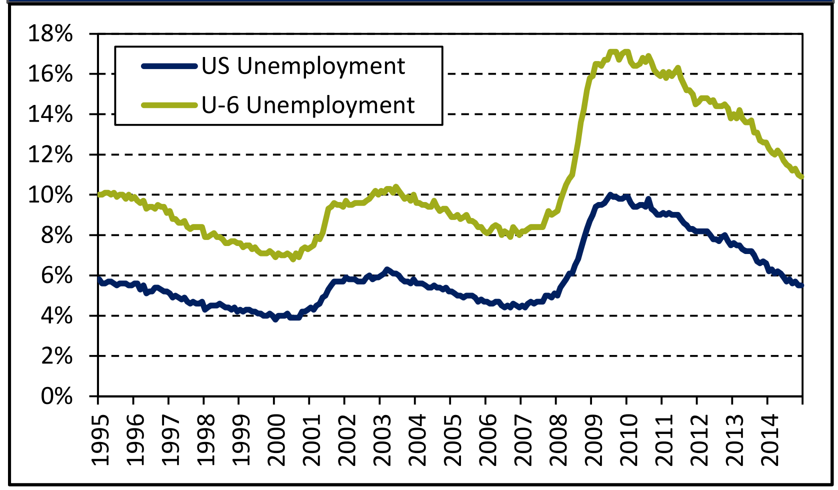
U.S. Economic Indicators

Inflation has stayed low



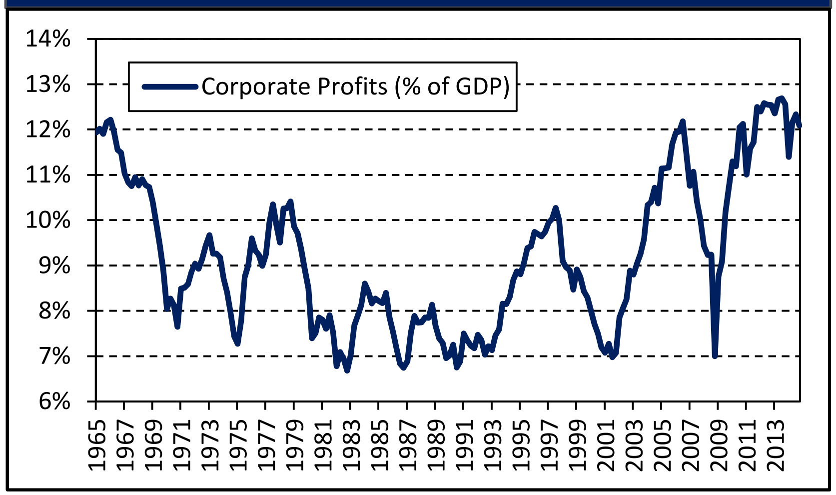
Source: Bloomberg, Federal Reserve, Bureau of Labor Statistics

Unemployment steadily improving



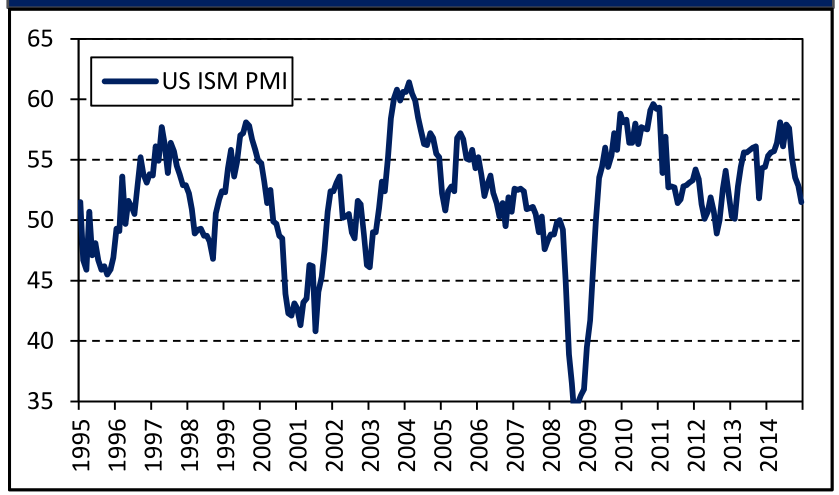
Source: Bloomberg, Bureau of Labor Statistics

Corporate profits at secular highs



Source: Bloomberg, Bureau of Economic Analysis

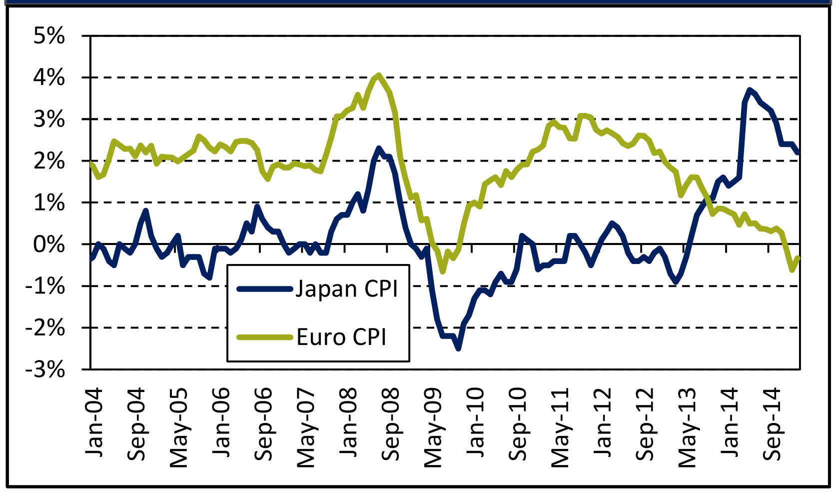
Manufacturing above average but trending down



Source: Bloomberg, Institute for Supply Management

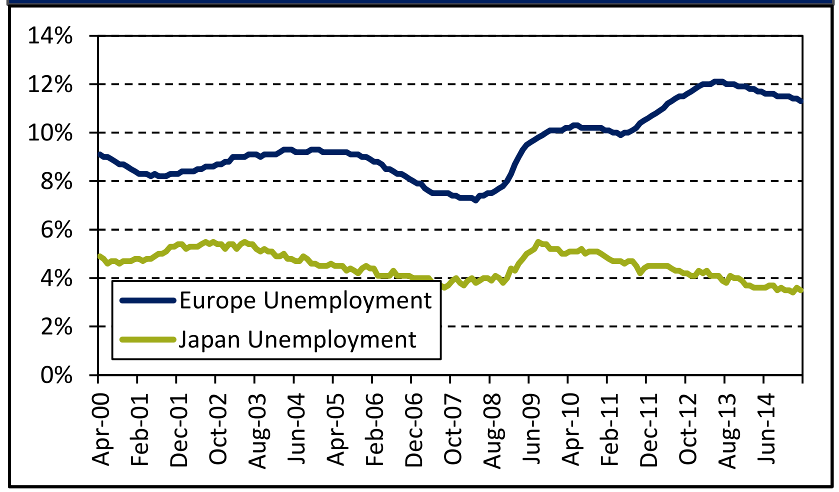
International Economic Indicators

Deflation remains a concern



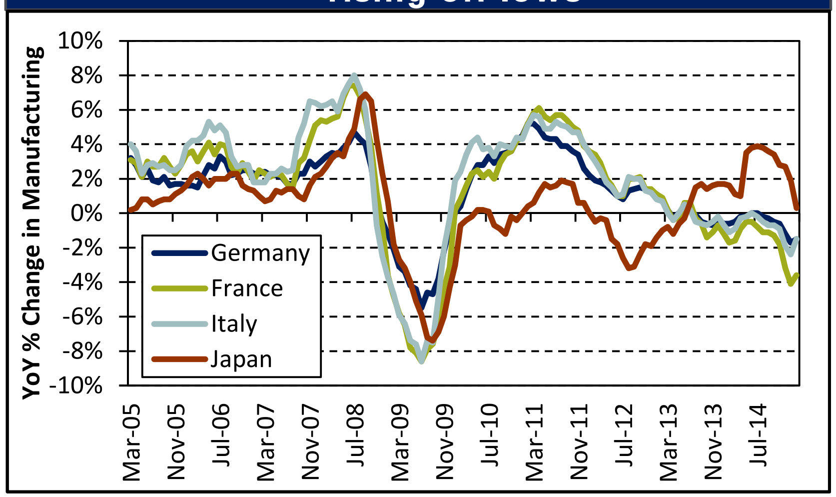
Source: Bloomberg, Japan Ministry of Internal Affairs and Communications, Eurostat

Europe employment recovery lagging



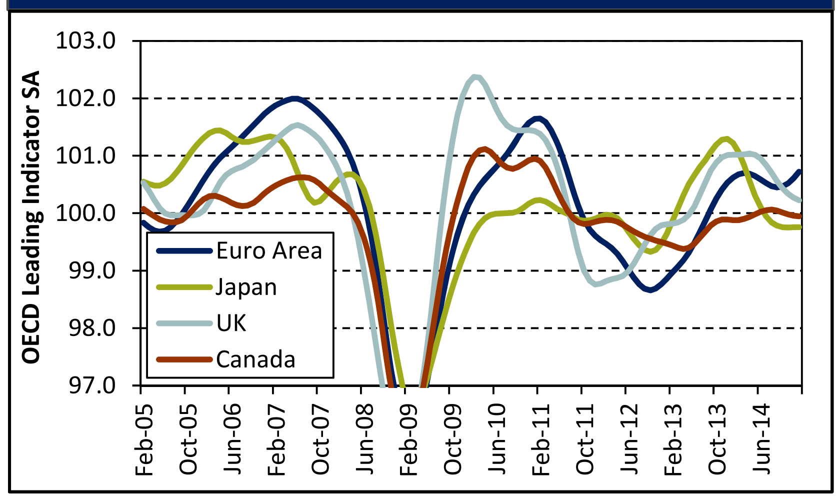
Source: Bloomberg, Japan Ministry of Internal Affairs and Communications, Eurostat

Manufacturing subdued in Europe but rising off lows



Source: Bloomberg, OECD, Eurostat

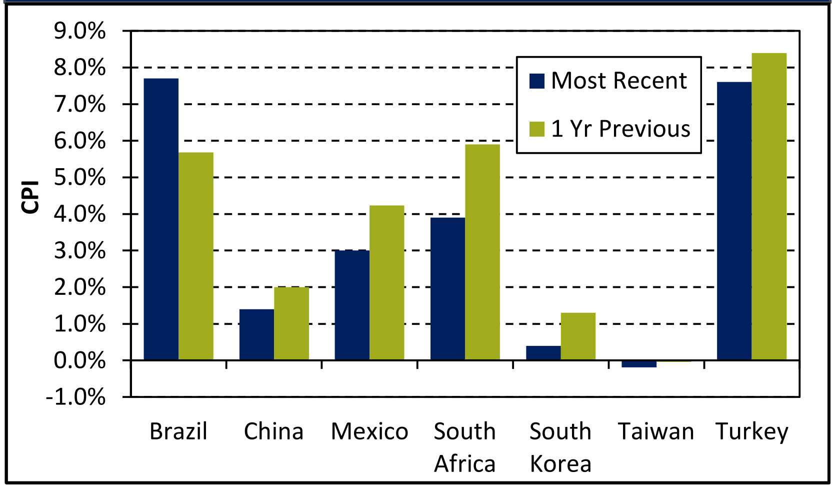
Leading indicators neutral to positive



Source: Bloomberg, OECD

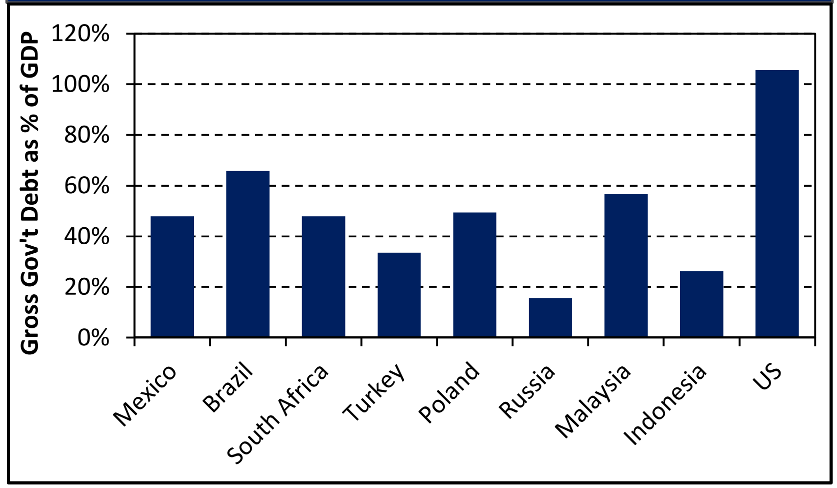
Emerging Market Economic Indicators

EM inflation is varied by country



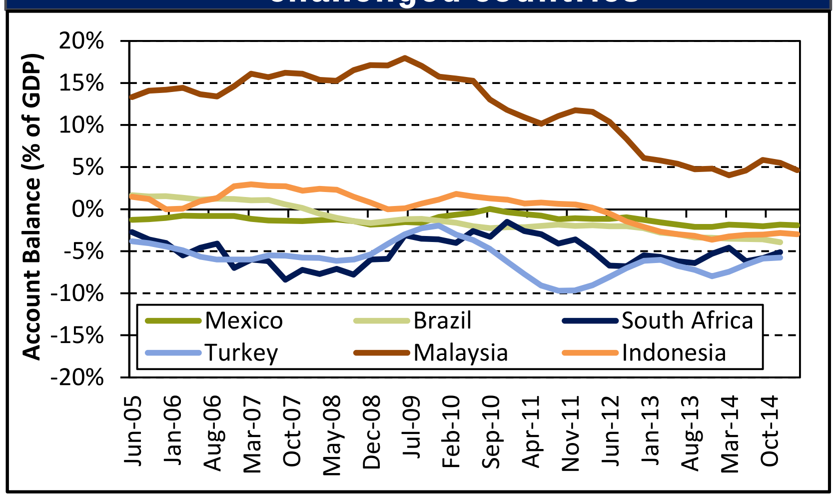
Source: Bloomberg

Relatively healthy Debt/GDP ratios



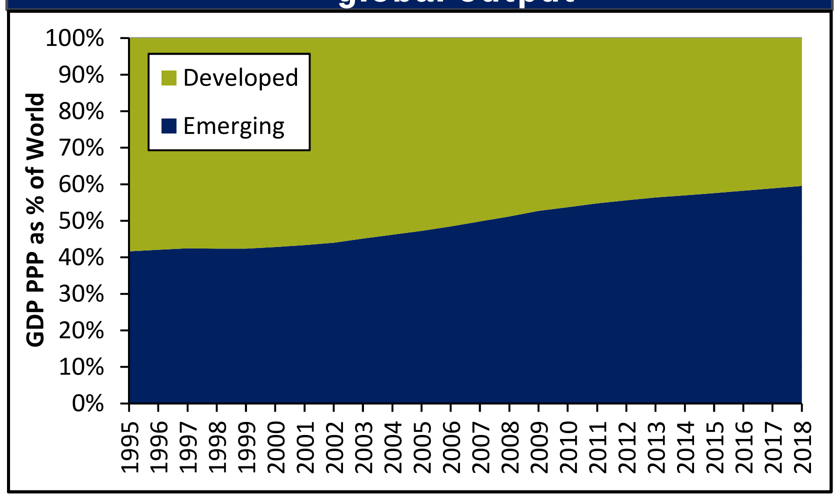
Source: Bloomberg, IMF

Some improvement in account balance challenged countries



Source: Bloomberg

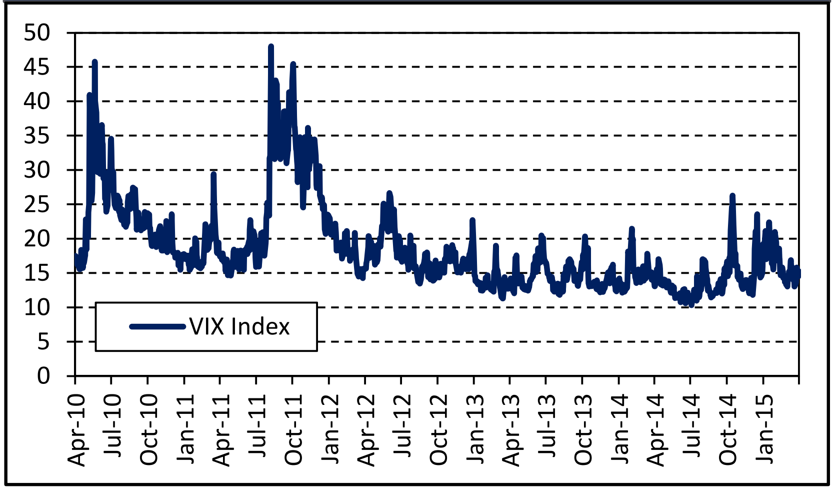
Emerging economies make up >50% of global output



Source: Bloomberg, IMF

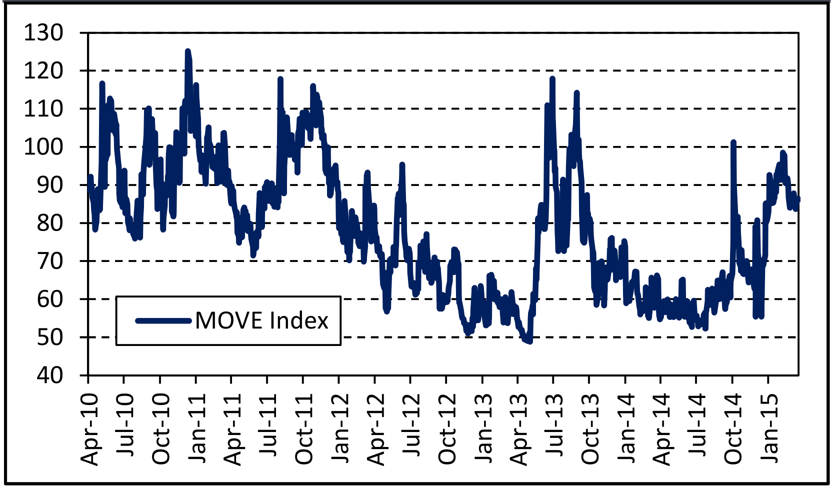
Volatility

Equity volatility remains low



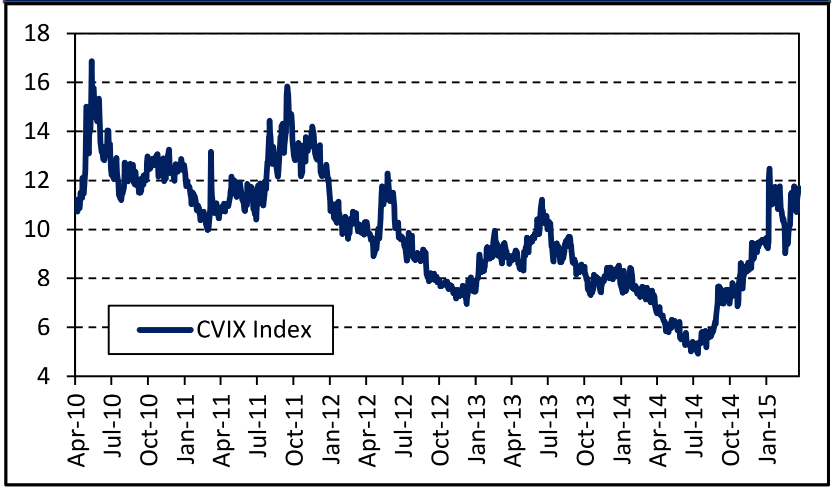
Source: Bloomberg, CBOE

Treasury rates experiencing higher volatility



Source: Bloomberg, Merrill Lynch

Recent uptick in currency volatilities



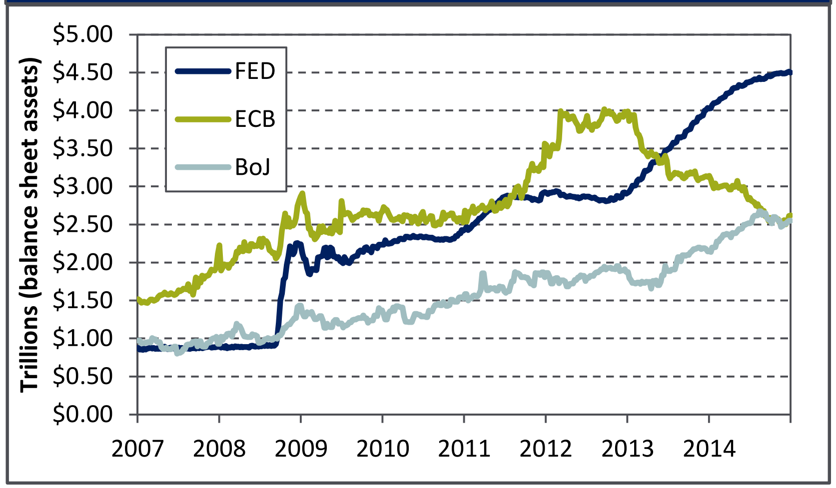
Source: Bloomberg, Deutsche Bank

Commodity pricing volatility has increased

Source: Bloomberg, Merrill Lynch

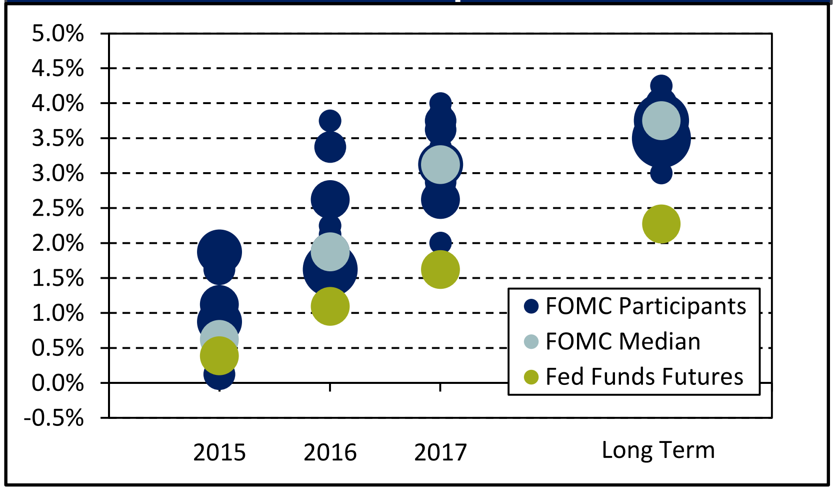
Central Banks

Major central bank policy divergence



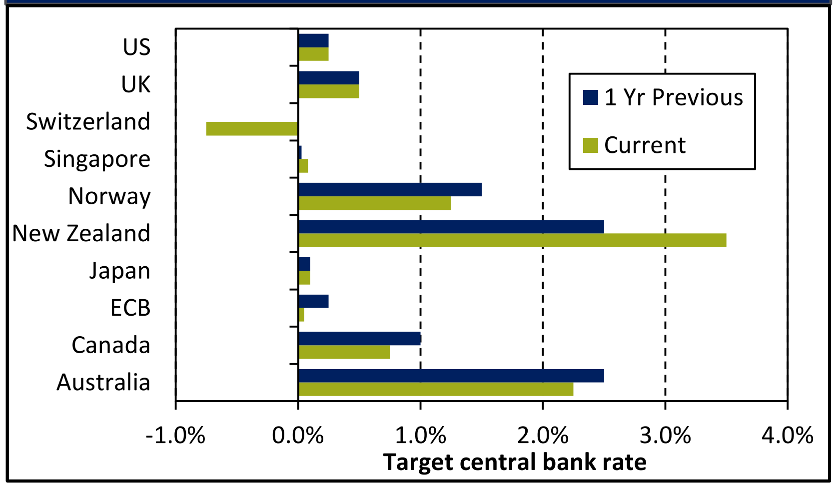
Source: Bloomberg, Federal Reserve, Bank of Japan, ECB, NEPC

Fed's ideal rate of policy firming above market expectations



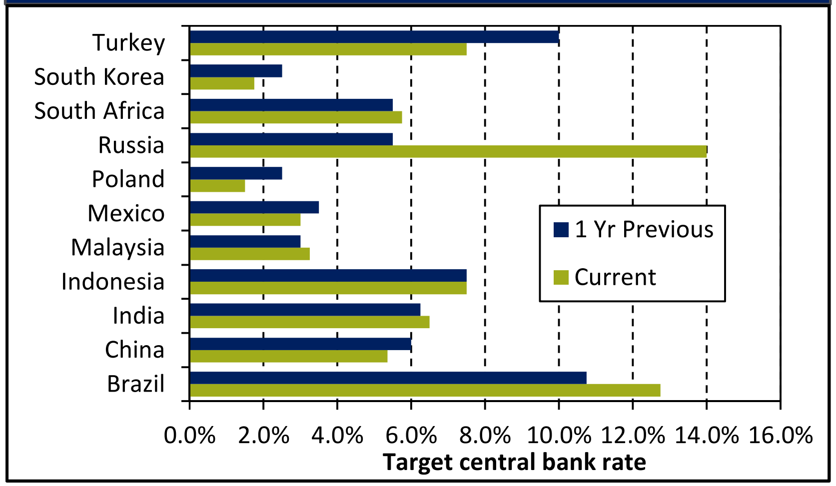
Source: Bloomberg, Federal Reserve, NEPC

Many developed central banks have maintained low interest rates



Source: Bloomberg

EM central bank policies have varied by circumstance



Source: Bloomberg

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 – 3/31/2015 – 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
- **4/1/2015 - present – 20% S&P 500/3% S&P 400/3% S&P 600/17% MSCI EAFE/2% MSCI EAFE Small Cap/5% MSCI Emerging Markets/8% Russell 2000 (lagged one quarter)/11% Barclays Capital Aggregate/4% Barclays Capital High Yield/10% S&P/LSTA Levered Loan Index + 250 basis points (lagged one quarter)/10% NCREIF ODCE (lagged one quarter)/2% Bloomberg Commodities Index TR/5% Multi-Asset Class Custom 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)/14% 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)/6% NCREIF ODCE (lagged one quarter)/4% Bloomberg Commodity Index

Note: Interim SAA Policy includes proration of 1% Private Equity and 2% Real Estate, which are unfunded. Private Equity was prorated to domestic equity; Real Estate was prorated to domestic equity and fixed income. Recently approved Strategic Asset Allocation Policy effective April 1, 2015.

[1]MSCI 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 dividend withholding taxes effective 1/1/2014.

Information Disclosure

- **NEPC uses, as its data source, the plan's custodian bank or fund service company, and NEPC relies on those sources for security pricing, calculation of accruals, and all transactions, including income payments, splits, and distributions. While NEPC has exercised reasonable professional care in preparing this report, we cannot guarantee the accuracy of all source information contained within.**

- **The Investment Performance Analysis (IPA) is provided as a management aid for the client's internal use only. Portfolio performance reported in the IPA does not constitute a recommendation by NEPC.**

- **Information in this report on market indices and security characteristics is received from sources external to NEPC. While efforts are made to ensure that this external data is accurate, NEPC cannot accept responsibility for errors that may occur.**

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Paul Matson
Director

MEMORANDUM

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

FROM: Mr. Gary R. Dokes, Chief Investment Officer (CIO)
Mr. Dave Underwood, Assistant Chief Investment Officer
Mr. Karl Polen, Head of Private Markets Investing

DATE: April 13, 2015

RE: **Agenda Item #5**: Presentation, Discussion and Appropriate Action Regarding ASRS Total Equities Asset Class (Public and Privates)

Purpose
To present and discuss the ASRS Total Equities Asset Class (Public and Privates)

Recommendation
Information item only; no action required.

Background
As part of the annual asset class presentations to the IC, the CIO, Investment Management Division Portfolio Managers, and NEPC will review ASRS Total Equity Asset Classes, i.e., program strategies, portfolio structure, performance, etc. In the event detail manager performance or confidential/non-public information is discussed, the IC may move into executive session to discuss such matters.

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.

Attachments:
- Public Equity Asset Class Review
- Private Equity Program Review

IMD - Total Public Equity Asset Class Review

April 20, 2015

Dave Underwood, Assistant Chief Investment Officer

Cole Smith, Assistant Portfolio Manager

John Doran, Assistant Portfolio Manager

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Public Equity Class Status Update

Activity subsequent to the February 27, 2015 date used for valuations presented in the review

Activity subsequent to the February 27, 2015

IMD Equities implemented the first phase of reallocating the Public Equities asset class toward the ca 27th February 2015 Strategic Asset Allocation Policy. Subsequent to the March 31, 2015 calendar quarter-end, $1,273.5MN market value of securities (≈ 3.74% of Total Fund) moved from the Domestic Equities category into transition. Following transition ≈84% /$1,075 BN of that amount will move to the EAFE sub-class, indexed mandate and ≈ 16%/$200MN will move to the EAFE sub-class, active mandates, per $150MN to Thompson Siegel & Walmsley; $50MN to American Century. Sourcing of the $1,275BN drawdown was per:

			Passive Portion	
Domestic Equities Asset Sub-Class	**Drawdown ($Million)**	**% of Drawdown**	**($ Millions)**	**% of Subclass Draw**
LargeCap	-280	21.99%	-185	66.07%
MidCap	-561	44.05%	-305	54.37%
SmallCap	-432.5	33.96%	-150	34.68%
Totals	**-1,273.5**	**100.00%**	**-640**	- -

Contributing portfolios were:

- E2: - $100MN
- E7: - 85MN
- Intech: -$50MN
- LSV: -$45MN
- E3: - $140MN
- E4: - $165MN

- Wellington: - $150MN
- CRM: -$106.4MN #
- E6: -$150MN
- Champlain: - $99.9MN #
- DFA (SC): - $90MN
- TimesSquare: -$95M

Defunded; value as of 31 Mar2015

Public Equity Class Status Update

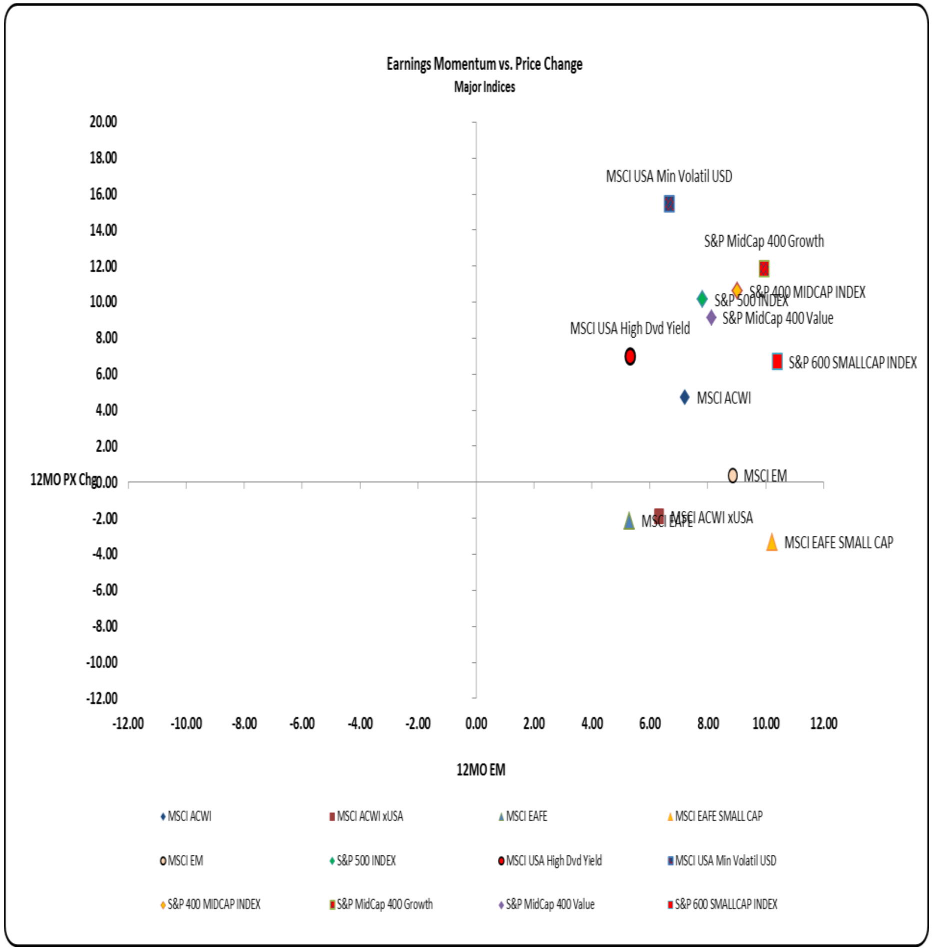
Equity Markets Environment Commentary

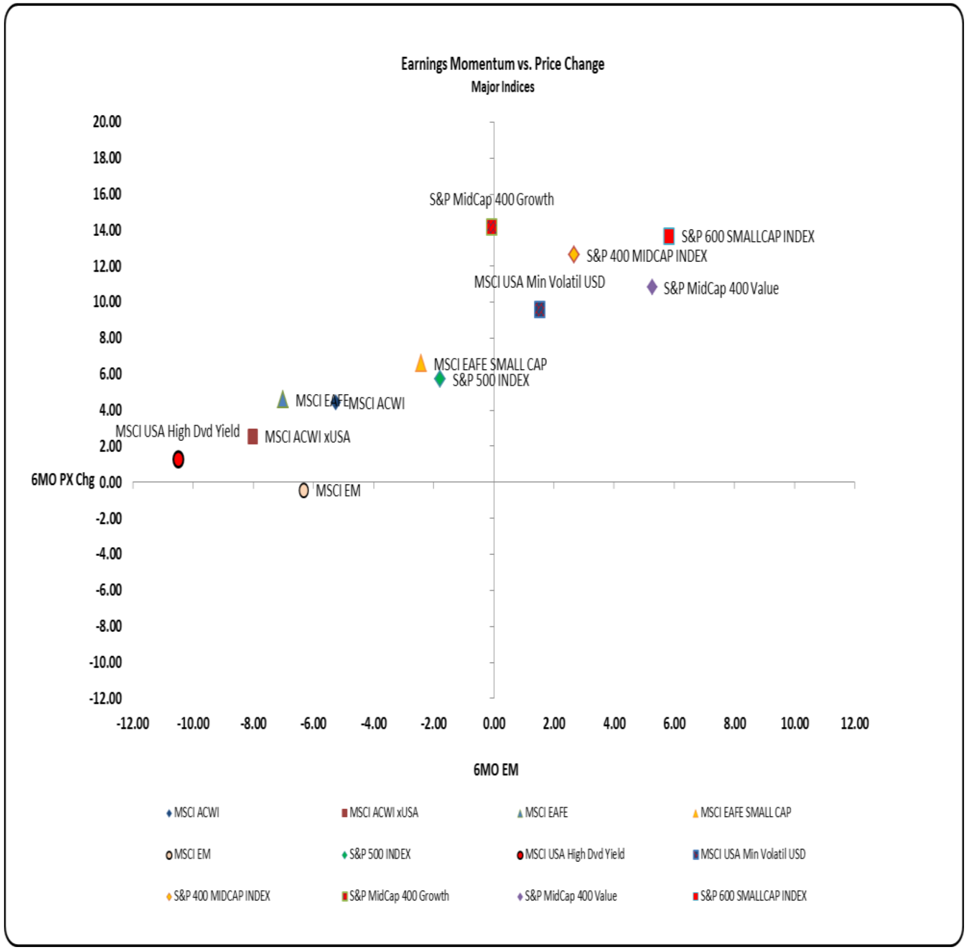
Equity Markets Environment Commentary:

- **U.S. equity indexes** were up for the sixth consecutive year in 2014 before peaking at an all-time high in 1Q2105.
  - Easy monetary policy, strong earnings, better macro trends and corporate mergers & acquisitions drove the markets.
  - The Federal Reserve ended its 'QE' program and targets the latter half of 2015 for the first rise in interest rates.
  - Large-cap stocks outperformed smaller counterparts over 2014, helped by larger relative exposures to technology, healthcare and consumer companies.
  - Weakness in energy stocks impaired the performance of several indexes that have sizeable weights in the sector/industries.
  - The relative performance of stocks sensitive to interest rates also faded over the year, however perceived volatility still sends investors toward low-beta.
  - Indexes for the growth style marginally outperformed the value style, attributable again to the former's larger proportions of technology.
- **Non-U.S. equity indexes** gathered strength over the course of 2014, but struggled initially.
  - Returns measured in local currencies were very good, but the rising currency hurt them in USD terms.
  - Weak global economic data, EM crisis concerns and geopolitical risks from Russia, the Ukraine and the Middle East hindered the markets until the ECB and BOJ came out in late-year and commenced quantitative easing programs.
    - USD 30bn has flowed into European equities during 1Q2015
    - Flows into Emerging Markets equities overall, have been marginally negative since June; wide variations exists intra-regionally
- **Equities in general** have experienced sporadic bouts of volatility but VIX continues to re-set near historic lows
  - Returns on U.S. equities have managed to stay slightly positive
  - European equities have performed quite well; German stocks have led, but those from peripheral countries have rebounded lately.
  - Japanese equities have also performed well, the direct opposite of most 1H2014
  - Earnings of non-U.S. companies now 'showing-up' to validate current valuations and justify further price advances.

Equity Markets Environment Commentary / Earnings Momentum:

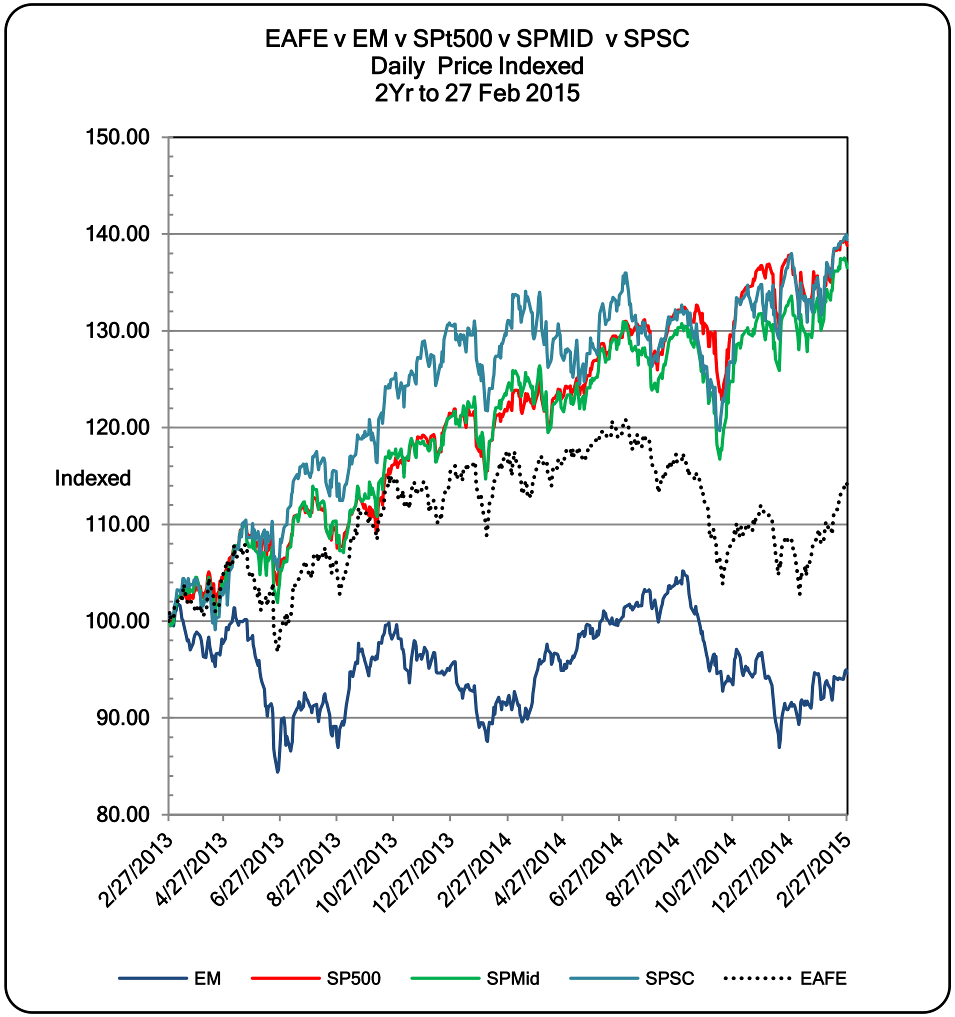
Earnings momentum deceleration among Energy and Financials stocks, primarily has exerted pronounced impact at the aggregate index level.

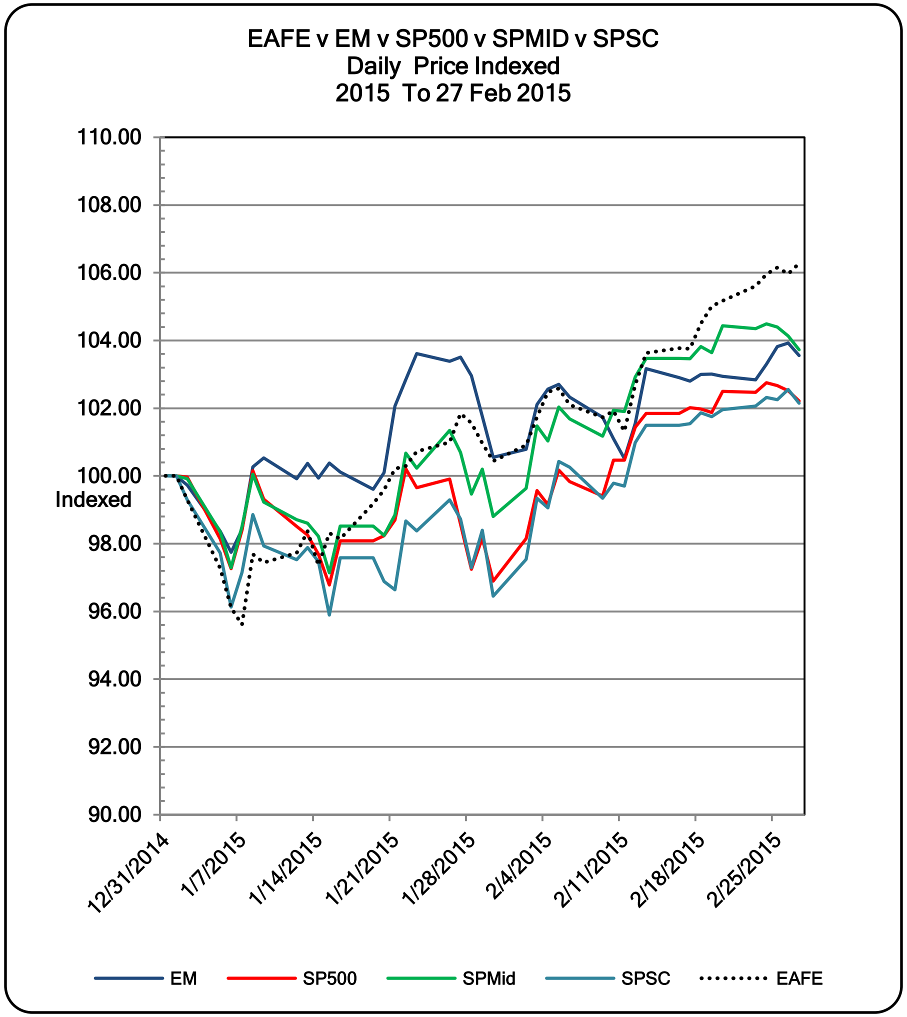




Equity Markets Environment Commentary / Major Indices Performance:

The performances of international developed markets have strengthened since the latter half of 2014. U.S. counterparts have not weakened materially, but in comparison, have faded somewhat during 1Q2015





IMD House Views – U.S. Domestic Equity

U.S. Equity - Primary Market Metrics & Indicators:

- **Fundamentals**: **POSITIVE**
  - Economic data still shows stable, sub-trend growth in 2015.
  - U.S. unemployment, is displaying sustained improvement. Income growth has not, although some localized instances of upward pressure has begun to surface.
  - At risk longer term due to stimulus measures, inflation remains generally subdued.
  - Liquidity remains ample; Federal Reserve policy remains accommodative without its asset purchases program.
  - Overall U.S. corporate profits growth has decelerated, mostly due to the impact of lower energy prices; revenues are still in a modest uptrend; high profit margins are no longer expanding.

- **Valuations**: **NEUTRAL**
  - US equity markets reached new highs in March but have been trendless in 2015 in the wake of mixed macro data, downward revisions to earnings estimates and anxiety over the timing and scale of the first upward reset to interest rates and more volatility in foreign exchange markets.
  - Though marginally rich, price/earnings multiples remain near historic averages: S&P 500, 15.3x- 17.4x; S&P MID, 16.9x-19.4x; S&P SC600, 17.0x-19.9x.
  - 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, whereas those of mid- and small-caps are around 4.0%.

- **Sentiment**: **NEUTRAL**
  - Short-term caution has moved up a notch following the sustained advance of equity markets without a significant pullback throughout 2013 and 2014.
  - Lessened near-term equity market volatility (i.e., VIX Index) still reflects growing acceptance of risk-oriented assets.
  - The relative strength of the U.S. Dollar continues to encourage assets into U.S. equities.

IMD House Views – Non-U. S. Equities

Non-U.S. Equities - Primary Market Metrics & Indicators:

- **Fundamentals**: **POSITIVE**
  - Eurozone and Japanese economic conditions are firming; they remain soft in lesser-developed economies.
  - Relatively inexpensive and available money supports a shift toward risk assets.
  - Monetary and economic policies are focused on promoting economic growth and stemming disinflation.
- **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.
- **Sentiment**: **POSITIVE**
  - Money flows continue toward both U.S. and developed markets non-U.S. equities; excepting the emerging economies markets. investors are less guarded and remain constructive on global risks despite some near tern risk aversion volatility.
  - Major non-U.S. markets performance has strengthened in 2015.

Total Public Equity Asset Class Review

Total Public Equity Asset Class

Broad Summary;

- Total Public Equities remains the largest asset class at 54% of the overall Total Fund.
- The Class is comprised of 27 mandates: U.S. Domestic Equity category – 13 ; Non-U.S Equity category -13; "Global" - 1
- Predominate allocations to passive mandates throughout the asset class, coupled with some systematic and some risk-mitigating allocation, has resulted in strong tracking with the policy benchmarks, yet affords opportunity to derive variable, but additional contribution from more active strategies.
- The Public Equities Asset Class has tracked well with its overall benchmark over time with favorable risk/return characteristics.
  - The Total U.S. Domestic Equity category has performed similarly and also with favorable risk/return characteristics.
  - Replacement of three active mandates in mid-2014 served to improve relative performance of the Total Non-U.S. Equity category and had equally positive effects on volatility and stacking error.
- Contributions, overall, from style and factor characteristics were principal drivers of investment return.
- The E7 and E8 systematic passive strategies have since inception performed as hoped, generally adding value beyond the broad market.
- The risk factor overlay pilot program is also functioning as hoped, although its attribution is minimal.

Total Public Equity Asset Class – Category Allocations as of February 27, 2015

TOTAL PUBLIC EQUITY ASSET CLASS

Asset Categories & Risk Factors as of 02-27-15

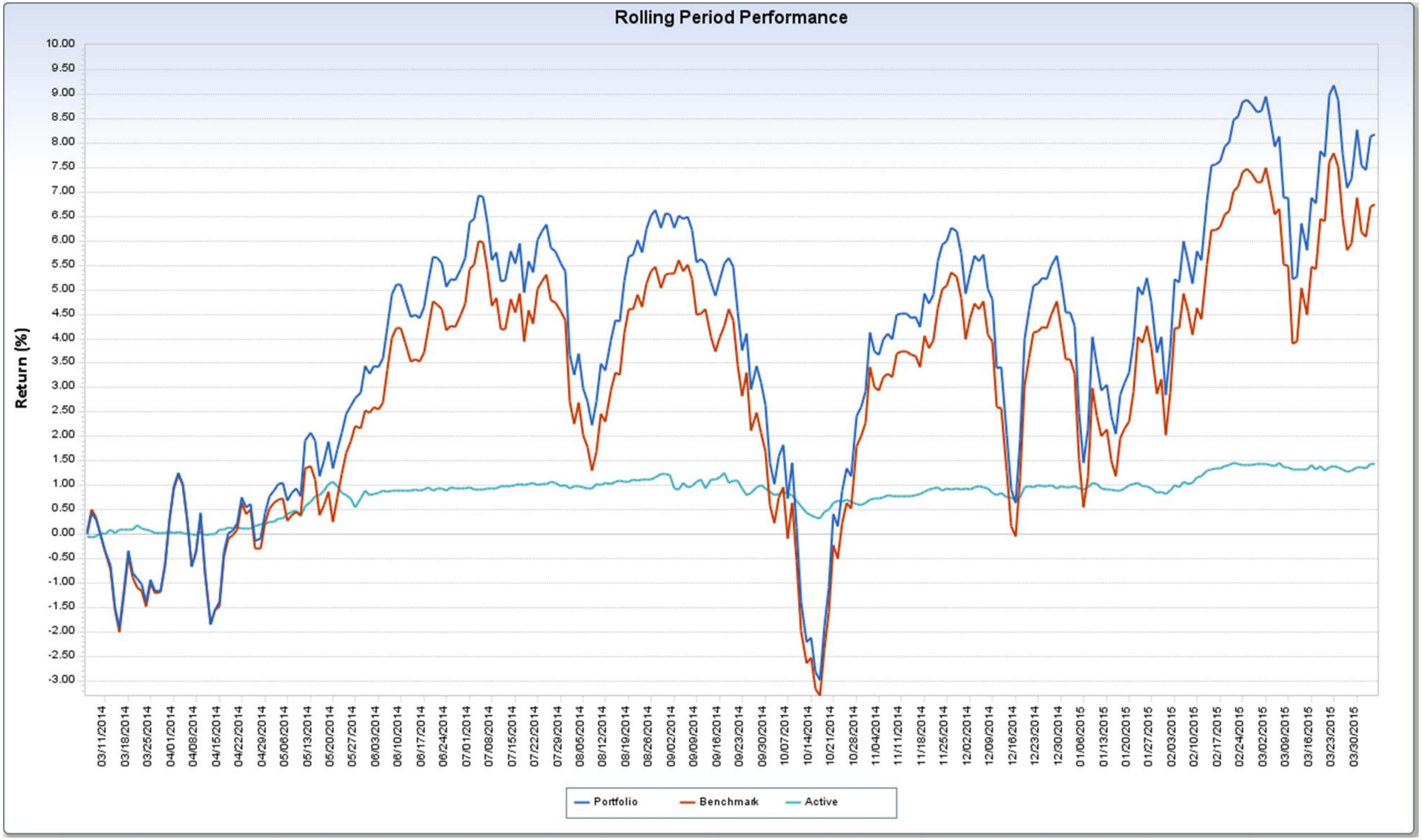
	Market Value	Pct of Public Equity	Category Weight	ASRS SAA Policy	Proportion Indexed
U.S. Equity	11,141,898,982.09	59.17%	32.03%	33.00%	74.05%
Non-U.S. Equity	7,126,429,989.38	37.84%	20.49%	23.00%	48.90%
Risk Factors Overlay	563,224,134.85	2.99%	1.62%	---	---
Total Asset Category	**18,831,553,107.32**	100.00%	54.14%	56.00%	62.31%
Total Fund	**34,785,135,525.00**				

Risk Factors Overlay Detail

ISHARES MSCI MOMENTUM FACTOR ETF	143,660,160.00	25.51%
ISHARES MSCI VALUE FACTOR ETF	136,191,760.00	24.18%
ISHARES MSCI SIZE FACTOR ETF	135,508,200.00	24.06%
ISHARES MSCI QUALITY FACTOR ETF	141,599,975.00	25.14%
GOVERNMENT STIF	6,264,039.85	1.11%
	563,224,134.85	100.00%

Total Public Equity – Cumulative Total Return
12 Months to February 27, 2015

Total Fund has tracked the policy benchmark consistently over the past year.



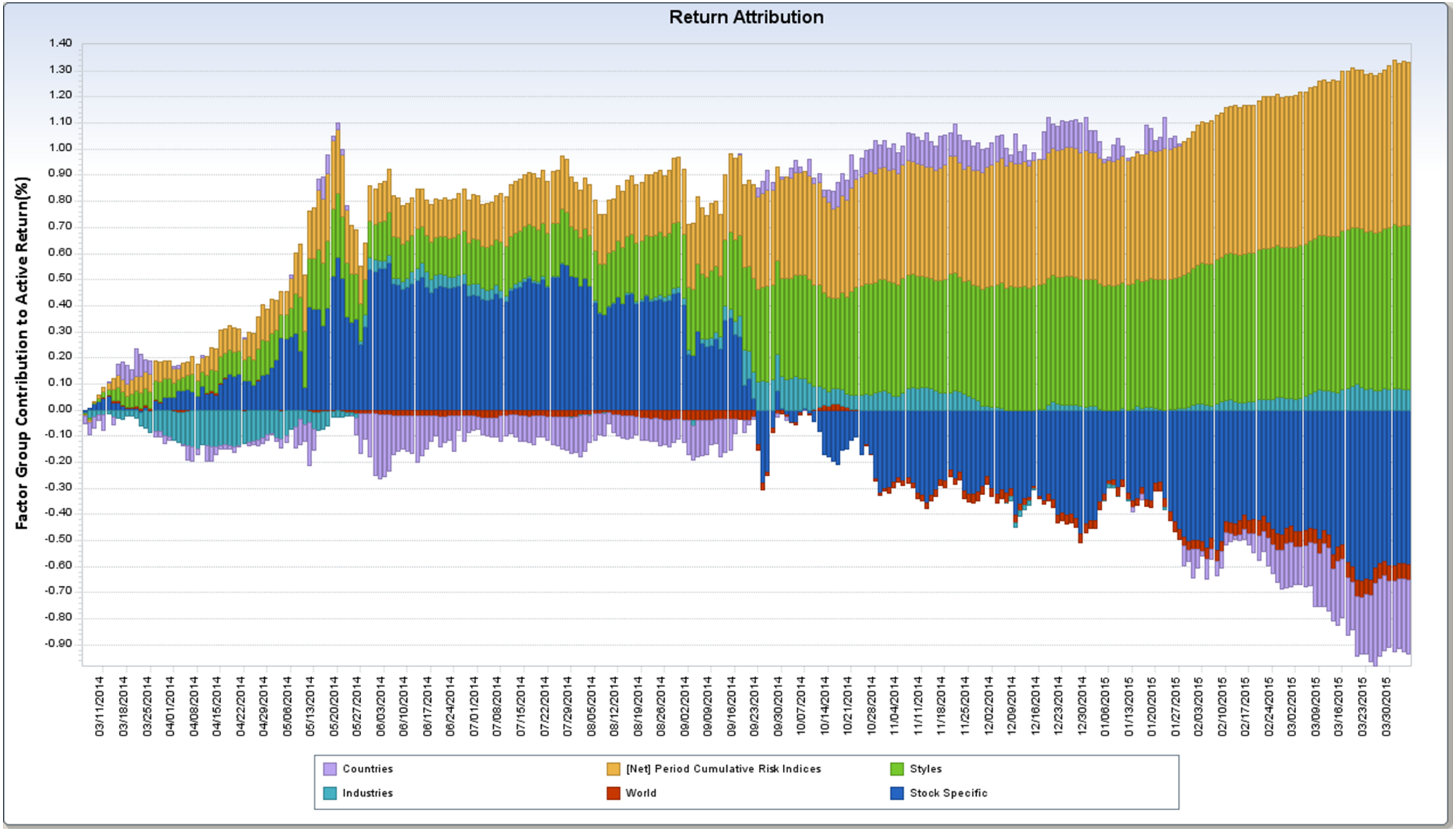
Total Public Equity – Performance as of 12/31/2014

Arizona State Retirement System

Total Domestic and International Equity Performance Summary

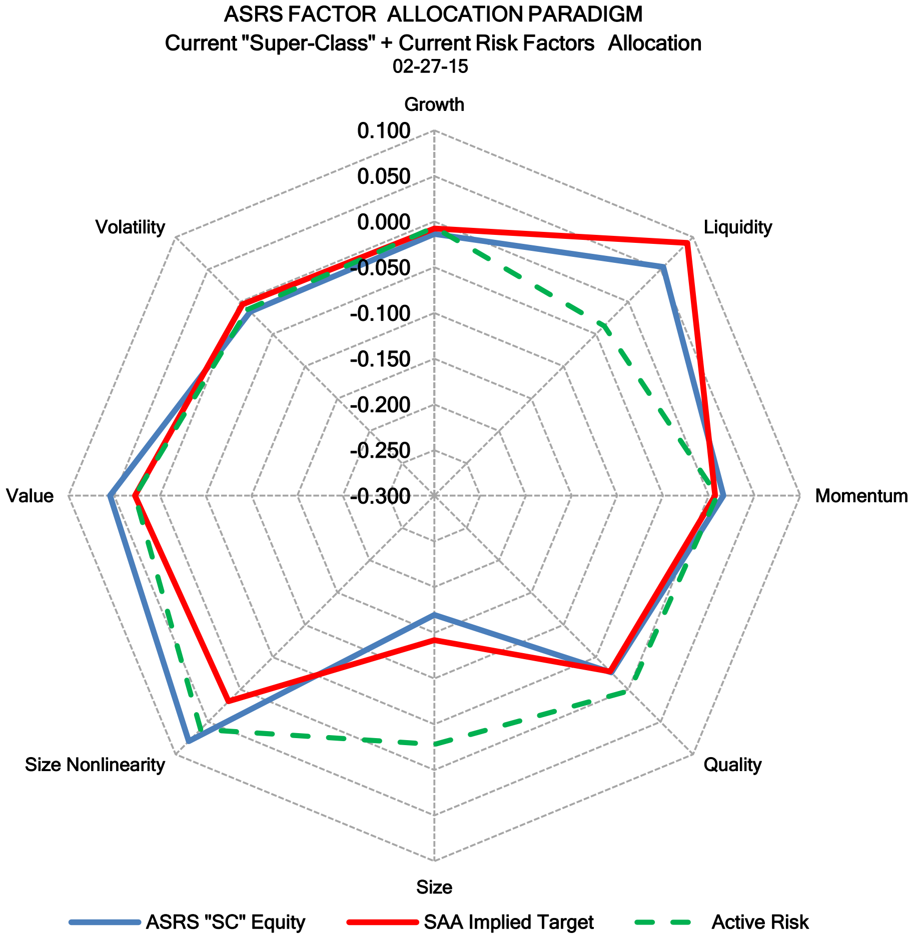
	Market Value ($)	% of Portfolio	3 Mo (%)	Rank	6 Mo (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Return (%)	Since
Total Domestic and International Equity[1,2]	**18,164,680,985**	**53.1**	**1.7**	--	**-0.9**	--	**5.2**	--	**16.1**	--	**12.0**	--	**6.8**	--	**6.8**	**Jan-98**
ASRS Custom Total Equity Benchmark			*1.9*	--	*-0.9*	--	*5.1*	--	*16.2*	--	*12.0*	--	*6.9*	--	*6.1*	*Jan-98*
Over/Under			-0.2		0.0		0.1		-0.1		0.0		-0.1		0.7	
Risk Factors			**5.4**	--	**6.9**	--	**13.7**	--	--	--	--	--	--	--	**18.2**	**Jun-13**
Equity Risk Factor Portfolio	545,321,390	1.6	5.4	--	6.9	--	13.7	--	--	--	--	--	--	--	18.2	Jun-13
ASRS Custom Total Equity Benchmark			*1.9*	--	*-0.9*	--	*5.1*	--	*16.2*	--	*12.0*	--	*6.9*	--	*11.9*	*Jun-13*
Over/Under			3.5		7.8		8.6								6.3	
Total Domestic and Int'l Equity ex-Equity Risk Factor Portfolio[1,2]	**17,619,359,595**	**51.5**	**1.6**	--	**-1.1**	--	**5.0**	--	**16.0**	--	**12.0**	--	**6.8**	--	**6.8**	**Jan-98**
ASRS Custom Total Equity Benchmark			*1.9*	--	*-0.9*	--	*5.1*	--	*16.2*	--	*12.0*	--	*6.9*	--	*6.1*	*Jan-98*
Over/Under			-0.3		-0.2		-0.1		-0.2		0.0		-0.1		0.7	

Total Public Equity – Cumulative Attribution to Return
12 Months to February 27, 2015

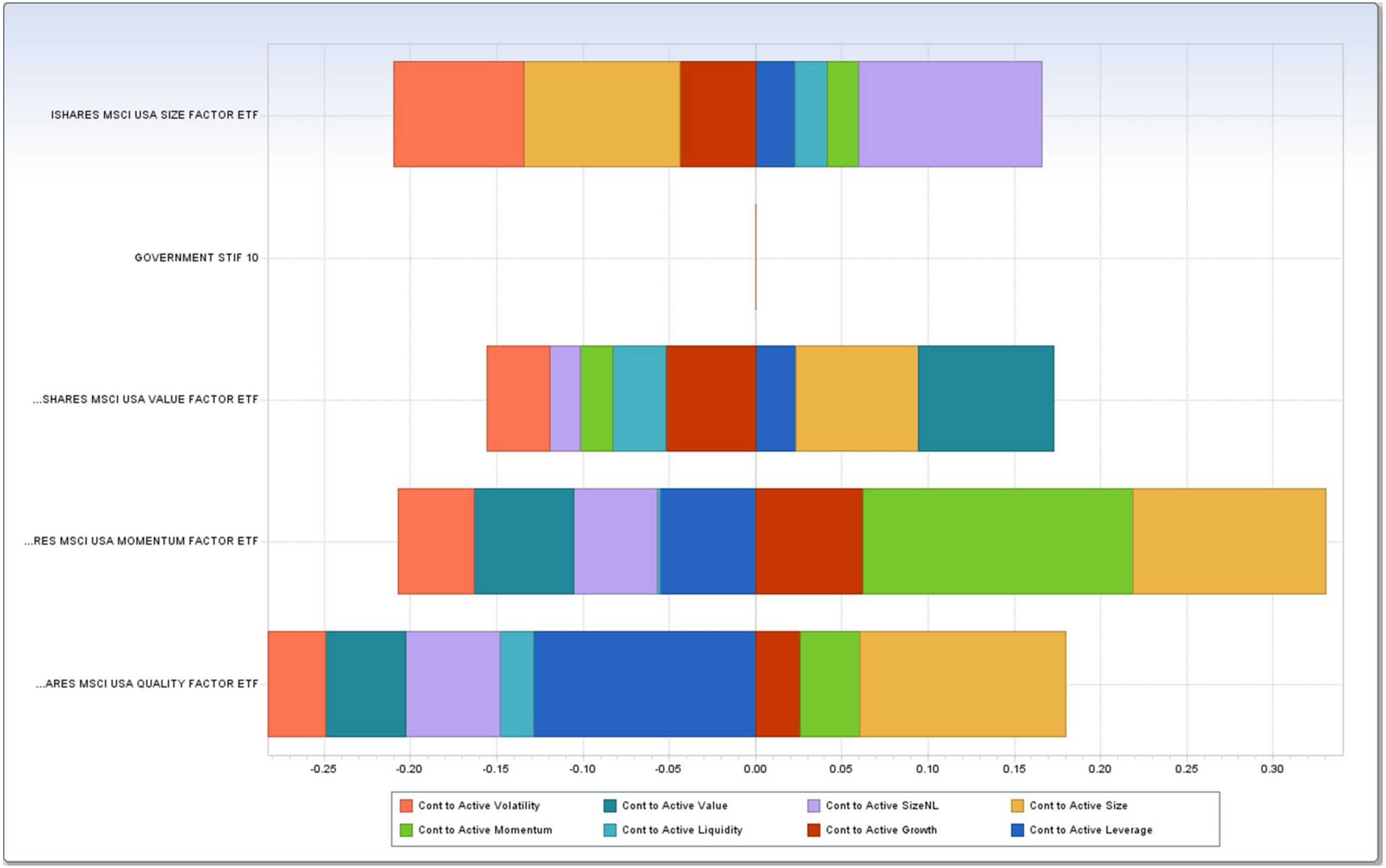


Total Public Equity – Risk Factors Exposures as of February 27, 2015

Total Public Equities , for the most part, oriented closely to the policy benchmark. Variances (measured in basis points) are relatively small. Exposure toward “Size” (i.e., smaller capitalization) , historically a major bias, has been reduced over the past year. Exposure toward midcap (i.e., “Size Nonlinearity”) is the largest variance,. (It has been reduced as part of the post March 31, 2015 reallocation.)

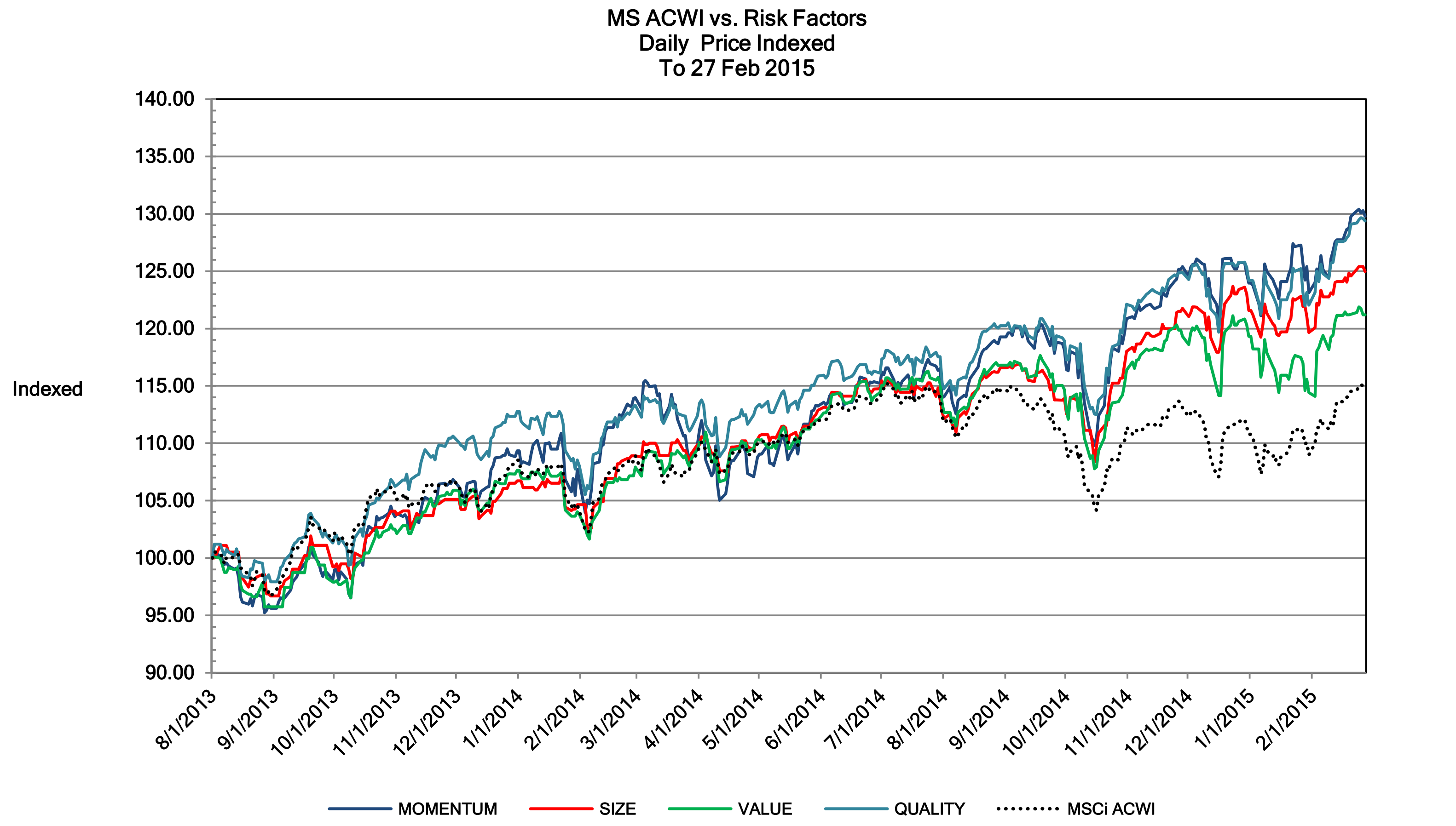


Total Public Equity – Risk Factors Overlay
Risk Factor ETFs Factor Relative Exposures as of February 27, 2015



Total Public Equity – Risk Factors
18 Months to Feb 27, 2015

Price performance of the respective individual factor ETFs both tracked the broad market consistently and have been strong, relatively.

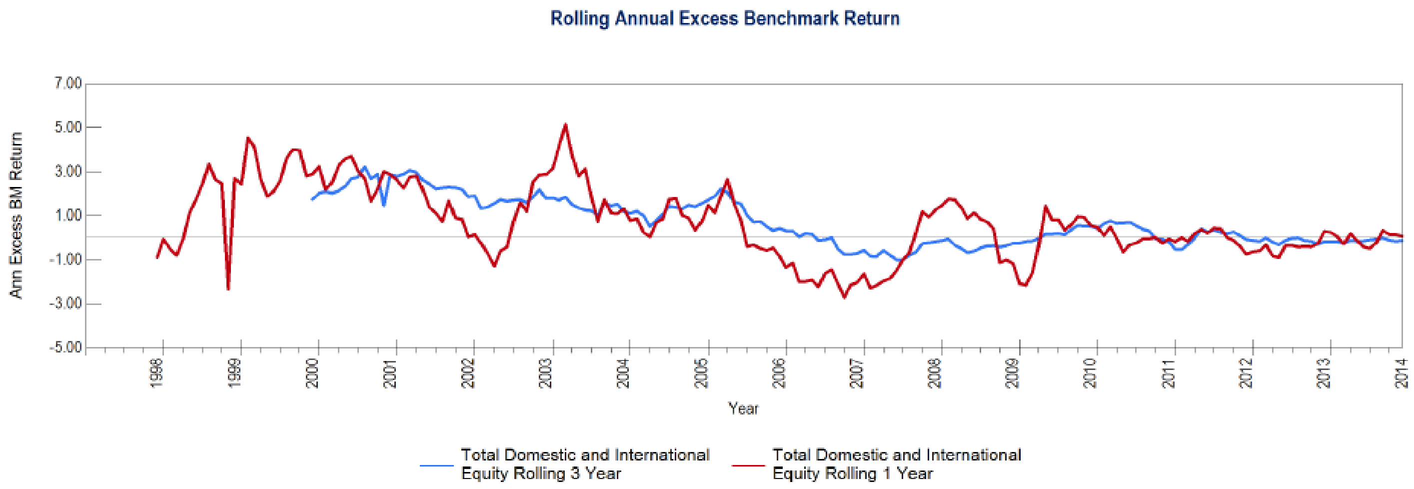


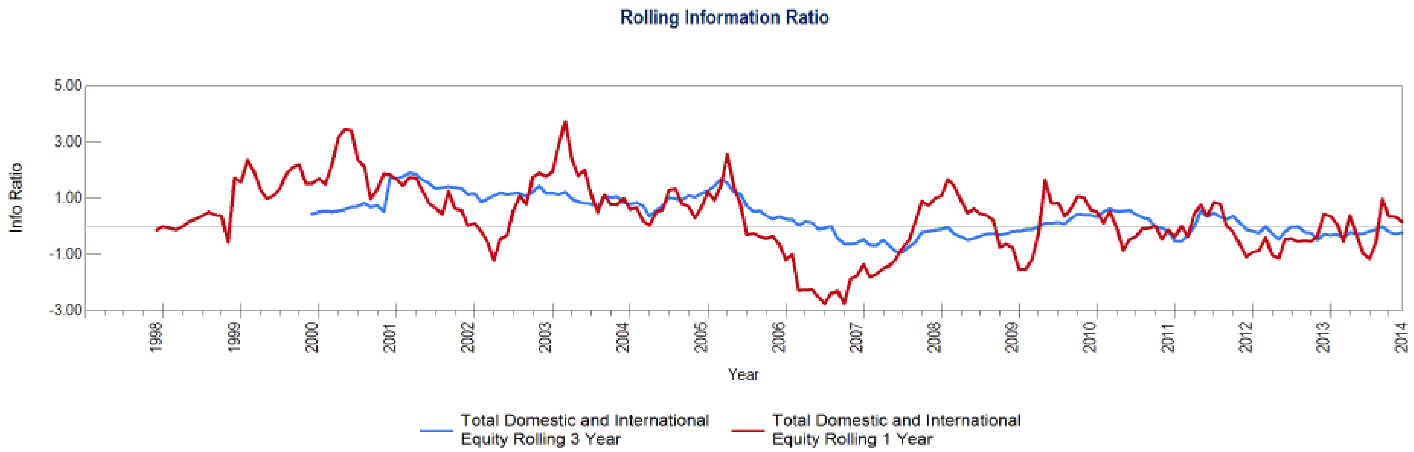
Total Public Equity – Performance as of 12/31/2014

The overall asset class is consistently tracking the policy benchmark.

Arizona State Retirement System

Asset Class Analysis - Total Domestic and International Equity





U.S. Domestic Equity Asset Category Review

U.S. Domestic Equity Asset Category – Sub-Class Allocations as of 2/27/15

U.S. DOMESTIC EQUITY CATEGORY SUMMARY

Asset Sub-Classs as of 02-27-15

	Market Value	Asset Sub-Class Weight	Asset Category Weight	ASRS SAA Policy	Proportion Indexed
Large-Cap	8,018,232,407.55	71.96%	23.05%	23.00%	83.06%
Mid-Cap	1,637,806,921.17	14.70%	4.71%	5.00%	66.27%
Small-Cap	1,485,859,653.37	13.34%	4.27%	5.00%	33.98%
Total Asset Category	**11,141,898,982.09**	100.00%	32.03%	33.00%	74.05%

U.S. Domestic Equity Category - Mandate Allocations as of 2/27/15

28-Feb-2015	Total Fund MV		34,785,155,525						
Portfolio	**# Assets**	**Mkt Value**	**Pct Total Fund**	**Pct Public Equity**	**Pct Asser Class**	**Pct of SubClass**	**Inexed Pct of SubClass**	**Inexed Pct of Pb Eq**	
E2 MODEL	511	5,295,552,828.61	15.22%	28.16%	47.53%	66.04%	66.04%	28.16%	
E7 MODEL	132	808,779,766.38	2.33%	4.30%	7.26%	10.09%	10.09%	4.30%	
E8 MODEL	160	555,688,339.62	1.60%	2.96%	4.99%	6.93%	6.93%	2.96%	
INTECH LARGE CAP	118	506,001,074.11	1.45%	2.69%	4.54%	6.31%			
LSV-US LARGE CAP VALUE	136	852,210,398.83	2.45%	4.53%	7.65%	10.63%			
LargeCap Domestic Total	**1,057**	**8,018,232,407.55**	**23.05%**	**42.65%**	**71.96%**	**100.00%**	**83.06%**	**35.42%**	
		SAA Target	*23.00%*						
E3 MODEL	230	541,930,910.90	1.56%	2.88%	4.86%	33.09%	33.09%	2.88%	
E4 MODEL	306	543,462,935.88	1.56%	2.89%	4.88%	33.18%	33.18%	2.89%	
WELLINGTON MANAGEMENT CO	102	446,443,326.42	1.28%	2.37%	4.01%	27.26%			
CRM MID CAP VALUE	54	105,969,747.97	0.30%	0.56%	0.95%	6.47%			
MidCap DomesticTotal	**692**	**1,637,806,921.17**	**4.71%**	**8.71%**	**14.70%**	**100.00%**	**66.27%**	**5.77%**	
		SAA Target	*5.00%*						
E6	606	504,938,731.06	1.45%	2.69%	4.53%	33.98%	33.98%	2.69%	
CHAMPLAIN INVESTMENT PARTNERS	76	96,943,633.39	0.28%	0.52%	0.87%	6.52%			
DIMENSIONAL FUND ADVISORS EQFD	498	396,844,221.52	1.14%	2.11%	3.56%	26.71%			
TIMESSQUARE CAPITAL MANAGEMENT	95	487,133,067.40	1.40%	2.59%	4.37%	32.78%			
Small Cap Domestic Total	**1,275**	**1,485,859,653.37**	**4.27%**	**7.90%**	**13.34%**	**100.00%**	**33.98%**	**2.69%**	
		SAA Target	*5.000%*						
US Equity Total	**3,024**	**11,141,898,982.09**	**32.03%**	**59.26%**	**100.00%**	**59.26%**	**74.05%**	**43.88%**	
		SAA Target	*33.00%*						

U.S. Domestic Equity Category - Mandates / Passive Strategies as of February 27,2015

The six passive index replication strategies are managed by IMD and make up the majority of the category. E2, E3, E4 and E6 portfolios are conventional index strategies;. the E7 and E8 portfolios are systematic index replication strategies in a "paired set" that offset each other in the short term while enabling access to the underlying strategies, which over the long term have returned an excess to that of the broad market.

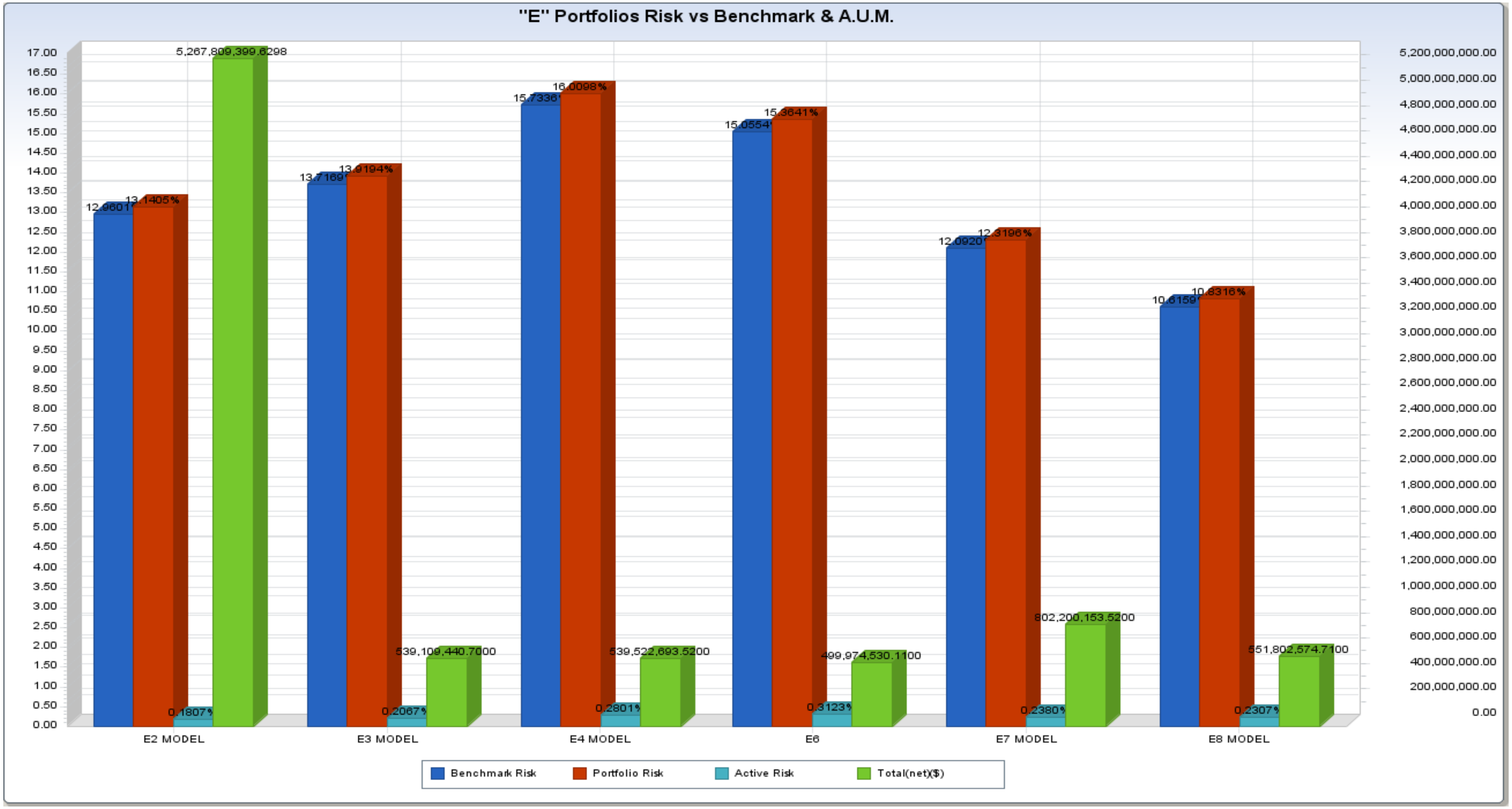
U.S. DOMESTIC EQUITIES

Passive Mandates Summary as of 02-27-15

	Market Value	% Total Equity	% U.S. Equity	Benchmark
E2	5,295,552,828.61	28.16%	47.53%	S&P 500
E3	541,930,910.90	2.88%	4.86%	S&P 400 Growth
E4	543,492,935.88	2.89%	4.88%	S&P 400 Value
E6	504,938,731.06	2.69%	4.53%	S&P 600
E7	808,779,766.38	4.30%	7.26%	MSCI USA High Dividend Yield Index
E8	535,688,339.62	2.70%	4.09%	MSCI USA Minimum Volatility Index
Total Asset Sub-Class	**8,230,383,512.45**	43.62%	73.15%	

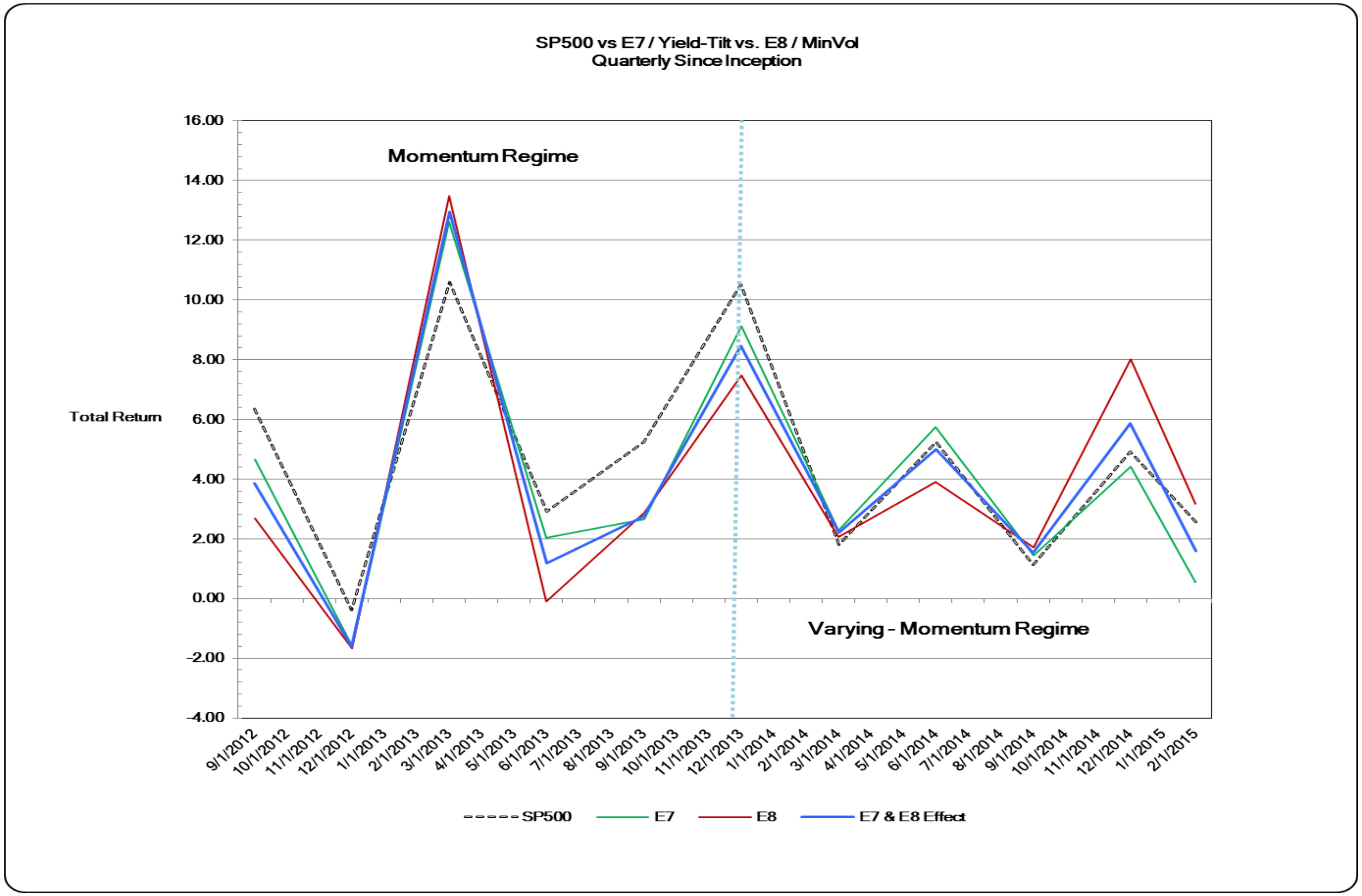
U.S. Domestic Equity Category - Mandates / Passive Strategies

All of the internally-managed passive portfolios conform strongly to their respective benchmarks. The residual active risk is accounted for by frictional cash and the "equitization" components (index futures & collateral) needed to keep the portfolios fully exposed to the benchmark equity market. With the exception of index change/corporate actions events, frictional cash is maintained within a range of 0.85% to 1.25% of portfolio market value.



U.S. Domestic Equity Category – Passive Mandates / E7 & E8 vs. SP500 as of February 27, 2015

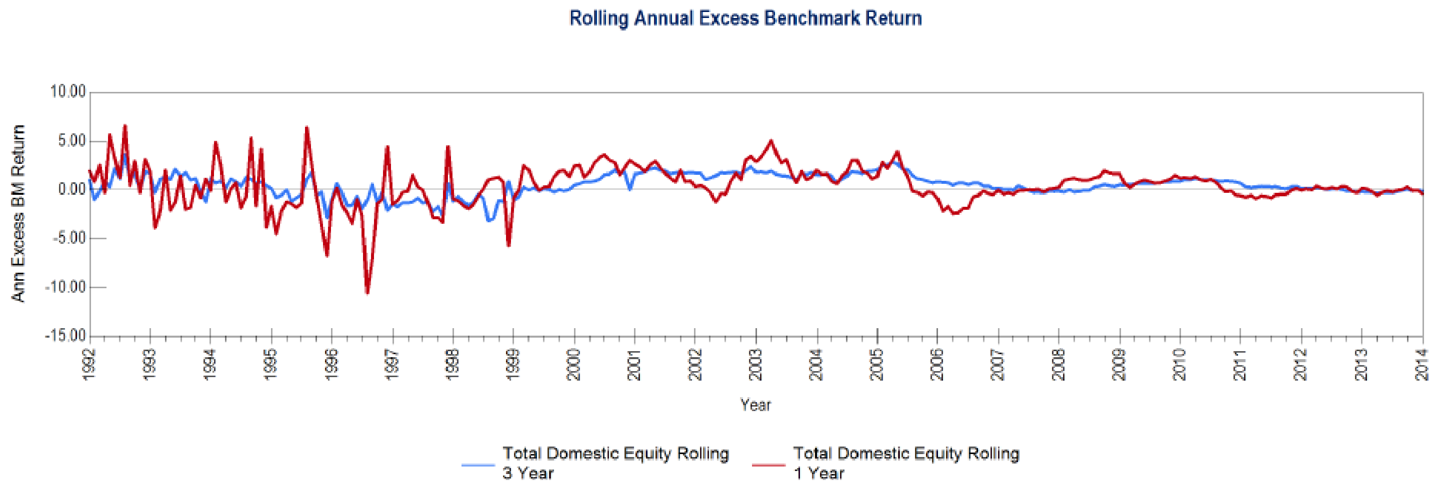
The E7 and E8 systematic passive strategies have since inception performed as hoped, generally adding value beyond the broad market. The strategies are sensitive to regimes in which the overall indexes are driven by price momentum. The relative proportion between the two strategies has been approximately 60% E7 ("Yield Tilt") and 40% E8 (Min-Vol) since inception. This was moved closer to 50% during the post- March 31st drawdown of the U.S. Equity class.

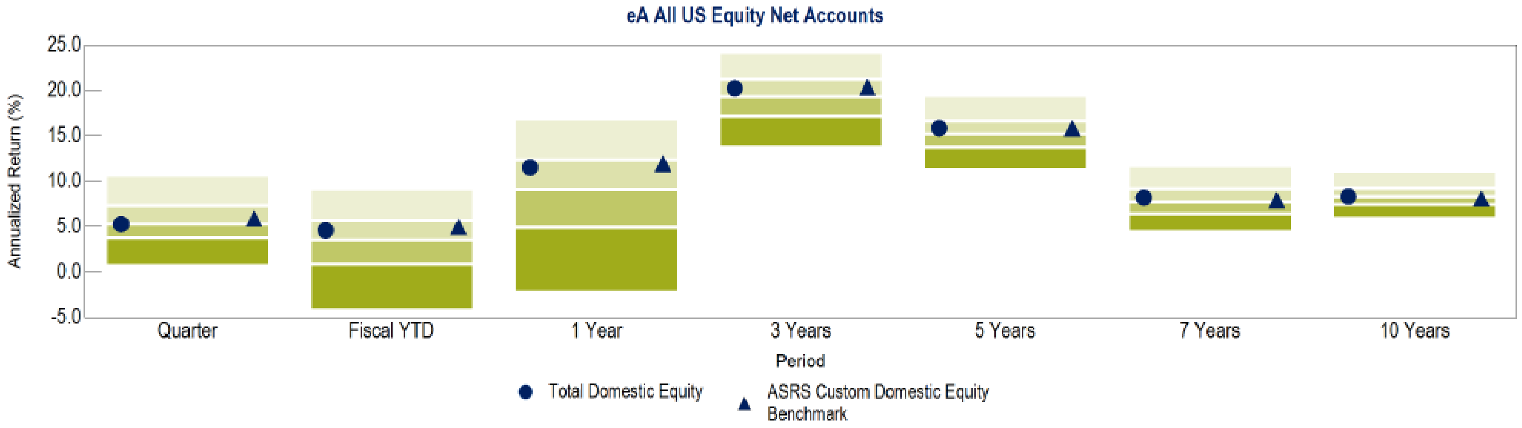


Total Domestic Equity – Performance as of 12/31/2014

Arizona State Retirement System

Asset Class Analysis - Total Domestic Equity

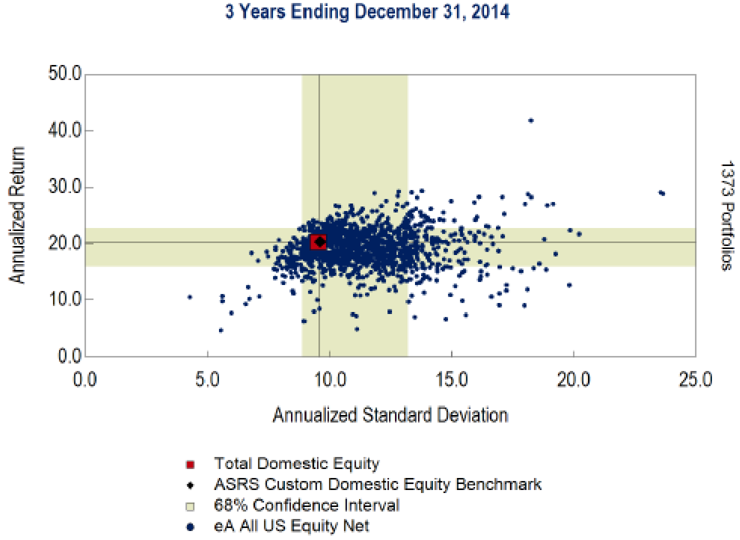


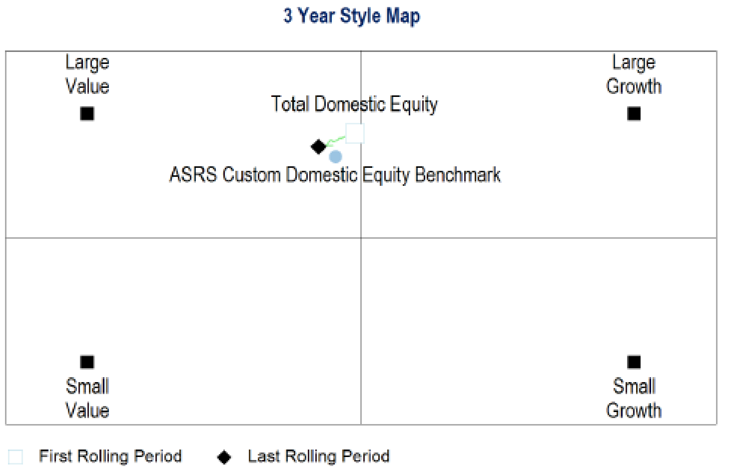


Total Domestic Equity – Performance as of 12/31/2014

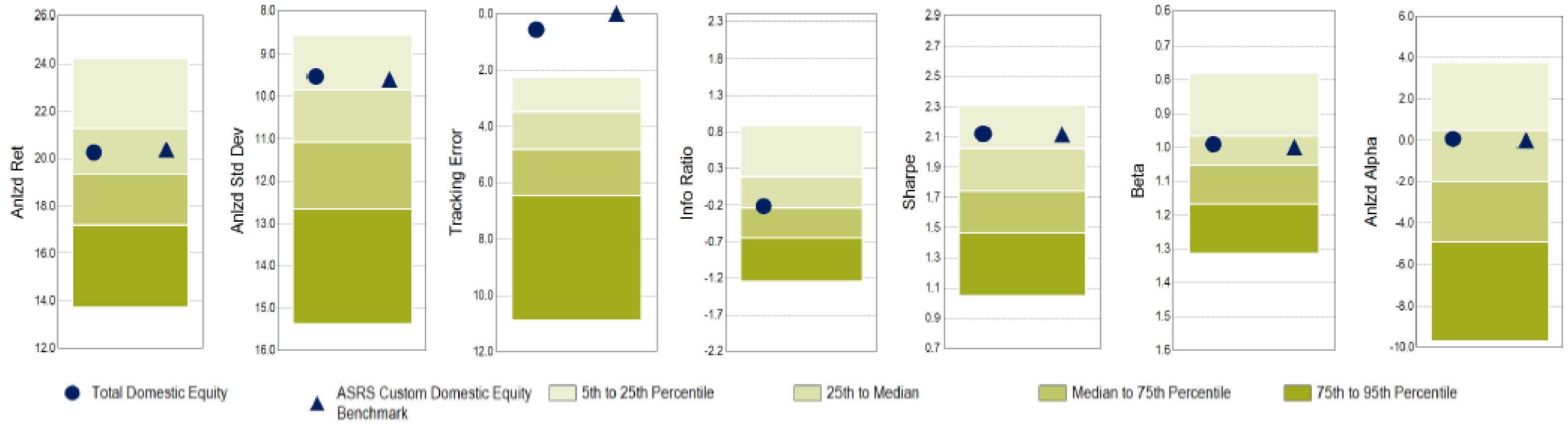
Arizona State Retirement System

Asset Class Analysis - Total Domestic Equity





*Style map is returns based.

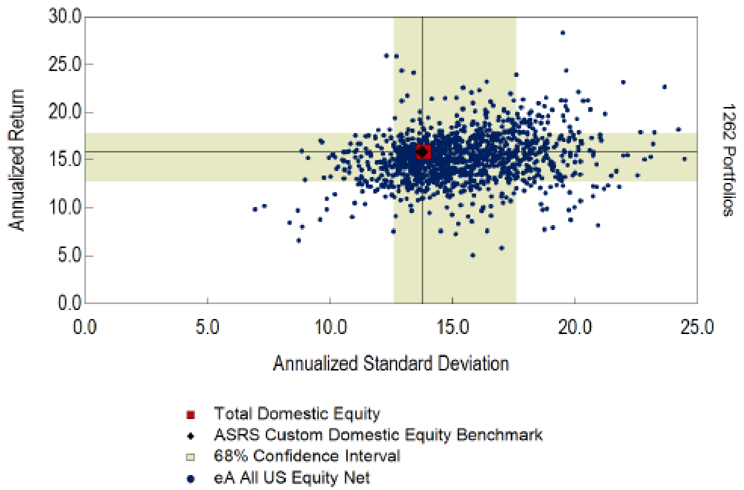


Total Domestic Equity – Performance as of 12/31/2014

Arizona State Retirement System

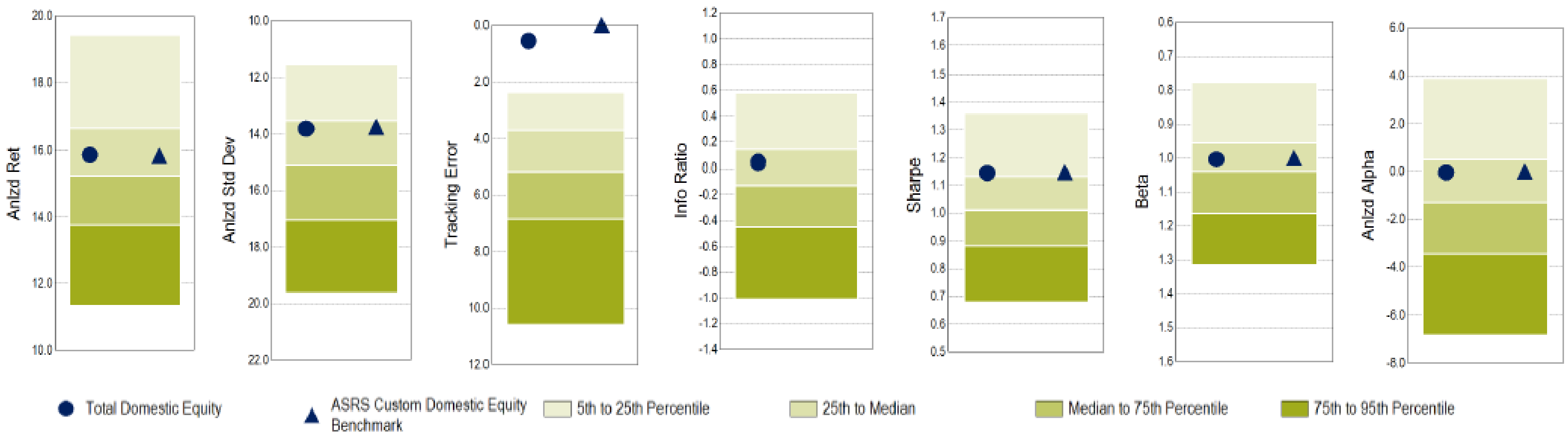
Asset Class Analysis - Total Domestic Equity

5 Years Ending December 31, 2014



5 Year Style Map

*Style map is returns based.



U.S. Domestic Equity Asset Category Review
Large-Cap Mandates

U.S. Domestic Equity Asset Category – Large-Cap Mandates

U.S. Large-Cap:

- Excess returns of the asset sub-class have trended upward in recent periods after having weakened in the prior two years.
- The Intech mandate accounted for most of the erosion; the strategy was less effective in those periods, thus relative performance suffered. The firm addressed this by adjusting its (quantitative) methodologies which began to show some effectiveness.
- LSV continues to deliver good relative returns, adding value despite a tougher performance over the second half of 2014.
- Even with the above headwind, the overall sub-class tracks well with the benchmark with slightly less risk (annualized Standard deviation).

Total Domestic and Large Cap Equity – Performance as of 12/31/2014

Arizona State Retirement System

Domestic and Large Cap Equity Performance Summary

	Market Value ($)	% of Portfolio	3 Mo (%)	Rank	6 Mo (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Return (%)	Since
Total Domestic Equity[1]	**10,867,172,487**	**31.8**	**5.3**	**51**	**4.6**	**38**	**11.5**	**33**	**20.3**	**38**	**15.9**	**38**	**8.3**	**52**	**11.4**	**Jul-75**
ASRS Custom Domestic Equity Benchmark			*5.9*	*42*	*5.0*	*33*	*12.0*	*30*	*20.4*	*36*	*15.8*	*39*	*8.1*	*58*	*11.5*	*Jul-75*
Over/Under			-0.6		-0.4		-0.5		-0.1		0.1		0.2		-0.1	
eA All US Equity Net Median			*5.3*		*3.6*		*9.1*		*19.3*		*15.3*		*8.4*		*12.6*	*Jul-75*
Total Large Cap Equity	**7,850,157,523**	**22.9**	**4.9**	**42**	**6.0**	**32**	**13.5**	**26**	**20.0**	**46**	**15.3**	**36**	**7.7**	**61**	**8.3**	**Jul-02**
S&P 500			*4.9*	*41*	*6.1*	*30*	*13.7*	*24*	*20.4*	*38*	*15.5*	*33*	*7.7*	*64*	*8.2*	*Jul-02*
Over/Under			0.0		-0.1		-0.2		-0.4		-0.2		0.0		0.1	
eA US Large Cap Equity Net Median			*4.6*		*4.9*		*11.6*		*19.7*		*14.7*		*8.0*		*8.7*	*Jul-02*
Active Large Cap Equity																
INTECH	484,638,674	1.4	3.0	86	4.6	71	10.1	60	19.2	62	15.1	43	7.8	59	10.0	Jan-03
S&P/Citigroup 500 Growth[2]			*5.1*	*40*	*7.1*	*30*	*14.9*	*11*	*20.5*	*40*	*16.0*	*21*	*8.5*	*39*	*9.7*	*Jan-03*
Over/Under			-2.1		-2.5		-4.8		-1.3		-0.9		-0.7		0.3	
eA US Large Cap Growth Equity Net Median			*4.6*		*5.8*		*11.1*		*19.8*		*14.8*		*8.2*		*9.9*	*Jan-03*
LSV	832,670,586	2.4	4.2	54	3.4	62	11.4	50	23.2	15	16.7	11	8.9	20	11.7	Jan-03
S&P/Citigroup 500 Value[2]			*4.8*	*39*	*5.0*	*32*	*12.4*	*38*	*20.4*	*40*	*14.9*	*42*	*6.7*	*74*	*9.4*	*Jan-03*
Over/Under			-0.6		-1.6		-1.0		2.8		1.8		2.2		2.3	
eA US Large Cap Value Equity Net Median			*4.4*		*4.0*		*11.3*		*19.5*		*14.5*		*7.9*		*10.2*	*Jan-03*
Enhanced/Passive Large Cap Equity																
Internally Managed E2	5,183,287,241	15.1	5.0	48	6.1	30	13.7	33	20.4	31	15.5	34	7.7	68	7.8	Apr-97
S&P 500			*4.9*	*48*	*6.1*	*30*	*13.7*	*33*	*20.4*	*31*	*15.5*	*34*	*7.7*	*69*	*7.8*	*Apr-97*
Over/Under			0.1		0.0		0.0		0.0		0.0		0.0		0.0	
eA US Large Cap Core Equity Net Median			*4.7*		*5.0*		*12.5*		*19.6*		*14.8*		*8.2*		*9.0*	*Apr-97*
Internally Managed E7	808,308,745	2.4	4.4	57	6.0	31	14.8	24	--	--	--	--	--	--	18.1	Aug-12
MSCI USA High Dividend Yield Index			*4.5*	*57*	*6.1*	*31*	*14.9*	*22*	*17.9*	*77*	*16.8*	*9*	*8.8*	*23*	*18.0*	*Aug-12*
Over/Under			-0.1		-0.1		-0.1								0.1	
eA US Large Cap Core Equity Net Median			*4.7*		*5.0*		*12.5*		*19.6*		*14.8*		*8.2*		*20.2*	*Aug-12*
Internally Managed E8	541,252,277	1.6	8.0	4	9.8	3	16.7	8	--	--	--	--	--	--	17.5	Aug-12
MSCI USA Minimum Volatility Index			*8.0*	*4*	*9.9*	*3*	*16.5*	*8*	*17.5*	*82*	*16.0*	*23*	*8.5*	*38*	*16.9*	*Aug-12*
Over/Under			0.0		-0.1		0.2								0.6	
eA US Large Cap Core Equity Net Median			*4.7*		*5.0*		*12.5*		*19.6*		*14.8*		*8.2*		*20.2*	*Aug-12*

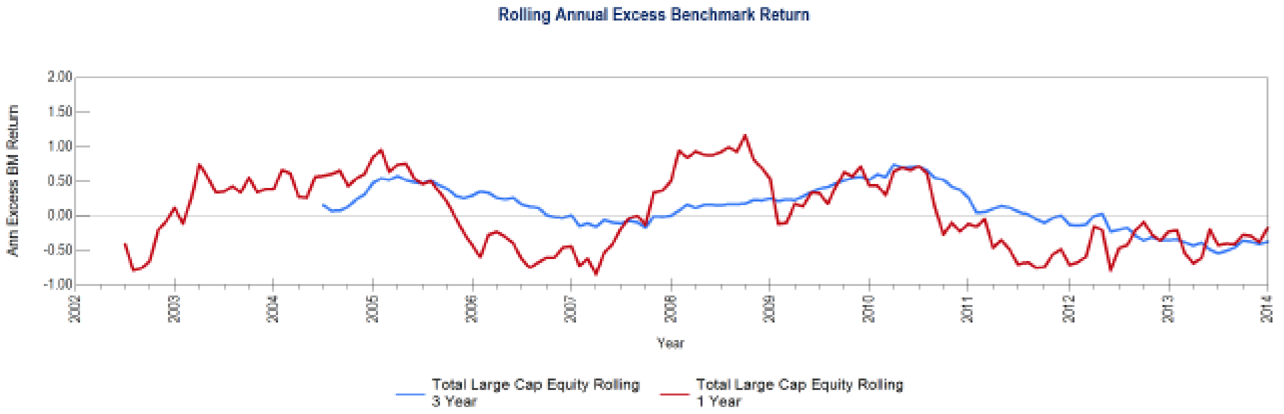
U.S. Domestic Equity Category – Large-Cap Performance as of 2/27/15

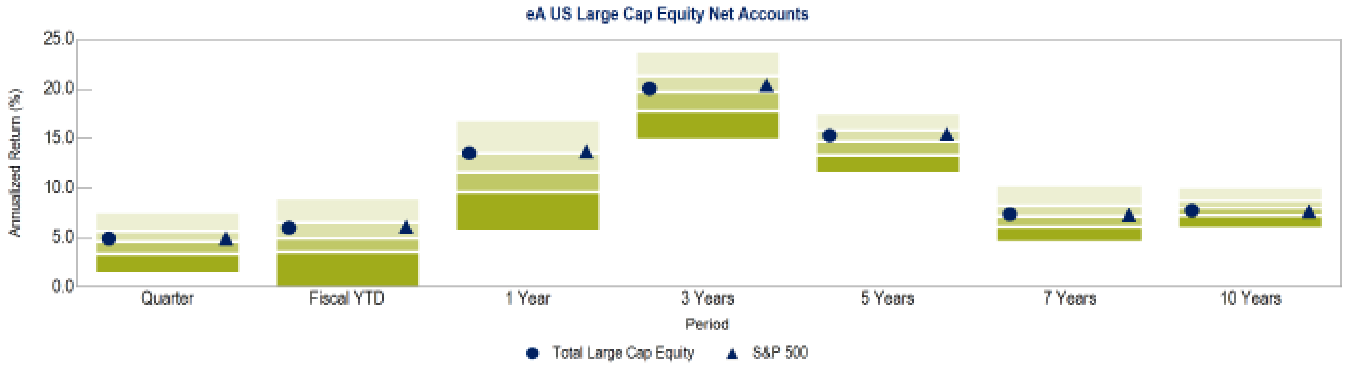
	Net Returns (%)							Excess Returns (basis points)						
	3 Mths	YTD	1 Year	3 Years	5 Years	10 Years	Inception	3 Mths	YTD	1 Year	3 Years	5 Years	10 Years	Inception
U.S. LARGE CAP EQUITY														
ASRS E2: PHX (Passive)	2.28	2.56	15.53	17.97	16.17	8.04	7.91	-3	-1	2	-3	-1	5	7
S&P 500	2.31	2.57	15.51	18.00	16.18	7.99	7.84							
INTECH: FL (Active)	3.31	4.31	12.13	17.55	16.51	8.18	10.22	9	10	-510	-121	-95	-83	31
S&P 500 Growth	3.22	4.21	17.22	18.76	17.46	9.01	9.91							
LSV: CHI (Active)	3.06	2.29	14.08	20.61	16.87	8.94	11.69	171	148	46	341	198	205	239
S&P 500 Value	1.35	0.81	13.62	17.20	14.89	6.89	---							
ASRS E7: PHX (Passive)	-0.15	0.60	15.85	---	---	---	17.08	0	1	-15	---	---	---	6
MSCI USA High Div Yld Index	-0.15	0.60	16.00	---	---	---	---							
ASRS E8: PHX (Passive)	3.22	3.13	18.88	---	---	---	17.67	-6	-3	12	---	---	---	53
MSCI USA Min Vol Index	3.28	3.16	18.76	---	---	---	---							
Total Large-Cap														

U.S. Domestic Equity Category – Large-Cap Asset Sub-Class

Arizona State Retirement System

Asset Class Analysis - Total Large Cap Equity



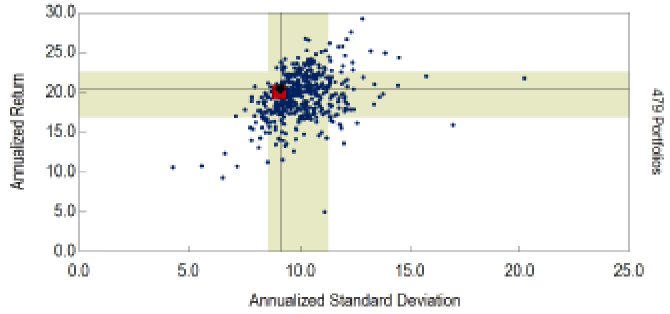


U.S. Domestic Equity Category – Large-Cap Asset Sub-Class

Arizona State Retirement System

Asset Class Analysis - Total Large Cap Equity

3 Years Ending December 31, 2014

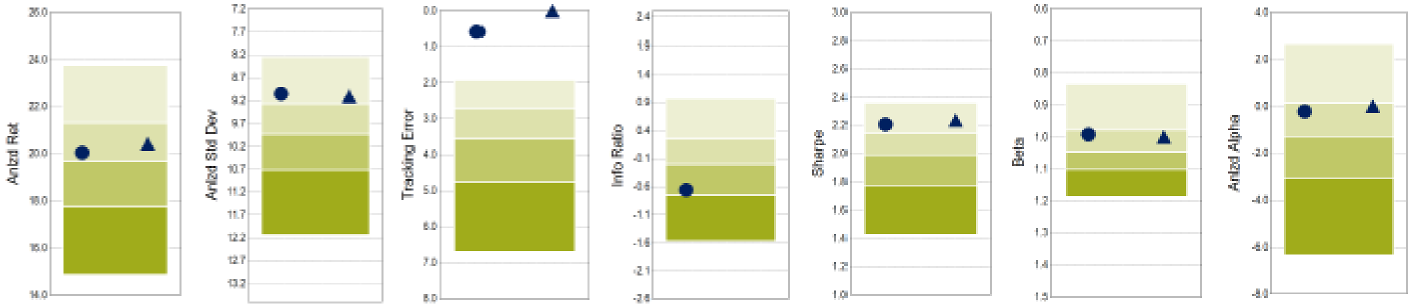


Total Large Cap Equity
S&P 500
68% Confidence Interval
eA US Large Cap Equity Net

3 Year Style Map

First Rolling Period
Last Rolling Period

*Style map is returns based.



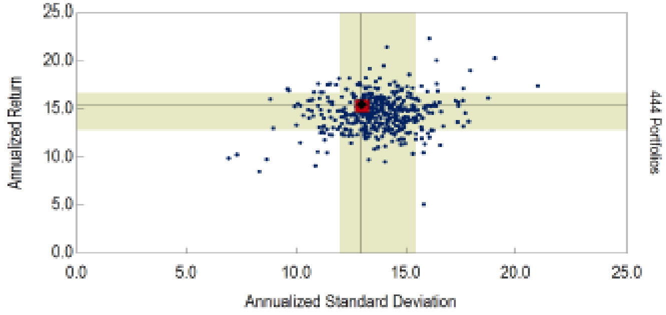
Total Large Cap Equity
S&P 500
5th to 25th Percentile
25th to Median
Median to 75th Percentile
75th to 95th Percentile

U.S. Domestic Equity Category – Large-Cap Asset Sub-Class

Arizona State Retirement System

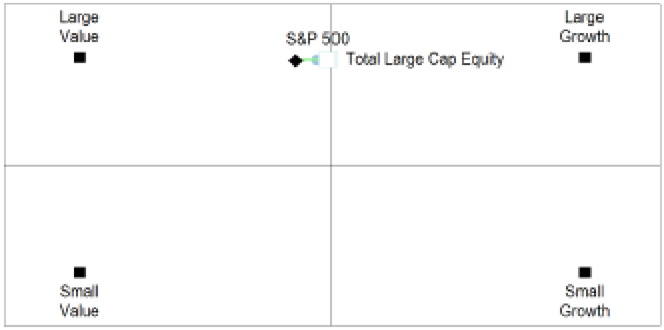
Asset Class Analysis - Total Large Cap Equity

5 Years Ending December 31, 2014



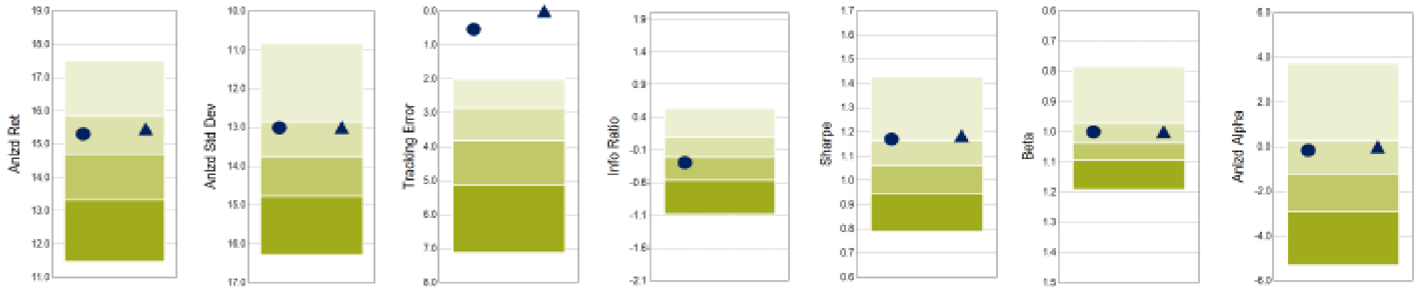
- Total Large Cap Equity
- S&P 500
- 68% Confidence Interval
- eA US Large Cap Equity Net

5 Year Style Map



First Rolling Period ◆ Last Rolling Period

*Style map is returns based.



● Total Large Cap Equity ▲ S&P 500 5th to 25th Percentile 25th to Median Median to 75th Percentile 75th to 95th Percentile

U.S. Domestic Equity Category – Large-Cap Mandates / Active Strategies

U.S Equity Large Cap

LSV

LSV's strategy is managed using quantitative techniques to select individual securities in a risk-controlled, bottom-up approach. The portfolio decision making process is quantitative, ranking securities based on fundamental measures of value and indicators of near-term appreciation potential. The objective of the model is to pick undervalued stocks with signs of recent recovery. Stocks are screened simultaneously to generate an overall expected return ranking for each stock in the universe; based on traditional value measures, assessing whether a security is undervalued, and momentum indicating signs of recent recovery.

($MM)	% Total Public Equity	% US Equity	Benchmark	Net Excess Return (bps)		
				1 year	3 year	5 year
852.2	4.5%	7.7%	S&P 500 Value	46	341	198

INTECH

INTECH believes it can add value using natural stock price volatility through a mathematically based, risk-managed process. The firm does not pick individual stocks or forecast stock alphas, but uses natural stock price volatility and correlation characteristics to attempt to generate an excess return. Essentially, INTECH adjusts the cap weights of an index portfolio to potentially more efficient combinations. INTECH's relative performance is generally influenced by two factors - the market's relative volatility structure and size (market diversity). Relative volatility refers to how stocks move relative to one another or relative to a benchmark. Size (market diversity) is a measure of how capital is distributed among stocks in a market or index. Since INTECH's strategies tend to overweight smaller stocks and underweight larger stocks in a large-cap index, rising diversity tends to benefit INTECH's relative performance.

($MM)	% Total Equity	% US Equity	Benchmark	Net Excess Return (bps)		
				1 year	3 year	5 year
506.0	2.7%	4.5%	S&P 500 Growth	-510	-121	-95

U.S. Domestic Equity Asset Category Review
Mid-Cap Mandates

U.S. Domestic Equity Asset Category – Mid-Cap Mandates / Active Strategies

U.S. Mid-Cap

- The sub-class short-run and long-term performance has tracked the benchmark within a few basis points despite variable relative performance of the active mandates, of which the value strategy (CRM) has been weak chronically.
- IMD has been able to offset these shortcomings through managing allocations among the subclass and a sizeable passive component . This has resulted in favorable risk characteristics, particularly favorable tracking error.
- ***CRM,*** defunded in the first quarter of 2015, views investment prospects on a long-term basis and relies on experience in identifying what it believes are inappropriately undervalued companies. The strategy consists of a fundamental, bottom-up screening process and attempts to identify stocks undergoing change, neglected by current consensus, and attractively priced based on current fundamentals. CRM has underperformed the benchmark over the past one, three and five year periods.
- ***Wellington*** centers their investment philosophy on owning high quality companies with strong management teams and good balance sheets. They focus on fundamental analysis and build the portfolio to meet three imperatives of quality, diversification and purity. Wellington performed in line with the benchmark over the prior year, but has added 284 bps of excess return over the past three years.

U.S. Domestic Equity Category – Mid Cap Performance as of 12/31/2014

Arizona State Retirement System

Mid Cap Equity Performance Summary

	Market Value ($)	% of Portfolio	3 Mo (%)	Rank	6 Mo (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Return (%)	Since
Total Mid Cap Equity	**1,574,006,298**	**4.6**	**5.9**	**39**	**1.4**	**67**	**9.6**	**41**	**20.6**	**30**	**16.2**	**42**	**9.6**	**49**	**10.6**	**Jul-02**
S&P 400 MidCap			*6.3*	*31*	*2.1*	*58*	*9.8*	*40*	*20.0*	*40*	*16.5*	*36*	*9.7*	*43*	*10.6*	*Jul-02*
Over/Under			-0.4		-0.7		-0.2		0.6		-0.3		-0.1		0.0	
eA US Mid Cap Equity Net Median			*5.5*		*3.0*		*8.4*		*19.0*		*15.6*		*9.5*		*10.9*	*Jul-02*
Active Mid Cap Equity																
Wellington	420,868,783	1.2	4.9	62	0.0	81	10.5	35	22.5	6	15.9	56	10.9	6	11.6	Jul-02
S&P 400 MidCap			*6.3*	*32*	*2.1*	*55*	*9.8*	*39*	*20.0*	*45*	*16.5*	*46*	*9.7*	*66*	*10.6*	*Jul-02*
Over/Under			-1.4		-2.1		0.7		2.5		-0.6		1.2		1.0	
eA US Mid Cap Core Equity Net Median			*5.8*		*2.6*		*8.2*		*19.6*		*16.3*		*10.1*		*11.0*	*Jul-02*
CRM	103,344,065	0.3	5.2	54	1.5	55	6.2	74	18.7	60	13.2	90	8.4	81	9.9	Jan-04
S&P/Citigroup 400 Value[1]			*6.9*	*20*	*1.9*	*50*	*12.1*	*33*	*21.3*	*36*	*16.4*	*42*	*9.3*	*53*	*10.2*	*Jan-04*
Over/Under			-1.7		-0.4		-5.9		-2.6		-3.2		-0.9		-0.3	
eA US Mid Cap Value Equity Net Median			*5.4*		*1.8*		*10.5*		*19.9*		*15.8*		*9.6*		*10.4*	*Jan-04*
Passive Mid Cap Equity																
Internally Managed E3	517,156,324	1.5	5.8	43	2.3	68	7.5	52	18.9	43	17.0	18	10.6	20	8.7	Dec-00
S&P/Citigroup 400 Growth[1]			*5.8*	*42*	*2.4*	*68*	*7.6*	*51*	*18.8*	*45*	*16.7*	*24*	*10.0*	*32*	*8.2*	*Dec-00*
Over/Under			0.0		-0.1		-0.1		0.1		0.3		0.6		0.5	
eA US Mid Cap Growth Equity Net Median			*5.3*		*3.4*		*7.6*		*18.4*		*15.4*		*9.0*		*7.9*	*Dec-00*
Internally Managed E4	532,637,127	1.6	6.8	20	1.8	51	11.9	34	21.2	37	16.3	45	9.6	51	10.8	Jul-02
S&P/Citigroup 400 Value[1]			*6.9*	*20*	*1.9*	*50*	*12.1*	*33*	*21.3*	*36*	*16.4*	*42*	*9.3*	*53*	*10.6*	*Jul-02*
Over/Under			-0.1		-0.1		-0.2		-0.1		-0.1		0.3		0.2	
eA US Mid Cap Value Equity Net Median			*5.4*		*1.8*		*10.5*		*19.9*		*15.8*		*9.6*		*11.0*	*Jul-02*

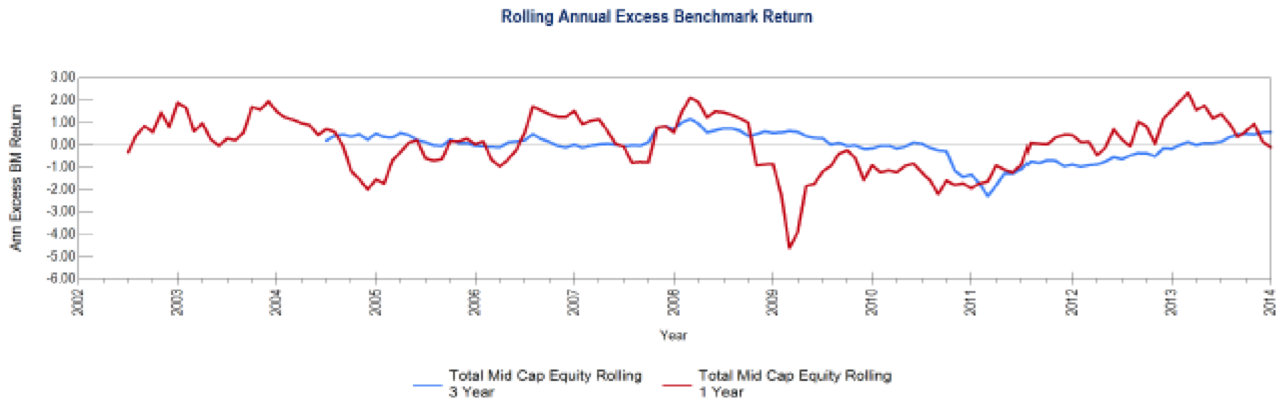
U.S. Domestic Equity Category – Mid-Cap Performance as of 2/27/15

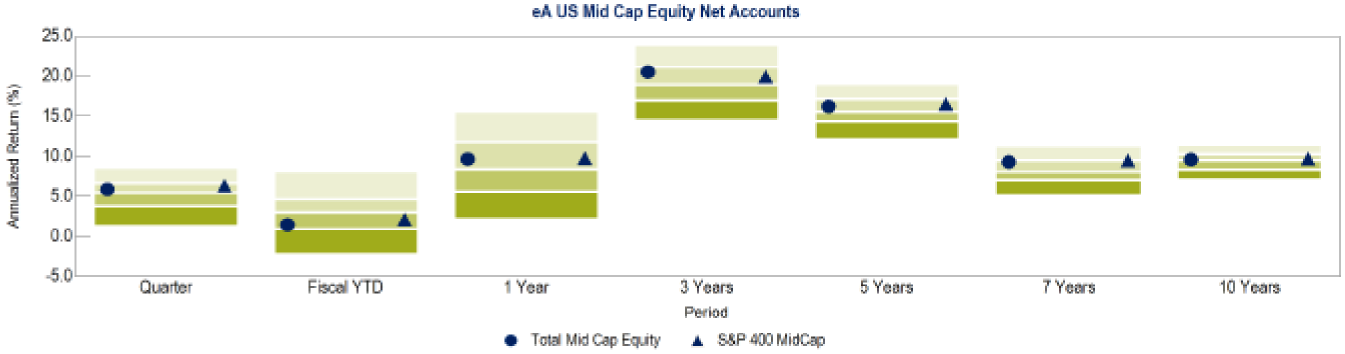
	Net Returns (%)							Excess Returns (basis points)						
	3 Mths	YTD	1 Year	3 Years	5 Years	10 Years	Inception	3 Mths	YTD	1 Year	3 Years	5 Years	10 Years	Inception
U.S. MID CAP EQUITY														
Wellington: SF (Active)	6.43	6.08	11.16	20.08	16.74	11.36	11.97	163	213	1	284	-28	131	118
S&P 400	4.80	3.94	11.14	17.25	17.02	10.05	---							
ASRS E3: PHX (Passive)	5.30	5.06	10.03	16.29	17.86	10.99	9.02	-1	0	-11	11	33	55	55
S&P 400 Growth	5.31	5.06	10.14	16.18	17.53	10.44	---							
CRM: NY (Active)	3.59	2.42	7.42	15.93	13.93	8.67	9.98	-58	-27	-466	-241	-259	-93	-29
ASRS E4: PHX (Passive)	4.16	2.74	11.92	18.23	16.44	9.86	10.91	-1	4	-16	-11	-7	26	20
S&P 400 Value	4.17	2.70	12.08	18.34	16.51	9.60	---							
Total Mid-Cap														

U.S. Domestic Equity Category – Mid-Cap Asset Sub-Class

Arizona State Retirement System

Asset Class Analysis - Total Mid Cap Equity



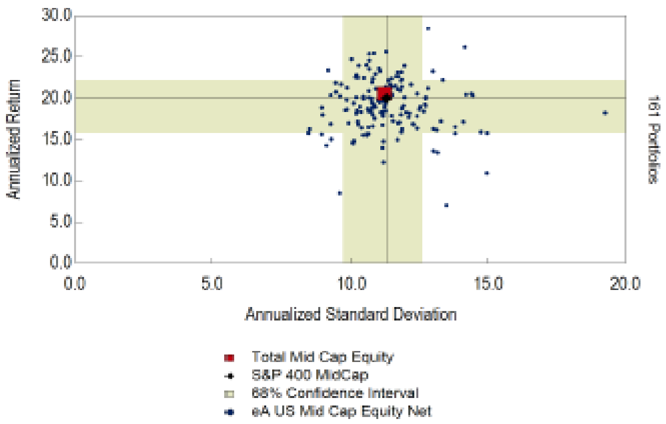


U.S. Domestic Equity Category – Mid-Cap Asset Sub-Class

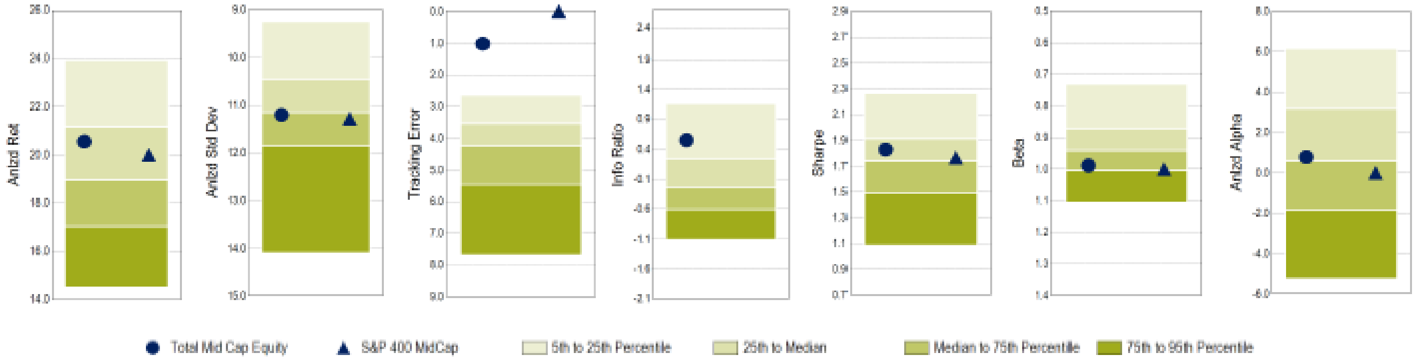
Arizona State Retirement System

Asset Class Analysis - Total Mid Cap Equity

3 Years Ending December 31, 2014



*Style map is returns based.

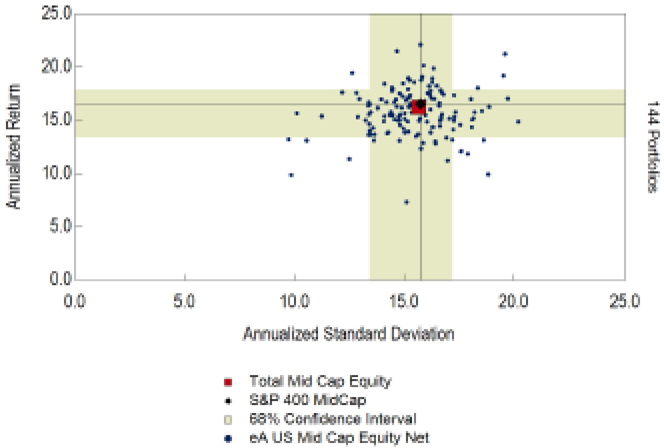


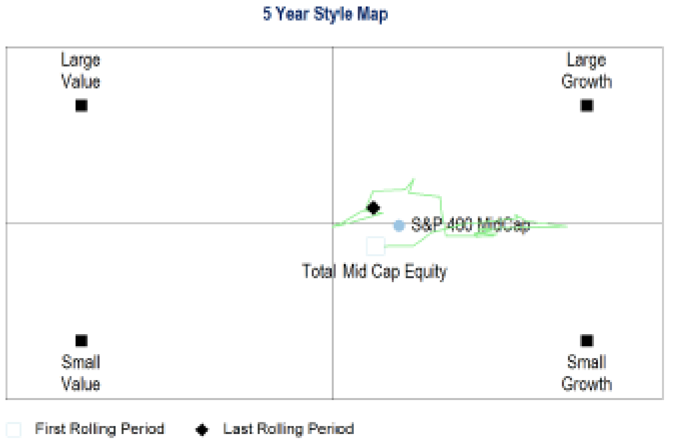
U.S. Domestic Equity Category – Mid-Cap Asset Sub-Class

Arizona State Retirement System

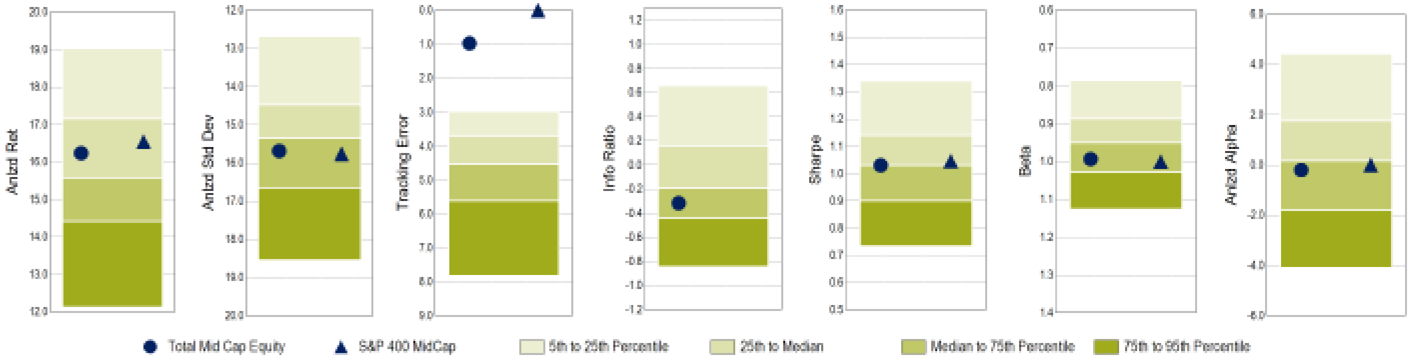
Asset Class Analysis - Total Mid Cap Equity

5 Years Ending December 31, 2014





*Style map is returns based.



U.S. Domestic Equity Category – Mid-Cap Mandates / Active Strategies

U.S Equity Mid Cap

Wellington

The Mid Cap Opportunities Portfolio seeks to outperform the S&P MidCap 400 Index by investing in high-quality, established mid-cap companies with good balance sheets, strong management teams, and market leadership in their industry.

($MM)	% Total Equity	% US Equity	Benchmark	Net Excess Return (bps)		
				1 year	3 year	5 year
446.4	2.4%	4.0%	S&P 400	1	284	-28

CRM

CRM's investment philosophy strives to outperform the broad market and pertinent indices over a full market cycle by participating in good market periods and limiting declines in poor periods. The Firm's experience in identifying what it believes to be inappropriately undervalued companies and its process of patiently waiting for market recognition has provided CRM's clients with long-term returns. The Firm looks for the following attributes in all investment ideas within the portfolio:

1. **Change**: The global financial markets are rich with change. Every day the markets present investors with mergers, divestitures, restructurings, new management teams or new products and expanded markets.
2. **Neglect**: Especially in its early stages, change tends to be greeted with uncertainty, expressed as investor neglect — manifested through behavioral finance, negative sentiment, negative-to-neutral stock ratings, benchmark exclusion, and buyer aversion.
3. **Valuation**: When change meets neglect, the intrinsic value of a company may exceed the current stock price. At the intersection of change and neglect with attractive valuation, CRM finds the potential for outperformance with lower downside risk.

($MM)	% Total Equity	% US Equity	Benchmark	Net Excess Return (bps)		
				1 year	3 year	5 year
106.0	0.6%	1.0%	S&P 400 Value	-466	-241	-259

U.S. Domestic Equity Asset Category Review
Small-Cap Mandates

U.S. Domestic Equity Asset Category – Small-Cap Mandates / Active Strategies

U.S. Small-Cap

- The sub-class underperformed the benchmark for the 2014 year, but has tracked well with the benchmark over time. Noticeably weak relative performance of the three active strategies which could not be offset by the passive component in 2014 accounted for the underperformance of the subclass. IMD defunded the most perpetually ineffective of these active strategies (Champlain, noted below) in the course of the March 31, 2015 reallocation from the U.S. Domestic Equities .category.

- 2014 performance of the subclass has affected short-run tracking error although return/risk characteristics remain solid.

- ***TimesSquare (TS),*** a fundamental growth manager, focuses primarily on the aspects of the business model, looking for companies with exceptional management, strong balance sheets and strong, sustainable growth. TS has outperformed the benchmark by 41 bps and 25 bps over the past three and five years respectively.

- ***DFA*** is guided by an investment philosophy based on rigorous academic and empirical research. The strategy is structured around systematic expected premiums—company size, relative price, and profitability—and focuses on stocks with low relative prices within approximately the smallest 10% of the US equity universe. DFA has added 56 bps of excess return to the benchmark over the past three years, but has faced headwinds over the past year resulting in underperformance.

- ***Champlain***, defunded in the first quarter of 2015, maintains the philosophy that investing in a good business at a good price is a high probability path to wealth creation. They buy the shares of superior businesses with credible and sincere managements at a discount to Fair or Intrinsic Value, which gives investors several potential paths to success. Champlain has outperformed the benchmark by 117 bps over the past year, but has underperformed over the past three and five years.

U.S. Domestic Equity Category – Small Cap Performance as of 12/31/2014

Arizona State Retirement System

Small Cap Equity Performance Summary

	Market Value ($)	% of Portfolio	3 Mo (%)	Rank	6 Mo (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Return (%)	Since
Total Small Cap Equity	**1,442,997,701**	**4.2**	**6.7**	**68**	**1.1**	**49**	**3.9**	**51**	**20.4**	**32**	**17.0**	**32**	**9.2**	**28**	**10.9**	**Jul-02**
ASRS Custom Small Cap Equity Blended Benchmark			*9.8*	*21*	*2.5*	*34*	*5.8*	*38*	*20.2*	*34*	*17.3*	*26*	*9.0*	*34*	*10.4*	*Jul-02*
Over/Under			-3.1		-1.4		-1.9		0.2		-0.3		0.2		0.5	
eA US Small Cap Equity Net Median			*8.1*		*1.0*		*4.0*		*18.9*		*15.7*		*8.4*		*10.0*	*Jul-02*
Active Small/Mid Cap Equity																
TimesSquare	461,267,858	1.3	5.5	64	1.7	66	2.2	65	20.6	20	17.3	27	--	--	12.4	Apr-05
Russell 2500 Growth			*7.5*	*31*	*3.0*	*38*	*7.1*	*30*	*20.5*	*21*	*17.3*	*27*	*9.4*	*36*	*10.1*	*Apr-05*
Over/Under			-2.0		-1.3		-4.9		0.1		0.0				2.3	
eA US Small-Mid Cap Growth Equity Net Median			*6.6*		*2.4*		*3.3*		*17.5*		*15.8*		*8.8*		*9.2*	*Apr-05*
Active Small Cap Equity																
Champlain	95,811,208	0.3	10.0	17	4.6	13	5.1	47	16.9	68	15.8	42	--	--	10.1	Jan-08
S&P 600 SmallCap			*9.8*	*19*	*2.5*	*38*	*5.8*	*43*	*20.2*	*40*	*17.3*	*28*	*9.0*	*28*	*9.8*	*Jan-08*
Over/Under			0.2		2.1		-0.7		-3.3		-1.5				0.3	
eA US Small Cap Core Equity Net Median			*8.5*		*1.5*		*4.4*		*18.7*		*15.7*		*8.4*		*8.3*	*Jan-08*
DFA - US Small Cap	389,950,275	1.1	3.4	83	-2.2	77	3.6	65	21.5	21	16.9	20	8.8	30	12.3	Sep-98
DFA Blended Benchmark			*10.4*	*9*	*2.9*	*13*	*7.5*	*23*	*21.2*	*24*	*17.0*	*20*	*8.8*	*32*	*11.4*	*Sep-98*
Over/Under			-7.0		-5.1		-3.9		0.3		-0.1		0.0		0.9	
eA US Small Cap Value Equity Net Median			*7.3*		*-0.1*		*5.0*		*18.8*		*15.3*		*8.3*		*11.9*	*Sep-98*
Passive Small Cap Equity																
Internally Managed E6	495,968,359	1.4	9.9	18	2.5	37	5.7	44	20.2	40	17.1	31	--	--	8.6	Feb-07
S&P 600 SmallCap			*9.8*	*19*	*2.5*	*38*	*5.8*	*43*	*20.2*	*40*	*17.3*	*28*	*9.0*	*28*	*8.3*	*Feb-07*
Over/Under			0.1		0.0		-0.1		0.0		-0.2				0.3	
eA US Small Cap Core Equity Net Median			*8.5*		*1.5*		*4.4*		*18.7*		*15.7*		*8.4*		*7.1*	*Feb-07*

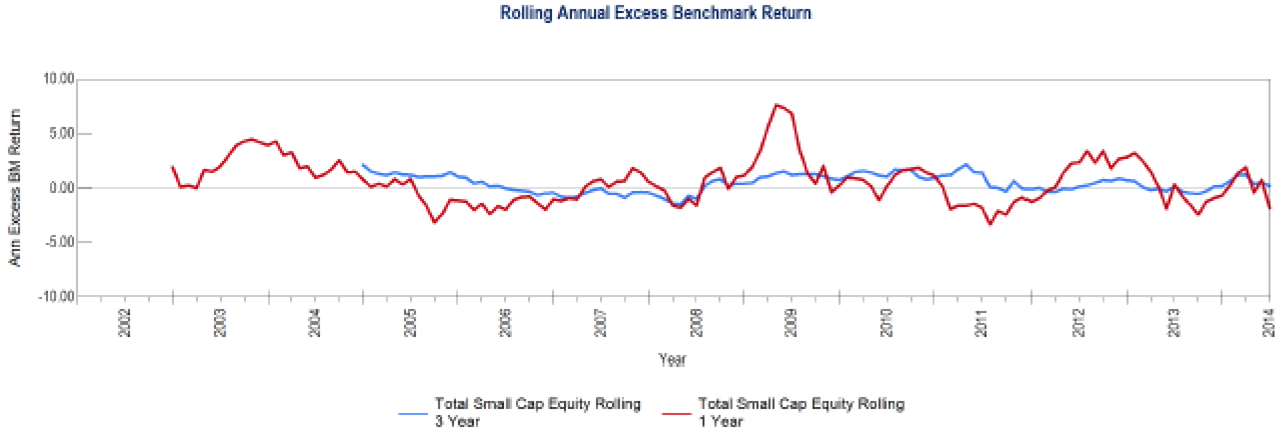
U.S. Domestic Equity Category – Small-Cap Performance as of 2/27/15

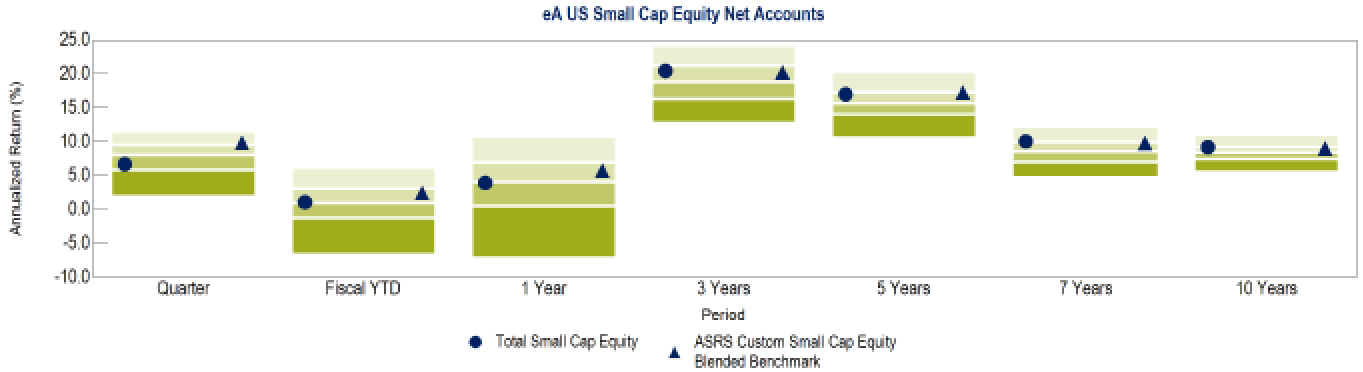
	Net Returns (%)							Excess Returns (basis points)						
	3 Mths	YTD	1 Year	3 Years	5 Years	10 Years	Inception	3 Mths	YTD	1 Year	3 Years	5 Years	10 Years	Inception
U.S. SMALL CAP EQUITY														
ASRS E6: PHX (Passive)	5.23	2.29	7.69	17.73	17.49	---	8.74	-2	-3	-6	-7	-14	---	34
Champlain: VT (Active)	2.10	0.99	8.92	14.82	16.31	---	10.03	-315	-134	117	-298	-132	---	15
S&P 600	5.25	2.32	7.75	17.79	17.63	9.22	---							
TimesSquare: New York (Active)	5.73	5.39	7.18	18.35	18.65	---	12.77	-132	-31	-244	41	25	---	221
Russell 2500 Growth	7.05	5.71	9.62	17.94	18.40	10.15	---							
DFA: Santa Monica (Active)	2.56	1.79	5.22	18.16	16.48	9.07	12.29	-52	144	-179	56	-10	6	100
R2k Val/ S&P 600 Value	3.08	0.35	7.01	17.61	16.58	9.01	---							
Total Small-Cap														

U.S. Domestic Equity Category – Small-Cap Mandates / Active Strategies

Arizona State Retirement System

Asset Class Analysis - Total Small Cap Equity



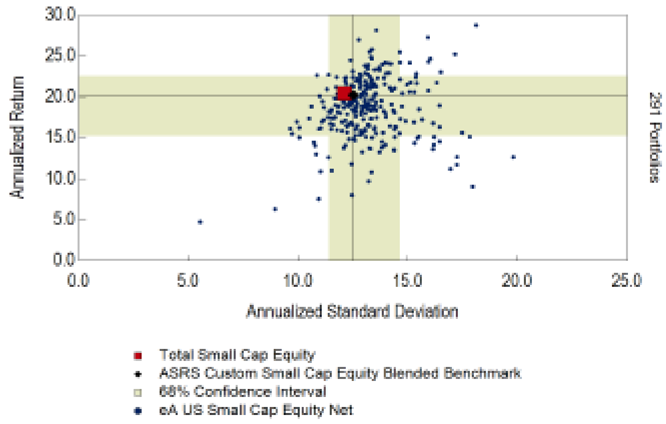


U.S. Domestic Equity Category – Small-Cap Mandates / Active Strategies

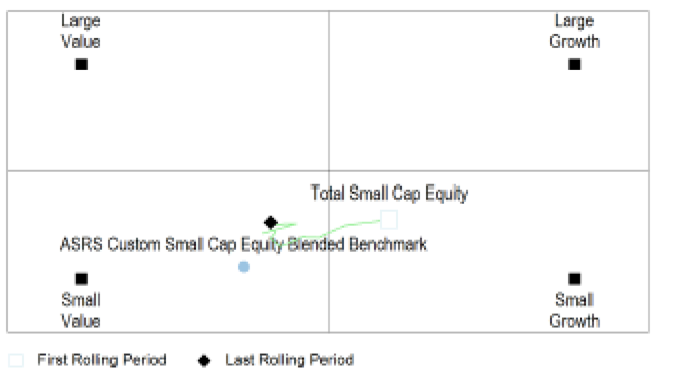
Arizona State Retirement System

Asset Class Analysis - Total Small Cap Equity

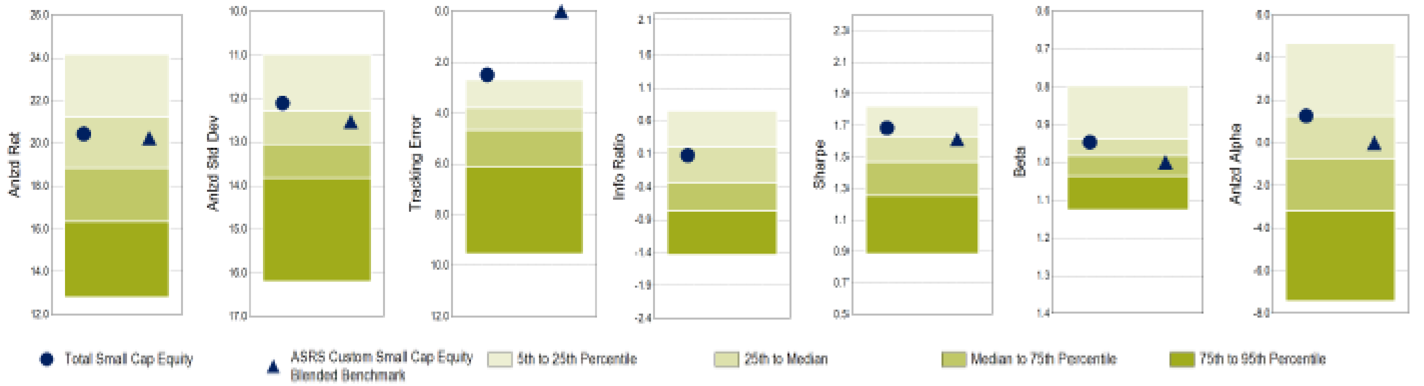
3 Years Ending December 31, 2014



3 Year Style Map



*Style map is returns based.

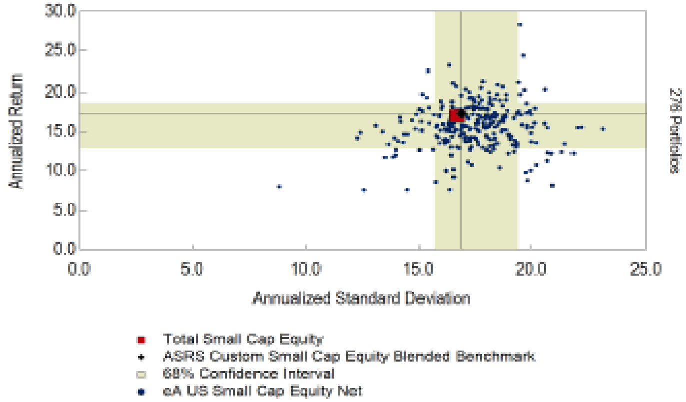


U.S. Domestic Equity Category – Small-Cap Mandates / Active Strategies

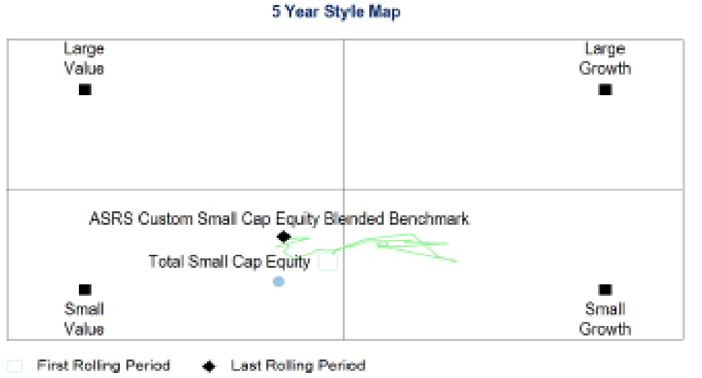
Arizona State Retirement System

Asset Class Analysis - Total Small Cap Equity

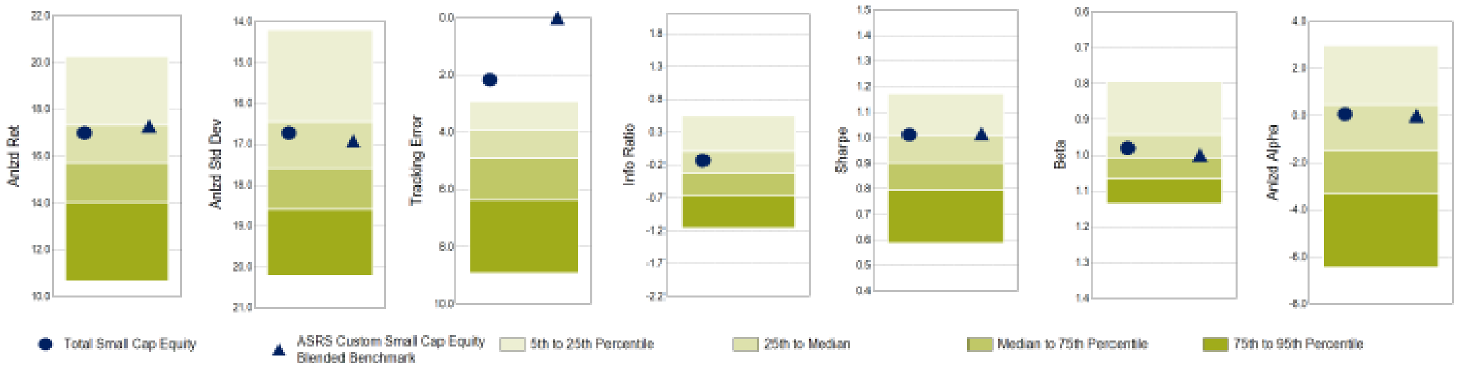
5 Years Ending December 31, 2014



5 Year Style Map



*Style map is returns based.



U.S. Domestic Equity Category – Small-Cap Mandates / Active Strategies

<table>
<tr><th colspan="8">U.S Equity Small Cap</th></tr>
<tr><td rowspan="4">TimesSquare</td><td colspan="7">TSCM uses fundamental research skills, which place a particular emphasis on the assessment of management quality and an in-depth understanding of superior business models, to build a diversified portfolio of growth stocks which will generate superior risk-adjusted returns. TSCM believes the market is still inefficient, so that their proprietary independent research will add value for clients.</td></tr>
<tr><td rowspan="2">($MM)</td><td rowspan="2">% Total Equity</td><td rowspan="2">% US Equity</td><td rowspan="2">Benchmark</td><td colspan="3">Net Excess Return (bps)</td></tr>
<tr><td>1 year</td><td>3 year</td><td>5 year</td></tr>
<tr><td>487.1</td><td>2.6%</td><td>4.4%</td><td>Russell 2500 Growth</td><td>-244</td><td>41</td><td>25</td></tr>
<tr><td rowspan="4">DFA</td><td colspan="7">DFA attempts to capture excess returns by providing reliable exposure to style and size risk factors. DFA's research has shown that the value style, as defined by book-to-market ratio, and small market capitalization are risk factors that explain a large proportion of performance over long periods of time. DFA structures the portfolio to target these risk factors which should deliver higher expected returns than the market over the long term.</td></tr>
<tr><td rowspan="2">($MM)</td><td rowspan="2">% Total Equity</td><td rowspan="2">% US Equity</td><td rowspan="2">Benchmark</td><td colspan="3">Net Excess Return (bps)</td></tr>
<tr><td>1 year</td><td>3 year</td><td>5 year</td></tr>
<tr><td>396.8</td><td>2.1%</td><td>3.6%</td><td>S&P 600 Value</td><td>-179</td><td>56</td><td>-10</td></tr>
<tr><td rowspan="4">Champlain</td><td colspan="7">Champlain invests in quality business at a good price. The portfolio holds shares of superior businesses with credible managements at a discount to intrinsic value, giving several potential paths to wealth creation. First, the market may bid the shares to a premium over fair value. Second, management may grow the fair value over time in a faster rate than market appreciation. Third, the company may be bought by a larger company or private market investor.</td></tr>
<tr><td rowspan="2">($MM)</td><td rowspan="2">% Total Equity</td><td rowspan="2">% US Equity</td><td rowspan="2">Benchmark</td><td colspan="3">Net Excess Return (bps)</td></tr>
<tr><td>1 year</td><td>3 year</td><td>5 year</td></tr>
<tr><td>96.9</td><td>0.5%</td><td>0.9%</td><td>S&P 600</td><td>117</td><td>-298</td><td>-132</td></tr>
</table>

Non-U.S. Equity Asset Category Review

Non-U.S. EQUITY CATEGORY SUMMARY

Asset Sub-Classs as of 02-27-15

	Market Value	Asset Sub-Class Weight	Asset Category Weight	ASRS SAA Policy	Proportion Indexed
EAFE	3,963,508,999.36	55.62%	11.39%	14.00%	59.44%
EAFE Small-Cap	1,243,198,791.67	17.44%	3.57%	3.00%	36.87%
Emerging Markets	1,919,722,198.35	26.94%	5.52%	6.00%	31.91%
Total Asset Category	**7,126,429,989.38**	100.00%	20.48%	23.00%	48.90%

Non-U.S. Equity Category –Mandate Allocations as of 2/27/15

28-Feb-2015	Total Fund MV	34,785,155,525						
Portfolio	# Assets	Mkt Value	Pct Total Fund	Pct Public Equity	Pct Asser Class	Pct of SubClass	Inexed Pct of SubClass	Inexed Pct of Pb Eq
BLACKROCK-EAFE CNTRY FUND UA	2	2,356,068,488.32	6.77%	12.53%	33.06%	59.44%	59.44%	12.53%
BRANDES INVESTMENT PARTNERS INT EQ	59	594,664,275.14	1.71%	3.16%	8.34%	15.00%		
AMERICAN CENTURY	106	527,139,167.95	1.52%	2.80%	7.40%	13.30%		
THOMPSON SIEGEL WALMSLEY	109	156,887,412.71	0.45%	0.83%	2.20%	3.96%		
TRINITY STREET	37	328,749,655.24	0.95%	1.75%	4.61%	8.29%		
Large Cap Developed	**313**	**3,963,508,999.36**	**11.39%**	**21.08%**	**55.62%**	**100.00%**	**59.44%**	**12.53%**
		SAA Target	*14.00%*					
BLACKROCK-MSCI EAFE SM CAP B	1	458,313,457.83	1.32%	2.44%	6.43%	36.87%	36.87%	2.44%
AQR CAPITAL	565	176,865,422.17	0.51%	0.94%	2.48%	14.23%		
FRANKLIN TEMPLETON INVESTMENTS	37	396,994,397.23	1.14%	2.11%	5.57%	31.93%		
DIMENSIONAL FUND ADVISORS INTL SC	1,524	211,025,514.44	0.61%	1.12%	2.96%	16.97%		
Small Cap Developed	**2,127**	**1,243,198,791.67**	**3.57%**	**6.61%**	**17.44%**	**100.00%**	**36.87%**	**2.44%**
		SAA Target	*3.00%*					
BLACKROCK EMERGING MARKETS FUND	2	670,086,853.35	1.93%	3.56%	9.40%	34.91%	34.91%	3.56%
EV SEM CIT ASRS	1,515	480,389,697.00	1.38%	2.55%	6.74%	25.02%		
WILLIAM BLAIR EM EQUITY	131	471,646,438.00	1.36%	2.51%	6.62%	24.57%		
LSV EM EQUITY	331	297,599,210.00	0.86%	1.58%	4.18%	15.50%		
EM	**1,979**	**1,919,722,198.35**	**5.52%**	**10.21%**	**26.94%**	**100.00%**	**34.91%**	**3.56%**
		SAA Target	6.00%					
Non US Equity Total	**4,419**	**7,126,429,989.38**	**20.49%**	**37.90%**	**100.00%**	**37.90%**	**48.90%**	**18.53%**
		SAA Target	*23.00%*					

Non-U.S. Equity Category - Mandates / Passive Strategies

Non-U.S. EQUITIES CATEGORY

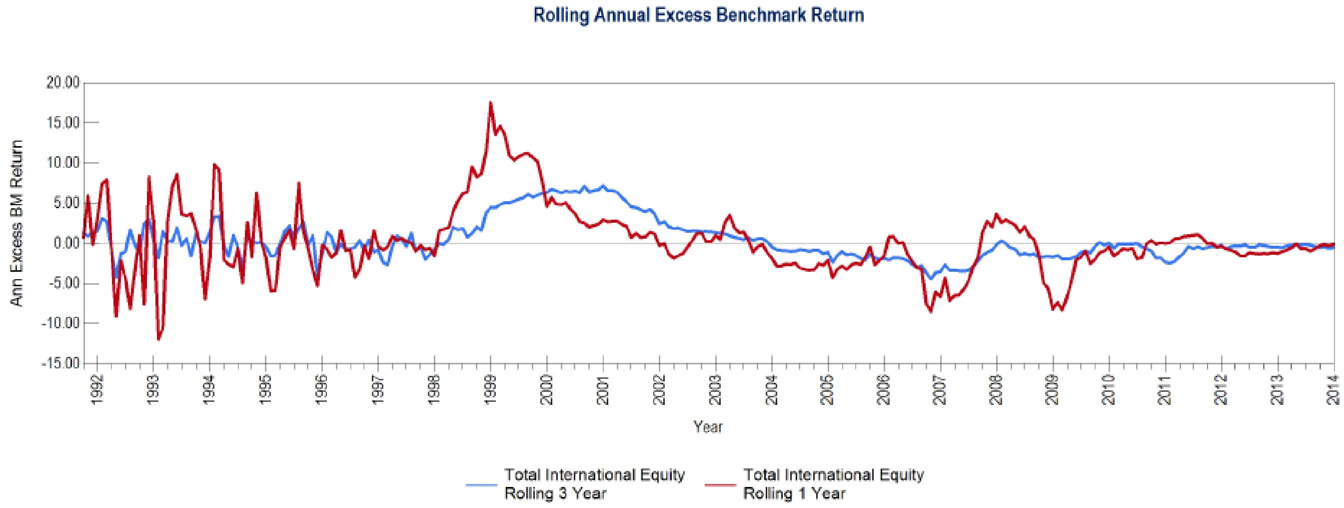
Passive Mandates Summary as of 02-27-15

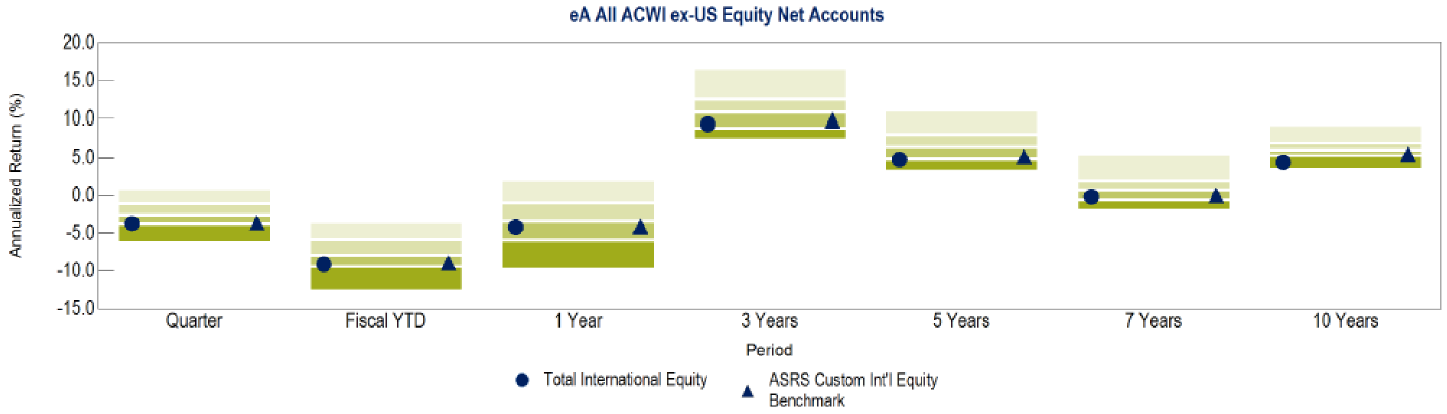
	Market Value	% Total Equity	% Non-U.S. Equity	Benchmark
BlackRock EAFE	2,356,068,488.32	12.53%	33.06%	MSCI EAFE (Net)
BlackRock EAFE Small Cap	458,313,457.83	2.44%	6.43%	MSCI EAFE Small Cap (Net)
BlackRock EAFE Small Cap	670,086,853.35	3.56%	9.40%	MSCI Emerging Markets (Net)
Total Asset Sub-Class	**3,484,468,799.50**	18.53%	48.89%	

Total International Equity – Performance as of 12/31/2014

Arizona State Retirement System

Asset Class Analysis - Total International Equity



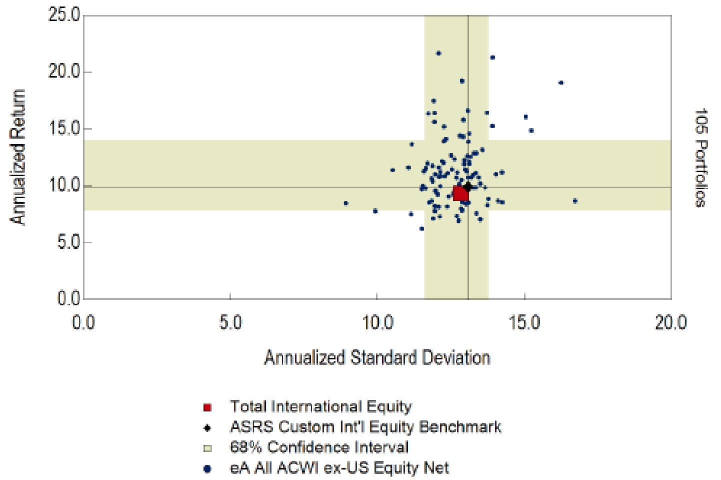


Total International Equity – Performance as of 12/31/2014

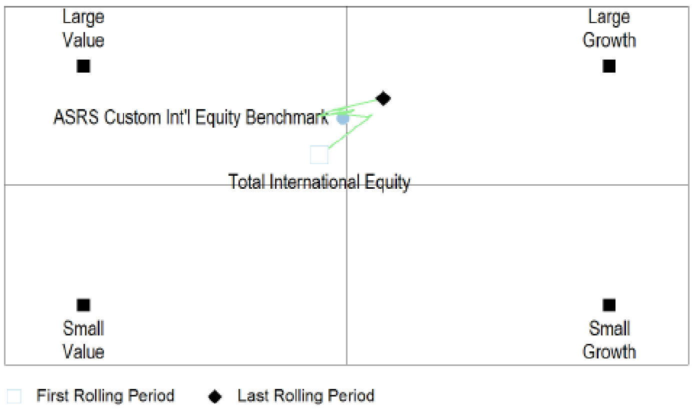
Arizona State Retirement System

Asset Class Analysis - Total International Equity

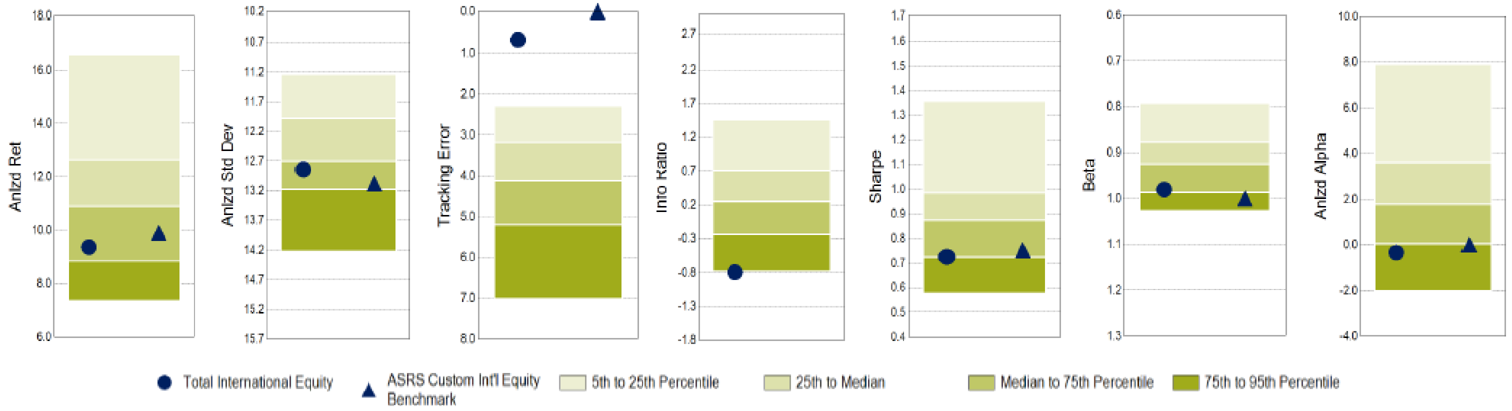
3 Years Ending December 31, 2014



3 Year Style Map



*Style map is returns based.

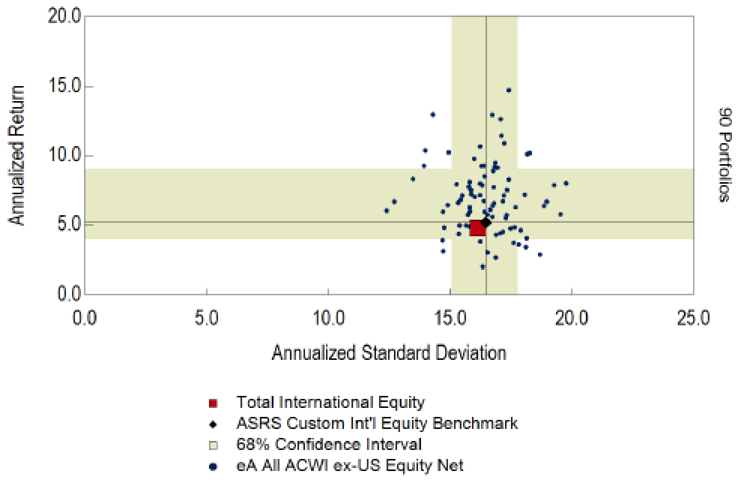


Total International Equity – Performance as of 12/31/2014

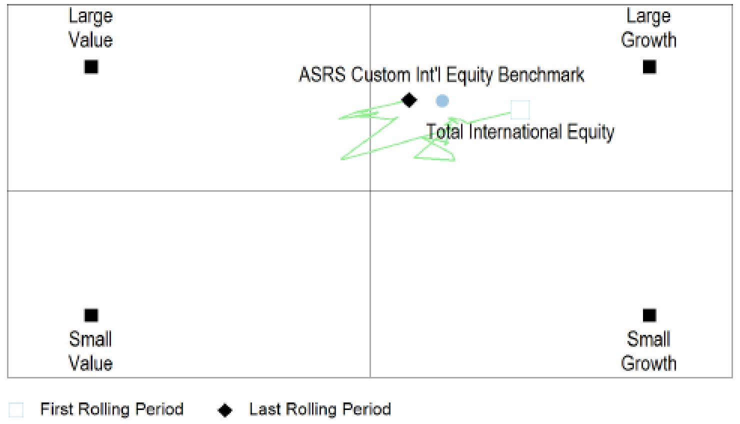
Arizona State Retirement System

Asset Class Analysis - Total International Equity

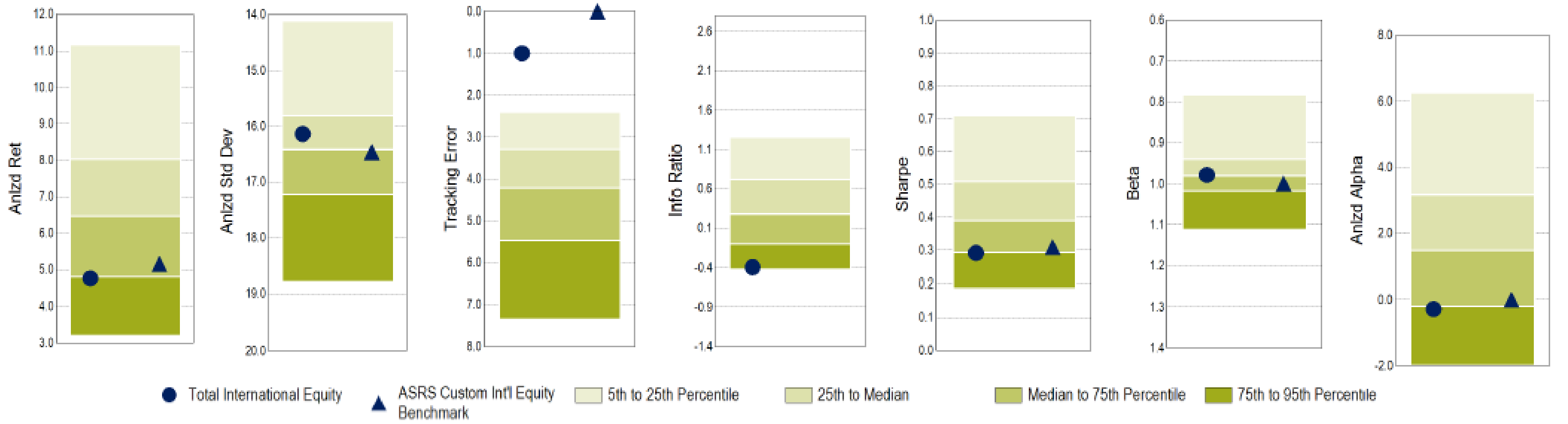
5 Years Ending December 31, 2014



5 Year Style Map



*Style map is returns based.



Non-U.S. Equity Asset Category Review
EAFE Mandates

Non-U.S. Equity Category – EAFE Mandates / Active Strategies

EAFE Equity:

- *Note: NEPC combines the International Developed Markets (EAFE) and the International Developed Markets-Small-Cap (EAFE-SC) sub-classes in its reports. Consequently tracking error and risk analysis reflects the combined sub-classes*
- Replacement of three active mandates in mid-2014 served to improve relative performance of the Total Non-U.S. Equity category and had equally positive effects on volatility and stacking error.
- ***Brandes,*** a Graham & Dodd value investor, believes that market prices trend towards the intrinsic, underlying worth of a company over time. By staying committed to their philosophy, they have been taking advantage of negative sentiment in international markets over recent years and have been able to uncover attractive stocks. Brandes continues to outperform their benchmark, generating excess returns of 259 bps and 104 bps over the last one and three years respectively.
- ***American Century (AC)*** maintains a fundamentally driven, risk-managed equity portfolio that invests in companies that it believes are demonstrating early and sustainable accelerating growth. Using a unique investment methodology for defining growth—an acceleration of change from a starting point—the team looks for companies at an inflection point where future earnings growth prospects may change dramatically. Since inception in the third quarter of 2014, AC has outperformed the MSCI EAFE benchmark by 247 bps.
- ***Thompson, Siegel & Walmsley (TSW)*** engages in a disciplined process that is designed to identify undervalued stocks with a catalyst to unlock value. They believes that the best way to value a stock investment is in terms of the underlying company's cash generation because ultimately, that is what will determine return on investment. TSW has added 13 bps in excess return since inception in the third quarter of 2014.
- ***Trinity Street (TS)*** believes in intensive, fundamental bottom-up research on companies involved in change, to build revenue, margin, cash flow and earnings estimates which may be substantially different from consensus. Portfolios are concentrated in positions in which they have a high conviction for outperformance over a 2-3 year outlook. Although TS has underperformed the benchmark since inception in mid-2014, we remain committed to their longer term approach and investment philosophy.

International Developed Markets Equity – Performance as of 12/31/2014

Arizona State Retirement System

International and International Developed Markets Equity Performance Summary

	Market Value ($)	% of Portfolio	3 Mo (%)	Rank	6 Mo (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Return (%)	Since
Total International Equity[1]	**6,752,187,108**	**19.7**	**-3.7**	**75**	**-9.1**	**72**	**-4.2**	**61**	**9.4**	**72**	**4.8**	**77**	**4.4**	**86**	**6.1**	**Apr-87**
ASRS Custom Int'l Equity Benchmark			*-3.6*	*74*	*-8.9*	*71*	*-4.1*	*59*	*9.9*	*65*	*5.2*	*69*	*5.5*	*72*	*5.8*	*Apr-87*
Over/Under			-0.1		-0.2		-0.1		-0.5		-0.4		-1.1		0.3	
eA All ACWI ex-US Equity Net Median			*-2.5*		*-7.9*		*-3.4*		*10.9*		*6.5*		*6.0*		*7.7*	*Apr-87*
Total International Developed Markets Equity[2]	**4,889,534,411**	**14.3**	**-3.3**	**62**	**-9.8**	**71**	**-5.4**	**66**	**11.1**	**65**	**6.3**	**63**	**5.1**	**55**	**6.4**	**Apr-87**
ASRS Custom Int'l Developed Markets Equity Benchmark			*-3.3*	*62*	*-9.3*	*64*	*-4.9*	*60*	*11.9*	*56*	*6.5*	*57*	*6.2*	*38*	*6.1*	*Apr-87*
Over/Under			0.0		-0.5		-0.5		-0.8		-0.2		-1.1		0.3	
eA All EAFE Equity Net Median			*-2.8*		*-8.4*		*-4.3*		*12.7*		*7.0*		*5.3*		*7.2*	*Apr-87*
Active Large Cap International Equity																
Brandes	545,344,386	1.6	-4.3	80	-10.8	83	-4.2	50	11.0	67	5.3	77	4.3	79	8.9	Oct-98
Brandes Custom Benchmark			*-3.6*	*67*	*-9.2*	*62*	*-4.9*	*60*	*11.4*	*61*	*5.9*	*66*	*5.9*	*42*	*6.1*	*Oct-98*
Over/Under			-0.7		-1.6		0.7		-0.4		-0.6		-1.6		2.8	
eA All EAFE Equity Net Median			*-2.8*		*-8.4*		*-4.3*		*12.7*		*7.0*		*5.3*		*7.2*	*Oct-98*
American Century[3]	498,143,261	1.5	-1.5	25	-6.2	18	--	--	--	--	--	--	--	--	-6.2	Jul-14
MSCI EAFE			*-3.6*	*67*	*-9.2*	*62*	*-4.9*	*60*	*11.1*	*65*	*5.3*	*76*	*4.4*	*77*	*-9.2*	*Jul-14*
Over/Under			2.1		3.0										3.0	
eA All EAFE Equity Net Median			*-2.8*		*-8.4*		*-4.3*		*12.7*		*7.0*		*5.3*		*-8.4*	*Jul-14*
Trinity Street[3]	309,077,086	0.9	-4.9	86	-11.0	84	--	--	--	--	--	--	--	--	-11.0	Jul-14
MSCI EAFE			*-3.6*	*67*	*-9.2*	*62*	*-4.9*	*60*	*11.1*	*65*	*5.3*	*76*	*4.4*	*77*	*-9.2*	*Jul-14*
Over/Under			-1.3		-1.8										-1.8	
eA All EAFE Equity Net Median			*-2.8*		*-8.4*		*-4.3*		*12.7*		*7.0*		*5.3*		*-8.4*	*Jul-14*
TS&W International[3]	147,886,391	0.4	-2.9	54	-8.6	52	--	--	--	--	--	--	--	--	-8.6	Jul-14
MSCI EAFE			*-3.6*	*67*	*-9.2*	*62*	*-4.9*	*60*	*11.1*	*65*	*5.3*	*76*	*4.4*	*77*	*-9.2*	*Jul-14*
Over/Under			0.7		0.6										0.6	
eA All EAFE Equity Net Median			*-2.8*		*-8.4*		*-4.3*		*12.7*		*7.0*		*5.3*		*-8.4*	*Jul-14*

International Developed Markets Equity – Performance as of 12/31/2014

Arizona State Retirement System

International and International Developed Markets Equity Performance Summary

	Market Value ($)	% of Portfolio	3 Mo (%)	Rank	6 Mo (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Return (%)	Since
Passive Large Cap International Equity																
BlackRock EAFE Equity Index	2,218,289,892	6.5	-3.6	66	-9.2	62	-4.7	57	11.3	61	5.6	73	--	--	9.0	Jul-09
MSCI EAFE			-3.6	67	-9.2	62	-4.9	60	11.4	61	5.7	71	4.9	61	9.1	Jul-09
Over/Under			0.0		0.0		0.2		-0.1		-0.1				-0.1	
eA All EAFE Equity Net Median			-2.8		-8.4		-4.3		12.7		7.0		5.3		10.3	Jul-09
Active Small Cap International Equity																
DFA - International Small Cap	199,925,998	0.6	-5.4	89	-13.9	95	-6.7	79	13.9	75	6.7	98	--	--	5.2	Sep-05
MSCI EAFE Small Cap			-2.3	50	-9.9	60	-4.9	67	14.1	70	8.9	82	6.4	91	5.5	Sep-05
Over/Under			-3.1		-4.0		-1.8		-0.2		-2.2				-0.3	
eA EAFE Small Cap Equity Net Median			-2.3		-9.2		-3.7		15.5		10.6		7.7		6.7	Sep-05
Franklin Templeton	370,360,513	1.1	-3.0	73	-13.4	93	-11.4	93	14.5	69	--	--	--	--	6.9	Apr-11
MSCI EAFE Small Cap			-2.3	50	-9.9	60	-4.9	67	14.1	70	8.9	82	6.4	91	5.3	Apr-11
Over/Under			-0.7		-3.5		-6.5		0.4						1.6	
eA EAFE Small Cap Equity Net Median			-2.3		-9.2		-3.7		15.5		10.6		7.7		7.2	Apr-11
AQR Capital	167,661,481	0.5	-1.5	41	-8.1	36	-3.6	48	--	--	--	--	--	--	9.2	Jun-13
MSCI EAFE Small Cap			-2.3	50	-9.9	60	-4.9	67	14.1	70	8.9	82	6.4	91	7.5	Jun-13
Over/Under			0.8		1.8		1.3								1.7	
eA EAFE Small Cap Equity Net Median			-2.3		-9.2		-3.7		15.5		10.6		7.7		8.2	Jun-13
Passive Small Cap International Equity																
BlackRock EAFE Small Cap Equity Index	431,072,612	1.3	-2.0	48	-9.7	59	-4.8	66	13.9	75	--	--	--	--	11.2	Jun-10
MSCI EAFE Small Cap			-2.3	50	-9.9	60	-4.9	67	14.1	70	8.9	82	6.4	91	11.4	Jun-10
Over/Under			0.3		0.2		0.1		-0.2						-0.2	
eA EAFE Small Cap Equity Net Median			-2.3		-9.2		-3.7		15.5		10.6		7.7		12.5	Jun-10

Non-U.S. Equity Category – Developed Large-Cap Performance as of 2/27/15

	Net Returns (%)							Excess Returns (basis points)						
	3 Mths	YTD	1 Year	3 Years	5 Years	10 Years	Inception	3 Mths	YTD	1 Year	3 Years	5 Years	10 Years	Inception
INT'L DEVELOPED LARGE CAP EQUITY														
Brandes: SD (LC Active)	5.03	8.94	2.56	10.77	8.03	5.00	9.35	223	244	259	104	-33	-128	292
American Century (LC Active)	2.35	5.72	---	---	---	---	-0.87	-46	-78	---	---	---	---	248
Trinity Street (LC Active)	2.16	6.12	---	---	---	---	-5.61	-65	-38	---	---	---	---	-226
Thompson, Siegel, and Walmsley (LC Active)	2.62	5.91	---	---	---	---	-3.22	-19	-59	---	---	---	---	13
Blackrock EAFE: SF(Passive)	2.83	6.50	0.21	9.69	8.09	---	9.94	3	1	24	-3	-8	---	-7
MSCI EAFE	2.81	6.50	-0.04	9.73	8.17	5.27	---							
Total Int'l LC Equity														

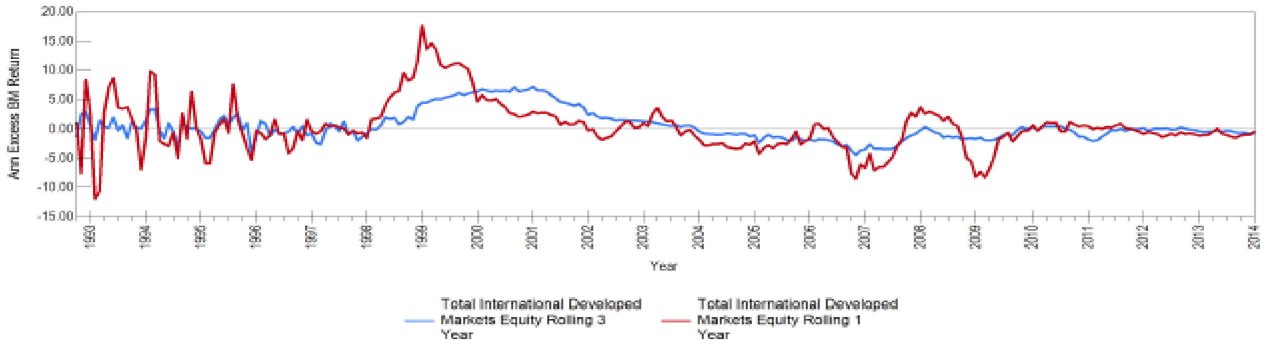
Non-U.S. Equity Category – Developed Markets Mandates

Note: NEPC combines the International Developed Markets (EAFE) and the International Developed Markets-Small-Cap (EAFE-SC) sub-classes in its reports. Consequently tracking error and risk analysis reflects the combined sub-classes.

Arizona State Retirement System

Asset Class Analysis - Total International Developed Markets Equity

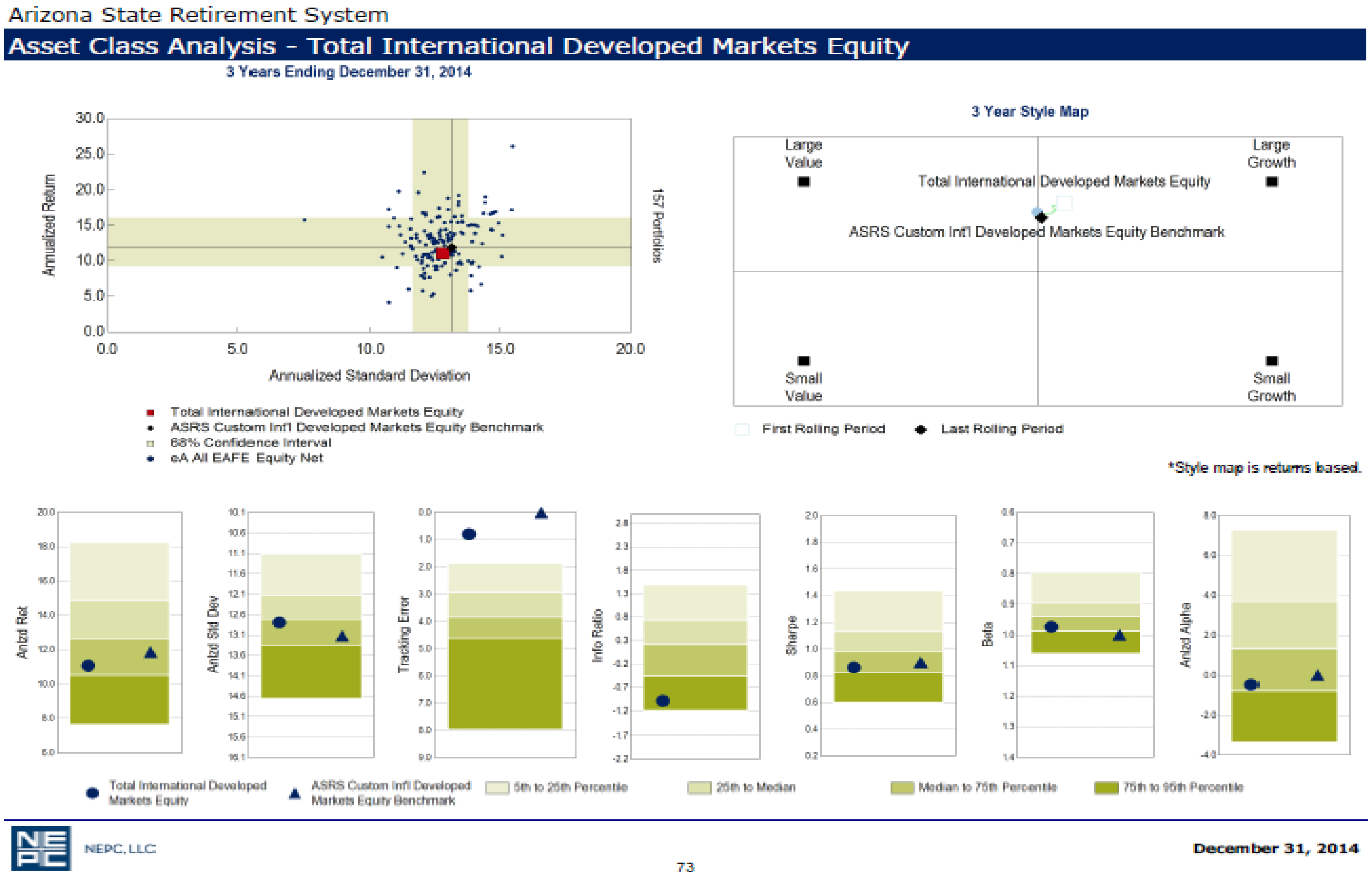
Rolling Annual Excess Benchmark Return



eA All EAFE Equity Net Accounts

Non-U.S. Equity Category – Developed Markets Mandates

Note: NEPC combines the International Developed Markets (EAFE) and the International Developed Markets-Small-Cap (EAFE-SC) sub-classes in its reports. Consequently tracking error and risk analysis reflects the combined sub-classes.



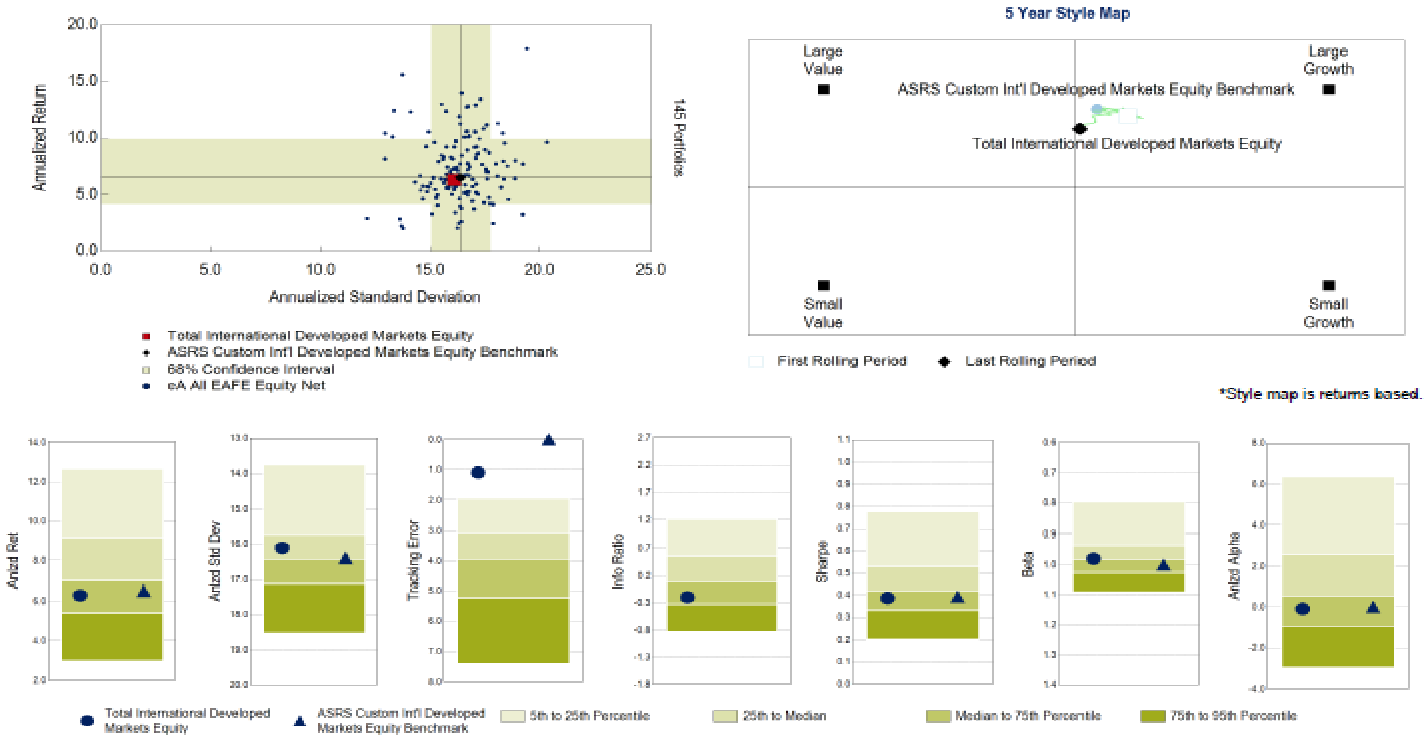
Non-U.S. Equity Category – Developed Markets Mandates

Note: NEPC combines the International Developed Markets (EAFE) and the International Developed Markets-Small-Cap (EAFE-SC) sub-classes in its reports. Consequently tracking error and risk analysis reflects the combined sub-classes.

Arizona State Retirement System

Asset Class Analysis - Total International Developed Markets Equity

5 Years Ending December 31, 2014



Non-U.S. Equity Category – EAFE Mandates / Active Strategies

<table>
<tr><th colspan="8">Non- U.S Developed Large Cap Equity</th></tr>
<tr><td rowspan="4">Brandes</td><td colspan="7">Brandes is a bottom-up, Graham & Dodd, value-oriented, investment manager focusing on the fundamental characteristics of a company in order to develop an estimate of its intrinsic value. Brandes selects stocks that are selling at a discount to the firm’s estimates of their intrinsic business value, seeking to establish a margin of safety and an opportunity for competitive performance. The investment process drives the firm to build portfolios that typically consist of out-of-favor or overlooked issues that it believes are undervalued. Such securities may remain overvalued for months or years, and may exhibit sharp price fluctuations.</td></tr>
<tr><td rowspan="2">($MM)</td><td rowspan="2">% Total Equity</td><td rowspan="2">% non-US Equity</td><td rowspan="2">Benchmark</td><td colspan="3">Excess Return (bps)</td></tr>
<tr><td>1 year</td><td>3 year</td><td>5 year</td></tr>
<tr><td>594.7</td><td>3.2%</td><td>8.3%</td><td>MSCI EAFE</td><td>259</td><td>104</td><td>-33</td></tr>
<tr><td rowspan="4">American Century</td><td colspan="7">American Century’s philosophy of growth investing is centered on the belief that accelerating growth in earnings and revenues is more highly correlated to stock price performance rather than the absolute level of growth. Managers use a bottom-up stock selection process utilizing proprietary fundamental research to invest primarily in large cap companies exhibiting improving fundamentals and accelerating growth characteristics. Managers invest in companies in developed countries outside the U.S., with limited investments in companies in emerging countries. The portfolio is constructed within a risk-aware framework to maximize stock specific risk, while minimizing risk from unintended sources.</td></tr>
<tr><td rowspan="2">($MM)</td><td rowspan="2">% Total Equity</td><td rowspan="2">% non-US Equity</td><td rowspan="2">Benchmark</td><td colspan="3">Excess Return (bps)</td></tr>
<tr><td>YTD</td><td>3 months</td><td>ITD</td></tr>
<tr><td>527.1</td><td>2.8%</td><td>7.4%</td><td>MSCI EAFE</td><td>-78</td><td>-46</td><td>247</td></tr>
</table>

Non-U.S. Equity Category – EAFE Mandates / Active Strategies

Non- U.S Developed Large Cap Equity

Thompson, Siegel & Walmsley

TS&W employs a core investment style influenced by a value philosophy. The process is designed to identify inexpensive stocks that are exhibiting evidence of positive development in business fundamentals and starts with a proprietary Four-Factor screen. TS&W defines value using cash flows. Cash flows are a more robust measure of business value than earnings and are more readily comparable across geographies. The process seeks to avoid value traps by investing in companies that are exhibiting positive change. As part of the initial screen, TS&W evaluates earnings potential (defined as earnings estimate revisions and earnings surprises) and relative price strength, which are regarded as evidence of change that can be uncovered through fundamental analysis. The process employs rigorous risk controls and a sell discipline.

($MM)	% Total Equity	% non-US Equity	Benchmark	Excess Return (bps)		
				YTD	*3 months*	*ITD*
156.9	0.8%	2.2%	MSCI EAFE	*-59*	*-19*	*13*

Trinity Street

Trinity Street believes that equity markets are usually efficient and provide an adequate mechanism for valuing companies and taking into account all of the company-specific data and external influences on such valuations. The firm also believes, however, that this pricing mechanism can be interrupted when a company is undergoing rapid and fundamental change. On occasions, the market can be slow to interpret the impact and consequences of such change, sometimes leading to major mispricings-pricings. Consequently, they focus all of their research effort on fundamental bottom-up analysis of rapidly-changing companies, to discern whether the consequences of the change taking place are “under-recognized” by brokers’ forecasts and/or the market valuation of the company meaning that the company may be undervalued. “Change” is a genuine constant in markets and is ever-present, but where it takes place is constantly moving. It takes place irrespective of whether value, growth or other trends are generally impacting markets. Under-Recognized Change can therefore be seen as a consistent source of alpha which should work in most market environments.

($MM)	% Total Equity	% non-US Equity	Benchmark	Excess Return (bps)		
				YTD	*3 months*	*ITD*
328.7	1.8%	4.6%	MSCI EAFE	*-38*	*-65*	*-226*

Non-U.S. Equity Asset Category Review
EAFE Small-Cap Mandates

Non-U.S. Equity Category – EAFE Small-Cap Mandates / Active Strategies

EAFE Small-Cap Equity:

- *Note: NEPC combines the International Developed Markets (EAFE) and the International Developed Markets-Small-Cap (EAFE-SC) sub-classes in its reports. Consequently tracking error and risk analysis reflects the combined sub-classes.*

- Relative performance of EAFE-SC markets were challenged in 2014. They trailed their larger-cap counterparts throughout 2014, ending the year with a negative return. This flux affected greatly the active mandates of the EAFE-SC asset sub-class. Signs of strength in international developed markets in early 2015 have led to a rebound, and some relative outperformance versus the U.S. equity markets.

- ***DFA*** employs a strategy based on rigorous empirical and academic research, with the goal of adding value over the long-term. Quantitative and qualitative screens are used in tandem to provide a consistent focus on relevant dimensions of expected returns while minimizing unnecessary turnover. DFA has historically been a strong performer, but faced headwinds in 2014 resulting in underperformance.

- ***Franklin Templeton (FT)*** believes a concentrated, yet diversified portfolio of high-quality companies with sustainable business models has the potential to produce above-average risk-adjusted returns over the longer term. They seek companies that have a clear competitive advantage, strong balance sheets and free cash flow, and are attractively priced based on rigorous valuation analysis. Despite underperforming the benchmark over a one year period, FT has provided excess returns of 130 bps over the past three years.

- .***AQR*** believes market inefficiencies can be exploited through a diversified and disciplined approach. By combining the factor characteristics of value and momentum, they seek to uncover stocks that are attractively priced with a near-term catalyst that will drive returns. AQR has delivered excess returns of 25 bps over the past year

Non-U.S. Equity Category – Developed Small-Cap Performance as of 2/27/15

	Net Returns (%)							Excess Returns (basis points)						
	3 Mths	YTD	1 Year	3 Years	5 Years	10 Years	Inception	3 Mths	YTD	1 Year	3 Years	5 Years	10 Years	Inception
INT'L DEVELOPED SMALL CAP EQUITY														
AQR Capital	4.79	5.32	-2.18	---	---	---	11.60	-129	-135	25	---	---	---	82
Blackrock EAFE SC: SF (Passive)	6.08	6.66	-2.16	11.17	---	---	12.34	-1	0	26	-15	---	---	-15
DFA: Santa Monica (SC Active)	4.22	5.36	-6.74	10.07	8.53	---	5.69	-186	-130	-431	-124	-232	---	-39
Franklin Templeton: San Mateo (SC Active)	7.78	7.01	-6.15	12.61	---	---	8.42	170	35	-372	130	---	---	157
MSCI EAFE Small Cap	6.08	6.66	-2.42	11.31	10.85	6.42	---							
Total Int'l SC Equity														

Non-U.S. Equity Category – EAFE Small-Cap Mandates / Active Strategies

Non- U.S Developed Small Cap Equity

DFA

DFA attempts to capture excess returns by providing reliable exposure to style and size risk factors. DFA's research has shown that the value style, as defined by book-to-market ratio, and small market capitalization are risk factors that explain a large proportion of performance over long periods of time. DFA structures the portfolio to target these risk factors which should deliver higher expected returns than the market over the long term.

($MM)	% Total Equity	% non - US Equity	Benchmark	Excess Return (bps)		
				1 year	3 year	5 year
211.0	1.1%	3.0%	MSCI EAFE Small Cap	-431	-124	-231

Franklin Templeton

FTI's investment philosophy is based on a belief that companies with sustainable competitive advantages, which are able to generate cash flows, strong return on investment and have low downside risk, can create shareholder value and deliver superior risk-adjusted returns over a full market cycle. By conducting disciplined, fundamental bottom-up research, Franklin Global Small Cap Team can identify companies whose potential has not been fully recognized by the market.

($MM)	% Total Equity	% non - US Equity	Benchmark	Excess Return (bps)		
				1 year	3 year	5 year
397.0	2.1%	5.6%	MSCI EAFE Small Cap	-372	130	n/a

AQR

AQR's investment philosophy is based on the fundamental concepts of value and momentum. They believe that pursuing the philosophy of over weighting cheap securities which are showing a positive outlook while simultaneously under weighting expensive securities with a deteriorating outlook across many markets will continue to work over the long term. AQR's believes that applying this valuation and momentum philosophy across a large number of securities, minimizing transaction costs, and incorporating disciplined risk-control will lead to attractive long-term results.

($MM)	% Total Equity	% non - US Equity	Benchmark	Excess Return (bps)		
				1 year	3 year	5 year
176.9	0.9%	2.5%	MSCI EAFE Small Cap	25	n/a	n/a

Non-U.S. Equity Asset Category Review
Emerging Markets Mandates

Non-U.S. Equity Category – Emerging Markets Mandates / Active Strategies

Emerging Markets Equity:

- Although the emerging markets for equities declined over the course of 2014, thus trailing the global developed markets, the Emerging Markets Equity sub-class performed well in terms of relative return, declining a mere -0.9% versus -2.2% for the MSCI Emerging Markets Index. This is attributed to the robust performance of the William Blair and LSV active strategies. These, and the Eaton Vance active strategy have each added excess return since their addition to the ASRS Total Fund.

- The combination of these active strategies and a meaningful passive component has resulted in favorable risk/return characteristics, supplemented by low realtive tracking error.

- ***William Blair (WB),*** who utilizes a bottom-up research process to select stocks of well-managed, quality growth companies which are expected to maintain superior growth and profitability. In addition to the fundamental analysis associated with security selection, WB views the economic strength of developing economies and industries as critical inputs to the portfolio construction process. WB has added 298 bps and 461 bps of excess return over the last one and three years respectively.

- ***Eaton Vance (EV)***, a quantitative manager who employs a rules based strategy, attempts to add excess return through the identification of mispriced securities and systematic rebalancing. Despite a challenging year in 2014, EV has delivered positive excess return of 81 bps over the prior three years.

- **LSV** employs a quantitative technique to select undervalued stocks with high near-term appreciation potential. The competitive strength of the strategy is that it avoids introducing any judgmental biases and behavioral weaknesses into the process that often influence investment decisions. LSV has generated positive excess returns of 120 bps and 42 bps over the past one and three years respectively.

Emerging Markets Equity – Performance as of 12/31/2014

Arizona State Retirement System

International Emerging Markets Equity Performance Summary

	Market Value ($)	% of Portfolio	3 Mo (%)	Rank	6 Mo (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Return (%)	Since
Total International Emerging Markets Equity	**1,862,249,364**	**5.4**	**-4.8**	**64**	**-7.4**	**58**	**-0.9**	**51**	**5.8**	**46**	**--**	**--**	**--**	**--**	**0.4**	**Oct-10**
MSCI Emerging Markets			*-4.5*	*60*	*-7.8*	*66*	*-2.2*	*62*	*4.3*	*69*	*2.0*	*67*	*8.7*	*70*	*-0.1*	*Oct-10*
Over/Under			-0.3		0.4		1.3		1.5						0.5	
eA Emg Mkts Equity Net Median			*-3.9*		*-6.9*		*-0.8*		*5.6*		*3.5*		*9.7*		*1.0*	*Oct-10*
Active Emerging Markets Equity																
Eaton Vance	465,690,277	1.4	-8.5	95	-10.5	88	-4.3	78	5.0	60	--	--	--	--	0.0	Dec-10
MSCI Emerging Markets			*-4.5*	*60*	*-7.8*	*66*	*-2.2*	*62*	*4.3*	*69*	*2.0*	*67*	*8.7*	*70*	*-0.1*	*Dec-10*
Over/Under			-4.0		-2.7		-2.1		0.7						0.1	
eA Emg Mkts Equity Net Median			*-3.9*		*-6.9*		*-0.8*		*5.6*		*3.5*		*9.7*		*0.9*	*Dec-10*
LSV Emerging Market	291,832,376	0.9	-4.7	64	-8.1	69	-0.3	44	6.4	41	--	--	--	--	1.1	Dec-10
MSCI Emerging Markets			*-4.5*	*60*	*-7.8*	*66*	*-2.2*	*62*	*4.3*	*69*	*2.0*	*67*	*8.7*	*70*	*-0.1*	*Dec-10*
Over/Under			-0.2		-0.3		1.9		2.1						1.2	
eA Emg Mkts Equity Net Median			*-3.9*		*-6.9*		*-0.8*		*5.6*		*3.5*		*9.7*		*0.9*	*Dec-10*
William Blair	460,687,148	1.3	-1.1	9	-2.6	9	4.9	15	9.4	12	--	--	--	--	2.6	Nov-10
MSCI Emerging Markets			*-4.5*	*60*	*-7.8*	*66*	*-2.2*	*62*	*4.3*	*69*	*2.0*	*67*	*8.7*	*70*	*-0.8*	*Nov-10*
Over/Under			3.4		5.2		7.1		5.1						3.4	
eA Emg Mkts Equity Net Median			*-3.9*		*-6.9*		*-0.8*		*5.6*		*3.5*		*9.7*		*0.4*	*Nov-10*
Passive Emerging Markets Equity																
BlackRock Emerging Markets Equity Index	644,039,564	1.9	-4.5	61	-7.9	67	-2.4	65	3.8	73	--	--	--	--	-0.5	Oct-10
MSCI Emerging Markets			*-4.5*	*60*	*-7.8*	*66*	*-2.2*	*62*	*4.3*	*69*	*2.0*	*67*	*8.7*	*70*	*-0.1*	*Oct-10*
Over/Under			0.0		-0.1		-0.2		-0.5						-0.4	
eA Emg Mkts Equity Net Median			*-3.9*		*-6.9*		*-0.8*		*5.6*		*3.5*		*9.7*		*1.0*	*Oct-10*

Non-U.S. Equity Category – Emerging Markets Performance as of 2/2/15

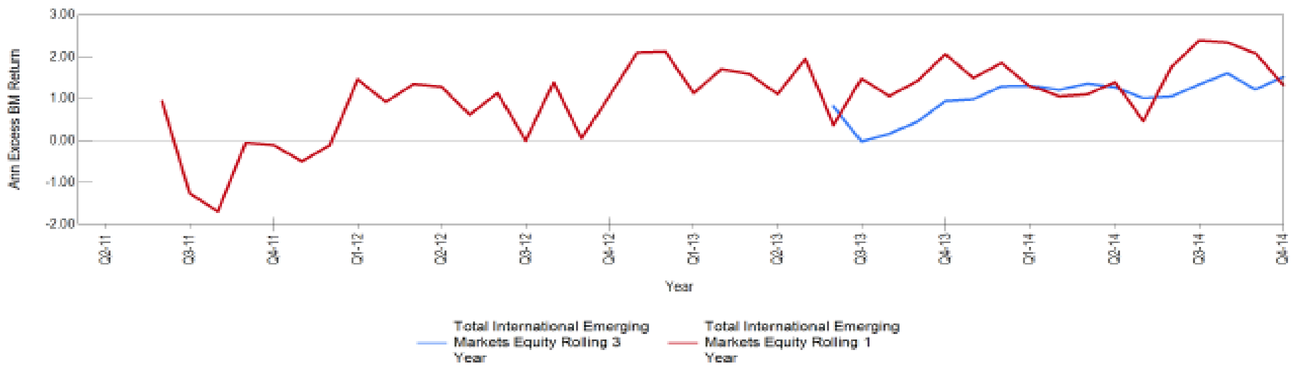
	Net Returns (%)							Excess Returns (basis points)						
	3 Mths	YTD	1 Year	3 Years	5 Years	10 Years	Inception	3 Mths	YTD	1 Year	3 Years	5 Years	10 Years	Inception
INT'L EMERGING MARKETS EQUITY														
Blackrock EM: SF (Passive)	-1.09	3.65	4.87	-0.53	---	---	0.31	-3	-7	-14	-41	---	---	-43
William Blair: Chicago (EM Active)	-1.15	2.07	7.99	4.49	---	---	2.99	-8	-165	298	461	---	---	290
LSV: Chicago (EM Active)	-2.66	1.65	6.22	0.29	---	---	1.42	-160	-206	120	42	---	---	69
Eaton Vance: Boston (EM Active)	-3.54	2.63	0.19	0.69	---	---	0.59	-248	-108	-482	81	---	---	-13
MSCI Emerging Markets	-1.07	3.71	5.01	-0.12	---	---	---							
Total EM Equity														

Non-U.S. Equity Category – Emerging Markets Mandates

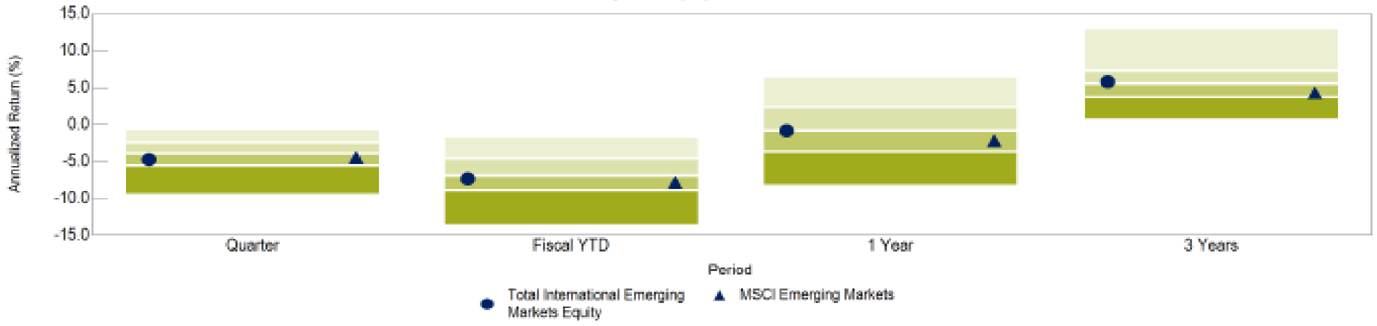
Arizona State Retirement System

Asset Class Analysis - Total International Emerging Markets Equity

Rolling Annual Excess Benchmark Return



eA Emg Mkts Equity Net Accounts

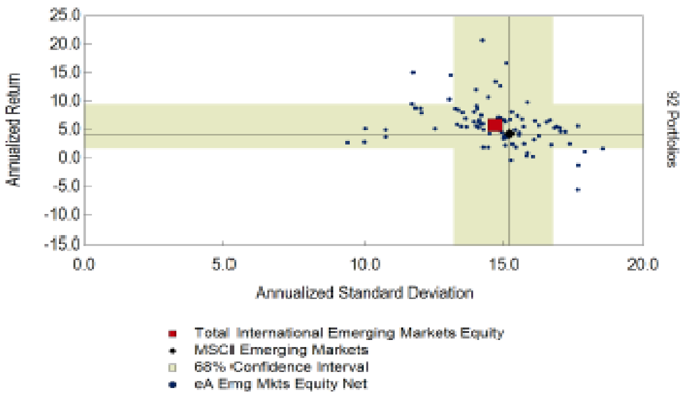


Non-U.S. Equity Category – Emerging Markets Mandates

Arizona State Retirement System

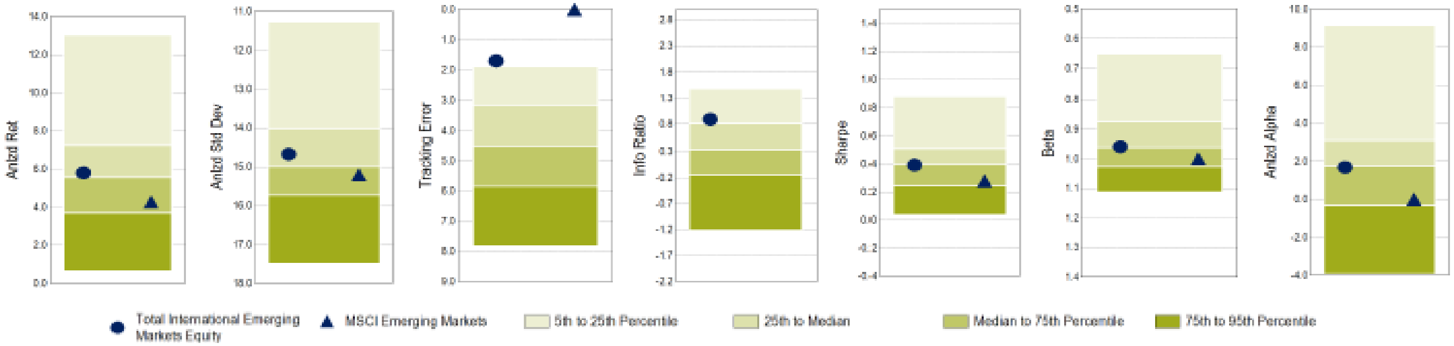
Asset Class Analysis - Total International Emerging Markets Equity

3 Years Ending December 31, 2014



3 Year Style Map

*Style map is returns based.



Non-U.S. Equity Category – Emerging Markets Mandates / Active Strategies

<table>
<tr><th colspan="9">Non- U.S Emerging Market Equity</th></tr>
<tr><td rowspan="4">Eaton Vance</td><td colspan="8">The Eaton Vance - Parametric Emerging Markets Equity strategy utilizes a structured, rules-based investment approach that seeks to exploit the unique characteristics of the emerging market equity asset class to achieve enhanced returns based on their research indicating that the systematic movement of developing countries is the dominant factor in explaining security returns, supporting country selection, as opposed to security selection, as the most important aspect in capturing returns in emerging markets.</td></tr>
<tr><td rowspan="2">($MM)</td><td rowspan="2">% Total Equity</td><td rowspan="2">% non - US Equity</td><td rowspan="2" colspan="2">Benchmark</td><td colspan="3">Excess Return (bps)</td></tr>
<tr><td>1 year</td><td>3 year</td><td>5 year</td></tr>
<tr><td>480.4</td><td>2.6%</td><td>6.7%</td><td colspan="2">MCSI Emerging Markets</td><td>-482</td><td>81</td><td>n/a</td></tr>
<tr><td rowspan="4">LSV</td><td colspan="8">The Emerging Markets Value Equity strategy’s primary emphasis is the use of quantitative techniques to select individual securities in what would be considered a bottom-up approach. A risk control discipline limits the over- or under-exposure of the portfolio to industry concentrations. Value factors and security selection dominate sector/industry factors as drivers of performance.</td></tr>
<tr><td rowspan="2">($MM)</td><td rowspan="2">% Total Equity</td><td rowspan="2">% non - US Equity</td><td rowspan="2" colspan="2">Benchmark</td><td colspan="3">Excess Return (bps)</td></tr>
<tr><td>1 year</td><td>3 year</td><td>5 year</td></tr>
<tr><td>297.6</td><td>1.6%</td><td>4.2%</td><td colspan="2">MCSI Emerging Markets</td><td>120</td><td>42</td><td>n/a</td></tr>
<tr><td rowspan="4">William Blair</td><td colspan="8">William Blair’s philosophy is based on the belief that the market is inefficient with respect to distinguishing between an average growth company and a quality growth company. In their view, a quality growth company is one that can achieve a higher growth rate for a longer period of time than the market expects, leading to superior stock performance. Characteristics of the business franchises for these companies commonly include experienced and motivated management teams, unique business models, and attractive financial characteristics.</td></tr>
<tr><td rowspan="2">($MM)</td><td rowspan="2">% Total Equity</td><td rowspan="2">% non - US Equity</td><td rowspan="2" colspan="2">Benchmark</td><td colspan="3">Excess Return (bps)</td></tr>
<tr><td>1 year</td><td>3 year</td><td>5 year</td></tr>
<tr><td>471.6</td><td>2.5%</td><td>6.6%</td><td colspan="2">MCSI Emerging Markets</td><td>298</td><td>461</td><td>n/a</td></tr>
</table>

Private Equity Program Review

ASRS Staff Presentation

Karl Polen & Eric Glass

April 20, 2015

Outline

1. Background
   - The Private Equity Program
   - Private Equity Investment Approach
2. Private Equity Performance
3. Portfolio Composition

Private Equity

- ASRS has allocated 8% of total assets (+/- 2%) to private equity as part of its strategic asset allocation
- ASRS began investing in private equity in 2007
- The NAV of PE assets was $ 2296 million on September 30, 2014
  - This is 6.73% of total fund and the NAV is $ 433 million below target funding (retroactively applying the recently adopted 8% target)
- We update pacing plans annually to adjust investment levels to achieve and maintain target funding
- Investment pace for 2015 is $600 million in new commitments, although this will be reevaluated in light of the recent increase in the allocation to 8% from 7%

Investment Philosophy

We believe successful private equity investing hinges on three considerations

- Strategy
- Track Record
- Organizational Dynamics

Strategy

- Academic research provides evidence on the performance of private equity[1]
  - Private Equity buyout funds outperform public markets by about 20% in total value over the life of a fund
  - Venture Capital has underperformed
- A review of the ASRS portfolio leads to conclusions about comparative performance
  - Mid sized buyout funds deliver the best and most consistent returns
  - Firms with specialized expertise in restructuring or an industry sector often do well

[1] Harris, Jenkinson and Kaplan. Private Equity Performance: What Do We Know? The Journal of Finance, October 2014.

Strategy

- ASRS favors
  - Buyout strategies that emphasize organizational transformation instead of mere financial engineering
  - Investments in growing sectors with high demand for capital (energy) or high revenue growth potential (technology, healthcare)
  - Investments in sectors impacted by regulatory change (financial services)
  - Investments with sponsors having specialized expertise in restructuring, bankruptcy and turnaround situations
- ASRS is underweight
  - Venture Capital
  - Europe
  - Emerging Markets

Track Record

- Private equity performance has a fairly high level of dispersion
  - "Top quartile" funds outperform median funds by 5% to 10% depending on vintage
  - It is exceedingly rare for managers to perform persistently in the top quartile, but we do find managers persistently above median
  - ASRS implements private equity to provide diversification by manager, strategy and vintage year
- ASRS utilizes "PME" methods for performance assessment
  - PME (public market equivalent) measurements compare private equity returns to returns in public markets as if you invested in the public markets on the same days and in the same amounts as were invested in the PE fund
  - ASRS has been a leader in this realm, implementing software for PME methods nearly two years before it was commercially available through Bloomberg and other services[2]

[2] For a detailed explanation of PME methods, see this conference presentation http://www.rinfinance.com/agenda/2014/talk/KarlPolen.pdf

Performance Tracking

- In connection with creation of the software for the PME calculations, ASRS has built a performance tracking and reporting system for private assets
- Grosvener remains the official book of the record and the ASRS system works from information downloaded from the Grosvener system
- The ASRS system generates
  - a monthly reporting package
  - a quarterly performance chart pack
  - an internal website with cash flow and performance metrics on each partnership

"Hunter, not hunted"

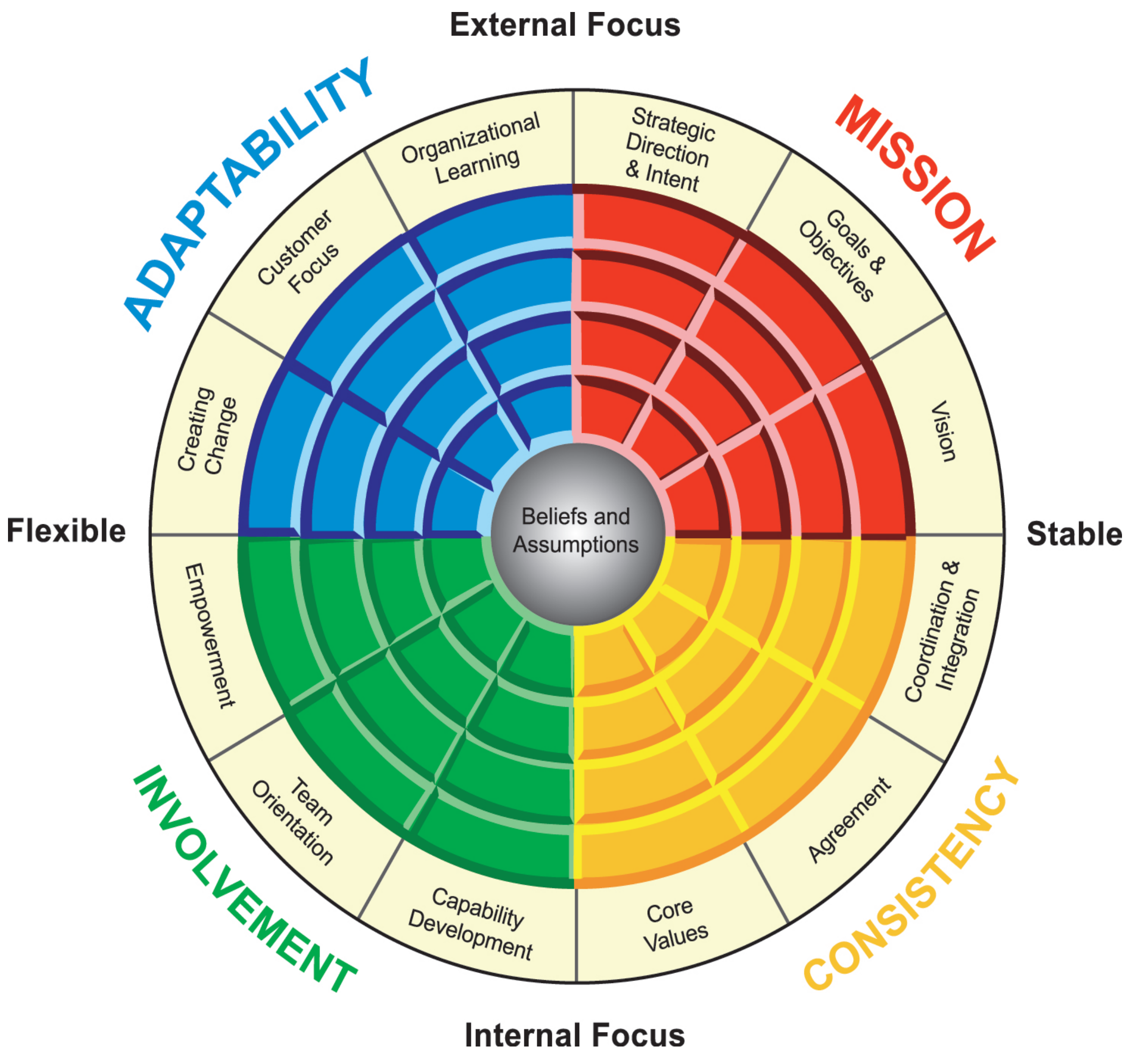
- ASRS uses quantitative screens from the Preqin database and PME methods to discern private equity sponsors with persistent excellent results
- ASRS has established an outbound program to pursue investments with the most highly qualified sponsors

Organizational Dynamics

- Although we place much emphasis on quantitative analysis to discern performance
  - this analysis is not securities analysis
  - the new investor does not participate in the track record deals
  - private equity investing is best thought of as a team hiring decision
- Traditional private equity diligence places emphasis on stability
  - But common sense suggests that the best firms will by dynamic, evolving with changing conditions, weeding out weak performers and promoting high performers
  - Research has found that stability is a negative indicator of performance[3]

[3] Cornelli, Simintzi and Vig. Team Stability and Performance in Private Equity. 2014 Working Paper. http://www.collerinstitute.com/Research/Paper/264

Organization Assessment



- ASRS engaged Denison Consulting to assist in developing skills in organizational assessment
  - Developed interview questions to explore organizational attributes of adaptability, mission, involvement and consistency
  - Ongoing work to explore deeper dive organizational assessment

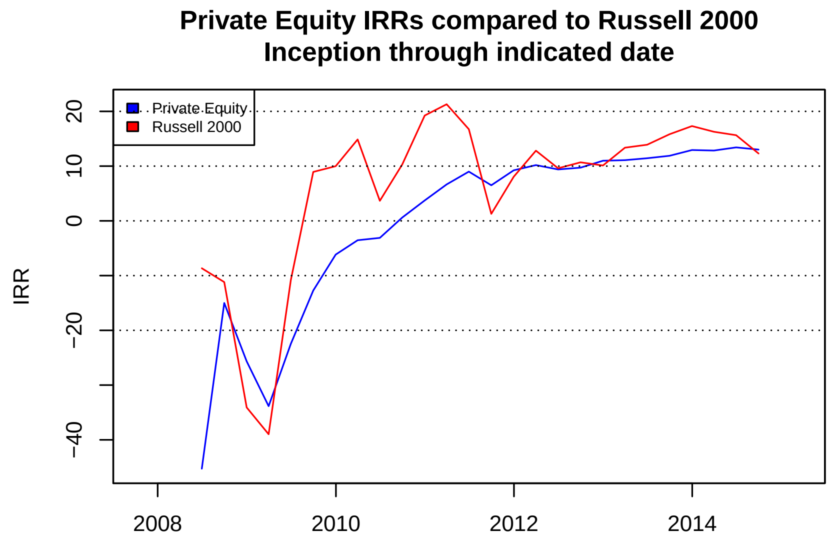
Comparison to Russell 2000 (September 30, 2014)

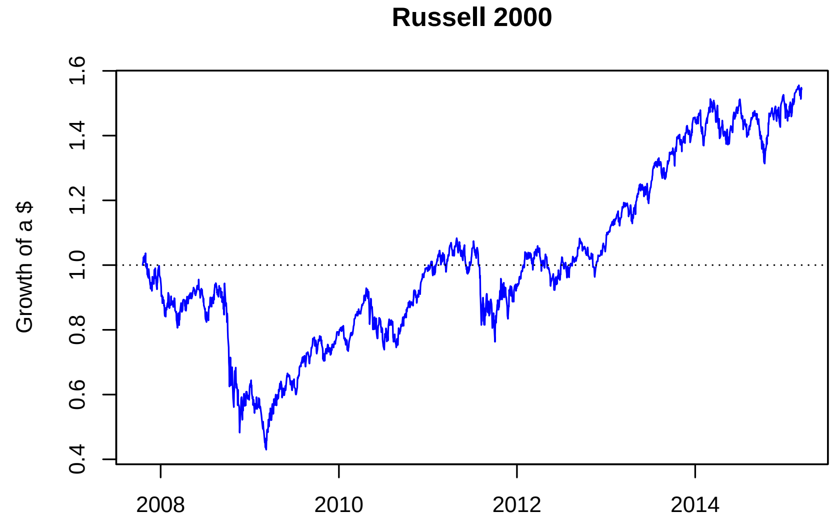
TWRs and IRRs Compared to Russell 2000

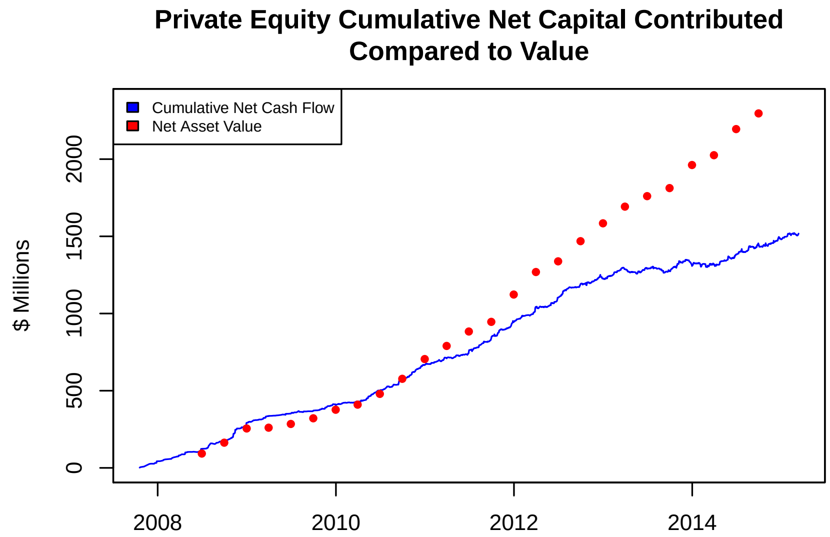
	One Quarter	One Year	Three Years	Five Years	Inception
Private Equity TWR	1.75%	16.75%	16.19%	15.70%	5.29%
Russell 2000 TWR	-7.36%	3.93%	21.26%	14.29%	5.95%
Private Equity IRR	1.75%	16.66%	16.37%	15.75%	13.02%
Russell 2000 IRR	-7.67%	2.33%	18.18%	12.88%	12.30%

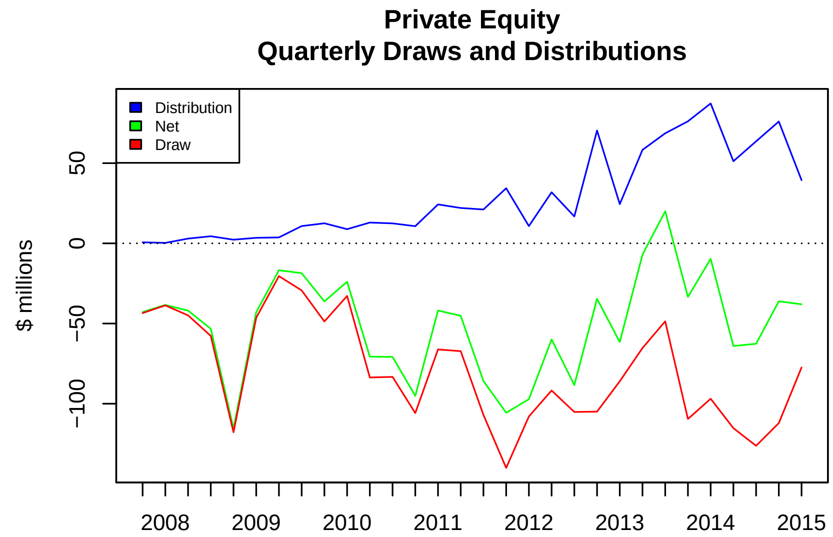
Current and Legacy Portfolios

Fund	R2K PME	Fund IRR	R2K $Mtch IRR	Fund TVPI
Total PE	1.02	13.02%	12.30%	1.39
Total PE Legacy Portfolio	1.02	13.08%	12.52%	1.48
Total PE Current Portfolio	1.02	12.60%	11.02%	1.17


Private Equity IRRs compared to Russell 2000
Inception through indicated date
Private Equity
Russell 2000
IRR
20
10
0
−20
−40
2008
2010
2012
2014


Russell 2000
Growth of a $
1.6
1.4
1.2
1.0
0.8
0.6
0.4
2008
2010
2012
2014


Private Equity Cumulative Net Capital Contributed
Compared to Value
Cumulative Net Cash Flow
Net Asset Value
$ Millions
2000
1500
1000
500
0
2008
2010
2012
2014


Private Equity
Quarterly Draws and Distributions
Distribution
Net
Draw
$ millions
50
0
−50
−100
2008
2009
2010
2011
2012
2013
2014
2015

Performance Compared to Other PE (September 30, 2014)

Private Equity Comparative Performance

	One Quarter	One Year	Three Years	Five Years	Inception
Private Equity TWR	1.75%	16.75%	16.19%	15.70%	5.29%
Russell 2000 TWR	-7.36%	3.93%	21.26%	14.29%	5.95%
Burgiss TWR	0.06%	16.42%	13.84%	13.59%	4.98%
Private Equity IRR	1.75%	16.66%	16.37%	15.75%	13.02%
Russell 2000 IRR	-7.67%	2.33%	18.18%	12.88%	12.30%
Burgiss IRR	0.06%	16.24%	13.95%	13.57%	11.32%

Private Opportunistic Equity (September 30, 2014)

Private Opportunistic Performance

	One Quarter	One Year	Three Years	Five Years	Inception
Private Opportunistic TWR	-1.79%	45.68%	28.17%	NA%	23.71%
Absolute 8 TWR	2.00%	8.00%	8.00%	NA%	8.00%
Private Opportunistic IRR	-1.79%	42.79%	NA%	NA%	31.89%
Absolute 8 IRR	1.96%	8.00%	NA%	NA%	8.00%

- The NAV in private opportunistic equity assets was $372 million as of September 30, 2014
- While we customarily compare opportunistic investments to an absolute return benchmark
    - The inception to date dollar matched IRR for an investment in Russell 2000 would have been 12.73%

Performance Outlook

- Performance above is reported for periods ending September 30, 2014
  - As of the date of preparation of this report, 10 out of 80 funds have year end results in the Grosvener back office system
    - among those ten, one is up in performance, three are down and six are flat (IRR changed less than one percent)
- Energy price changes are expected to impact performance in Q4 numbers
  - Price impacts will be offset by hedging gains since most of our partners hedge two to three years of production
  - 15% of the portfolio in the ground is in energy and the net impact of energy exposure is expected to be negative
  - Only one of the funds with reported year end results is an energy fund
    - Blackstone Energy Partners reports an inception IRR of 39.8% for Q4 2014 compared to 54.2% for Q3 2014

ASRS Portfolio by Vintage

ASRS Portfolio Commitments by Vintage

	Commitment $	# of Funds	Commitment/Fund
2006	50	1	50
2007	483	15	32
2008	688	15	49
2009	386	8	48
2010	370	8	44
2011	659	12	55
2012	325	5	58
2013	550	10	61
2014	620	11	52
	4,131	85	49

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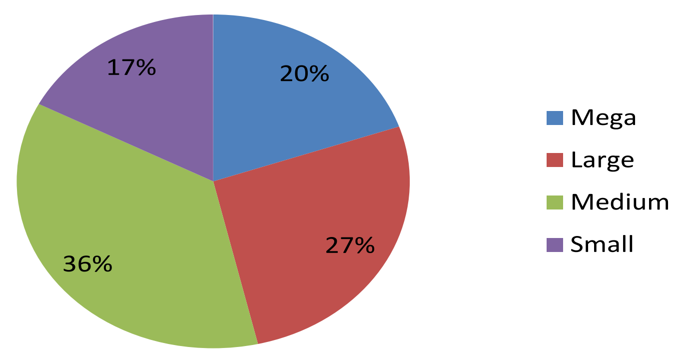
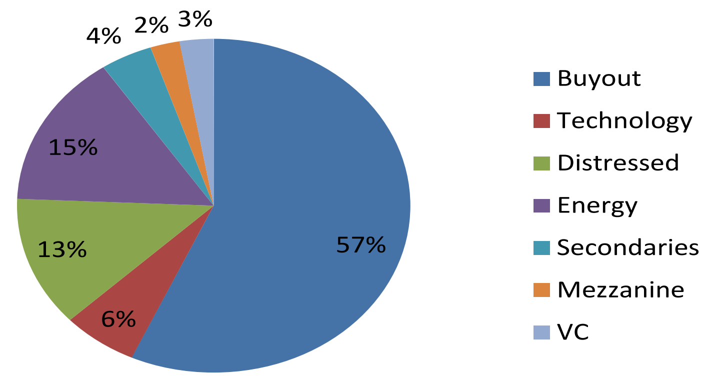
ASRS Commitments by Style

ASRS Portfolio Commitments by Style

	Commitment $
Total Mega Buyout	462
Total Large Buyout	626
Total Medium Buyout	853
Total Small Buyout	407
Total Buyout	2,348
Total Technology	255
Total Distressed	522
Total Energy	615
Total Secondaries	176
Total Mezzanine	100
Total Venture Capital	115
Total	4,131





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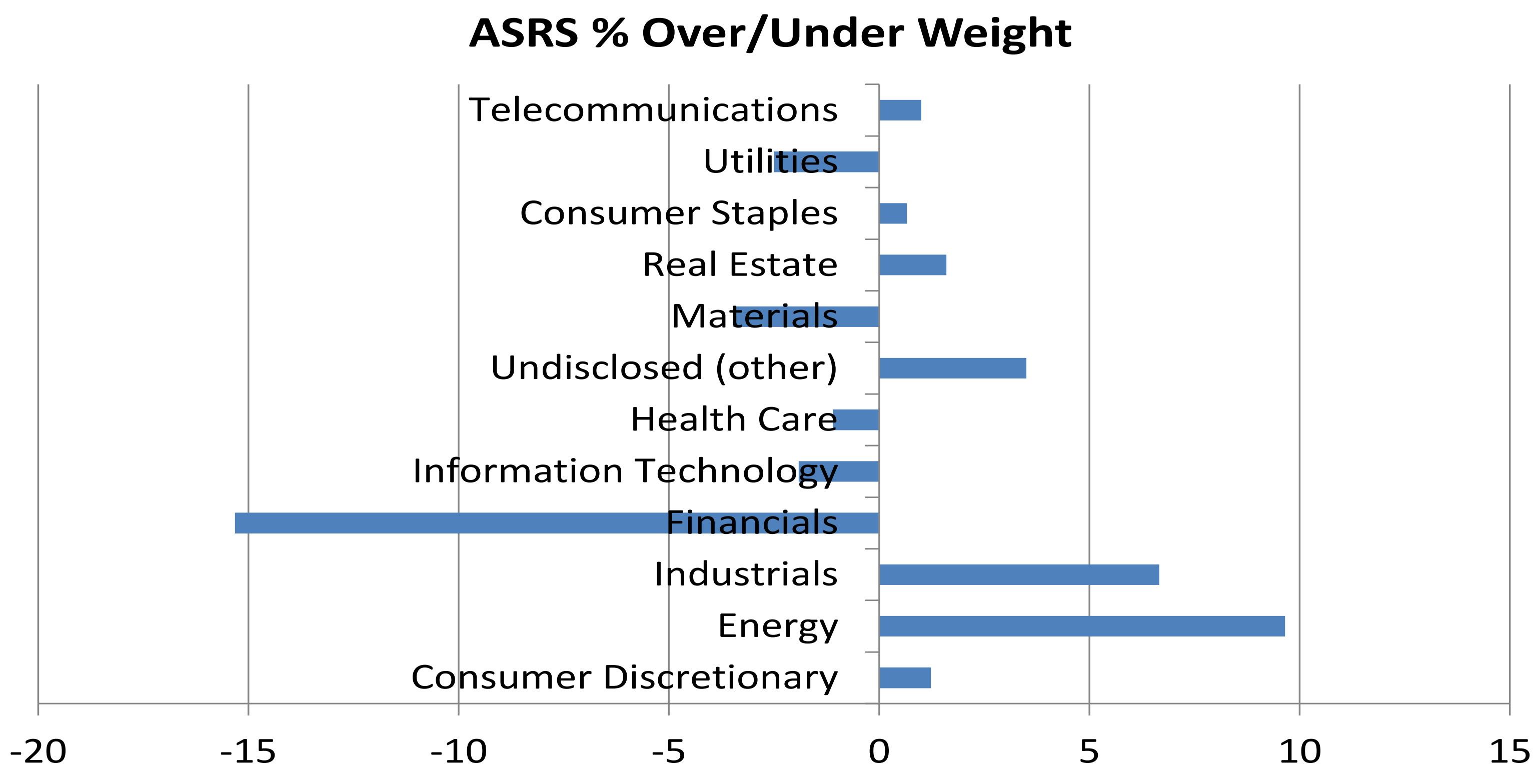
ASRS PE Industry Sectors Compared to R2K

ASRS Portfolio Commitments vs R2K



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Agenda Item #6

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 R. Dokes, Chief Investment Officer

DATE: April 13, 2015

RE: **Agenda Item #6**: Presentation, Discussion and Appropriate Action Regarding ASRS Investment Policy Statement (IPS)

Purpose

To present, discuss, and take appropriate action regarding the ASRS Investment Policy Statement in order to:

1. Meet the annual review requirement of the Board Governance Policy Handbook.
2. Document the 'Cash Assetization Program' and the 'Transition Management Program'.

Recommendations

Move that the IC recommend to the full Board the approval of proposed changes to the ASRS Investment Policy Statement as denoted in Exhibit 1.

Background

The ASRS has developed numerous investment documents which individually address specific aspects of its investment management program. These include the ASRS Investment Goals & Objectives, Investment Beliefs, Strategic Asset Allocation Policy (SAAP), Strategic Investment Policies (SIP), and the Board Governance Policy Handbook.

The Investment Policy Statement aggregates the aforementioned documents into a single macro-level investment document which capture key components of the ASRS investment program.

As the result of review and discussions between the Director and CIO, revisions to the IPS were made. Revisions are marked in red in Exhibit 1 and reflect the development and implementation of the ASRS Cash Management Program, and provide greater clarity of verbiage in the investment cash considerations section.

Attachments:

- ASRS Investment Policy Statement – Exhibit 1 (Proposed)
- ASRS Investment Policy Statement – Exhibit 2 (Existing)

Exhibit 1 - Proposed

Investment Policy Statement (IPS)

BOARD APPROVED: 02/18/2011
REVISED: 11/16/2012
REVISED: 08/23/2013

Arizona State Retirement System

3300 N CENTRAL AVENUE
PHOENIX, AZ 85012

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PURPOSE

The purpose of this Investment Policy Statement (IPS) is to set forth the investment, beliefs, goals & objectives, constraints and establish the guidelines for the development and implementation of the ASRS strategic and tactical asset allocation policy.

The ASRS recognizes that a well-articulated investment policy is important to the long-term success of achieving the ASRS investment objectives. As such, the ASRS has developed this IPS with the following goals in mind:

- To clearly and explicitly establish the objectives and parameters that govern the investments of the ASRS' assets;
- To establish a target asset allocation that is long-term in nature but dynamic to allow the ASRS to take advantage of market opportunities which is expected to achieve its investment rate of return objectives;
- To help protect the financial health of the ASRS through the implementation of this policy statement;
- To establish a framework for monitoring investment activity, and promote effective communication between the Board, Staff, and other involved parties.

INVESTMENT GOALS & OBJECTIVES

The ASRS has established a set of Investment Goals and Objectives that describe the macro-level expected outcomes that the ASRS seeks to achieve.

GOALS:

1. **Maximizes Fund Rates of Return for Acceptable Levels of Fund Risk.**

   This goal has an asset oriented focus. Here, the returns generated or earned by the investment Fund should be considered in conjunction with the risk or volatility that the Fund will support, where risk is essentially the possibility of a change in the value of the ASRS Fund attributed to changes in economic conditions, interest rates, dividend policy and other variables in any given year.

2. **Achieves 75th Percentile Rates of Return Compared to Peers.**

   This goal compares the performance of ASRS' aggregate investment portfolio to other public pension funds with over $1 billion of assets under management. Though ASRS' asset allocation policy will differ from other public pension funds given its risk return profile and investment beliefs, it is common practice to compare returns between comparable public pension funds.

3. **Achieves Long-term Fund Rates of Return Equal to or Greater than the Actuarial Assumed Interest Rate.**

   This goal has a liability oriented focus. Here, the returns generated or earned by the investment Fund should be considered in conjunction with the actuarial assumed interest rate, where this interest rate is essentially an estimate of the long-term average of the combination of expected inflation rates and expected real rates of return. The actuarial assumed interest rate is also the discount rate used to calculate the present value of liabilities.

4. **Achieves Long-term Economic and Actuarial Funded Statuses of 100 percent.**

   This goal has a funded-status oriented focus. Here, the structuring of the investment Fund should be considered in conjunction with the level, volatility, and direction of the economic and actuarial funded status of the Fund. Although both actuarial and economic funded status levels are valuable for discussion and decision-making, economic-funded status is more reflective of financial condition and long-term policy implications. Economic-funded status is defined as the actual or market value of investments as a percentage of the actual or market value of liabilities and excludes such accounting constructs as smoothing and amortization.

5. **Mitigates Contribution Rate Volatility.**

   This goal has a contribution-rate orientation focus. Here, the structuring of the investment Fund should be considered in conjunction with the level, volatility, and direction of the contribution rates that will need to be paid by both employees and employers in the Fund. In general, lower levels and volatility in contribution rates are preferred.

Collectively, the above goals[1] incorporate the following elements that are important for a fund's comprehensive investment structure:

1. Complementary use of <u>absolute</u> and <u>relative</u> rates-of-return perspectives.

2. Complementary use of <u>asset-only</u> and <u>asset-liability</u> perspectives.

3. Complementary use of <u>economic</u> and <u>actuarial</u> perspectives.

OBJECTIVES:

Total Fund Performance

1. Achieve a 20-year rolling annual total fund net rate of return equal to or greater than the actuarial assumed interest rate.

2. Achieve 1-year and 3-year rolling annual total fund net rates of return equal to or greater than the return of the ASRS asset allocation policy (SAAP) Benchmark.

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[1] Though important, Safety of Principal is not denoted as a separate goal, given its incorporation in other goals and the general acceptability of Modern Portfolio Theory. Liquidity of the Fund is also not denoted separately as it is a normal investment operating function and acts more as a constraint than an investment goal.

Asset Class Performance

3. Achieve 1-year and 3-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.

Cash Flow Performance

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

Refer to the ASRS Strategic Plan.

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 IMD's resources can be enhanced.

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.

Refer to IMD Investment Beliefs.

INVESTMENT ~~CONSTRAINTS~~CONSIDERATIONS

1. **Arizona State Statutes**
ASRS investments may be limited by Arizona Revised Statutes. To ensure compliance, checks and balances have been established which both reside within and external to the ASRS Investment Management Division. Reporting processes are implemented and, as appropriate, disseminated to the Director, Board Committees, and Board. ~~The ASRS monitors its investment compliance to applicable investment Arizona statutes and regulations. Checks and balances have been established which both reside within and external to the ASRS Investment Management Division. Reporting protocols are implemented and, as appropriate, disseminated to the Director and the Board.~~

2. **Time Horizon**
The ASRS is managed on a going-concern basis. The following timeframes are utilized for portfolio construction decisions and contribution rate determination:

Portfolio Construction Decisions:
*Strategic asset allocations focus on medium term (3-5 years) capital market expectations, subject to the constraint of meeting the long-term assumed actuarial rate based on long-term (30 year) Capital Market Assumptions.
*Tactical deviation decisions are based on shorter term (less than 3-5years) capital market expectations.

Contribution Rate Determination:
*Liabilities are discounted based upon long-term (30 year) capital market expectations.
*Contribution rates are set based upon longer-term (currently 10 year) investment valuation smoothing periods, and longer-term (currently 30 years 'closed') deficit/surplus amortization periods.

The impact on contribution rates of any realized short-term volatility of returns will be mitigated through actuarial time-series diversification (smoothing & amortizing), rather than by lowering short-term expected return volatility at the expense of lower expected returns (and therefore higher aggregate contribution rates).

Contribution rates are the *realized cash flow* financial outputs, and based upon the above, they are relatively insensitive to shorter-term portfolio volatilities. This enables the ASRS to combine the traditional cross-sectional diversification benefits of a large employee pooled plan with time-series diversification benefits of a multi-generational plan, resulting in higher expected short-term return volatility which enables higher expected long-term returns.

~~The ASRS is managed on an on-going-concern basis with primary emphasis placed on long-term capital market expectations (20-30+ years), which are evaluated in the context of relevant ranges of probable investment return outcomes.~~

3. Liquidity and Cash-Flow

The ASRS maintains a long-term investment horizon; however, managing short-term liquidity and cash-flow is paramount to ensure that pension obligations, health insurance, member refunds, administrative payments and other cash-flow requirements are made. This requires Investment Management and Financial Services Divisions to anticipate internal and external cash-flow needs, and to efficiently manage transactions in order to mitigate the costs of ensuring adequate liquidity.

~~The ASRS maintains a long-term investment horizon; however, managing liquidity and cash flow is paramount to ensure that pension obligations, health insurance, member refunds, administrative payments and other cash flow requirements are made. This requires Investment Management and Financial Services Divisions to anticipate internal and external cash flow needs in order to preclude the use of alternative liquidity vehicles.~~

RISK MANAGEMENT, MONITORING AND REPORTING

The ASRS applies a risk management framework for identifying, managing and reporting on ASRS Investments. These include, but are not limited to, operational risk (e.g., internal and external portfolio(s) guideline compliance, cash management, securities lending, IMD business continuity, etc.) and investment risk (e.g., deviations from target allocation, manager oversight, performance measurement/attribution, ability to achieve investment objectives, etc.).

In conjunction with the agency risk management program, appropriate steps are taken to provide reasonable assurance to Executive Management and the Board that investment management programs are designed, implemented and maintained to achieve investment goals and objectives as referenced in the ASRS Strategic Plan.

Responsibilities reside with the ASRS investment staff, custody bank, general consultant, project consultants, investment managers, and ASRS Internal Audit.

Reporting periodicity and the level of investment information dissemination vary depending upon target audience. Daily report generation and investment monitoring reside with the custody bank and IMD/Internal Audit; Quarterly/Annual aggregate, portfolio positions, and asset class performance are reported to the IC/Board.

The use of leverage is defined in the applicable ASRS investment documentation. For separate account public market investments (internally or externally managed portfolios), authorization to permit or not permit leverage is explicitly denoted in the managers' Letter of Direction and Clarification; monitoring is conducted by IMD and ASRS consultants. For commingled public and private markets investments, authorization to permit or not permit leverage is explicitly denoted in the managers' contracts or partner agreements; monitoring is conducted by the designated partnership agreement external auditor and, as applicable, reviewed at limited partnership advisory meetings.

The use of derivatives is defined in the applicable ASRS investment documentation. For separate account public market investments (internally or externally managed portfolios), authorization to permit or not permit derivatives is explicitly denoted in the managers' Letter of Direction and Clarification; monitoring is conducted by IMD and ASRS consultants. For commingled public and private markets investments, authorization to permit or not permit derivatives is explicitly denoted in the managers' contracts or partner agreements; monitoring is conducting by the designated partnership agreement external auditor and, as applicable, reviewed at limited partnership advisory meetings.

The management of currency exposure is defined in the applicable ASRS investment documentation. For separate account public market investments (internally or externally managed portfolios), authorization to permit or not permit currency hedging is explicitly denoted in the managers' Letter of Direction and Clarification; monitoring is conducted by IMD and ASRS consultants. For commingled public and private markets investments, authorization to permit or not permit currency hedging is explicitly denoted in the managers' contracts or partner agreements; monitoring is conducting by the designated partnership agreement external auditor and, as applicable, reviewed at limited partnership advisory meetings.

ASSET ALLOCATION

As part of strategic asset allocation development, the ASRS asset mix will reflect investments in strategic and tactical asset classes and strategies whose collective risk/return profile are anticipated to achieve its long-term investment rate of return goals and objectives.

The ASRS employs a dynamic strategic asset allocation study approach whose initiation and periodicity will primarily be a function of market dynamics. The strategic asset allocation is used to determine the long-term policy asset weights. Investment opportunities and asset classes are constantly evolving and developing, such that they may become attractive and suitable for institutional investment portfolios before the next scheduled policy review. Therefore, asset allocation reviews in addition to periodic studies are conducted as warranted or triennially, whichever is shorter.

The strategic asset allocation study may include, but not be limited to, the following:

- Discussion and analysis of existing and evolving asset classes and investment strategies.
- Evaluation of expected sources of investment returns, risk and diversification (quantitatively/qualitatively).
- Reviewing investment industry developments (academic and pragmatic).
- Utilization of quantitative tools (e.g., efficient frontier mean-variance optimization, risk budgeting) and evaluation of multiple scenarios.
- Reviewing and engaging discussions regarding capital market assumptions.
- Reviewing asset allocation policies from other public and non-public entities.

Refer to the ASRS Strategic Asset Allocation Policy (SAAP) Schematic

REBALANCING

The ASRS has established and maintains an asset class rebalancing policy(s) which encompasses the guidelines and processes for identifying and determining potential courses of action precipitated by the ASRS asset class over/under weight deviations relative to its broad strategic asset allocation policy (SAAP), ASRS cash-flow needs and/or to take tactical positions between and within SAAP asset classes.

The frequency and magnitude of portfolio rebalancing is determined by the Investment Rebalancing Committee consisting of the Director, CIO, and IMD Asset Class Portfolio Managers. The CIO reports asset class rebalancing activities to the Director and, through the Director, to the Investment Committee and full Board.

Refer to the Strategic Investment Policy – Rebalancing

VOTING OF PORTFOLIO PROXIES

The ASRS votes its ownership interest with an objective of maximizing the present value of its investment. Proxy voting for the ASRS internally-managed equity (“E”) portfolios and those assigned to external U.S. and non-U.S. equity managers shall not be influenced or directed by political or social prerogatives that may diminish or impair the economic value of an investment.

The ASRS currently engages Institutional Shareholder Services (ISS) and employs its research and voting guidelines for the voting of proxies for the “E” portfolios. This process is not applicable to ASRS externally-managed equity portfolios.

The ASRS external equity managers use their discretion to vote their portfolio proxies; voting records are monitored for consistency with both the individual external manager’s voting policy and the ISS proxy voting policy. External equity manager voting records found to be inconsistent with or different from the ISS proxy voting policy are researched and documented. IMD retains the right to direct external equity managers’ voting on any issue(s) if doing so is deemed beneficial to the Fund.

SECURITIES LITIGATION

The ASRS monitors and participates in securities litigations when appropriate to protect the ASRS interests. From time to time, class action lawsuits are brought against companies, their directors, and/or their officers, as well as third parties such as the companies’ independent public accountants, for alleged violations of federal and state securities laws relating to various disclosure obligations and breaches of fiduciary or other duties. As a shareholder or bondholder, the ASRS may join or initiate a securities class action or pursue a private action when securities fraud and other acts of wrongdoing have taken place.

Monitoring and reporting is carried out by the ASRS contracted outside counsel who may make recommendations to the ASRS and depending on the merits of the recommendation are discussed by the Securities Litigations Oversight Committee (SLOC). In the event the SLOC recommends the ASRS consider pursuing lead plaintiff or private action, Board approval is required before such action can be taken.

Refer to the Strategic Investment Policy – Securities Litigation

SECURITIES LENDING

The ASRS is allowed to lend securities with either the custody bank or tri-party in a separate account or commingled security lending structure. The CIO and Director ~~IMD~~ will determine the ASRS securities lending program parameters (risk profile, aggregate lending balance, types of securities on loan, collateral requirements, etc.). The ASRS securities lending program primarily focuses on identifying loan intrinsic value.

MANAGEMENT OF INVESTMENT MANAGEMENT FEES (COST)

The ASRS strives to maintain an efficient and relatively low aggregate investment management fee structure. The ASRS internally-manage public market portfolios are managed to provide beta-like market returns with low management fees (approx 1 bps); external public and private portfolios are anticipated to generally provide alpha, take active risk and enable the ASRS the ability to access market capital opportunities which may not be available through ASRS internal investment program.

To the extent possible, the ASRS negotiates and monitors investment fees for external public and private investment managers. For external public equity managers, securities-level transaction(s) cost analyses will be evaluated by IMD staff. Those managers whose transaction costs appear high relative to the market in which they trade or who use soft dollars may be subject to participation to the ASRS commission recapture program.

The ASRS IMD staff will oversee public manager portfolio transitions, e.g., securities from one public manager to another. These transactions may be executed on a security-level basis by either IMD staff or through an intermediary who may possess skills and/or can execute transactions on a more effective cost basis. Pre- and post-transaction cost analyses (commission, trading costs, market impact, etc.) are evaluated by the IMD staff.

ROLES & RESPONSIBILITIES

The ASRS Board governance structure provides the Investment Committee (IC) with general investment oversight responsibilities. In addition, the Directors' Asset Class Committees implement Board policies and provide detail oversight of the ASRS investments. Specific duties of the IC and Asset Class Committees are outlined in the ASRS Board Governance Policy Handbook.

Refer to the ASRS Board Governance Policy Handbook

Agenda Item #7

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 R. Dokes, Chief Investment Officer (CIO)
Ms. Lupita Breland, Portfolio Analyst
Mr. Micheal Copeland, Investment Analyst

DATE: April 13, 2015

RE: **Agenda Item #7**: Presentation, Discussion and Appropriate Action Regarding Proposed Modifications to the ASRS Long Term Disability (LTD) Strategic Asset Allocation [SAA]

Purpose
To present, discuss, and take appropriate action regarding the proposed modifications to the ASRS LTD SAA.

Recommendation
Move that the IC recommend to the Board the approval of Exhibit 2: ASRS LTD SAA.

Background
The ASRS LTD program assets of approximately $253 million are invested in passive asset class modules held at and managed by BlackRock. Typically, the LTD SAA is reviewed and modified after changes are made to the Pension Plan SAA; we recommend the changes to the LTD SAA contained in Exhibit 2: ASRS LTD SAA Proposed.

In general, the allocation to asset classes is similar to those of the Pension Plan but differences exist due to the limited passive funds available from BlackRock. Specifically, the 5% allocation to Multi-Asset Strategies in the Pension Plan has been prorated to the major asset classes (1% Core Fixed Income, 2% Russell 1000, 1% EAFE, and1% Real Estate); the 8% Private Equity allocation has been allocated to the Russell 2000, and the 10% Private Debt allocation has been split between Core Fixed Income and US High Yield 73%/27% which is consistent with how the unfunded Private Debt exposure is prorated in the interim SAAP.

Pending further statutory review, the physical segregation of LTD assets from Total Fund may be modified. This may or may not require the ASRS to seek a legislative initiative to clarify this statutory limitation.

The Director, CIO and IMD staff will provide additional context on the management of the LTD program, including cash flows, performance, and operational items.

Attachments:
- Exhibit 1: ASRS LTD Current & Proposed SAA with redline
- Exhibit 2: ASRS LTD SAA Proposed

Exhibit 1: ASRS LTD Current & Proposed SAA with redline

Current SAA Policy	Target Weights	Range		Fee Rate	Est. Fees ($)		Liquidity
Barclays Aggregate Index Fund	13%			0.06%	$16,891		daily (T-2, T+3)
HY Bond Index Fund	8%			0.20%	$36,780		daily (T-2, T+3)
Emerging Market Debt	4%			0.28%	$24,212		daily (T-3, T+5)
Total Fixed Income	25%	15-35%					
Russell 1000 Index Fund	34%			0.05%	$48,186		daily (T-1, T+3)
Russell 2000 Index Fund	6%			0.07%	$11,804		daily (T-1, T+3)
U.S. Equity (w/ PE allocation)	40%	33-45%					
EAFE Index Fund	14%			0.10%	$33,443		weekly (T-3, T+3)
EAFE Small Cap Index Fund	3%			0.12%	$10,310		weekly (T-3, T+3)
Emerging Markets Index Fund	6%			0.20%	$29,574		weekly (T-3, T+3)
Non-U.S. Equity	23%	16-28%					
Total Equity	63%	53-70%					
Real Estate Securities Index Fund	8%	6-10%		0.15%	$30,798		daily (T-1, T+3)
Dow Jones UBS Commodities Index Fund	4%	1-7%		0.35%	$19,160		weekly (T-2, T+1)
Total	**100%**			**0.10%**	**$261,156**		

Proposed SAA Policy	Policy Weights	+% policy range		Fee Rate	Est. Fees ($)		Liquidity
Barclays Aggregate Index Fund	19%			0.06%	$28,643		daily (T-2, T+3)
HY Bond Index Fund	7%			0.20%	$35,175		daily (T-2, T+3)
Emerging Market Debt	0%			0.28%	$0		daily (T-3, T+5)
Fixed Income	26%	19-36%					
Russell 1000 Index Fund	24%			0.05%	$30,150		daily (T-1, T+3)
Russell 2000 Index Fund	12%			0.07%	$21,105		daily (T-1, T+3)
U.S. Equity (w/ PE allocation)	36%	26-46%					
EAFE Index Fund	18%			0.10%	$45,225		weekly (T-3, T+3)
EAFE Small Cap Index Fund	2%			0.12%	$6,030		weekly (T-3, T+3)
Emerging Markets Index Fund	5%			0.20%	$25,125		weekly (T-3, T+3)
Non-U.S. Equity	25%	15-35%					
Total Equity	61%	51-68%					
Real Estate Securities Index Fund	11%	9-13%		0.15%	$41,456		daily (T-1, T+3)
Dow Jones UBS Commodities Index Fund	2%	0-4%'		0.35%	$17,588		weekly (T-2, T+1)
Total Inflation Linked	13%	10-16%					
Total	**100%**			**0.10%**	**$250,497**		

Difference in fees: **-$10,659**

Exhibit 2: ASRS LTD SAA Proposed

Proposed SAA Policy	Target Weights	Range
Barclays Aggregate Index Fund	19%	
HY Bond Index Fund	7%	
Total Fixed Income	26%	19-36%
Russell 1000 Index Fund	24%	
Russell 2000 Index Fund	12%	
U.S. Equity (w/ PE allocation)	36%	26-46%
EAFE Index Fund	18%	
EAFE Small Cap Index Fund	2%	
Emerging Markets Index Fund	5%	
Non-U.S. Equity	25%	15-35%
Total Equity	61%	51-68%
Dow Jones UBS Commodities Index Fund	2%	0-4%
Real Estate Securities Index Fund	11%	9-13%
Total Inflation Linked	13%	10-16%
Total	**100%**	

Differences between Total Fund and LTD:

1) Private Equity exposure is attained through Russell 2000 Index exposure as the Russell 2000 is already the underlying benchmark for the Total Fund's Private Equity asset class. Russell Indices are used because BlackRock does not offer an S&P 600 product. Domestic Equity pro-ration between the Russell 1000 and the Russell 2000 (85%/15% respective mix) is proportionate with the exposure that would be attained from the Total Fund SAAP's S&P 500, S&P 400, and S&P 600 mix.
2) The 5% multi-asset class strategies allocation is prorated by the major asset classes as follows: 1% Core Fixed Income, 2% Russell 1000, 1% EAFE,
3) Private Debt is split proportianally between Core Fixed Income and High yield 73%/27%.

Agenda Item
#8

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 R. Dokes, Chief Investment Officer (CIO)
Ms. Lupita Breland, Portfolio Analyst
Mr. Micheal Copeland, Investment Analyst

DATE: April 13, 2015

RE: **Agenda Item #8**: Presentation, Discussion and Appropriate Action Regarding Proposed Modifications to the ASRS System Strategic Asset Allocation [SAA]

Purpose
To present, discuss, and take appropriate action regarding the ASRS "System" SAA.

Recommendation
Move that the IC recommend to the Board the approval of Exhibit 2: ASRS System SAA.

Background
The System is the retirement program that preceded the current Arizona State Retirement System Pension Plan. It is a hybrid program that contains elements of both defined benefit and defined contribution plan structures. The System was established in 1953 and closed to new membership when the Pension Plan came into being in fiscal year 1972. System members have had several opportunities to switch to the Pension Plan, and many System members have done so. As of June 30, 2014, the System has 1,353 members and a market value of approximately $356 million.

In addition to the System being a closed plan with very few active members, the average age of the System's members is approximately 80 years while the average age of the Pension Plan's members is approximately 52 years. To date, the ASRS has utilized an investment strategy for the System that was similar but not exactly the investment strategy for the Pension Plan and this has proven to be a very effective strategy. Specifically, instead of the Private Equity allocation in the Pension Plan, the System has an equal allocation to the Barclays Intermediate Government/Credit index, but with all other allocations being equal. The original justifications for this were the illiquid nature of Private Equity, higher fee structure, J-curve effect, and low expected return in the short run when the program was being seeded. However, the unitization of individual funds at the custody bank allows the ASRS to allocate effectively across the three trusts (Pension Plan/System/HBS) efficiently alleviating this concern. Given the actuarial rate of the two plans is the same at 8%, that the Private Equity portfolio is seasoning mitigating the J-curve effect, and that the current expected return environment for fixed income securities is significantly below 8%; a more aligned investment strategy may be appropriate.

Issue
Since the last SAA for the System was approved, there have been significant changes in the financial markets and in the capabilities of Investment Management Division staff to minimize the illiquidity of private investment strategies. ASRS Private Assets are now 'unitized' with periodic valuations, making them more accessible to internal Fair Market Transactions between the System and the Pension Plan, thus substantially eliminating the liquidity constraint in this area. Consequently, the System currently is allocated its pro-rata share of Private Debt, Opportunistic Debt and Equity, and Real Estate strategies. Global interest rates have been zero or close to it since the global financial crisis in 2008 which has implications on the ability of public market investment strategies only to achieve the required 8% return. Furthermore, the current Private Equity program target is 8% of Total Fund, as opposed to being built from scratch which implies stable cash flows, mitigation of J-curve as the portfolio funds are in various investment stages, and higher expected returns than the public markets (the one year return of the Private Equity portfolio was 16.7% at December 31, 2014 versus 3.3% for the Barclays Intermediate Government/Credit index).

The most recent Asset Allocation study for the ASRS resulted in changes that reduce the expected overall volatility of the fund and is expected to achieve the required rate of return over the long term (30 years); specifically public equity was reduced to 50% from 56%, Private Debt was increased to 10% from 3%, Commodities was lowered to 2% from 4%, Real Estate was raised to 10% from 8%, Emerging Market Debt was eliminated, and US Fixed Income was reduced from 18% to 15%. While the rational for not including Private Equity in the System in 2007 is well considered, the maturity of the program, higher expected returns, volatility dampening effect, and the unitization of the funds warrants consideration of including Private Equity in the SAA for the System.

According to the latest Actuarial Report, the System's net cash outflows are projected to peak in FY15 and decline steadily leaving the Funded Status in 2023 at 58%. Due to the expected low-return environment in the short term and the high cash flow needs of the System (approximately 13% per annum), achieving the required rate of return is problematic, which may exacerbate the funded status going forward. The fungible nature of individual funds that the unitization allows provides for the System to reap the illiquidity premium of private investment strategies without being illiquid while simultaneously reducing the volatility of the System Investment program.

As a result of the above, it is recommended that System adopt the SAA approved for the Pension Plan at the March 27, 2015 Board meeting.

Attachments:

- Exhibit 1: ASRS System SAA Current and Proposed with redline
- Exhibit 2: ASRS System SAA Proposed

Exhibit 1: ASRS System SAA Current & Proposed with redline

	Current		
	Target	Ranges	Benchmark
U.S. Equity			
Large Cap	23%		S&P 500
Mid Cap	5		S&P 400
Small Cap	5		S&P 600
Total US Equity	33	26-38	Custom Benchmark
International Equity			
Developed Large Cap	14		MSCI EAFE
Developed Small Cap	3		MSCI EAFE Small Cap
Emerging Market	6		MSCI EM
Total International Equity	23	16-28	Custom Benchmark
Opportunistic Equity	0	0-3	Investment Specific
Total Equity	56	46-63	Custom Benchmark
U.S. Fixed Income			
Core Fixed Income	13		Barclays Agg
US High Yield	5		Barclays High Yield
US Fixed Income	18	8-28	Custom Benchmark
Private Debt	3		S&P LSTA Leveraged Loan Index + 2.5%
Short/Medium Term Fixed Income	7	5-9	Barclays Intermediate Credit
Opportunistic Debt	0	0-10	Investment Specific
Emerging Market Debt	4		JPM GBI-EM Global Diversified
Total Fixed Income	32	22-42	Custom Benchmark
Inflation Linked			
Commodities	4	1-7	Bloomberg Total Return
Real Estate	8	6-10	NCREIF ODCE
Infrastructure	0	0-3	Investment Specific
Farmland & Timber	0	0-3	Investment Specific
Opportunistic Inflation Linked	0	0-3	Investment Specific
Total Inflation Linked Assets	12	8-16	Custom Benchmark
Total	100%		
Global GTAA	10	5-15	Total Fund Benchmark

	Proposed			
	Target	Ranges	Benchmark	
U.S. Equity				
Large Cap	**20%**		S&P 500	
Mid Cap	**3**		S&P 400	
Small Cap	**3**		S&P 600	
Total US Equity	**26**	**16-36**	Custom Benchmark	
International Equity				
Developed Large Cap	**17**		MSCI EAFE	
Developed Small Cap	**2**		MSCI EAFE Small Cap	
Emerging Market	**5**		MSCI EM	
Total International Equity	**24**	**14-34**	Custom Benchmark	
Private Equity	**8**	**6-10**	Russell 2000	ADD
Opportunistic Equity	0		Investment Specific	
Total Equity	**58**	**48-65**	Custom Benchmark	
U.S. Fixed Income				
Treasuries (Long Duration)	0	**0-10**	**Barclays LT Treasuries**	ADD
Core Fixed Income	**11**		Barclays Agg	
Interest Rate Sensitive	**11**			ADD
US High Yield	4		Barclays High Yield	
Private Debt	**10**	**8-12**	S&P LSTA Leveraged Loan Index + 2.5%	
Short/Medium Term Fixed Income	0		Barclays Intermediate Credit	REMOVE
Opportunistic Debt	**0**		Investment Specific	
Emerging Market Debt	**0**		JPM GBI-EM Global Diversified	REMOVE
Total Fixed Income	**25**	**18-35**	Custom Benchmark	
Inflation Linked				
Commodities	**2**	**0-4**	Bloomberg Total Return	
Real Estate	**10**	**8-12**	NCREIF ODCE	
Infrastructure	0	0-3	Investment Specific	
Farmland & Timber	0	0-3	Investment Specific	
Opportunistic Inflation Linked	0		Investment Specific	
Total Inflation Linked Assets	12	**10-16**	Custom Benchmark	
Multi-Asset Class Strategies	**5**	**0-12**	Investment Specific	ADD
Total	100%			
Global GTAA	**n/a**	**n/a**	Total Fund Benchmark	REMOVE

*Note changes in red

Exhibit 2: ASRS System SAA Proposed

	Proposed		
	Target	Ranges	Benchmark
U.S. Equity			
Large Cap	20%		S&P 500
Mid Cap	3		S&P 400
Small Cap	3		S&P 600
Total US Equity	26	16-36	Custom Benchmark
International Equity			
Developed Large Cap	17		MSCI EAFE
Developed Small Cap	2		MSCI EAFE Small Cap
Emerging Market	5		MSCI EM
Total International Equity	24	14-34	Custom Benchmark
Private Equity	8	6-10	Russell 2000
Opportunistic Equity	0		Investment Specific
Total Equity	58	48-65	Custom Benchmark
U.S. Fixed Income			
Treasuries (Long Duration)	0	0-10	Barclays LT Treasuries
Core Fixed Income	11		Barclays Agg
Interest Rate Sensitive	11		
US High Yield	4		Barclays High Yield
Private Debt	10	8-12	S&P LSTA Leveraged Loan Index + 2.5%
Opportunistic Debt	0		Investment Specific
Total Fixed Income	25	18-35	Custom Benchmark
Inflation Linked			
Commodities	2	0-4	Bloomberg Total Return
Real Estate	10	8-12	NCREIF ODCE
Infrastructure	0	0-3	Investment Specific
Farmland & Timber	0	0-3	Investment Specific
Opportunistic Inflation Linked	0		Investment Specific
Total Inflation Linked Assets	12	10-16	Custom Benchmark
Multi-Asset Class Strategies	5	0-12	Investment Specific
Total	100%		

Agenda Item #9

Note: no documents are available for this agenda item.

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.

Created June 2008; Revised June 2013

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.