Arizona State Retirement System

Independent ASRS Investment Program Oversight for the Period Ending September 30, 2013

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ASRS Investment Objectives/Performance

Note: All of the data shown on the following pages is as of September 30, 2013 and reflects the deduction of investment manager fees, unless otherwise noted.

ASRS Investment Objectives

Macro

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

Micro

Source: ASRS Strategic Plan, March 2013

Total Fund Performance

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

	20 Year Annualized Return
Total Fund	8.1%
Constant 8%	8.0%
Excess Return	0.1%

Goal Met: Yes

Total Fund Performance

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

	Quarter	**1 Year**	**3 Years**	5 Years	10 Years	Since Inception (6/30/75)
Total Fund	5.5%	**13.9%**	**11.3%**	8.9%	7.6%	9.9%
Interim SAA Policy[1]	5.4%	**13.1%**	**10.9%**	8.4%	7.3%	9.7%
Excess Return	0.1%	**0.8%**	**0.4%**	0.5%	0.3%	0.2%

1 Year Goal Met: Yes
3 Year Goal Met: Yes

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

Total Fund Attribution Analysis

Total Plan	1 Year	3 Years	5 Years
Allocation Effect[1]	0.99%	0.42%	-0.57%
Manager Selection Effect[2]	-0.23%	-0.06%	1.20%
Residual[3]	0.00%	0.00%	-0.09%
Excess Return	**0.76%**	**0.36%**	**0.54%**

Source: State Street Investment Analytics

[1]Contribution due to over/underweights relative to Interim* Strategic Asset Allocation Policy (SAAP) Benchmark.

[2]Contribution due to manager selection (net) and interaction effect.

[3]Contribution due to activities not captured in allocation and manager selection effects.

*Pro-rates unfunded Private Equity, Private Debt and Real Estate allocations.

Total Fund Attribution Detail

1 Year Excess Return: +0.8%

- Allocation Effect: +0.99%
  - Public Markets Fixed Income tactical underweight (+1.19%)
  - International Equity tactical underweight (-0.28%)
  - Commodities tactical underweight (+0.18%)
- Manager Effect: -0.23%
  - Real Estate outperformed due to various managers (+0.19%)
  - Commodities outperformed due to Gresham (+0.14%)
  - Private Debt outperformed due to various managers (+0.13%)
  - International Equity underperformed due to various managers (-0.25%)
  - Private Equity underperformed due to various managers (-0.35%)
- Residual: 0.00%

3 Years Excess Return: +0.4%

- Allocation Effect: +0.42%
  - Public Markets Fixed Income tactical underweight (+0.56%)
  - International Equity tactical underweight (-0.11%)
  - Commodities tactical underweight (+0.08%)
- Manager Effect: -0.06%
  - Commodities outperformed due to Gresham (+0.11%)
  - GTAA outperformed due to Bridgewater (+0.17%)
  - International Equity underperformed due to various managers (-0.07%)
  - U.S. Equity underperformed due to various managers (-0.11%)
  - Private Equity underperformed due to various managers (-0.08%)
- Residual: 0.00%

5 Years Excess Return: +0.5%

- Allocation Effect: -0.57%
  - Public Markets Fixed Income tactical underweight (+0.17%)
  - U.S. Equity tactical overweight (-0.20%)
  - International Equity tactical underweight (-0.30%)
  - GTAA underweight (-0.10%)
- Manager Effect: +1.20%
  - Public Markets Fixed Income outperformed due to various managers (+1.13%)
  - GTAA outperformed due to Bridgewater (+0.30%)
  - International Equity underperformed due to various managers (-0.20%)
- Residual Effect: -0.09%

Source: State Street Investment Analytics

Note: Explanatory details of each effect represent the most notable contributions and may not sum to the total effect.

Asset Class Performance vs. Benchmark – Public Markets

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

	1 Year Return	3 Year Return
ASRS Total Domestic and Int'l Equity[1]	20.5%	13.7%
ASRS Custom Total Equity Benchmark	20.9%	13.9%
Excess Return	-0.4%	-0.2%
ASRS Domestic Equity	22.6%	17.0%
ASRS Custom Domestic Equity Benchmark	22.4%	17.1%
Excess Return	0.2%	-0.1%
ASRS International Equity	17.4%	6.9%
ASRS Custom Int'l Equity Benchmark	18.6%	7.1%
Excess Return	-1.2%	-0.2%
ASRS Public Markets Fixed Income	-1.6%	3.4%
ASRS Custom Fixed Income Benchmark	-1.2%	3.2%
Excess Return	-0.4%	0.2%
ASRS Inflation-Linked	-11.3%	-1.6%
ASRS Custom Inflation-Linked Benchmark	-14.3%	-4.4%
Excess Return	3.0%	2.8%
ASRS GTAA	13.4%	12.6%
ASRS Custom GTAA Benchmark	12.9%	10.8%
Excess Return	0.5%	1.8%

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

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

Goal Met: Partially

Asset Class Performance vs. Benchmark – Private Markets[1]

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

	1 Year Return	3 Year Return	IRR Since Inception	Inception Date
ASRS Private Equity	14.9%	16.2%	11.4%	Sep-07
Russell 2000	24.2%	18.7%	13.9%	
Excess Return	-9.3%	-2.5%	-2.5%	
ASRS Opportunistic Equity[2]	39.4%	--	28.4%	Apr-11
ASRS Private Debt	17.9%	--	18.5%	Jul-12
S&P/LSTA Levered Loan Index + 250 bps	10.0%	--	8.3%	
Excess Return	7.9%	--	10.2%	
ASRS Opportunistic Debt[2]	11.8%	10.3%	12.5%	Jul-08
ASRS Real Estate	14.5%	15.4%	4.7%	Sep-05
NFI - ODCE Index	12.2%	15.0%	5.0%	
Excess Return	2.3%	0.4%	-0.3%	

[1]Performance of private markets portfolios and corresponding benchmarks is reported on a one quarter lag. Performance shown as of June 30, 2013.

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

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

Goal Met: Partially

Cash Management

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

Month	Cash In	Cash Out	Balance as of 1st Business Day
Oct-12	$444,518,602	($179,375,084)	$282,753,603
Nov-12	$261,546,308	($182,843,286)	$79,446,600
Dec-12	$555,629,452	($180,760,550)	$372,709,821
Jan-13	$440,341,987	($180,438,071)	$259,722,610
Feb-13	$270,343,225	($180,786,807)	$99,165,260
Mar-13	$275,847,455	($181,236,080)	$89,033,161
Apr-13	$223,752,576	($182,003,067)	$65,075,125
May-13	$466,869,533	($182,469,344)	$285,187,177
Jun-13	$357,254,932	($182,835,622)	$212,223,877
Jul-13	$490,407,958	($185,679,872)	$307,287,872
Aug-13	$364,853,179	($188,310,189)	$205,962,942
Sep-13	$303,470,007	($189,505,809)	$95,194,585

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

Goal Met: Yes

Note:

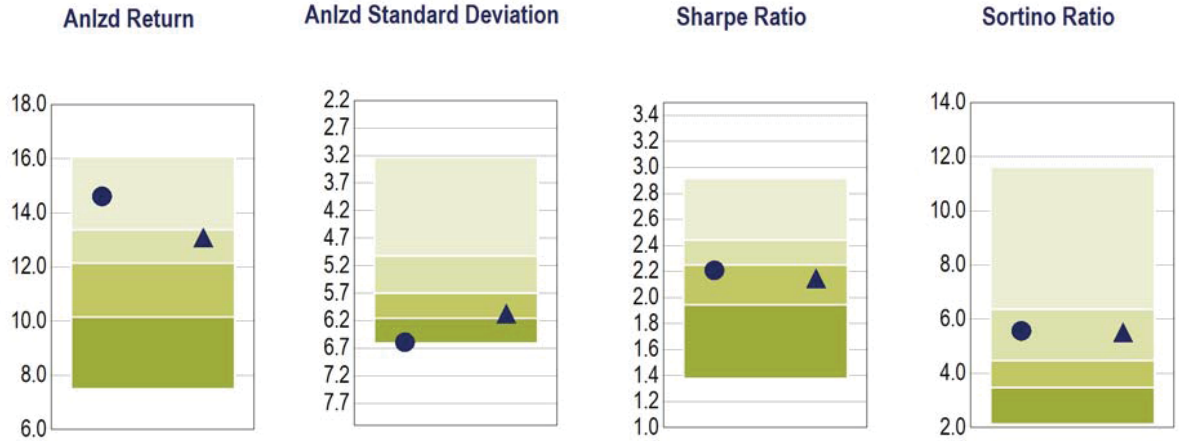
Cash In - The balance as of the business day prior to the monthly pension run payment, comprised of month-to-date contributions and excess cash held to fund manager(s) or as a tactical allocation.

Cash Out - The monthly pension run payment.

Total Fund Risk Statistics vs. Peer Universe

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

1 Year



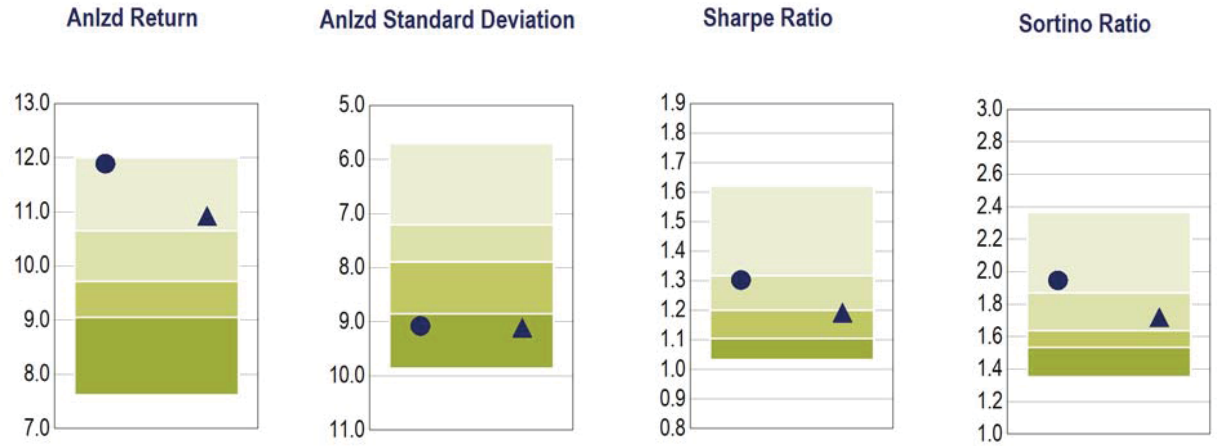
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Sortino Ratio
Total Fund				
Value	14.6	6.6	2.2	5.6
%tile	14	95	55	37
Interim SAA Policy				
Value	13.1	6.1	2.1	5.5
%tile	36	71	61	38
Universe				
5th %tile	16.1	3.2	2.9	11.6
25th %tile	13.4	5.0	2.4	6.4
Median	12.2	5.7	2.3	4.5
75th %tile	10.2	6.1	1.9	3.5
95th %tile	7.5	6.6	1.4	2.1

Note: The information contained herein is for comparison purposes only and is not a Total Fund benchmark. Peer universe comparisons are subject to several limitations, including: peer groups are not comprehensive; several funds are included in multiple peer groups; peer groups are constructed using gross of fee returns; and survivorship bias in that poorly performing funds may not longer report results.
Universes are constructed using gross of fee returns; therefore, ASRS rank is based on gross of fee returns.
Rankings are from highest (1) to lowest (100) in the InvestorForce Public Funds > $1 Billion Universe.
The InvestorForce Public Funds > $1 Billion Universe contains 62 observations for the one-year period ending September 30, 2013, with total assets of $839.4 billion.
Composition of Interim SAA Policy can be found in the appendix.

Total Fund Risk Statistics vs. Peer Universe

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

3 Year



	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Sortino Ratio
● Total Fund				
Value	11.9	9.1	1.3	1.9
%tile	8	86	28	22
▲ Interim SAA Policy				
Value	10.9	9.1	1.2	1.7
%tile	20	87	55	36
Universe				
5th %tile	12.0	5.7	1.6	2.4
25th %tile	10.7	7.2	1.3	1.9
Median	9.7	7.9	1.2	1.6
75th %tile	9.1	8.8	1.1	1.5
95th %tile	7.6	9.9	1.0	1.4

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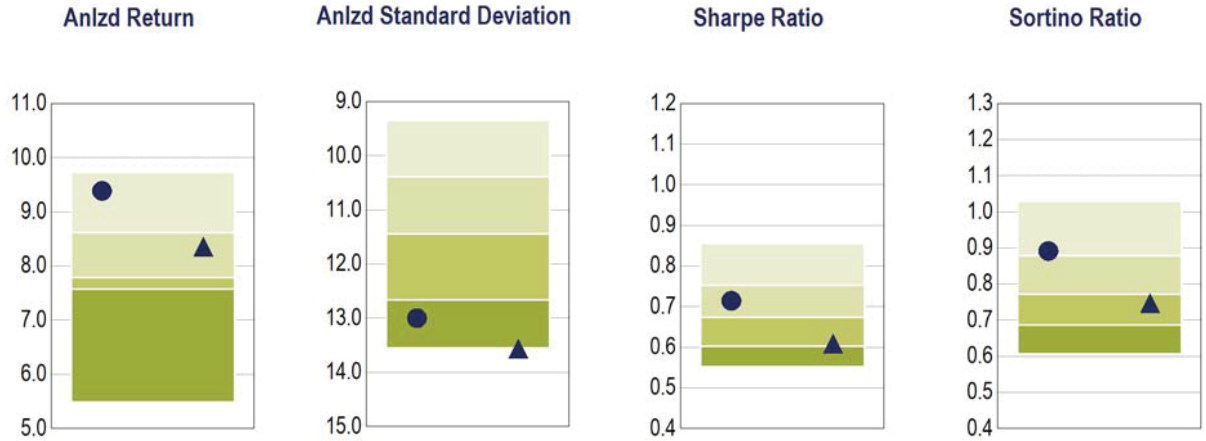
Universes are constructed using gross of fee returns; therefore, ASRS rank is based on gross of fee returns.
Rankings are from highest (1) to lowest (100) in the InvestorForce Public Funds > $1 Billion Universe.
The InvestorForce Public Funds > $1 Billion Universe contains 58 observations for the three-year period ending September 30, 2013, with total assets of $839.4 billion.
Composition of Interim SAA Policy can be found in the appendix.

Total Fund Risk Statistics vs. Peer Universe

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

5 Year



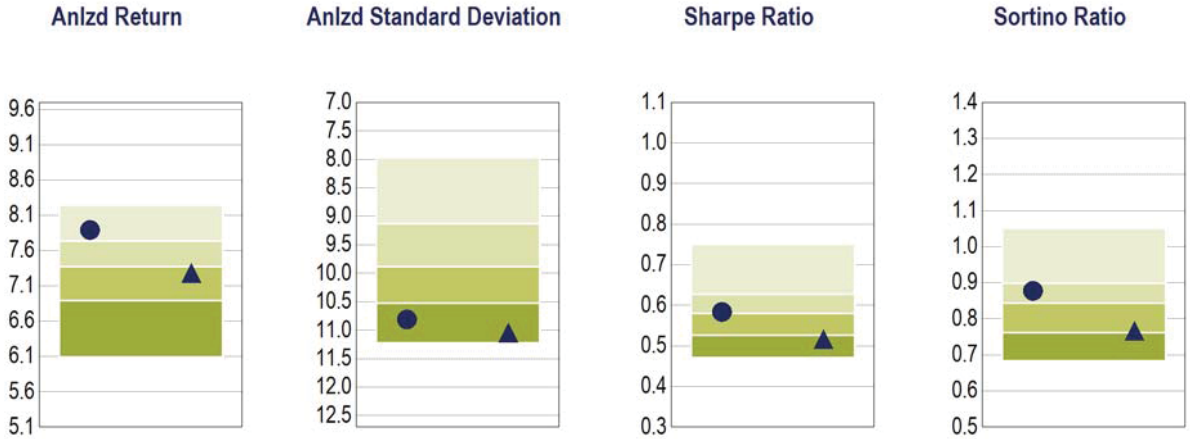
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Sortino Ratio
● Total Fund				
Value	9.4	13.0	0.7	0.9
%tile	9	85	40	20
▲ Interim SAA Policy				
Value	8.4	13.6	0.6	0.7
%tile	30	97	71	60
Universe				
5th %tile	9.7	9.3	0.9	1.0
25th %tile	8.6	10.4	0.8	0.9
Median	7.8	11.4	0.7	0.8
75th %tile	7.6	12.6	0.6	0.7
95th %tile	5.5	13.5	0.6	0.6

Note: The information contained herein is for comparison purposes only and is not a Total Fund benchmark. Peer universe comparisons are subject to several limitations, including: peer groups are not comprehensive; several funds are included in multiple peer groups; peer groups are constructed using gross of fee returns; and survivorship bias in that poorly performing funds may not longer report results.
Universes are constructed using gross of fee returns; therefore, ASRS rank is based on gross of fee returns.
Rankings are from highest (1) to lowest (100) in the InvestorForce Public Funds > $1 Billion Universe.
The InvestorForce Public Funds > $1 Billion Universe contains 58 observations for the five-year period ending September 30, 2013, with total assets of $839.4 billion.
Composition of Interim SAA Policy can be found in the appendix.

Total Fund Risk Statistics vs. Peer Universe

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

10 Year



	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Sortino Ratio
● Total Fund				
Value	7.9	10.8	0.6	0.9
%tile	17	85	49	35
▲ Interim SAA Policy				
Value	7.3	11.0	0.5	0.8
%tile	56	91	79	74
Universe				
5th %tile	8.2	8.0	0.8	1.1
25th %tile	7.7	9.1	0.6	0.9
Median	7.4	9.9	0.6	0.8
75th %tile	6.9	10.5	0.5	0.8
95th %tile	6.1	11.2	0.5	0.7

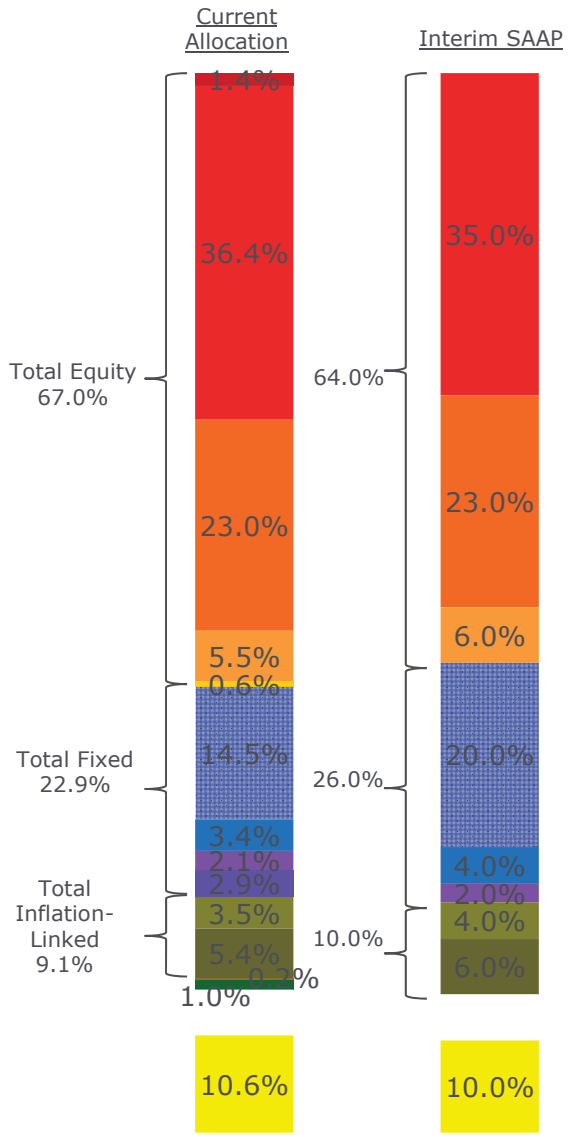
Note: The information contained herein is for comparison purposes only and is not a Total Fund benchmark. Peer universe comparisons are subject to several limitations, including: peer groups are not comprehensive; several funds are included in multiple peer groups; peer groups are constructed using gross of fee returns; and survivorship bias in that poorly performing funds may not longer report results.
Universes are constructed using gross of fee returns; therefore, ASRS rank is based on gross of fee returns.
Rankings are from highest (1) to lowest (100) in the InvestorForce Public Funds > $1 Billion Universe.
The InvestorForce Public Funds > $1 Billion Universe contains 50 observations for the ten-year period ending September 30, 2013, with total assets of $839.4 billion.
Composition of Interim SAA Policy can be found in the appendix.

Independent Oversight/Compliance

Note: All of the data shown on the following pages is as of September 30, 2013 and reflects the deduction of investment manager fees, unless otherwise noted.

Arizona State Retirement System

SAA Policy Compliance



	Current Mkt Value	Current Allocation	Interim SAAP	Difference	Policy Range	Within Range
Total Domestic and International Equity[1]	**$19,246,233,164**	**60.9%**	**59.0%**	**1.9%**		
Domestic Equity[3]	**$11,526,692,029**	**36.4%**	**35.0%**	**1.4%**	**26% - 38%**	**Yes**
U.S. Large Cap[2]	*$8,110,539,247*	*25.6%*	*25.0%*	*0.6%*		
U.S. Mid Cap	*$1,677,654,732*	*5.3%*	*5.0%*	*0.3%*		
U.S. Small Cap	*$1,738,498,051*	*5.5%*	*5.0%*	*0.5%*		
International Equity[3]	**$7,285,452,466**	**23.0%**	**23.0%**	**0.0%**	**16% - 28%**	**Yes**
Developed Large Cap[2]	*$4,391,844,189*	*13.9%*	*14.0%*	*-0.1%*		
Developed Small Cap	*$1,074,099,048*	*3.4%*	*3.0%*	*0.4%*		
Emerging Markets	*$1,819,509,229*	*5.8%*	*6.0%*	*-0.2%*		
Private Equity[4]	**$1,740,805,875**	**5.5%**	**6.0%**	**-0.5%**	**5% - 9%**	**Yes**
Opportunistic Equity[4,6]	**$192,615,332**	**0.6%**	**0.0%**	**0.6%**	**0% - 3%**	**Yes**
Total Equity	**$21,179,654,372**	**67.0%**	**64.0%**	**3.0%**	**53% - 70%**	**Yes**
U.S. Fixed Income	**$4,575,422,944**	**14.5%**	**20.0%**	**-5.5%**	**8% - 28%**	**Yes**
Core[2]	*$3,422,592,745*	*10.8%*	*15.0%*	*-4.2%*		
High Yield	*$1,152,830,199*	*3.6%*	*5.0%*	*-1.4%*		
Emerging Market Debt	**$1,083,092,510**	**3.4%**	**4.0%**	**-0.6%**		
Private Debt[4]	**$662,880,283**	**2.1%**	**2.0%**	**0.1%**		
Opportunistic Debt[4,6]	**$931,627,916**	**2.9%**	**0.0%**	**2.9%**	**0% - 10%**	**Yes**
Total Fixed Income	**$7,253,023,652**	**22.9%**	**26.0%**	**-3.1%**	**15% - 35%**	**Yes**
Commodities[2]	**$1,092,335,003**	**3.5%**	**4.0%**	**-0.5%**	**1% - 7%**	**Yes**
Real Estate[2,4]	**$1,712,945,936**	**5.4%**	**6.0%**	**-0.6%**	**6% - 10%**	**No**
Infrastructure	**$0**	**0.0%**	**0.0%**	**0.0%**	**0% - 3%**	**Yes**
Farmland and Timber	**$64,871,308**	**0.2%**	**0.0%**	**0.2%**	**0% - 3%**	**Yes**
Opportunistic Inflation-Linked[5]	**$0**	**0.0%**	**0.0%**	**0.0%**	**0% - 3%**	**Yes**
Total Inflation-Linked	**$2,870,152,247**	**9.1%**	**10.0%**	**-0.9%**	**8% - 16%**	**Yes**
Cash[5]	**$323,091,441**	**1.0%**	**0.0%**	**1.0%**		
Total	**$31,625,921,711**	**100.0%**	**100.0%**	**0.0%**		
Global Tactical Asset Allocation (GTAA)[2]	**$3,354,272,366**	**10.6%**	**10.0%**	**0.6%**	**5% - 15%**	**Yes**

[1]Total Domestic and International Equity includes Equity Risk Factor Portfolio with assets of $434.1 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 and International Equity market values include residual values remaining in terminated manager accounts.

[4]Values shown for private markets portfolios include cash flows that occurred during 3Q2013.

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

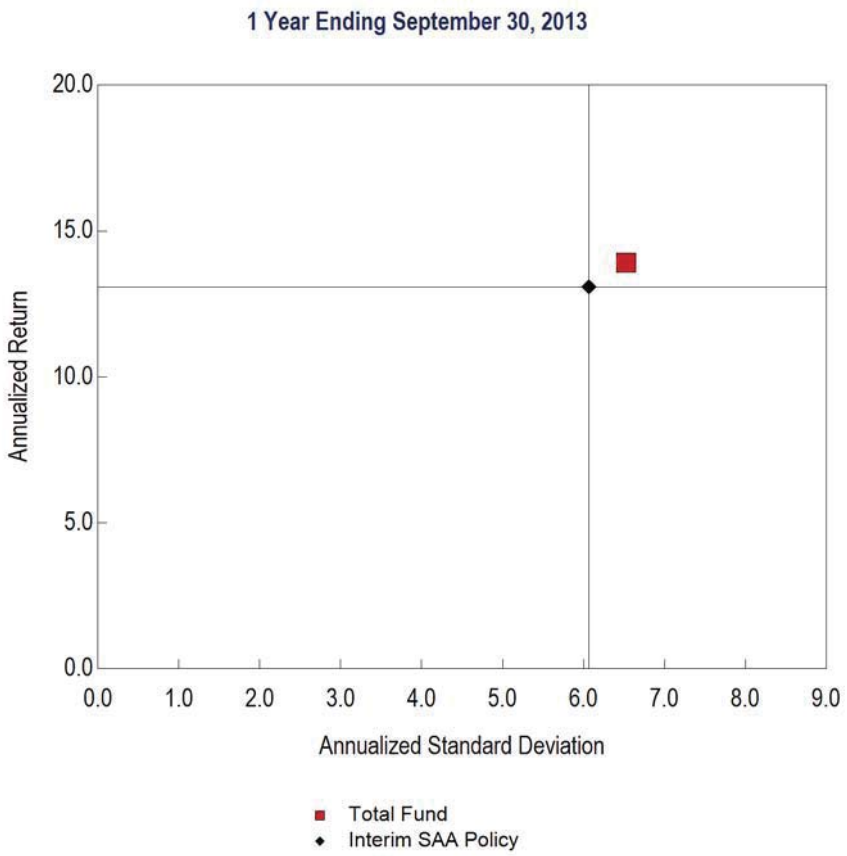
[6]Aggregate Opportunistic asset classes not to exceed 10%

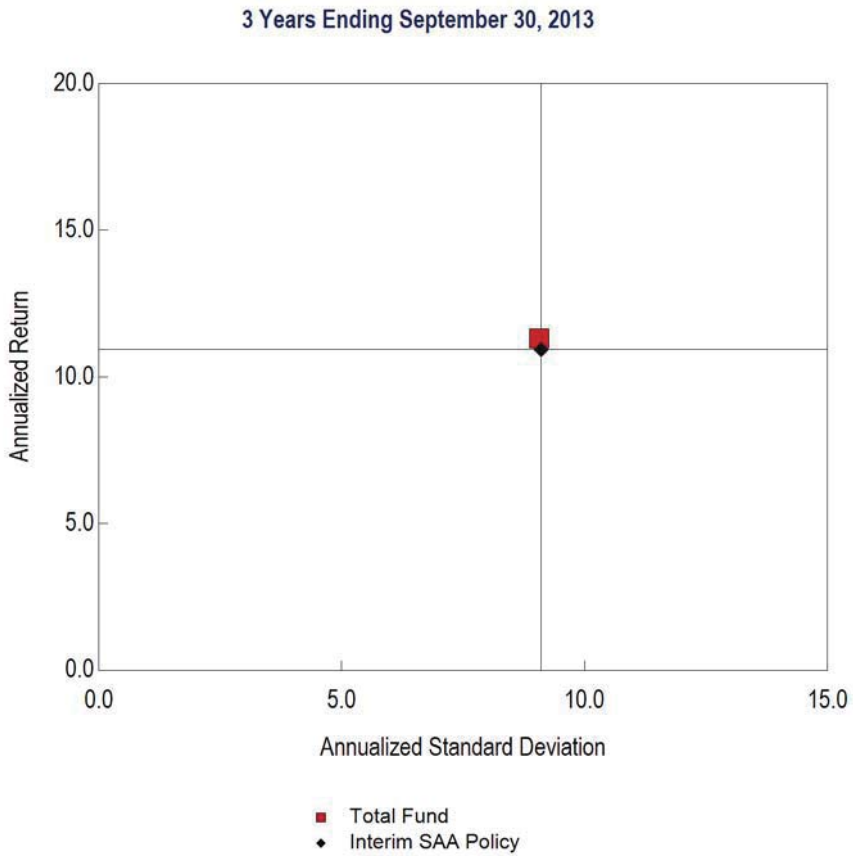
Note: Interim SAA Policy includes proration of 1% Private Equity, 1% Private Debt and 2% Real Estate, which are unfunded.

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

Market values include manager held cash.

Total Fund Analysis





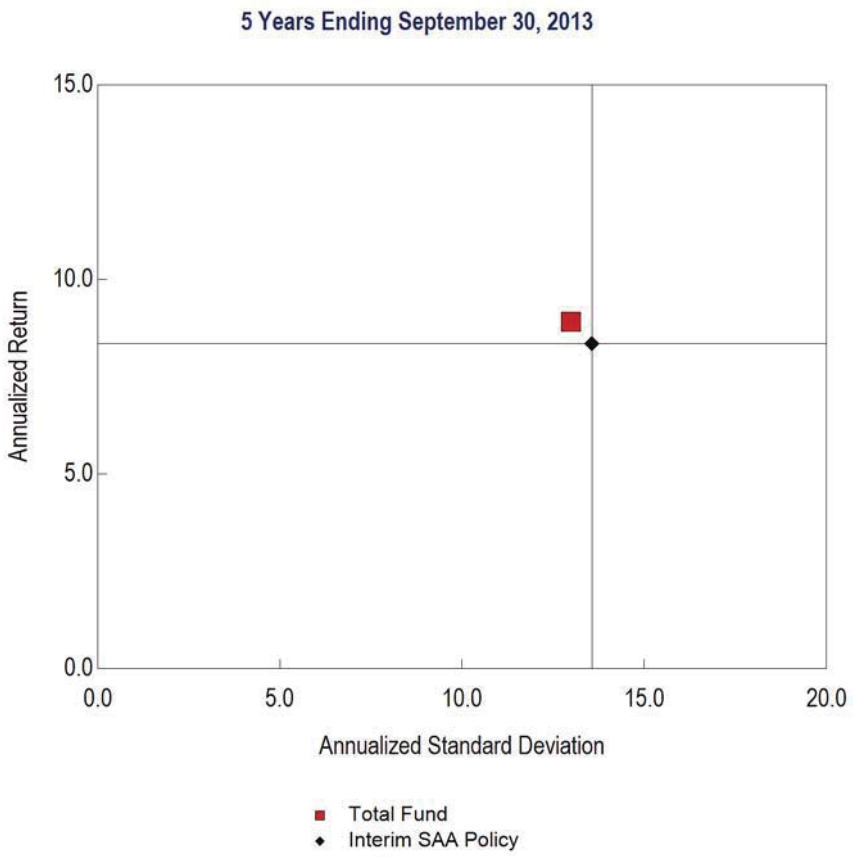
1 Year Ending September 30, 2013

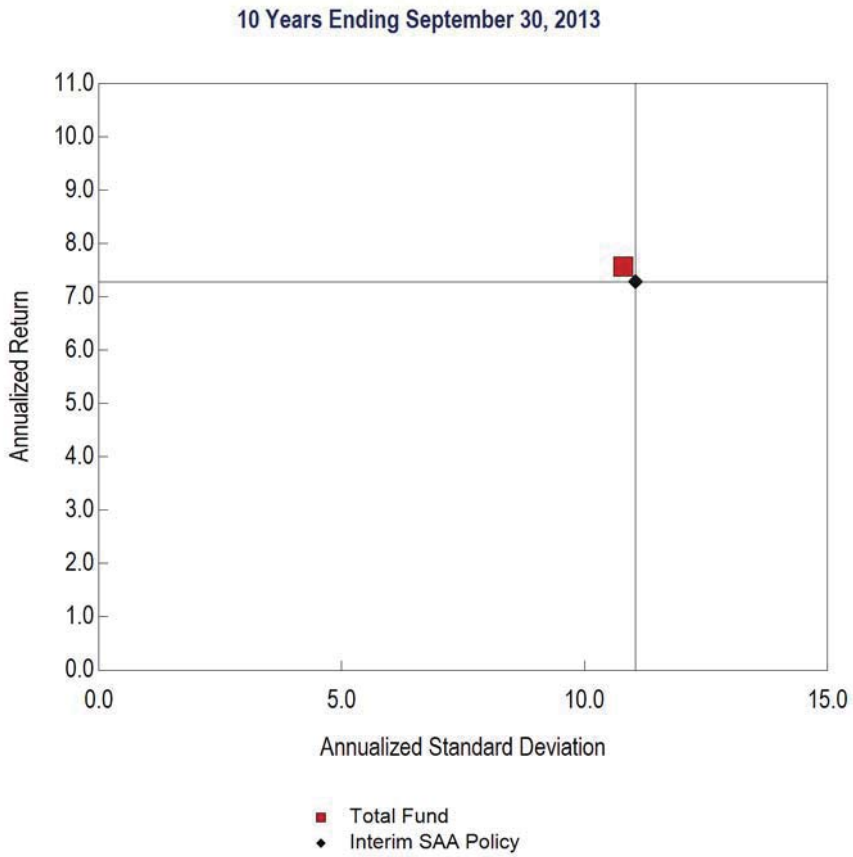
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Sortino Ratio
Total Fund	13.9%	6.5%	2.1	5.2
Interim SAA Policy	13.1%	6.1%	2.1	5.5

3 Years Ending September 30, 2013

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Sortino Ratio
Total Fund	11.3%	9.1%	1.2	1.8
Interim SAA Policy	10.9%	9.1%	1.2	1.7

Total Fund Analysis





5 Years Ending September 30, 2013

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Sortino Ratio
Total Fund	8.9%	13.0%	0.7	0.8
Interim SAA Policy	8.4%	13.6%	0.6	0.7

10 Years Ending September 30, 2013

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Sortino Ratio
Total Fund	7.6%	10.8%	0.6	0.8
Interim SAA Policy	7.3%	11.0%	0.5	0.8

Total Fund

	Market Value($)	% of Portfolio	3 Mo (%)	Rank	9 Mo (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Return (%)	Since
Total Fund	**31,625,921,711**	**100**	**5.5**	--	**11.7**	--	**13.9**	--	**11.3**	--	**8.9**	--	**7.6**	--	**9.9**	**Jul-75**
Interim SAA Policy			*5.4*	--	*10.8*	--	*13.1*	--	*10.9*	--	*8.4*	--	*7.3*	--	*9.7*	*Jul-75*
Over/Under			0.1		0.9		0.8		0.4		0.5		0.3		0.2	
Actual Benchmark			*5.5*	--	*11.5*	--	*13.5*	--	*11.0*	--	*8.2*	--	*7.3*	--	--	*Jul-75*
Total Domestic and International Equity[1]	**17,372,114,833**	**54.9**	**7.6**	--	**17.6**	--	**20.5**	--	**13.7**	--	**9.7**	--	**8.3**	--	**6.5**	**Jan-98**
ASRS Custom Total Equity Benchmark			*8.1*	--	*17.4*	--	*20.9*	--	*13.9*	--	*9.6*	--	*8.2*	--	*5.8*	*Jan-98*
Over/Under			-0.5		0.2		-0.4		-0.2		0.1		0.1		0.7	
Total Domestic Equity	**10,480,505,601**	**33.1**	**6.2**	**69**	**21.8**	**59**	**22.6**	**61**	**17.0**	**46**	**11.4**	**46**	**8.7**	**62**	**11.2**	**Jul-75**
ASRS Custom Domestic Equity Benchmar			*6.4*	*67*	*21.6*	*60*	*22.4*	*62*	*17.1*	*44*	*10.8*	*54*	*8.2*	*72*	*11.3*	*Jul-75*
Over/Under			-0.2		0.2		0.2		-0.1		0.6		0.5		-0.1	
eA All US Equity Net Median			*7.8*		*22.8*		*24.8*		*16.7*		*11.0*		*9.4*		*12.4*	*Jul-75*
Total International Equity	**6,457,520,563**	**20.4**	**10.2**	**42**	**10.8**	**73**	**17.4**	**69**	**6.9**	**75**	**6.3**	**72**	**7.9**	**84**	**6.4**	**Apr-87**
ASRS Custom Int'l Equity Benchmark			*10.6*	*35*	*11.6*	*60*	*18.6*	*58*	*7.1*	*73*	*7.2*	*62*	*9.1*	*62*	*6.1*	*Apr-87*
Over/Under			-0.4		-0.8		-1.2		-0.2		-0.9		-1.2		0.3	
eA All ACWI ex-US Equity Net Median			*10.0*		*12.7*		*19.7*		*8.1*		*7.8*		*9.7*		*7.8*	*Apr-87*
Total Public Markets Fixed Income	**4,489,350,924**	**14.2**	**0.8**	**39**	**-2.4**	**84**	**-1.6**	**77**	**3.4**	**52**	**6.3**	**49**	**5.0**	**46**	**8.6**	**Jul-75**
ASRS Custom Fixed Income Benchmark			*0.8*	*36*	*-1.6*	*66*	*-1.2*	*67*	*3.2*	*56*	*5.6*	*59*	*4.7*	*53*	--	*Jul-75*
Over/Under			0.0		-0.8		-0.4		0.2		0.7		0.3		--	
eA All US Fixed Inc Net Median			*0.6*		*-1.0*		*-0.4*		*3.5*		*6.2*		*4.8*		--	*Jul-75*
Total Inflation-Linked Assets	**810,699,135**	**2.6**	**3.8**	--	**-6.4**	--	**-11.3**	--	**-1.6**	--	--	--	--	--	**0.7**	**10-Feb**
ASRS Custom Inflation-Linked Benchmark			*2.1*	--	*-8.6*	--	*-14.3*	--	*-4.4*	--	*0.6*	--	*2.9*	--	*-1.6*	*10-Feb*
Over/Under			1.7		2.2		3.0		2.8		--		--		2.3	
Total GTAA	**3,354,272,366**	**10.6**	**6.7**	**4**	**11.5**	**4**	**13.4**	**4**	**12.6**	**1**	**11.5**	**1**	--	--	**7.8**	**4-Jan**
ASRS Custom GTAA Benchmark			*5.4*	*19*	*11.5*	*5*	*12.9*	*5*	*10.8*	*3*	*8.3*	*18*	*7.0*	*59*	*6.2*	*4-Jan*
Over/Under			1.3		0.0		0.5		1.8		3.2		--		1.6	
eA Global TAA Net Median			*3.5*		*5.0*		*6.1*		*6.0*		*6.2*		*7.9*		*6.4*	*4-Jan*

[1]Performance of ASRS Total Domestic and International Equity includes the performance of the ASRS Domestic and International Equity Asset classes and the Equity Risk Factor Portfolio with an inception date of 6/1/2013. NEPC began calculating Total Domestic and International Equity performance in January 2009. Monthly performance data from January 1998 - December 2008 was provided by State Street.

Note: Performance, ranks and medians are based on net of fee performance data.
Ranks are from highest (1) to lowest (100) in the eVestment Alliance Universe.
Composition of Interim SAA Policy and ASRS Custom Asset Class Benchmarks can be found in the appendix.

Asset Class Performance Summary - Private Markets

	Market Value($)	% of Portfolio	3 Mo (%)	1 Yr (%)	3 Yrs (%)	Return (%)	IRR	Since
Total Fund	**31,625,921,711**	**100**	**5.5**	**13.9**	**11.3**	**9.9**	**--**	**Jul-75**
Interim SAA Policy			*5.4*	*13.1*	*10.9*	*9.7*	--	*Jul-75*
Over/Under			0.1	0.8	0.4	0.2	--	
Actual Benchmark			*5.5*	*13.5*	*11.0*	--	--	*Jul-75*
Total Private Equity	**1,760,457,438**	**5.6**	**2.8**	**14.9**	**16.2**	**2.8**	**11.4**	**Sep-07**
Russell 2000 1 QTR Lagged			*3.1*	*24.2*	*18.7*	*4.1*	*13.9*	*Sep-07*
Over/Under			-0.3	-9.3	-2.5	-1.3	-2.5	
Total Opportunistic Equity[1]	**161,739,907**	**0.5**	**3.5**	**39.4**	**--**	**18.1**	**28.4**	**Apr-11**
Total Private Debt	**533,841,813**	**1.7**	**3.9**	**17.9**	**--**	**17.9**	**18.5**	**Jul-12**
S&P/LSTA Leveraged Loan Index + 250Bps 1Qtr Lagged			*0.8*	*10.0*	*9.3*	*10.0*	*8.3*	*Jul-12*
Over/Under			3.1	7.9	--	7.9	10.2	
Total Opportunistic Debt[1]	**903,044,508**	**2.9**	**1.8**	**11.8**	**10.3**	**8.8**	**12.5**	**Jan-08**
Total Real Estate	**1,745,654,846**	**5.5**	**2.8**	**14.5**	**15.4**	**2.8**	**4.7**	**Dec-05**
NCREIF ODCE 1 QTR Lagged			*3.6*	*12.2*	*15.0*	*4.3*	*5.0*	*Dec-05*
Over/Under			-0.8	2.3	0.4	-1.4	-0.3	

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

Note: Performance is based on net of fee performance data.
Performance data for Total Private Equity, Total Opportunistic Equity, Total Private Debt, Total Opportunistic Debt and Total Real Estate and corresponding benchmarks is lagged by one quarter. Market values shown include cash flows that occurred during 3Q 2013. Performance data and market values provided by Credit Suisse Fund Group. Prior to 3Q 2012, the performance of the Total Private Debt and Total Opportunistic Debt asset classes was reported in aggregate. Effective 6/30/2012, the Fund's allocations to Private Debt and Opportunistic Debt were separated and will be reported separately going forward.
Time-weighted performance of private markets portfolios shown to reconcile Total Fund performance as it is reported on a time-weighted basis. Due to the drawdown nature of private markets portfolios in which the investment managers call capital over time, dollar-weighted performance, or internal rate of return (IRR) is a more appropriate measure of ASRS private markets portfolios.
Composition of Interim SAA Policy can be found in the appendix.

Public Market Asset Class Analysis

3 Years Ending September 30, 2013

	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Tracking Error	Rank	Info Ratio	Rank	Sharpe Ratio	Rank	Beta	Rank	Anlzd Alpha
Total Fund	11.3%		9.1%		1.0%		0.4		1.2		1.0		0.5%
Interim SAA Policy	10.9%		9.1%		--		--		1.2		--		--
Total Domestic and International Equity	13.7%		13.9%		0.7%		-0.2		1.0		1.0		0.0%
ASRS Custom Total Equity Benchmark	13.9%		14.1%		--		--		1.0		--		--
Total Domestic Equity	17.0%	46	13.4%	32	0.6%	1	-0.2	58	1.3	33	1.0	40	-0.3%
ASRS Custom Domestic Equity Benchmark	17.1%	44	13.2%	31	--		--		1.3	30	--	38	--
Total International Equity	6.9%	75	16.7%	39	0.8%	1	-0.3	89	0.4	67	1.0	48	-0.1%
ASRS Custom Int'l Equity Benchmark	7.1%	73	17.2%	52	--		--		0.4	66	--	61	--
Total Public Markets Fixed Income	3.4%	52	3.5%	62	0.7%	1	-0.6	81	1.0	73	1.1	83	-0.6%
ASRS Custom Public Markets Fixed Income Benchmark	3.2%	56	3.3%	59	--		--		1.0	74	--		--
Total Inflation-Linked Assets	-1.6%		15.1%		2.2%		1.3		-0.1		1.0		2.7%
ASRS Custom Inflation-Linked Benchmark	-4.4%		15.5%		--		--		-0.3		--		--
Total GTAA	12.6%	1	9.8%	84	1.9%	2	0.9	1	1.3	8	1.0	86	1.5%
ASRS Custom GTAA Benchmark	10.8%	3	9.4%	67	--		--		1.1	17	--	82	--

Note: Performance is reported net of fees.
Ranks for statistics shown above are based on the respective universe against which the portfolio is ranked on the asset class performance summary that precedes this section of the analysis.
Rankings are from highest (1) to lowest (100) in the eVestment Alliance Universe.
Composition of the Interim SAA Policy and ASRS Custom Asset Class Benchmarks can be found in the appendix.

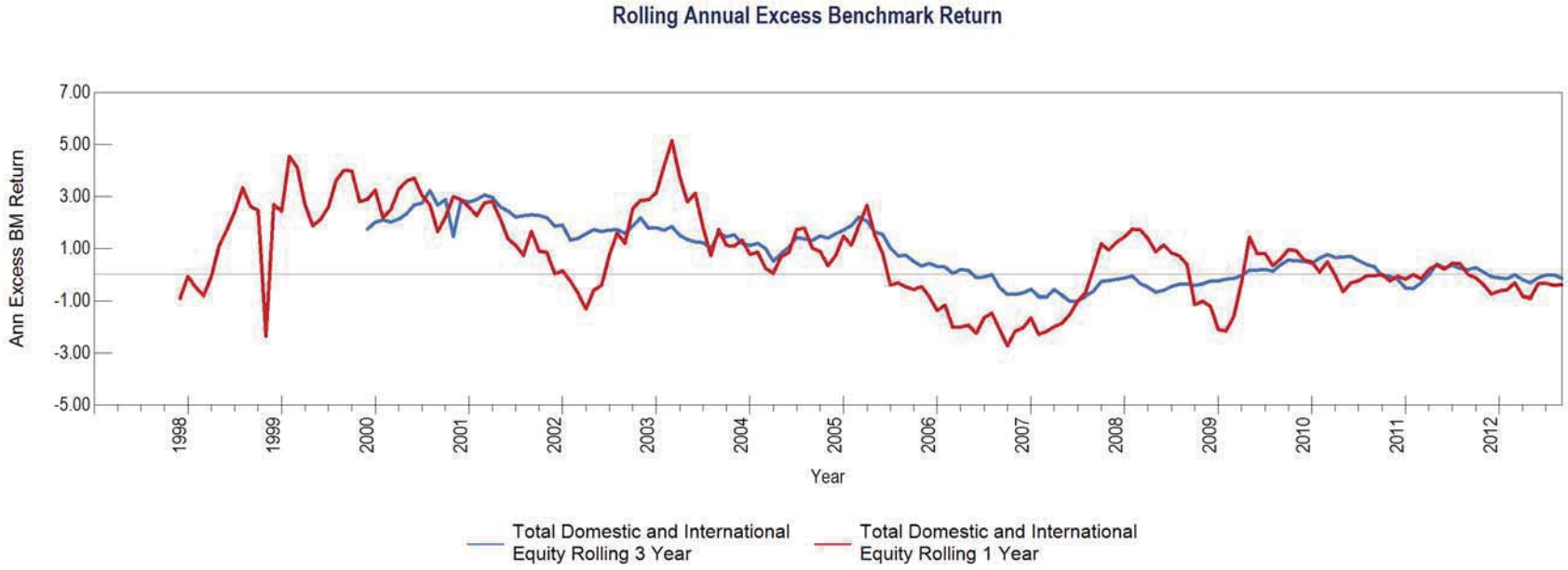
Public Market Asset Class Analysis

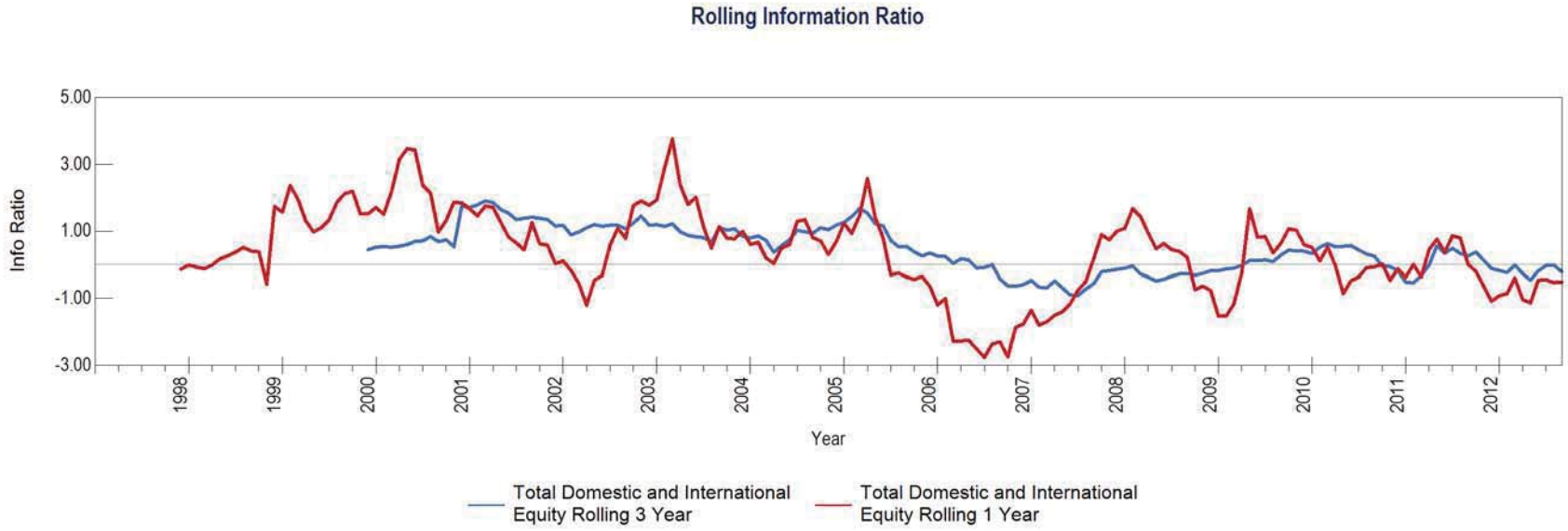
5 Years Ending September 30, 2013

	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Tracking Error	Rank	Info Ratio	Rank	Sharpe Ratio	Rank	Beta	Rank	Anlzd Alpha
Total Fund	8.9%		13.0%		1.4%		0.4		0.7		1.0		1.0%
Interim SAA Policy	8.4%		13.6%		--		--		0.6		--		--
Total Domestic and International Equity	9.7%		19.4%		1.0%		0.1		0.5		1.0		0.4%
ASRS Custom Total Equity Benchmark	9.6%		19.9%		--		--		0.5		--		--
Total Domestic Equity	11.4%	46	19.0%	37	0.7%	1	0.8	4	0.6	37	1.0	44	0.7%
ASRS Custom Domestic Equity Benchmark	10.8%	54	19.1%	39	--		--		0.6	48	--	46	--
Total International Equity	6.3%	72	21.8%	46	1.9%	1	-0.4	93	0.3	75	1.0	53	-0.5%
ASRS Custom Int'l Equity Benchmark	7.2%	62	22.6%	61	--		--		0.3	64	--	64	--
Total Public Markets Fixed Income	6.3%	49	4.1%	55	1.2%	4	0.2	50	1.5	48	1.0	80	0.2%
ASRS Custom Public Markets Fixed Income Benchmark	5.6%	59	3.9%	50	--		--		1.4	56	--		--
Total Inflation-Linked Assets	--		--		--		--		--		--		--
ASRS Custom Inflation-Linked Benchmark	0.6%		13.6%		--		--		0.0		--		--
Total GTAA	11.5%	1	13.2%	70	2.3%	2	1.4	1	0.9	10	1.0	76	3.6%
ASRS Custom GTAA Benchmark	8.3%	18	13.6%	77	--		--		0.6	46	--	80	--

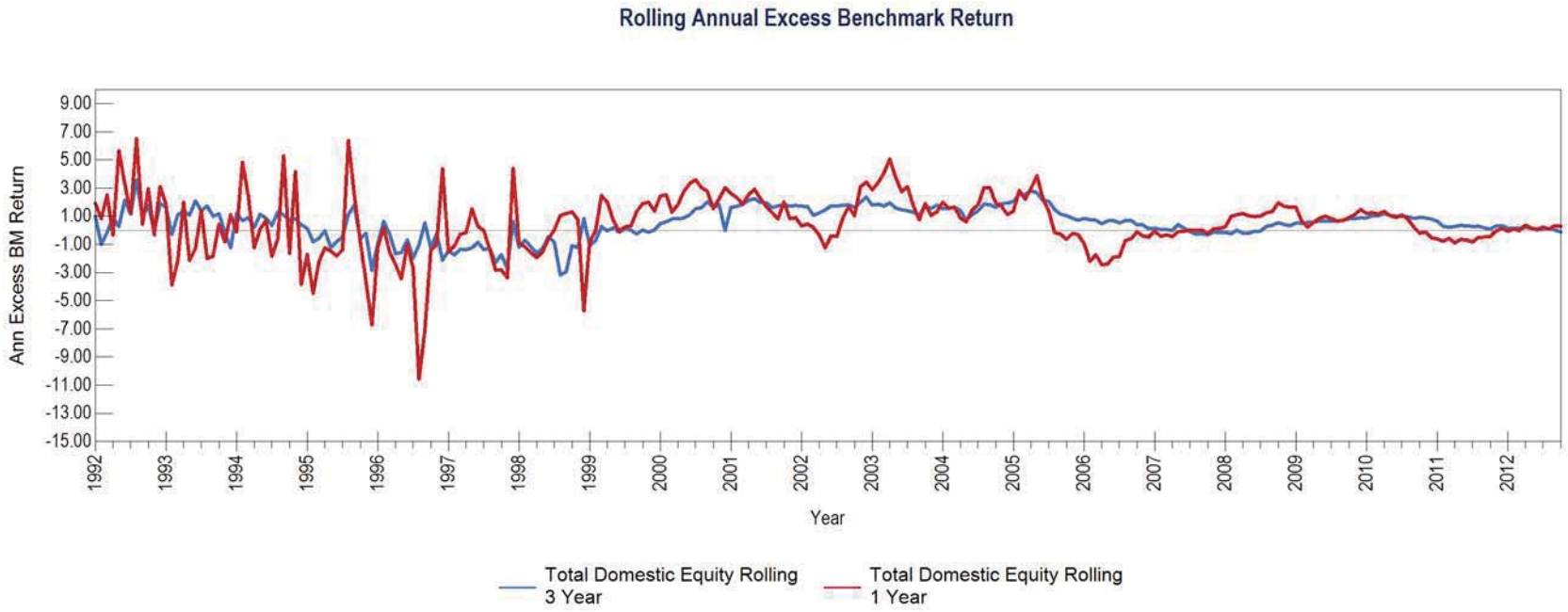
Note: Performance is reported net of fees.
Ranks for statistics shown above are based on the respective universe against which the portfolio is ranked on the asset class performance summary that precedes this section of the analysis.
Rankings are from highest (1) to lowest (100) in the eVestment Alliance Universe.
Composition of the Interim SAA Policy and ASRS Custom Asset Class Benchmarks can be found in the appendix.

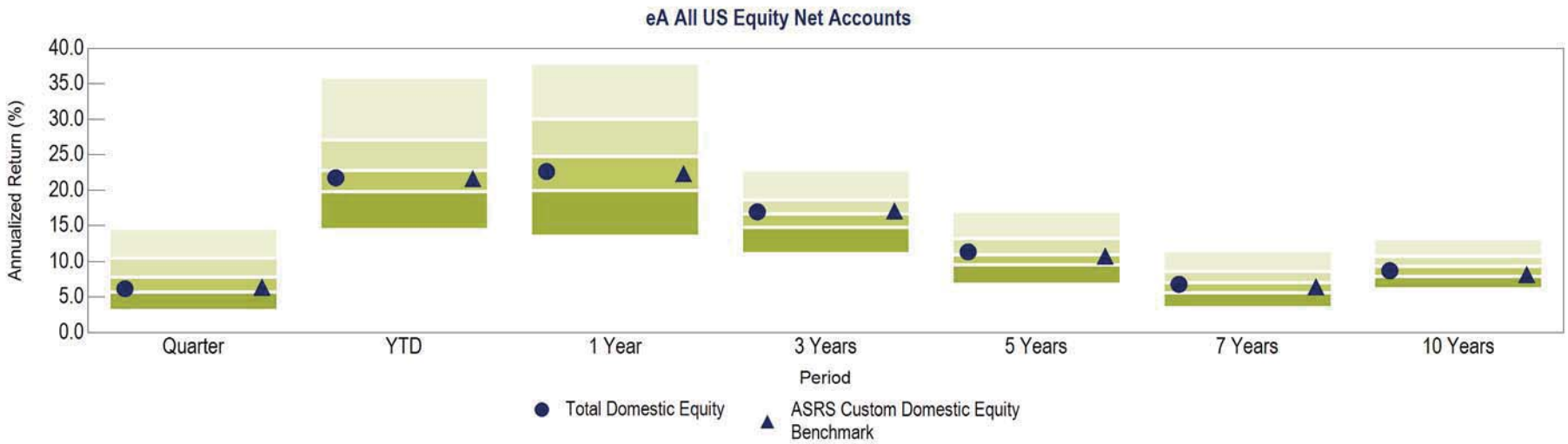
Asset Class Analysis - Total Domestic and International Equity



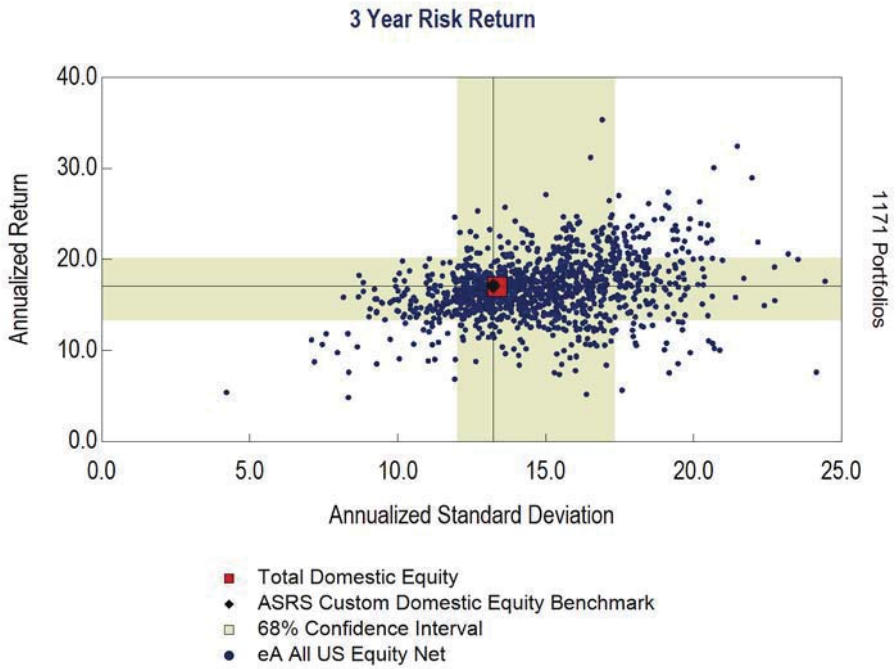


Asset Class Analysis - Total Domestic Equity





Asset Class Analysis - Total Domestic Equity



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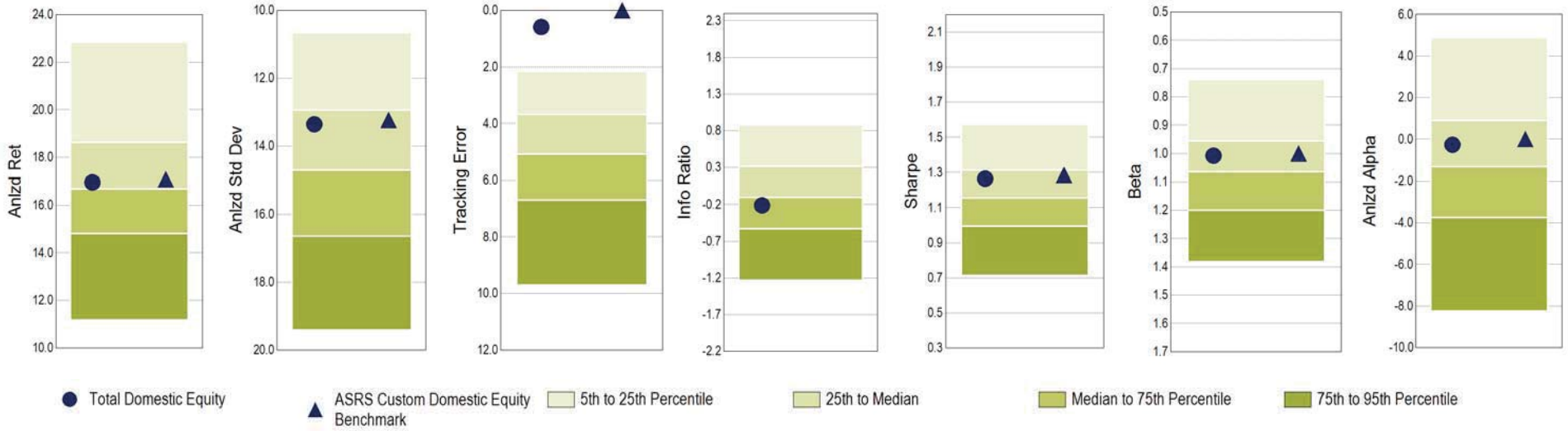
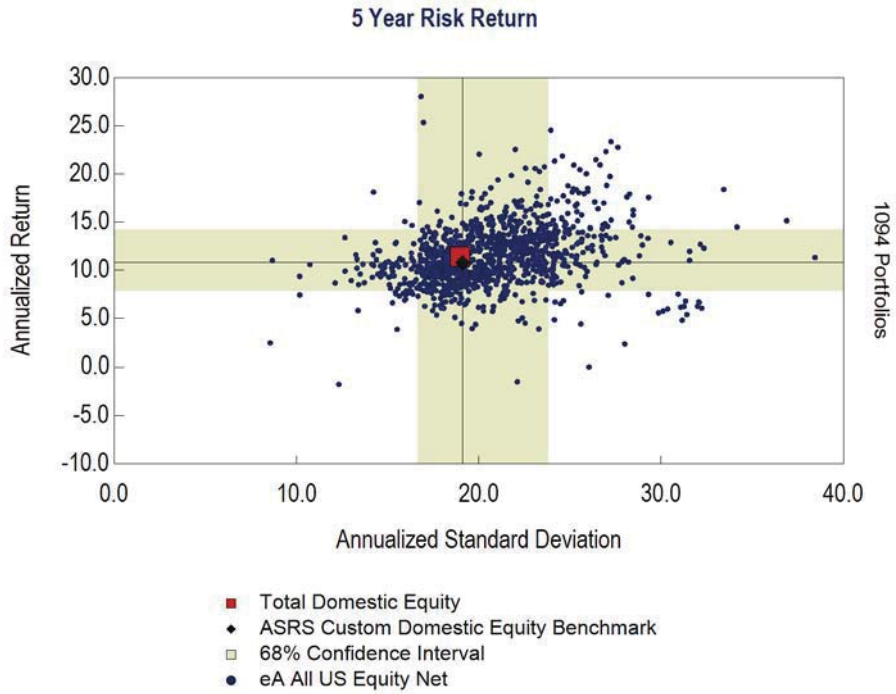


Asset Class Analysis - Total Domestic Equity



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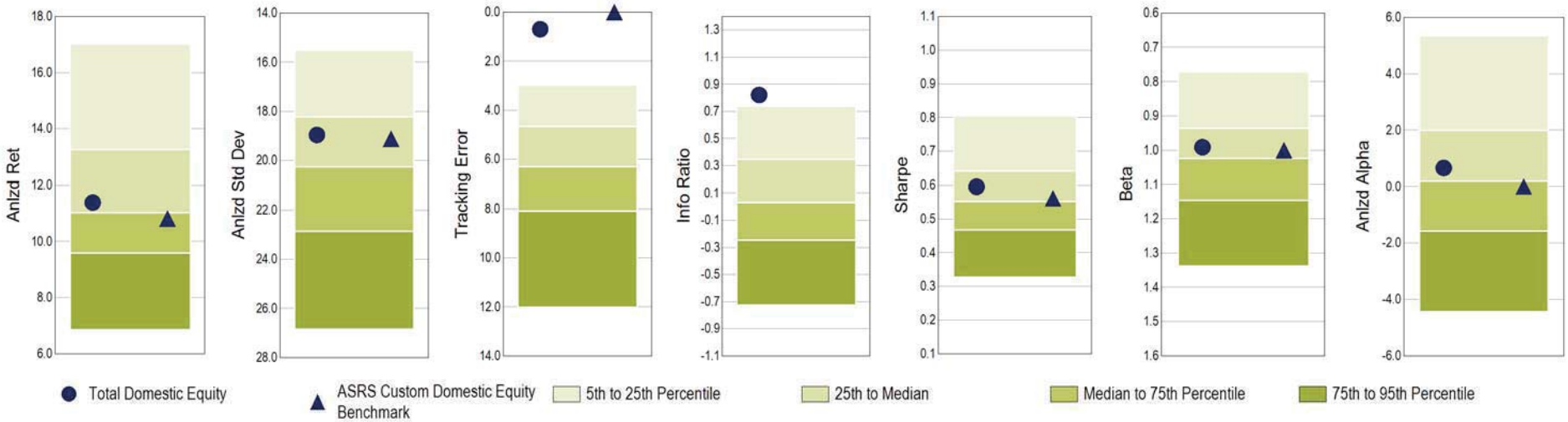
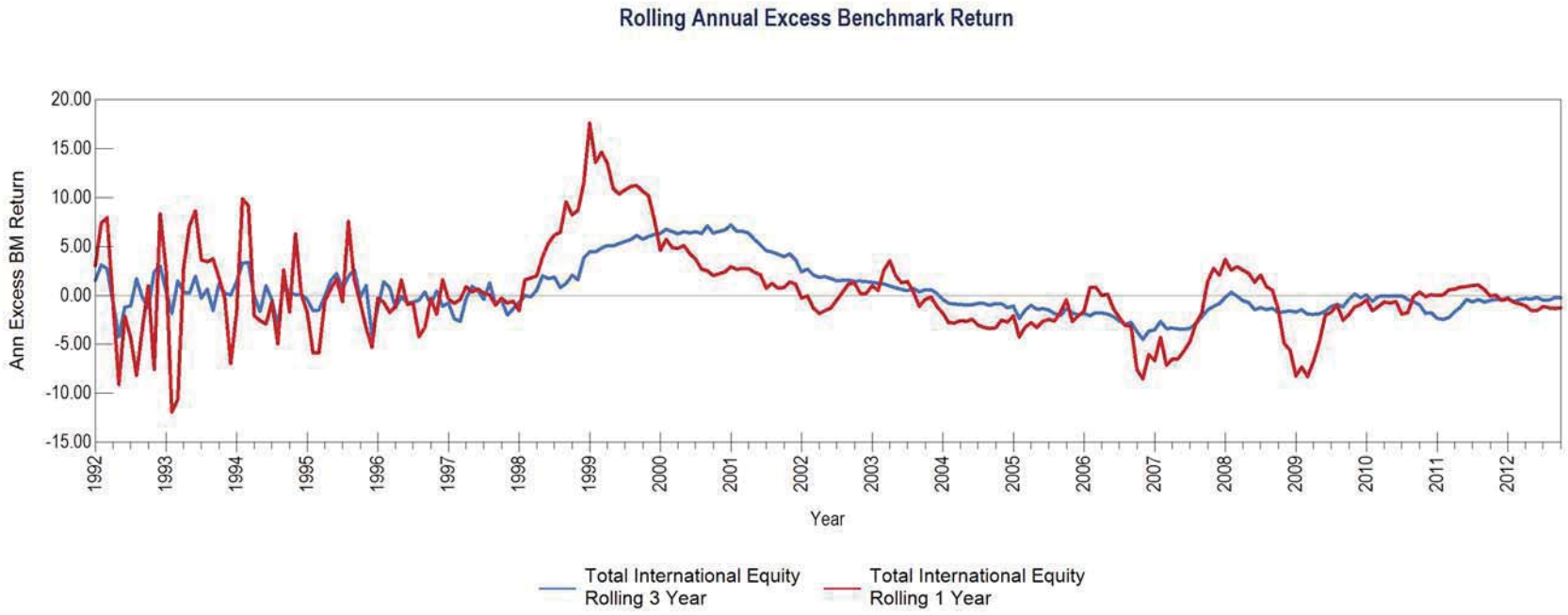
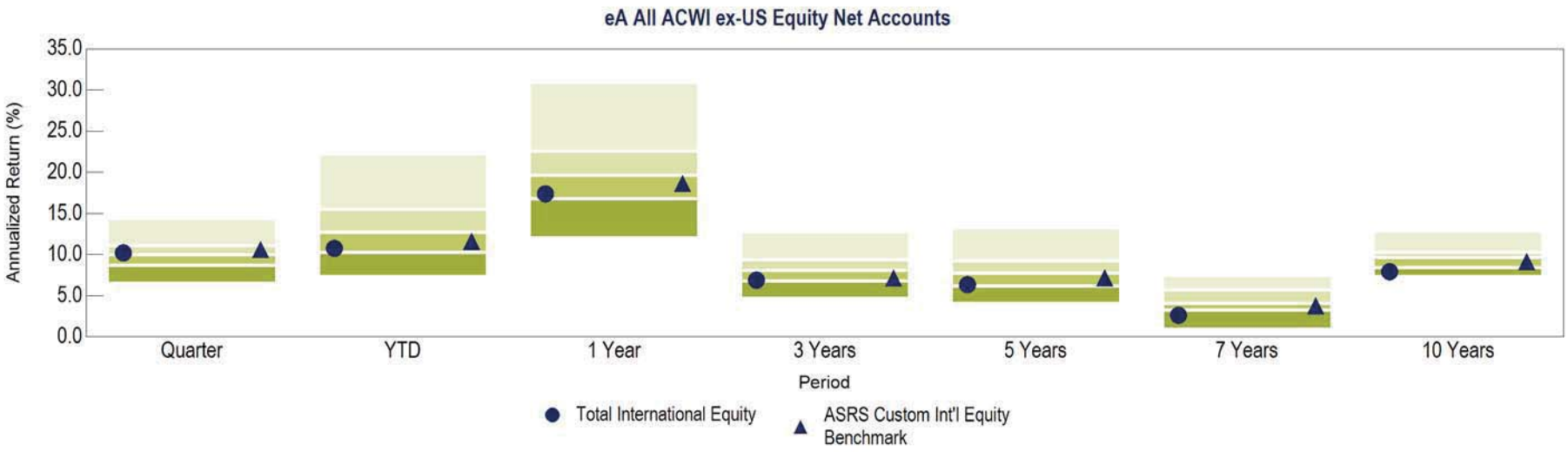
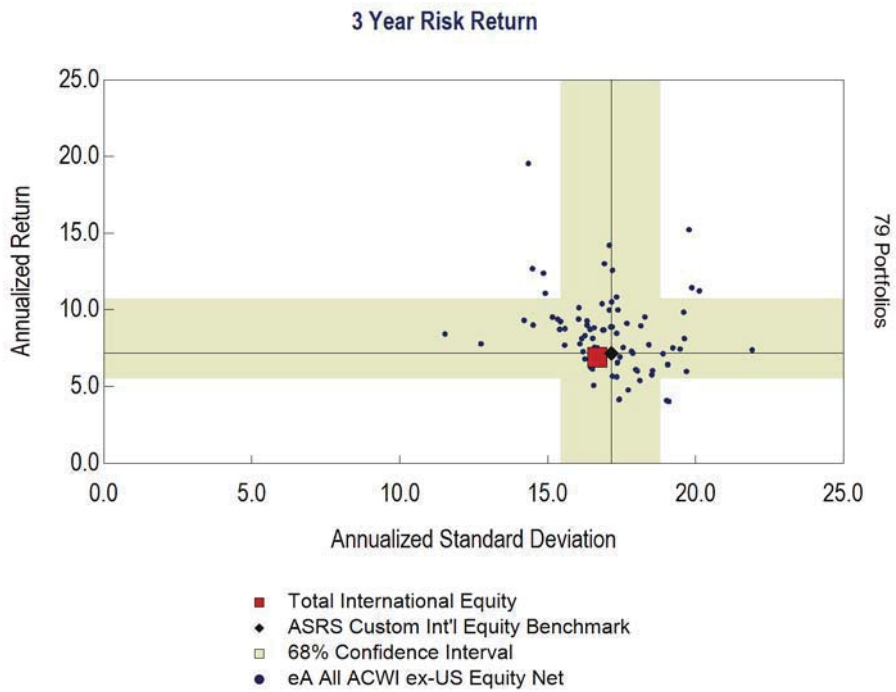


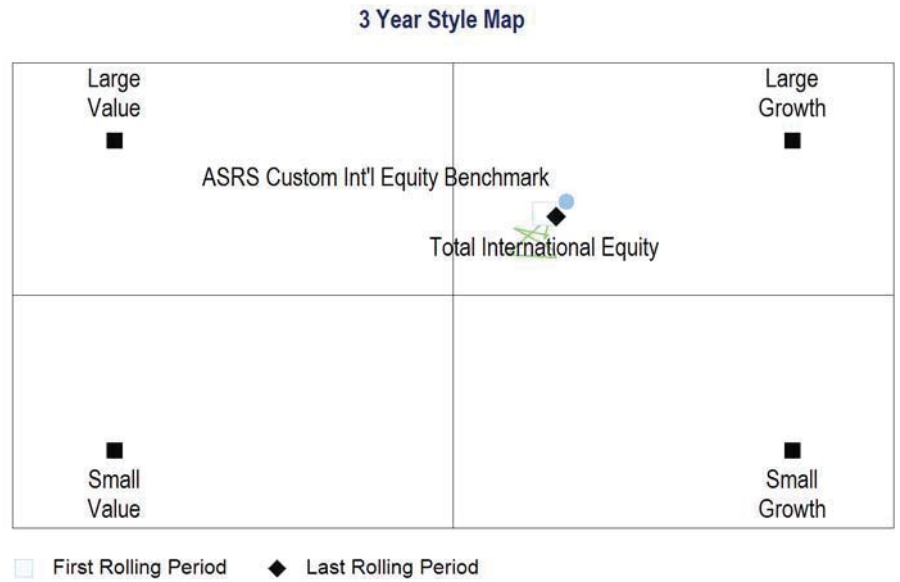
Asset Class Analysis - Total International Equity





Asset Class Analysis - Total International Equity





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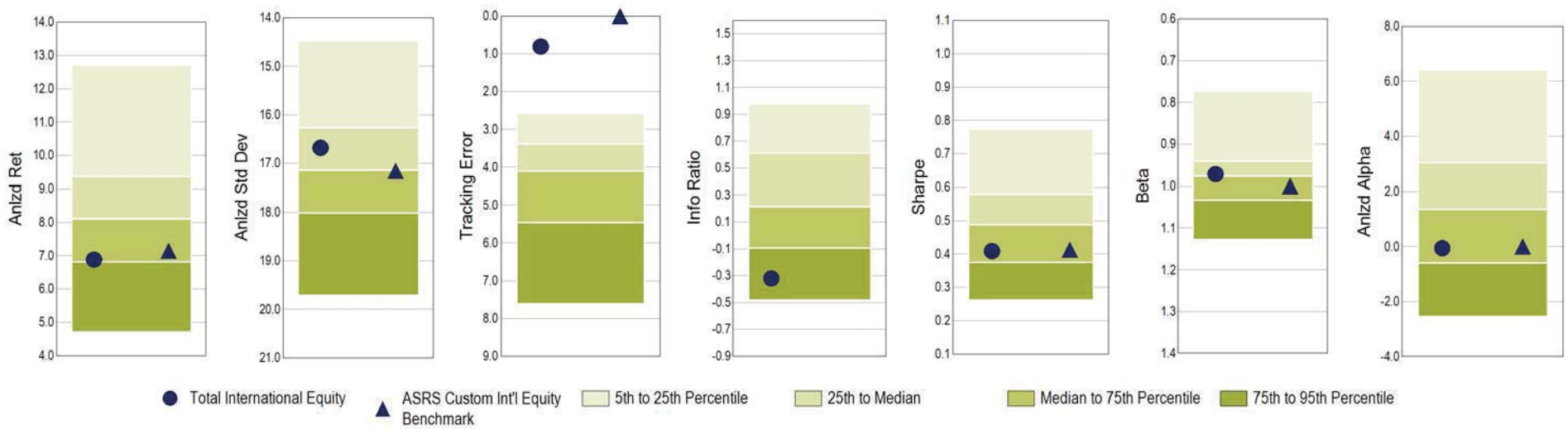
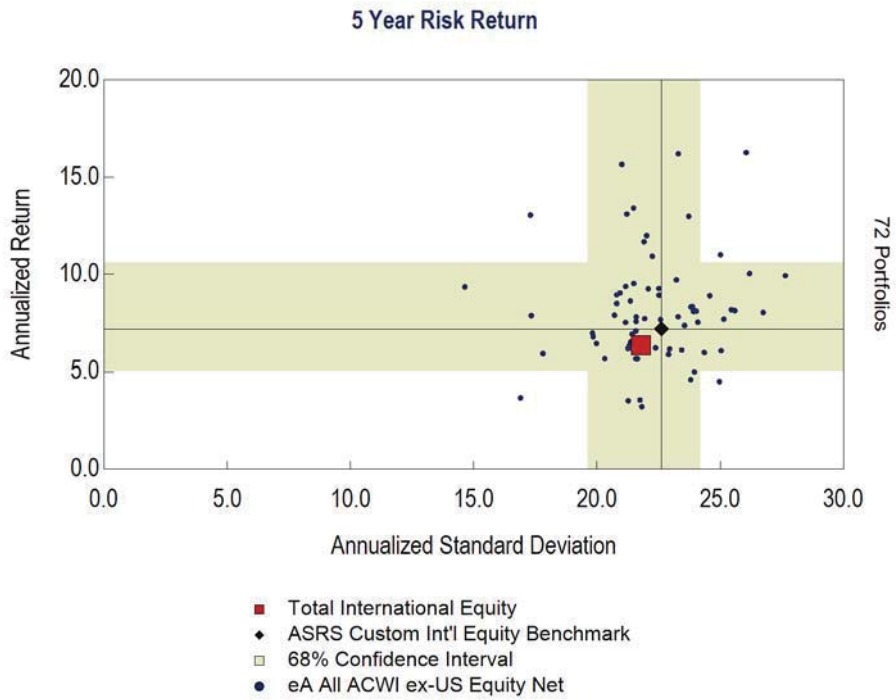
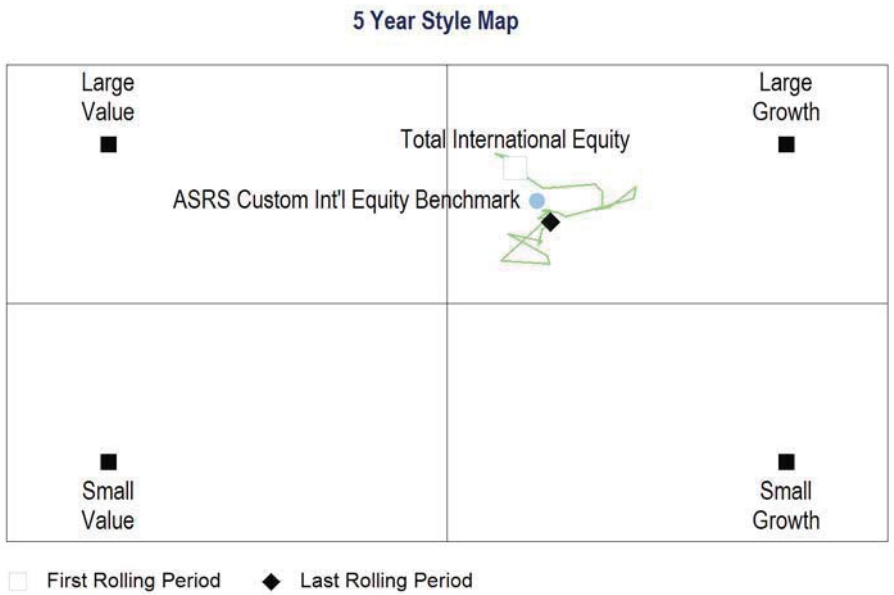


Asset Class Analysis - Total International Equity





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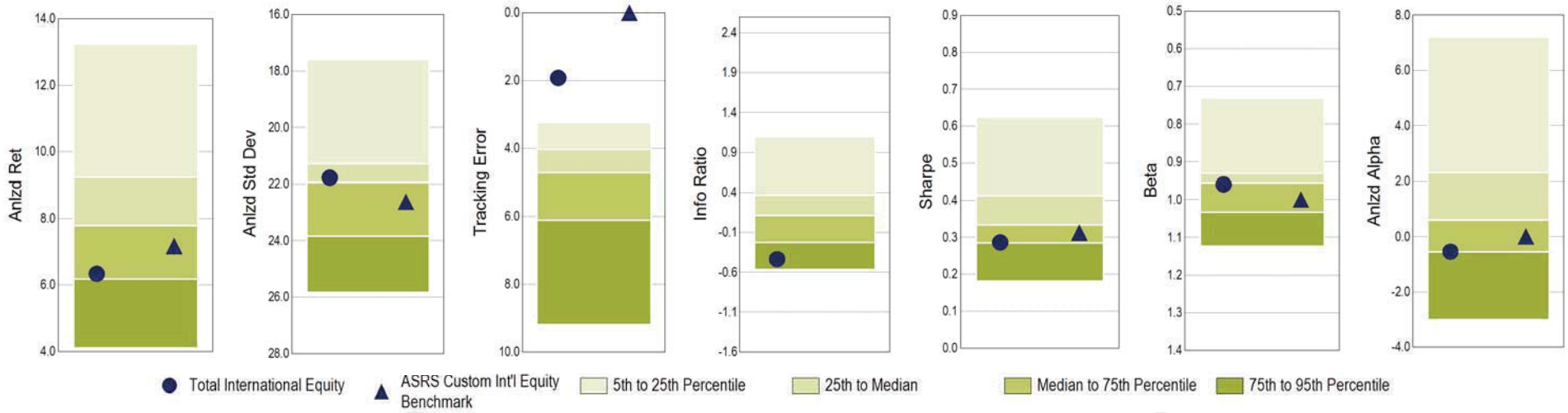
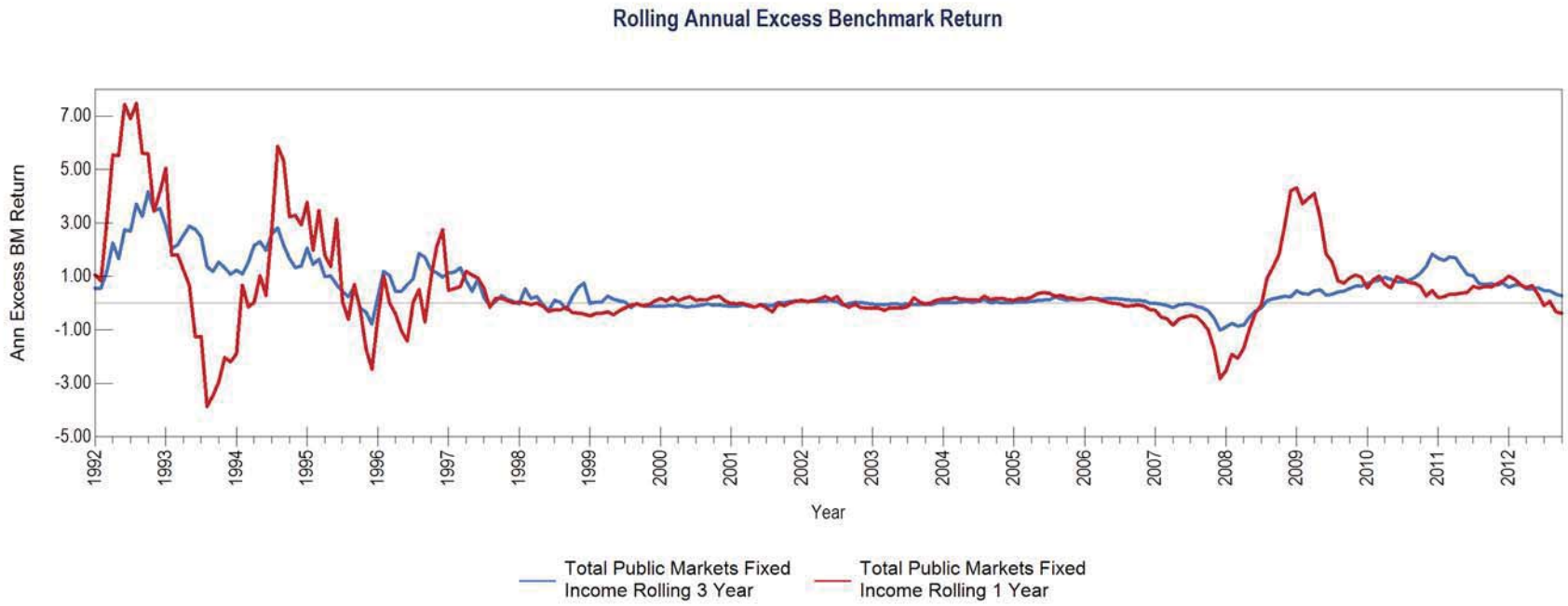
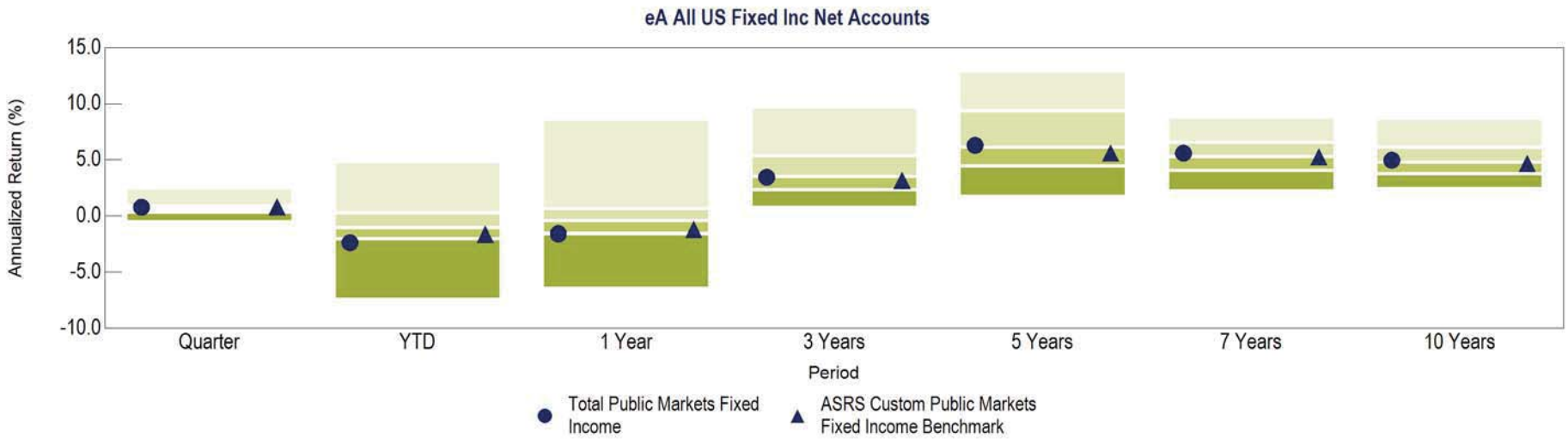
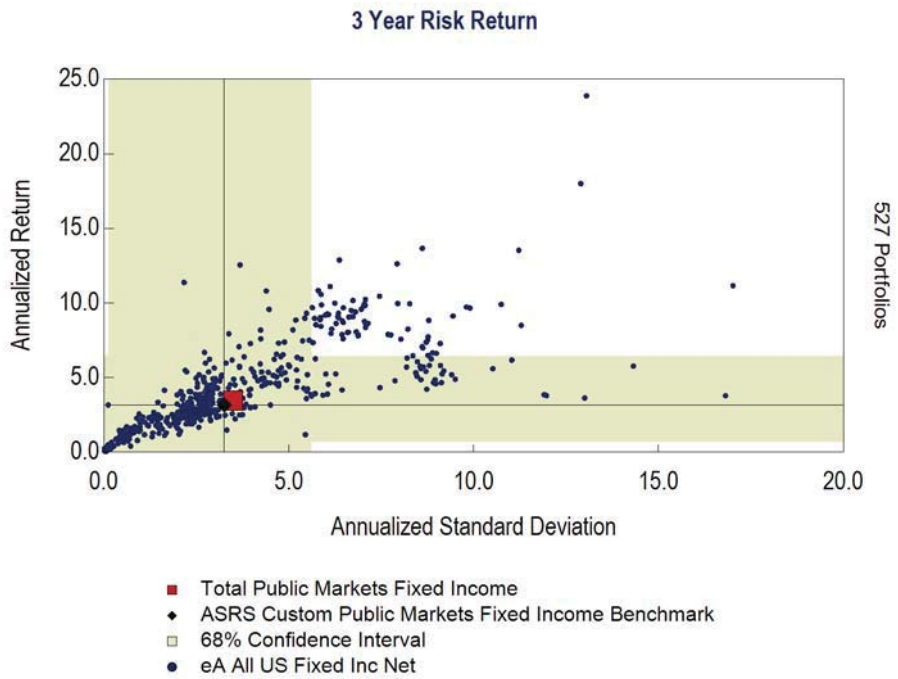


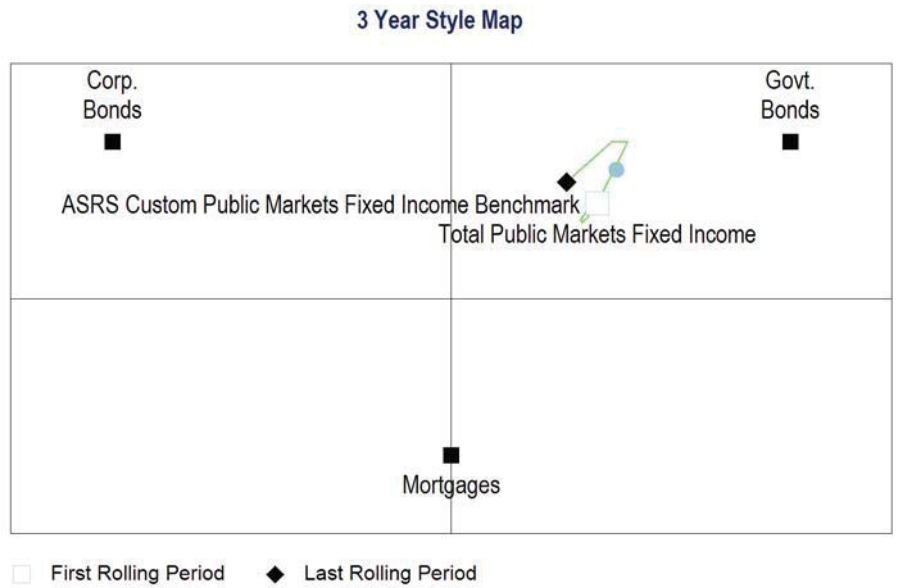
Asset Class Analysis - Total Public Markets Fixed Income





Asset Class Analysis - Total Public Markets Fixed Income





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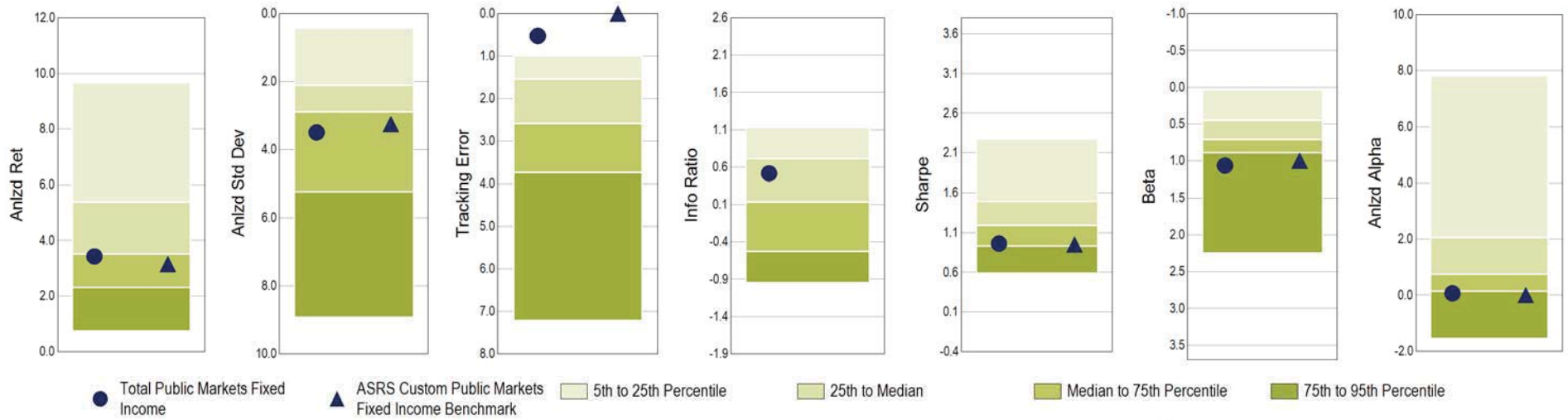
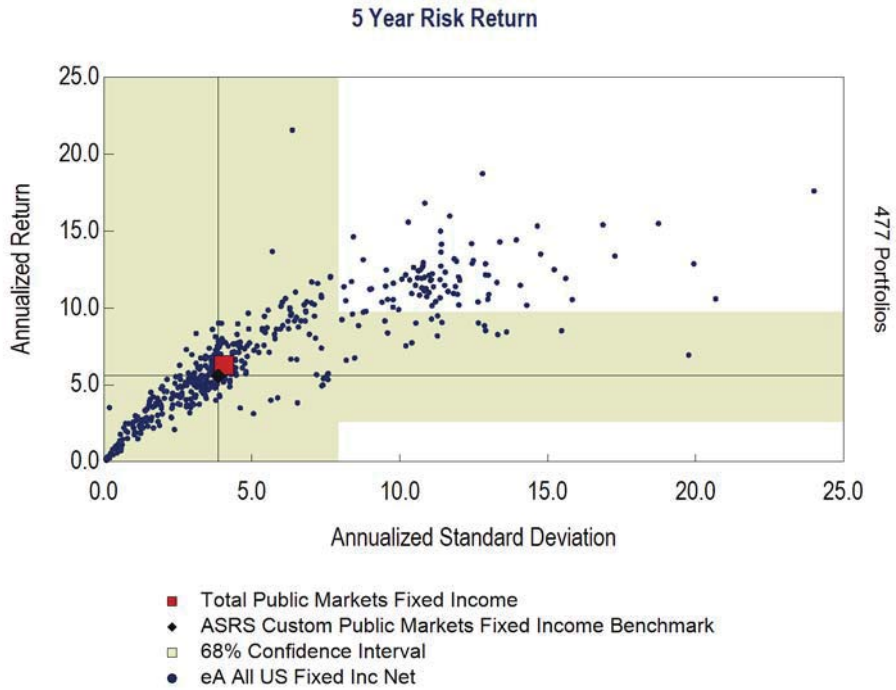
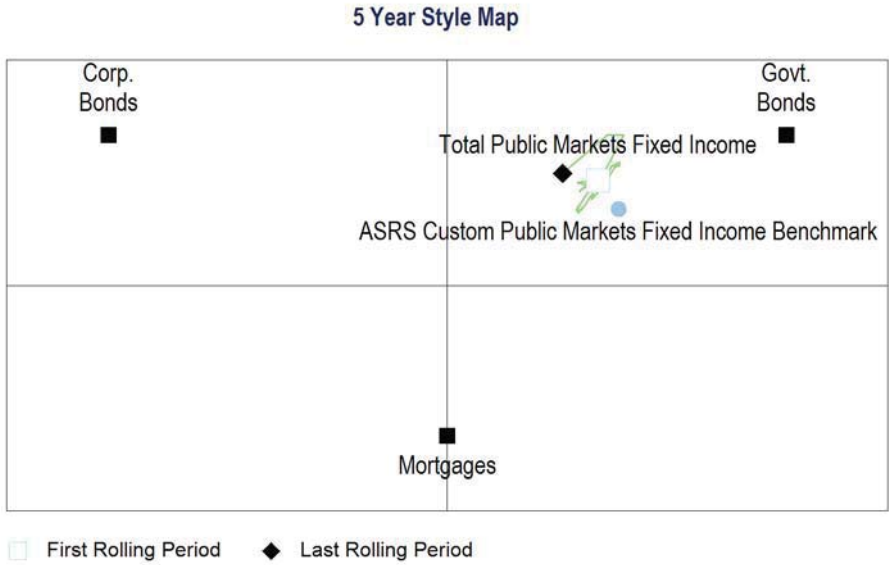


Asset Class Analysis - Total Public Markets Fixed Income





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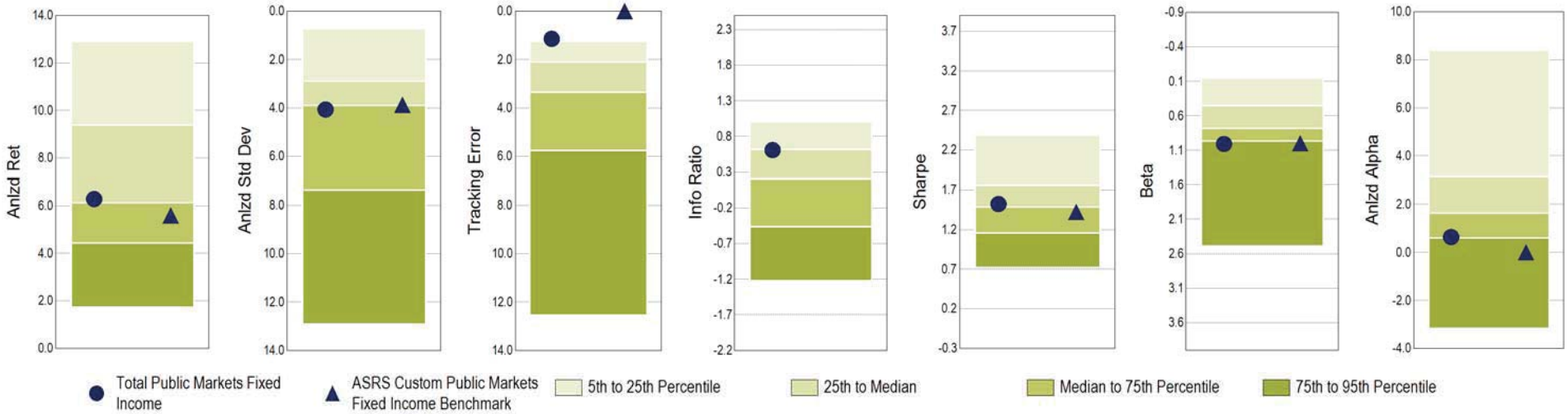
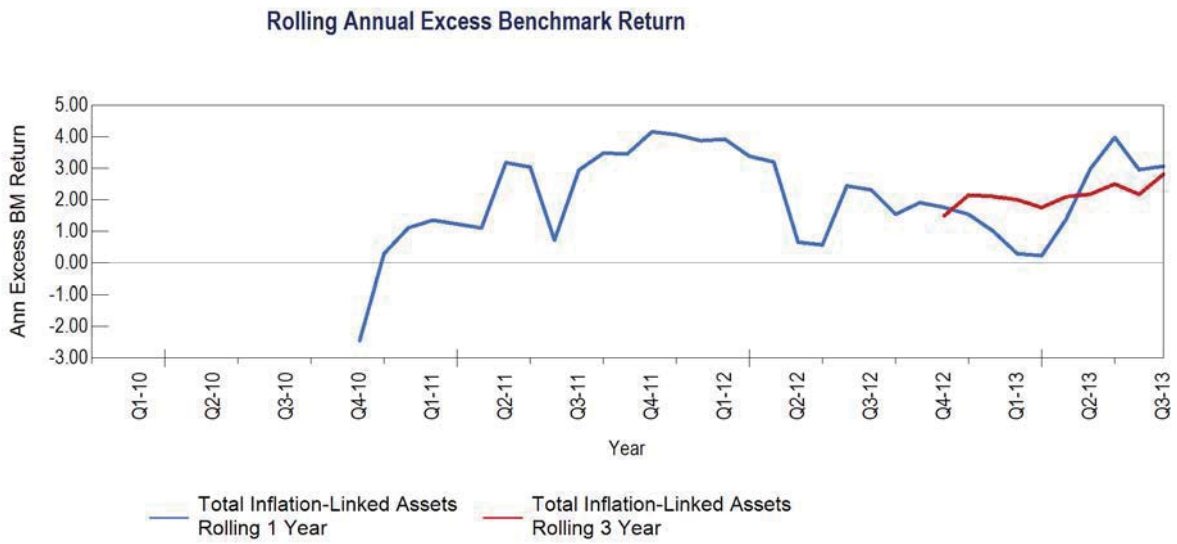
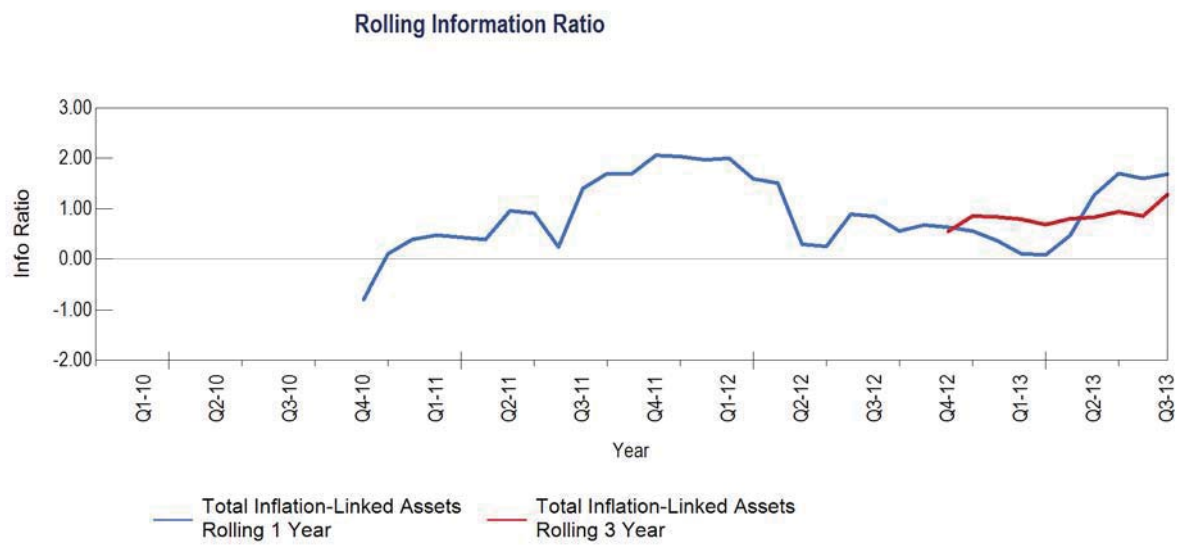
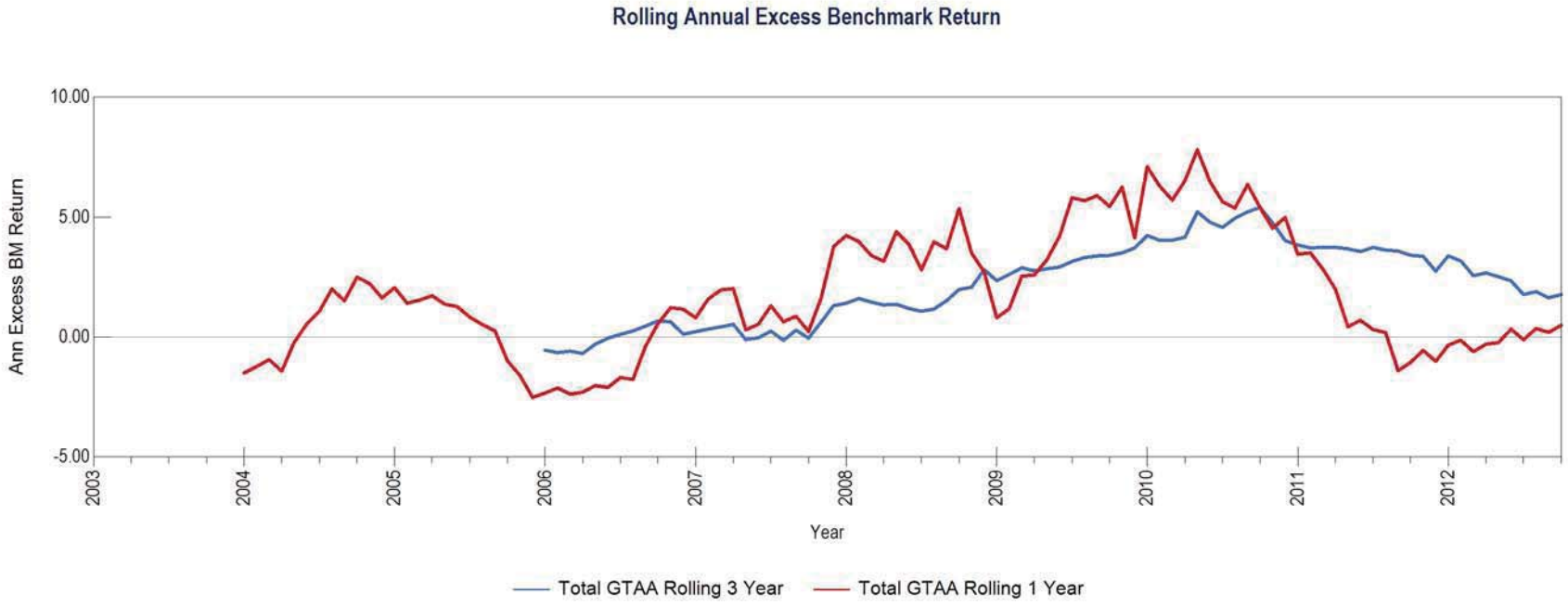


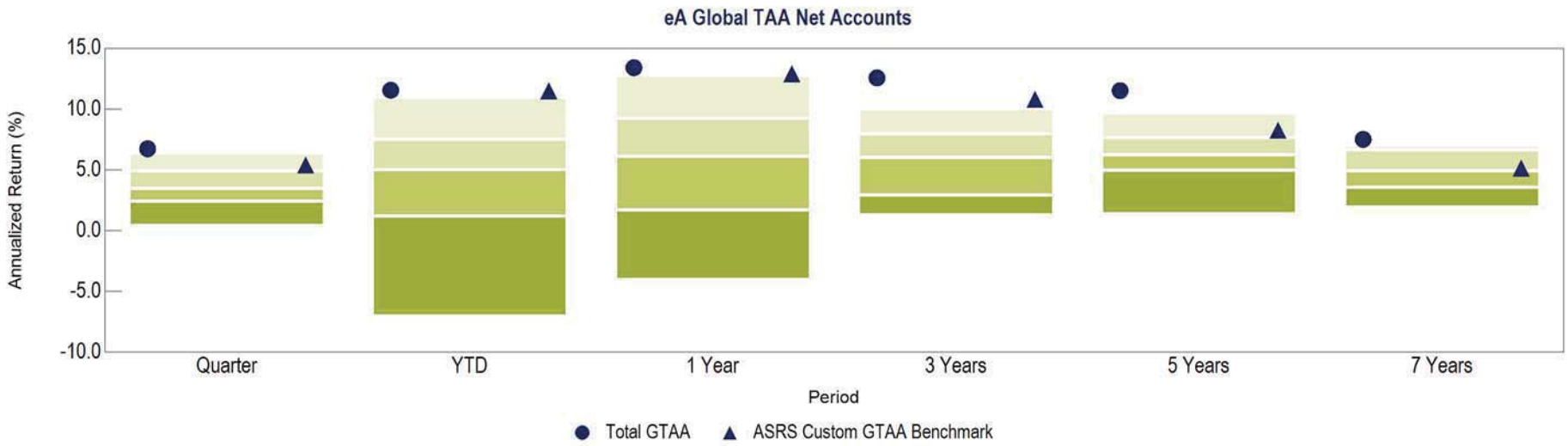
Asset Class Analysis - Total Inflation-Linked Assets



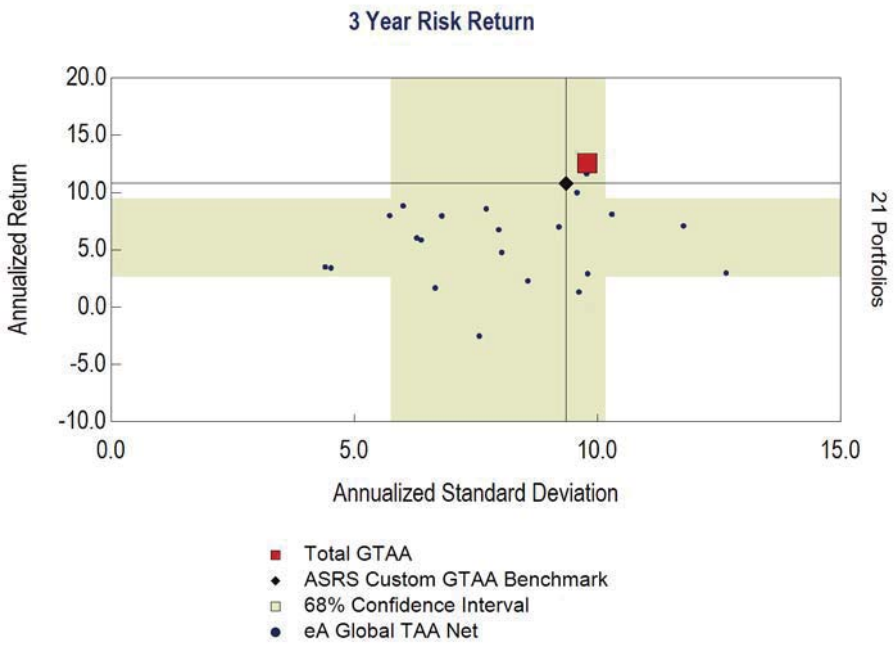


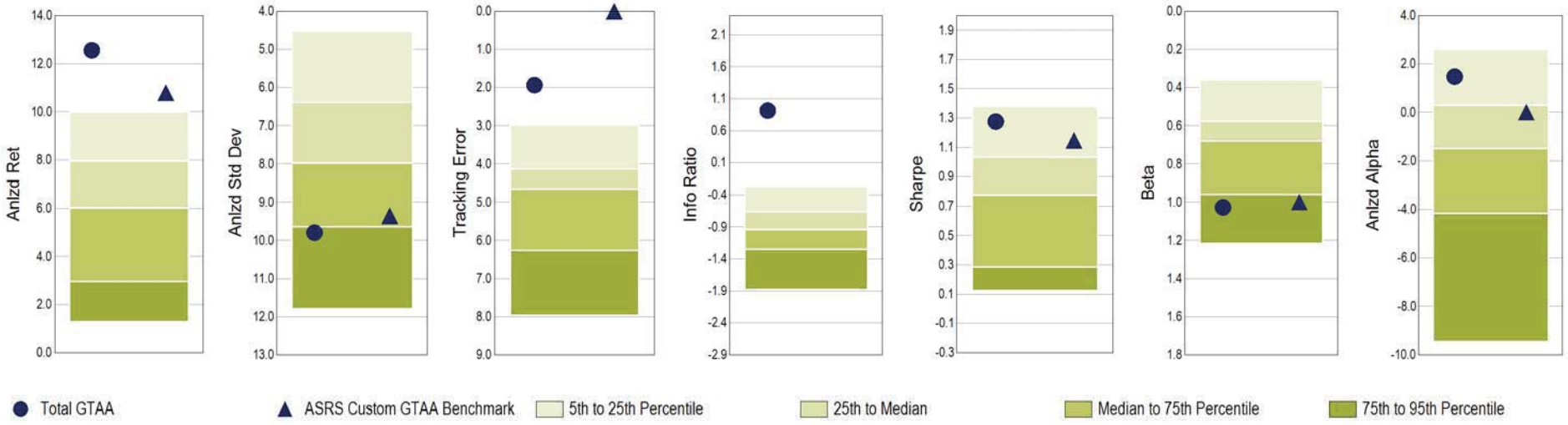
Asset Class Analysis - Total GTAA



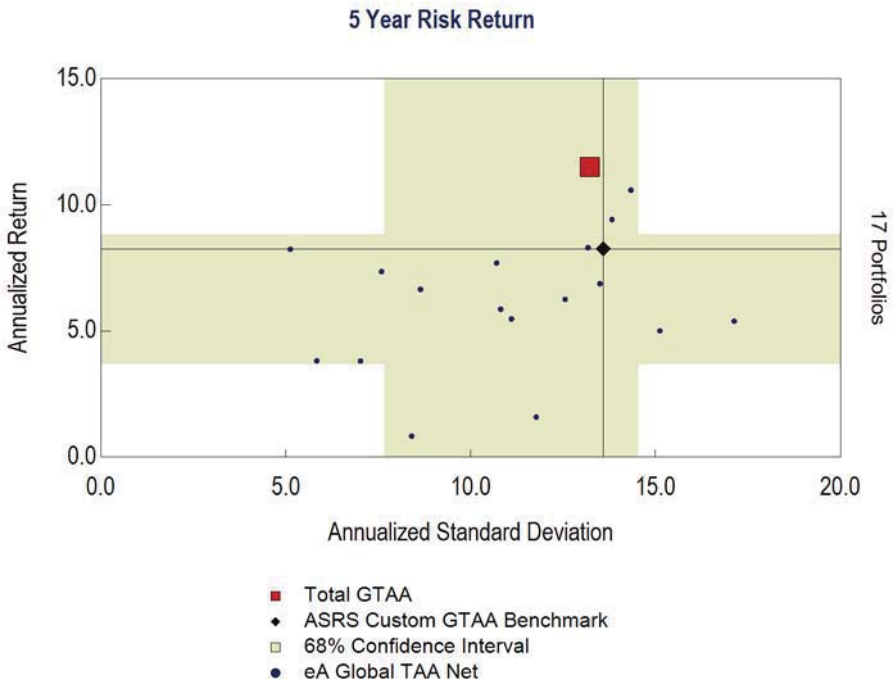


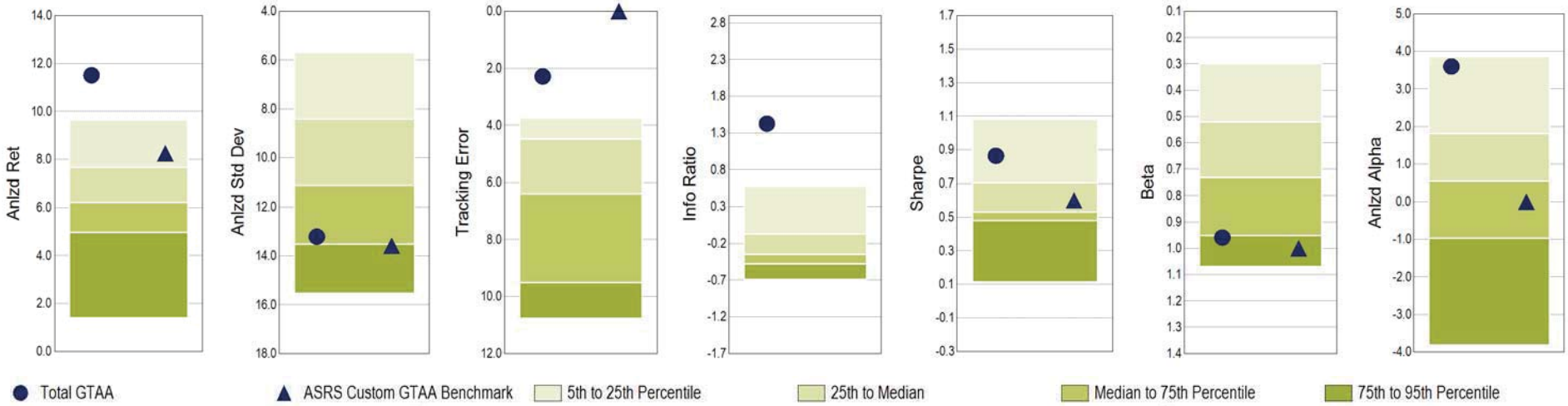
Asset Class Analysis - Total GTAA





Asset Class Analysis - Total GTAA





Asset Class Committee Monitoring

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

- **August 13, 2013 – Private Markets Committee**
  - Review of Private Markets Program Staff Report
  - General Discussion on Future Agenda Items and Deal Flow
  - Private Equity Manager Recommendation ($50 million)
    - Consistent with strategic plan at the Total Fund level (SAAP Target to Private Equity is 7%)
    - Due diligence process was followed in accordance with SIP006 – Investment Manager, Partner, and Co-Investment Selection and Oversight.
    - Committee approved the recommendation.
  - Private Equity Manager Recommendation ($50 million)
    - Consistent with strategic plan at the Total Fund level (SAAP Target to Private Equity is 7%)
    - Due diligence process was followed in accordance with SIP 006 – Investment Manager, Partner, and Co-Investment Selection and Oversight.
    - Committee approved the recommendation.

- **August 30, 2013 – Public Markets Committee**
  - Review of Public Equity Program Staff Report
  - Review of E7, E8, and Risk Factor ETF Portfolio and their fit in the ASRS Public Equity Program
  - Review of Benchmarks for ASRS Non-U.S. Equity Portfolios
    - "Gross of Withholding " vs. "Net of Withholding" with respect to the MSCI indexes used as benchmarks for the ASRS Non-U.S. Equity Portfolios.
    - Committee approved the recommendation to change from the "Gross of Withholding" to the "Net of Withholding" series of benchmarks.

Asset Class Committee Monitoring

- **September 20, 2013 – Private Markets Committee**
  - Review of Private Markets Program Staff Report
  - General Discussion on Future Agenda Items and Deal Flow
  - Private Equity Manager Recommendation ($85 million)
    - Consistent with strategic plan at the Total Fund level (SAAP Target to Private Equity is 7%)
    - Due diligence process was followed in accordance with SIP006 – Investment Manager, Partner, and Co-Investment Selection and Oversight.
    - Committee approved the recommendation.

- **October 4, 2013 – Ad Hoc Private Markets Committee**
  - Real Estate Investment Discussion
    - Discussion to change the investment guidelines for an existing real estate investment manager to allow for the construction of a property in a geographical market that would not be allowed under the current guidelines.
    - Committee approved the recommendation.
      - This does not necessarily mean that the investment manager will continue with the investment. They continue to perform due diligence, but wanted to confirm that they would be able to pursue the investment before moving forward.

Asset Class Committee Monitoring

- **October 21, 2013 – Private Markets Committee**
  - Review of Private Markets Program Staff Report
  - General Discussion on Future Agenda Items and Deal Flow
  - Real Estate Investment Discussion
    - Discussion to amend the agreement that is currently in place with an existing real estate investment manager to allow the partnership to raise to $25 million from $10 million the size of a permitted loan which may be collateralized with more than one investment property.
    - Committee approved the recommendation.
      - The market for smaller sized loans is limited with many lenders from whom the partnership would prefer to borrow require higher minimum loan balances. In addition, more favorable pricing is available on the larger loan.
  - Private Equity Investment Discussion
    - Discussion on a potential co-investment opportunity was deferred as the IMD continues to gather information on the opportunity and conduct further analysis.

- **November 4, 2013 – Ad Hoc Private Markets Committee**
  - Private Equity Co-Investment Recommendation ($50 million - deferred from 10/21/2013 PRIVMC meeting)
    - Consistent with strategic plan at the Total Fund level (SAAP Target to Private Equity is 7%)
    - Due diligence process was followed in accordance with SIP006 – Investment Manager, Partner, and Co-Investment Selection and Oversight.
    - Committee approved the recommendation.

General Observations

- **The Fund continues to make significant progress moving the portfolio toward the long-term SAAP.**
  - Full implementation results in a further reduction of 2% within U.S. Equities and 2% within U.S. Core Fixed Income and an increase of 1% to Private Equity, 1% to Private Debt, and 2% to Real Estate.

- **With regard to Emerging Markets, a concern about potential further deterioration in EM currencies resulted in the following actions in late September.**
  - Remain underweight EM Debt relative to policy (3.5% actual vs. 4.0% target currently)
    - Transitioned the local currency portfolio currently managed by Ashmore to the blended portfolio (local and USD-denominated debt), which the ASRS also invests in.
  - With regard to emerging markets equities, the slight underweight (5.9% actual vs. 6.0% target currently) remains; returns of equities within emerging markets appear to be less impacted by changes in the value of emerging market currencies compared to local currency debt.

- **$235 million in commitments to Private Equity strategies in line with strategic plan and pacing model for the asset class.**

- **The exception requested within the Real Estate allocation to potentially construct a property that is not in one of the designated markets is a recommendation that NEPC is comfortable with.**

- **Current exposure to Opportunistic investments is 3.5% of the Total Fund, which is largely comprised of investment in Opportunistic Debt strategies.**
  - Aggregate Opportunistic asset classes not to exceed 10% of the Total Fund.

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

Market Environment Update and Outlook

Economic Environment

- **"Advance" estimate of third quarter 2013 GDP growth is 2.8% after increasing by 2.5% in the second quarter.**
  - Retail sales fell to a 3.3% year-over-year growth rate in August 2013.
  - The inventory-to-sales ratio has remained mostly flat since early 2010 and closed at 1.28 in July 2013 after reaching its highest level since October 2009 in April.
  - Corporate profits as a percent of GDP remained near secular highs at 12.5% at the end of Q2 2013.
  - The trade deficit increased through July 2013.

- **The unemployment rate fell to 7.2% in September, its lowest level since 2008; U-6, a broader measure of unemployment, also decreased to 13.6% during the third quarter.**
  - JP Morgan has stated that sustained GDP growth of 1.5% is needed for positive job creation, and closer to 3% growth is needed to decrease the unemployment rate.

- **Consumer confidence fell slightly to 79.7 in September; the Case-Schiller Home Price Index (as of 6/30) rose to its highest level (146.32) since the financial crisis.**

- **Rolling 12-month CPI decreased to 1.5% at the end of August; Capacity Utilization stayed nearly flat at 77.8% in the month.**

- **Fed Funds rate remains at 0.25% while the 10-year Treasury Yield finished September at 2.6%.**

- **Fed balance sheets have increased in 2013, while European Central Bank balance sheets have decreased significantly.**
  - Large economies such as the U.S., China and Japan (to the extreme) have continued easing, while the ECB tightens.

- **S&P valuations are slightly above the 10-year average using current price/earnings ratios.**
  - Cyclically adjusted Shiller PE ratios, however, are well above the long-term average of 16.5x and above the 10-year average of 23.1x.

Market Environment - Overview

Domestic Equity Benchmarks		Qtr.	1 Yr.	3 Yr.	5 Yr.	10 Yr.
Large Core	S&P 500	5.2%	19.3%	16.3%	10.0%	7.6%
Small Core	Russell 2000	10.2%	30.1%	18.3%	11.2%	9.6%
Small Growth	Russell 2000 Growth	12.8%	33.1%	20.0%	13.2%	9.9%
Small Value	Russell 2000 Value	7.6%	27.0%	16.6%	9.1%	9.3%
Large Core	Russell 1000	6.0%	20.9%	16.6%	10.5%	8.0%
Large Growth	Russell 1000 Growth	8.1%	19.3%	16.9%	12.1%	7.8%
Large Value	Russell 1000 Value	3.9%	22.3%	16.2%	8.9%	8.0%
Mid Core	S&P Mid Cap 400	7.5%	27.7%	17.5%	13.1%	10.8%
REIT	NAREIT Composite	-2.6%	4.6%	12.3%	6.3%	N/A
Int'l Equity Benchmarks		**Qtr.**	**1 Yr.**	**3 Yr.**	**5 Yr.**	**10 Yr.**
International Developed	MSCI EAFE	11.6%	23.8%	8.5%	6.4%	8.0%
Emerging Equity	MSCI EM	5.8%	1.0%	-0.3%	7.2%	12.8%
Small Cap Int'l	S&P EPAC SmallCap	15.0%	28.5%	11.3%	10.3%	10.9%
World ex-US	MSCI ACWI ex-US	10.1%	16.5%	5.9%	6.3%	8.8%
Domestic FI Benchmarks		**Qtr.**	**1 Yr.**	**3 Yr.**	**5 Yr.**	**10 Yr.**
Core Bonds	Barclays Aggregate	0.6%	-1.7%	2.9%	5.4%	4.6%
Municipal Bond	Barclays Municipal	-0.2%	-2.2%	3.2%	6.0%	4.4%
High Yield	Barclays US High Yield	2.3%	7.1%	9.2%	13.5%	8.9%
Intermediate Gov/Cred	Barclays Interm. Gov/Credit	0.6%	-0.5%	2.4%	5.0%	4.1%
Long Gov/Credit	Barclays Long Gov/Credit	-0.8%	-8.3%	4.7%	9.1%	6.3%
Long Credit	Barclays Long Credit	-0.0%	-6.9%	5.4%	11.2%	6.3%
Long Treasuries	Barclays US 20+ Yr Treas	-2.7%	-11.8%	3.7%	6.1%	6.3%
Cash	BofA ML US 3-Month T-Bill	0.0%	0.1%	0.1%	0.2%	1.7%
Inflation	Barclays US TIPS 1-10 Yr	0.9%	-3.9%	3.1%	4.1%	4.6%
Global Inflation	Barclays Global ILB	3.8%	-0.5%	4.7%	4.9%	6.0%
STRIPS	Barclays 20+ Yr STRIPS	-5.4%	-18.6%	4.9%	7.6%	N/A
Global FI Benchmarks		**Qtr.**	**1 Yr.**	**3 Yr.**	**5 Yr.**	**10 Yr.**
World Gov. Bonds	Citigroup WGBI	2.9%	-4.6%	1.0%	4.3%	4.8%
Em. Mkt. Bonds (Local)	JPM GBI-EM Glob. Div.	-0.4%	-3.7%	1.8%	7.3%	10.1%
Diversified Benchmark		**Qtr.**	**1 Yr.**	**3 Yr.**	**5 Yr.**	**10 Yr.**
Diversified	Diversified*	4.7%	12.6%	10.4%	8.1%	7.3%
Alternative Benchmarks		**Qtr.**	**1 Yr.**	**3 Yr.**	**5 Yr.**	**10 Yr.**
Commodities	DJ UBS Commodity Index	2.1%	-14.3%	-3.2%	-5.3%	2.1%
Fund of Funds	HFRI Fund of Funds	1.8%	7.1%	3.9%	5.0%	5.9%
Hedge Fund	DJCS HF Composite	1.6%	7.4%	5.0%	5.5%	6.4%
Hedge Fund	DJCS Equity Market Neutral	1.2%	4.8%	3.1%	-7.9%	-0.6%
Hedge Fund	DJCS Event Driven	2.9%	13.7%	5.5%	6.4%	7.7%
Hedge Fund	DJCS Long-Short	3.5%	13.1%	5.6%	6.1%	7.0%
Real Estate	NCREIF Property Index**	2.9%	10.7%	13.1%	2.8%	8.6%

* 35% LC, 10% SC, 12% Int'l, 3% Emerging, 25% FI, 5% HY, 5% Global FI, 5% REITS
**As of 6/30/2013

Market Environment

Domestic and International Equity

- **Domestic Equity (S&P 500) trailed International Equity (MSCI ACWI ex-U.S.) in the third quarter (-4.9%).**

- **U.S. stocks continued their march upward in the third quarter as the S&P 500 Index gained +5.2%, shrugging off uncertainty around the continuity of the Federal Reserve's accommodative monetary policy.**
  - The economy also expanded modestly during the quarter. Housing remained strong as unemployment inched lower and consumers regained confidence.
  - Growth stocks outpaced value, underscoring increased risk tolerance; defensive and interest rate sensitive sectors, typically seen in value stock portfolios, lagged.
  - Small cap stocks continued to lead in the third quarter and year-to-date, with the Russell 2000 Index returning +10.2% for the quarter.

- **The third quarter was also positive for international and emerging markets.**
  - Developed non-U.S. markets posted a +11.6% return during the quarter as measured by the MSCI EAFE Index. Returns were boosted on the bank of improving economic data in Europe, especially in some of the more troubled regions such as Greece, Italy and Spain. Japanese stocks gained but still lagged broader developed markets as its Prime Minister's political party failed to garner a majority in elections.
  - Signs of stabilizing growth in China pushed up emerging markets, which returned +5.8% during the quarter. An increase in risk-taking within these regions sparked a sharp rally in the more cyclical sectors, such as energy and materials, while defensive sectors, such as consumer staples, lagged.

Private Equity

- **Private equity fundraising during the first nine months of 2013 totaled $228 billion – 85% of the amount raised in 2012 – pointing to an expected increase for 2013.**
  - Investor interest underscored economic optimism with 58% of commitments going to buyout and growth equity funds.
  - Venture capital fundraising represents only 9% of this year's total, well below its 10-year average of 17% of all new funds raised.
  - In the U.S., we remain guarded on the large buyout sector as an active high yield market, elevated transaction prices, and the return of "covenant-lite" term sheets leave little room for operational missteps and provide little protection in the event of a prolonged recession.
  - Opportunistically, private direct lending is an attractive fixed income alternative for investors and is competing with mezzanine funds by providing uni-tranche financing to lower- and middle-market businesses at attractive yields with lower fee structures.

- **Europe raised $57.2 billion of private equity through the first nine months of the year, eclipsing 2012's total of $54.0 billion.**

- **Asian private equity slowed to 9% of all funds raised in 2013.**

- **We believe investors making new commitments are best served by value-oriented buyouts, particularly in the lower- or middle-market where returns are less dependent on leverage and more reliant on operational improvements and the execution of growth strategies.**

Market Environment

Fixed Income

- **Long-term interest rates ended the quarter modestly higher than the prior quarter end.**
  - The 10-year Treasury yield spiked to nearly 3% before falling back significantly to end the quarter at 2.6% following a surprise announcement by the Fed in September to leave the bond purchase program unchanged for the time being.

- **The Barclays Capital U.S. Aggregate Bond Index returned -0.6% in the quarter, bringing year-to-date performance to -1.9%.**
  - Similar to Treasuries, mortgage-backed securities struggled in the first half of the quarter, but benefitted greatly from the Fed's inaction, posting gains of +1.0% for the quarter.
  - Weak Treasury markets in July and August negatively impacted pricing of investment grade credit, which subsequently recovered, posting gains of +0.9% during the quarter.
  - In a testament to market confidence, telecommunications giant Verizon Communications sold $49 billion of bonds, the largest corporate debt offering ever, amidst overwhelming investor demand.

- **Non-investment grade debt maintained their reign over the U.S. fixed income market.**
  - High yield bond yields fell to 6.2% in September from 6.6% in June, according to the Barclays Capital High Yield Index, which returned +2.3% in the third quarter.
  - Leveraged loans, which have benefitted from strong demand from retail and institutional investors, gained +1.2% during the quarter.
  - The thirst for yield persisted as lower quality and less liquid portions of the speculative-grade market outperformed higher quality issues.

- **Emerging market debt improved from the second quarter, but results were mixed.**
  - Concerns of a secular slowdown across emerging markets, specifically in Brazil, Indonesia, India, South Africa and Turkey, along with the specter of a Fed tightening, drove spreads higher over the period.
  - Emerging market bonds denominated in hard currency gained +0.9% in the third quarter, bringing year-to-date performance to -7.4%.
  - Bonds issued in local currency lost -0.4% during the quarter, with currency depreciation offsetting a modest decline in local yield curves, bringing year-to-date performance to -7.6%.

Market Environment

Commodities

- **Commodities experienced a bumpy ride in the third quarter as a strong start gave way to a weak finish. Overall, commodities posted quarterly returns of +2.1% according to the Dow Jones/UBS Commodity Index.**
  - Grains were the worst performing segment, returning approximately -5.1% on the back of record harvest levels in corn.
  - Precious metals led the pack, gaining about +9% amid an uptick in demand as growth stabilized in China.

Real Estate

- **NEPC is neutral on core real estate in the U.S. and remains positive on non-core real estate, that is, value-add and opportunistic strategies.**
  - Within U.S. core real estate, fundamentals continue to improve with increasing rents and decreasing vacancy rates.
  - Income spreads relative to Treasuries, though narrowing, remain attractive.
  - New supply in the form of construction is still muted.
- **Within non-core real estate, select attractive opportunities remain in the U.S. for skilled firms with a proven ability to identify undervalued assets, buy right, and create value.**
- **In Europe, non-core properties are still undervalued relative to core, and significant capital structure distress remains, creating what we believe are more attractive opportunities than in the U.S.**
- **We continue to believe that real estate debt strategies are appealing, particularly in Europe's distressed lending environment, although currency risk is a potential consideration.**

Real Assets/Inflation-Linked Assets

- **NEPC believes that energy, specifically in North America, represents an attractive opportunity in the up-stream and mid-stream parts of the energy value chain.**
  - MLPs operating in the energy mid-stream space continue to generate growing cash flows and carry a healthy outlook over the next three-to-five years for strong companies.
- **Agriculture and metals/mining opportunities seem appealing based on long-term demographic trends despite a less certain short-term outlook.**
- **Timber is an area of portfolios where we would recommend underweight positions as total return targets are low with a relatively small market opportunity and managers seeking deals outside the U.S.**

Third Quarter Market Review

- **After a volatile second quarter that left few places for investors to take shelter, equity markets surged in the third quarter.**
  - Fears of the Fed tapering easing proved overstated when a continuation of current bond purchasing policy was announced on September 18th.
  - Volatility receded in most asset classes outside of Treasuries.
  - U.S. equities, led by small cap stocks, continued their extraordinary run and markets (once again) shrugged off the prospect of fiscal gridlock.
  - European and emerging markets finally joined in on the upswing.
  - Following a difficult second quarter, risk parity strategies rebounded.

- **While investors will gladly accept the gains from the domestic equity rally, for many, a diversified portfolio has been challenging**
  - Emerging market equity and debt indices remain negative year-to-date through the third quarter.
  - Though yields have risen, fixed income returns have been muted.
    - High yield fixed income and bank loans have posted modest returns whereas many 'safer' asset classes have posted losses year-to-date.
  - While positive, hedge fund returns have been tame in comparison to traditional U.S. equity markets.
  - Commodities stayed mired in a slump as the energy landscape continued to change.

Third Quarter Market Outlook

- **Divergence in returns and policy has complicated the "Risk On, Risk Off" environment driven by central banks.**
  - Fed action has overwhelmed U.S. legislative inaction to propel markets, but the extent to which this will continue remains uncertain.
  - Complacency by the European Central Bank hasn't held back a surging European equity market, but threatens to do so in the future.
  - Emerging market central banks have been battling currency depreciation and face unique country-by-country growing pains.
  - Japan, meanwhile, faces the unknown outcomes of "Abe-nomics" and the BoJ's grand experiment in monetary stimulus.

- **The case to stay the course remains strong.**
  - U.S. equity surge backed more by Fed actions than fundamental improvements.
    - Corporate profits remain at secular highs, cyclically adjusted valuations are expensive, the growth outlook is still mild, and long-term fiscal issues persist unresolved.
  - High relative growth and attractive valuations in emerging economies remain in place.
    - However, an active approach is likely necessary as some countries face their own problems.
    - Even so, a 10-15% allocation to emerging markets within equity allocations is market neutral and a sound starting point for portfolios when rebalancing gains from U.S. equities.
  - Multi-asset strategies such as risk parity remain solid building blocks for a diversified allocation.
  - Private credit strategies including direct lending and real estate debt represent attractive opportunities.

- **It is important to stay vigilant by balancing risks and keeping a watchful eye on opportunities that often arise amid periods of changing volatility.**

Traditional Research – Key Themes and Best Ideas

Themes/Catalysts	Approach
Traditional Fixed Income: *Absolute Return Fixed Income Strategies* - Fit to outperform in low yield, low rate environment. Intended to be uncorrelated to equities while maintaining consistent liquidity.	• Unconstrained approach. • Benchmark agnostic. • Duration, sector, yield curve agnostic. • Duration band may range from -3 to 8 years. • Hedged credit and global rates.
U.S. Equities: Valuations still reasonable overall, with growth segments more attractive than value (e.g., Technology over Utilities). Fundamentals appear to matter again. Excess cash on balance sheets, ripe for M&A cycle.	• Fundamental stock-picker who is flexible and benchmark-agnostic. • Secular growth over cyclical. • Focused on quality. • Free-Cash-Flow (FCF) generation and growth are attractive for takeout activity.
Key themes most client portfolios are under allocated to: Emerging Markets (specifically small cap or consumption related products). International Small Cap. Concentrated Global Equity.	• These areas of the market have high quality investment teams and appear to offer greater inefficiency for increased alpha generation potential.
Multi-Asset Strategies: Return expectations are subdued across risky asset classes. Utilize tactical asset allocation strategies to identify sources of value.	• Tactical risk parity approach paired with an unconstrained global asset allocation strategy provides a broad, multi-asset solution.

NEPC Investment Themes for 2013

- **Equities**

  Themes/Catalysts
  - Valuations reasonable; dividend yield of S&P 500 > 10-Year Treasury Yield; U.S. housing market on the upswing.
  - Time arbitrage in a trading oriented market.

  Approach
  - Long biased, concentrated portfolios with longer time horizons.
  - Sector focused long/short funds.

- **Multi-Sector Credit & Multi-Strategy**

  Themes/Catalysts
  - Investing where banks are not: structured securities, middle market lending and bank loans.
  - Opportunistic investing across the capital structure.

  Approach
  - Structured Securities.
  - Middle Market Lending.
  - Bank Loans.
  - Opportunistic, Multi-Strategy Mandates.

- **European Special Situations**

  Themes/Catalysts
  - Basel III, other regulations/fiscal challenges leading to asset sales (corporate, structured and private) and providing other opportunities for investors (e.g. bank reg cap transactions).

  Approach
  - European Special Situations.
  - Bank Regulatory Capital Relief.
  - Mortgage Whole Loans/Structured Securities.

NEPC Updates

- **NEPC Research**
  - White Papers recently posted to http://www.nepc.com/research/
    - *Defined Contribution Plan Fees Continue to Decline: 2013 NEPC Plan & Fee Study* – September 2013
      - Ross Bremen, CFA, Partner; Dan Beaton, Senior Analyst
  - White Paper published in Fall 2013 *The Journal of Investing*
    - *Pursuing the Low Volatility Equity Anomaly: Strategic Allocation or Active Decision?*
      - Erik Knutzen, CFA, CAIA, Chief Investment Officer
  - White paper published in July/August 2013 issue of IMCA's *Investments & Wealth Monitor*
    - *Investing in Volatile Times – A Dynamic Approach to Asset Allocation*
      - Erik Knutzen, CFA, CAIA, Chief Investment Officer

- **Industry Recognitions**
  - 2013 aiCIO World's 25 Most Influential Investment Consultants
    - Erik Knutzen, CFA, CAIA, Chief Investment Officer, Partner (#1)
    - KC Connors, CFA, CAIA, Partner (#18)

- **Consultant Spotlight**
  - Richard M. Charlton, Chairman
    - Featured in a short video that was released on October 14, 2013 as P&I celebrates its 40th anniversary

- **2014 Public Funds Workshop**
  - January 26 – 28, 2014 in Phoenix, AZ
    - Hosted by the NEPC's Public Funds Practice Team

Appendix: SAA Policy History

Strategic Asset Allocation Policy (SAAP) History

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

- *Interim SAA Policy: 25% S&P 500/5% S&P 400/5% S&P 600/14% MSCI EAFE/3% MSCI EAFE Small Cap/6% MSCI Emerging Markets/6% Russell 2000 (lagged one quarter)/15% Barclays Capital Aggregate/5% Barclays Capital High Yield/4% JP Morgan GBI-EM Global Diversified/2% S&P/LSTA Levered Loan Index + 250 basis points (lagged one quarter)/6% NCREIF ODCE (lagged one quarter)/4% Dow Jones/UBS Commodities Index

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

[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

ASRS Custom Asset Class Benchmark History

- **ASRS Custom Total Equity Benchmark** was 77% S&P 500, 23% MSCI EAFE through 12/31/1999; 76% S&P 500, 24% MSCI EAFE through 9/30/2003; 78% S&P 500, 22% MSCI EAFE/ACWI ex-U.S.[1] through 12/31/2006; 49% S&P 500, 11% S&P 400, 11% S&P 600, 29% MSCI ACWI ex-U.S. through 10/31/2009; 48% S&P 500, 10% S&P 400, 10% S&P 600, 23% MSCI EAFE, 4% MSCI EAFE Small Cap, 5% MSCI Emerging Markets through 6/30/2012; 41% S&P 500, 9% S&P 400, 9% S&P 600, 25% MSCI EAFE, 5% MSCI EAFE Small Cap, 11% MSCI Emerging Markets thereafter.

- **ASRS Custom Domestic Equity Benchmark** was S&P 500 through 12/31/2006; 74% S&P 500, 13% S&P 400, 13% S&P 600 through 12/31/2010; 70% S&P 500, 15% S&P 400 and 15% S&P 600 thereafter.

- **ASRS Custom International Equity Benchmark** was MSCI EAFE through 9/30/2005; MSCI ACWI ex-U.S. through 12/31/2010; 72% MSCI EAFE, 11% MSCI EAFE Small Cap and 17% MSCI Emerging Markets through 6/30/2012; 61% MSCI EAFE, 13% MSCI EAFE Small Cap and 26% MSCI Emerging Markets thereafter.

- **ASRS Custom Fixed Income Benchmark** was Barclays Capital U.S. Aggregate Index through 12/31/2010; 93% Barclays Capital U.S. Aggregate Index, 7% Barclays Capital U.S. High Yield Bond Index through 12/31/2012; 59% Barclays Capital U.S. Aggregate Index, 23% Barclays Capital U.S. High Yield Bond Index, 18% JP Morgan GBI-EM Global Diversified thereafter.

- **ASRS Custom GTAA Benchmark** was 56% S&P 500, 16% MSCI EAFE, 28% Barclays Capital Aggregate through 9/30/2011; 50% S&P 500, 19% MSCI EAFE, 28% Barclays Capital Aggregate, and 3% DJ UBS Commodities Index thereafter.

- **ASRS Custom Inflation-Linked Benchmark** was 100% Barclays Capital U.S. TIPS through 7/31/2010; 50% Barclays Capital U.S. TIPS, 50% DJ UBS Commodities Index through 8/31/2010; 30% Barclays Capital U.S. TIPS, 70% DJ UBS Commodities Index through 5/31/2011; 100% DJ UBS Commodities Index thereafter.

[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

Information Disclosure

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