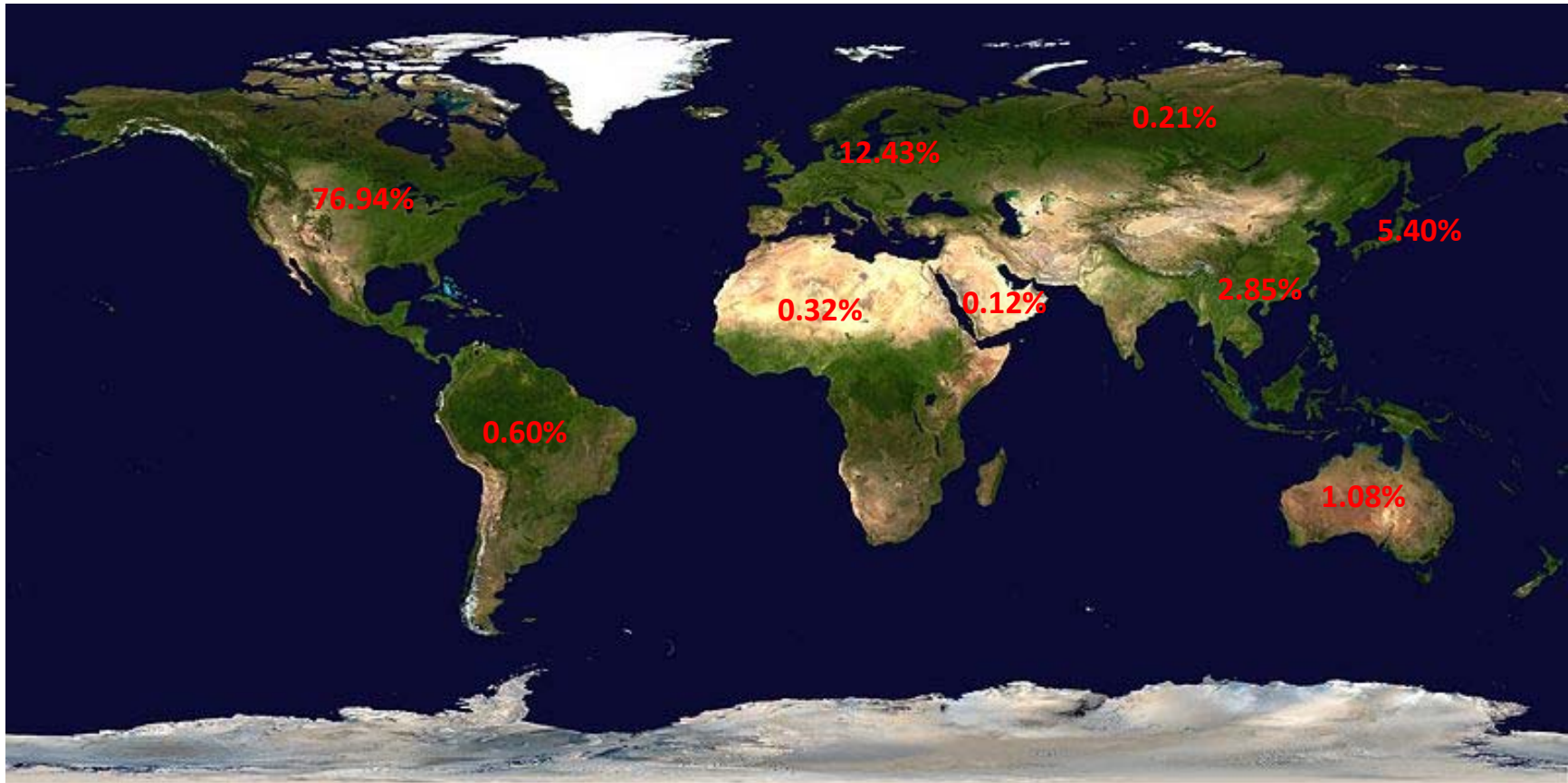


ARIZONA STATE RETIREMENT SYSTEM

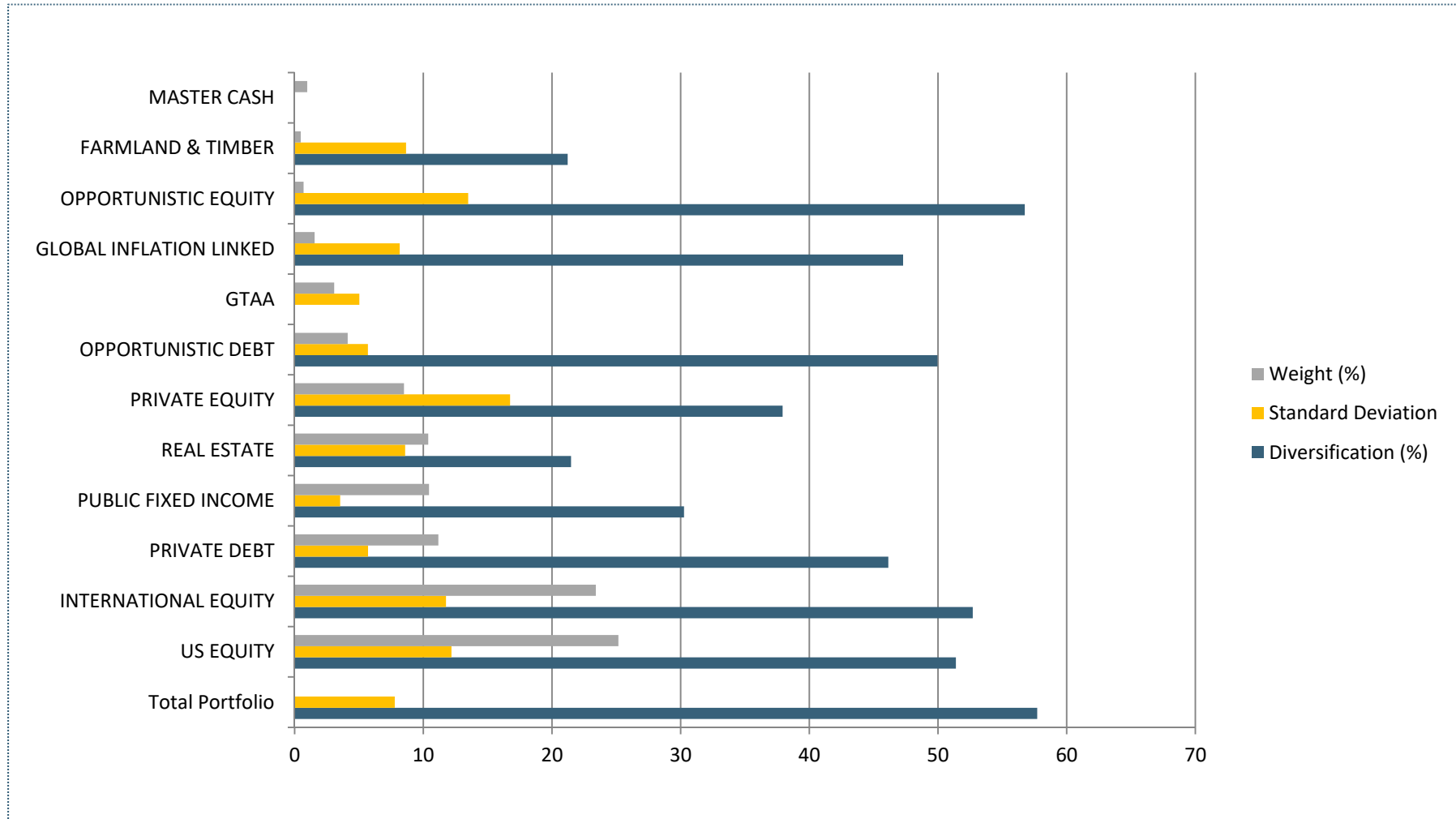
**Total Plan Risk & Exposure Report for the Period
Ending April, 2018**

June 2018

ASRS ASSETS ARE DIVERSIFIED ACROSS REGIONS



ASRS ASSETS AND RISK SOURCES ARE DIVERSIFIED ACROSS DIFFERENT ASSET CLASSES



VARIOUS EXPOSURE ANALYSIS VS. THE SAA

	Weight (%)	SAA Weight %	Active Weight %
Equity	57.77%	58.00%	-.23%
Fixed Income	25.75%	25.00%	.75%
Inflation Linked	12.43%	12.00%	.43%
Master Cash	0.98%	0.00%	0.98%
Multi Asset Class	3.07%	5.00%	-1.93%

	Weight (%)	SAA Weight (%)	Active Weight (%)
Total	100.00%	100.00%	0.00%
North America	76.94%	73.47%	3.48%
Europe DM	12.43%	14.03%	-1.60%
Asia DM	6.49%	7.47%	-0.98%
Asia EM	2.85%	3.41%	-0.56%
Latin America	0.60%	0.81%	-0.21%
Africa	0.32%	0.36%	-0.04%
Europe EM	0.22%	0.31%	-0.09%
Middle East	0.12%	0.14%	-0.02%
Others	0.01%	0.01%	0.01%

Top 15 Foreign Currency Exposures			
Currency	Weight (%)	SAA Weight (%)	Active Weight (%)
EUR	6.04%	6.33%	-0.29%
JPY	4.23%	4.92%	-0.69%
GBP	3.07%	3.50%	-0.43%
HKD	1.55%	1.82%	-0.27%
CHF	1.23%	1.42%	-0.19%
AUD	1.05%	1.30%	-0.25%
KRW	0.63%	0.82%	-0.19%
SEK	0.50%	0.55%	-0.05%
TWD	0.46%	0.59%	-0.12%
INR	0.46%	0.44%	0.01%
SGD	0.37%	0.28%	0.09%
DKK	0.32%	0.33%	-0.01%
ZAR	0.32%	0.35%	-0.03%
BRL	0.31%	0.38%	-0.06%
NOK	0.19%	0.16%	0.03%

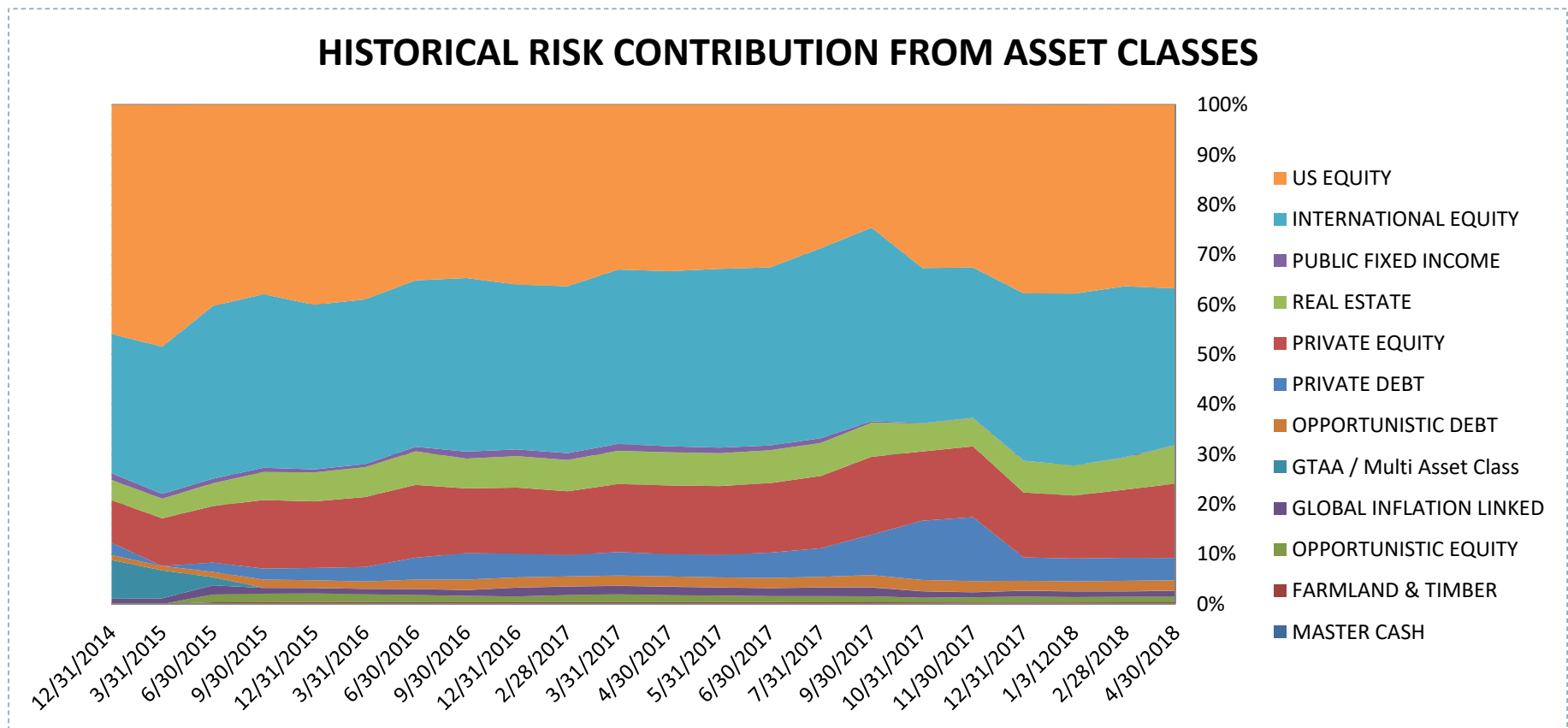
CORRELATION REPORT OF THE MAJOR ASSET CLASSES

ASRS assets are fairly diversified across different asset classes. While Fixed Income investments are a major source of portfolio diversification, private assets also add meaningful diversification benefits.

Portfolio	PUBLIC FIXED INCOME	US EQUITY	INTERNAT IONAL EQUITY	REAL ESTATE	FARMLAN D & TIMBER	PRIVATE EQUITY	PRIVATE DEBT	OPPORTU NISTIC EQUITY	OPPORTU NISTIC DEBT	GLOBAL INFLATIO N LINKED
PUBLIC FIXED INCOME	1.00									
US EQUITY	-0.13	1.00								
INTERNATIONAL EQUITY	0.00	0.75	1.00							
REAL ESTATE	0.11	0.59	0.47	1.00						
FARMLAND & TIMBER	0.11	0.59	0.47	1.00	1.00					
PRIVATE EQUITY	-0.09	0.75	0.60	0.44	0.44	1.00				
PRIVATE DEBT	0.18	0.39	0.42	0.26	0.26	0.52	1.00			
OPPORTUNISTIC EQUITY	-0.14	0.94	0.72	0.58	0.58	0.71	0.39	1.00		
OPPORTUNISTIC DEBT	0.18	0.61	0.56	0.83	0.83	0.56	0.57	0.61	1.00	
GLOBAL INFLATION LINKED	0.03	0.61	0.62	0.79	0.79	0.48	0.37	0.62	0.74	1.00

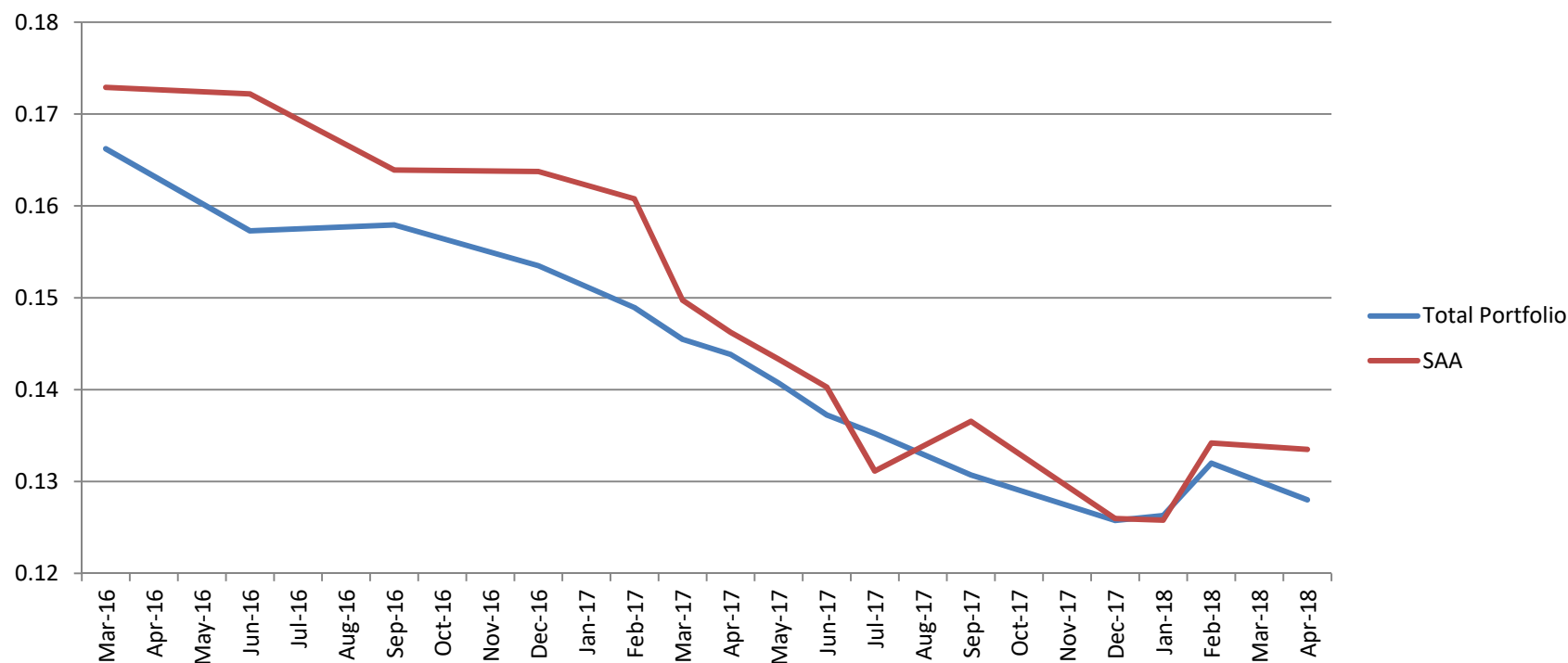
HISTORICAL RISK CONTRIBUTION OF THE MAJOR ASSET CLASSES

Public Equities continue to account for more than 65% of the overall portfolio risk.



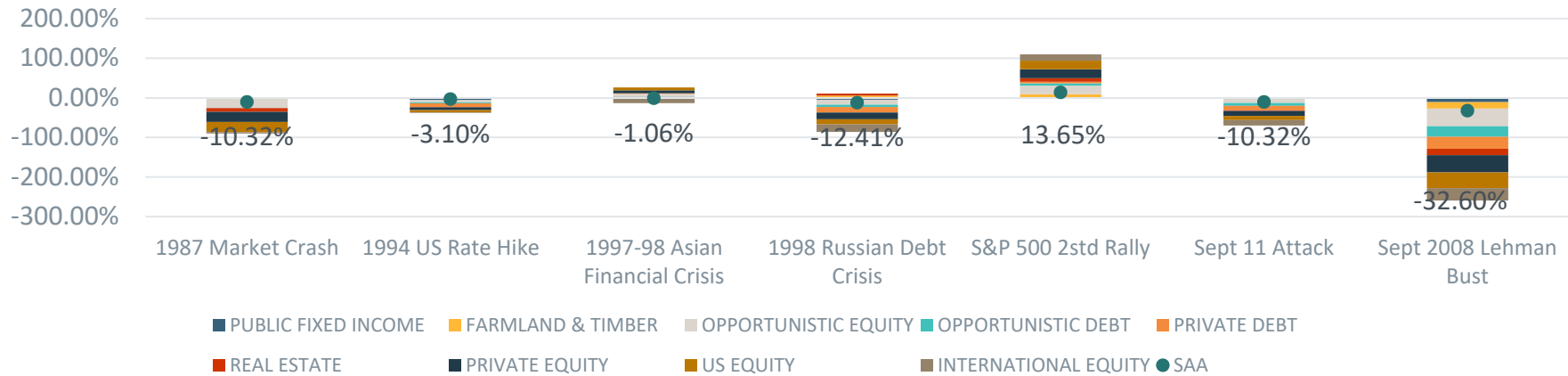
TOTAL PORTFOLIO VALUE-AT-RISK (VAR)

As of April 30, 2018, total VaR for ASRS Portfolio was 12.80%, indicating that there is a 5% chance that portfolio could lose ~\$5B in a given year. Note that a 5% event is expected to occur every 20 years

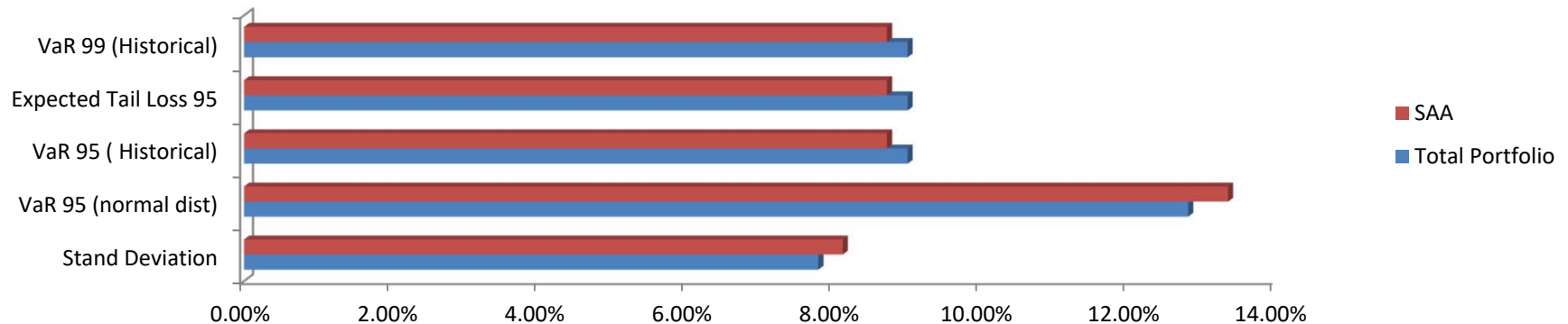


STRESS TEST AND TAIL RISK ANALYSIS

Stress Tests



VaR and Tail Risk Analysis



APPENDIX

Risk change analysis

GLOSSARY

- Diversification: shows the diversifying effect of covariance on portfolio risk. For example, a diversification figure of 60% means that you are diversifying away 60% of portfolio risk. A higher number thus indicates greater diversification arising from covariance.
- Standard Deviation: distribution of asset's return, expressed in percent. We forecast volatility using normal distribution with two-third probability in Barra's multiple factor model (BIM). The total risk for an asset depends on the asset's exposures to the risk factors, the factor variance/covariance matrix, and the forecast selection risk of the asset.
- Parametric VaR Confidence Level: 95%
- Historical VaR & Expected Tail Loss Settings:
 - Holding Period: 252 days (1 year)
 - Decay Factor: 0.94
 - Look Back Period: trailing 10 years
- Decay Factor: this parameter means that older observations are given less weight than more recent ones. Its magnitude determines how fast the weight on the observations used in the simulation decays over the historical period. BarraOne's decay factor default is 0.94.

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