



Invesco Advisory Solutions  
Custom Portfolio Analysis

Prepared for:  
YY

Houston Presentation With UA  
January 2018





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# Contents



# 1



# Overview of analysis and findings

Overview and objective

Key takeaways

Additional observations





# 2



# Portfolio holdings and performance

## Portfolio holdings

		Ticker	Name	Benchmark	Weights %
Equity 57%	US Lg	VADAX	Invesco Equally-Wtd S&P 500 A	Large Blend	8.5
	US Grth	PXLG	PowerShares Russell Top 200 Pure Gr ETF	Large Growth	4.7
		VAFAX	Invesco American Franchise A	Large Growth	4.7
	US Val	LCEAX	Invesco Diversified Dividend A	Large Value	10.0
		ACSTX	Invesco Comstock A	Large Value	4.8
	US Sm	ATDAX	Invesco Endeavor A	Mid-Cap Blend	2.1
		XMLV	PowerShares S&P MidCap Low Volatil ETF	Mid-Cap Value	2.1
		SMEAX	Invesco Small Cap Equity A	Small Blend	2.1
		XSLV	PowerShares S&P SmallCap Low Volatil ETF	Small Value	2.1
	Int Dev	AIIEX	Invesco International Growth A	Foreign Large Growth	5.2
		IZIAX	Invesco International Companies A	Foreign Large Growth	2.1
	EM	PXH	PowerShares FTSE RAFI Emerging Mkts ETF	Diversified Emerging Mkts	5.3
		GTDDX	Invesco Developing Markets A	Diversified Emerging Mkts	1.6
		LVLAX	Invesco Low Volatility Emerging Mkts A	Diversified Emerging Mkts	1.6
FI 28%	US Agg	ACPSX	Invesco Core Plus Bond A	Intermediate-Term Bond	10.5
		VKMGX	Invesco Quality Income A	Intermediate-Term Bond	5.3
	US Tsy	PLW	PowerShares 1-30 Laddered Treasury ETF	Long Government	5.2
	US Corp	STBAX	Invesco Short Term Bond A	Short-Term Bond	3.1
	US HY	AMHYX	Invesco High Yield A	High Yield Bond	3.7
Alt 15%	RE	ASRAX	Invesco Global Real Estate Income A	Global Real Estate	3.1
	HF	CPNAX	Invesco All Cap Market Neutral A	Market Neutral	3.2
		LSQAX	Invesco Long/Short Equity A	Long-Short Equity	2.1
	RP	ABRZX	Invesco Balanced-Risk Allc A	World Allocation	6.9
					100.0

Eq: Equity; FI: Fixed Income; Alt: Alternatives; MA: Mixed Allocation

# Portfolio holdings and performance

## Portfolio performance

			1 year return %	3 year return %	5 year return %	10 year return %	3 year vol %	3 year tracking error %
Ticker	Name							
	Portfolio		13.7	6.4	8.5	5.9	6.2	4.9
Equity	VADAX	Invesco Equally-Wtd S&P 500 A	18.2	9.2	15.4	9.1	10.4	2.0
	PXLG	PowerShares Russell Top 200 Pure Gr ETF	35.8	12.1	16.3		11.6	3.1
	VAFAX	Invesco American Franchise A	27.8	10.2	15.7	9.3	12.8	3.7
	LCEAX	Invesco Diversified Dividend A	11.1	8.0	12.9	8.0	7.1	5.0
	ACSTX	Invesco Comstock A	17.2	8.5	14.1	7.3	13.2	4.1
	ATDAX	Invesco Endeavor A	18.4	7.7	12.3	8.8	12.8	6.4
	XMLV	PowerShares S&P MidCap Low Volatil ETF	19.4	14.7			8.8	8.0
	SMEAX	Invesco Small Cap Equity A	15.2	6.8	11.5	7.3	13.5	3.3
	XSLV	PowerShares S&P SmallCap Low Volatil ETF	16.6	15.9			10.9	6.5
	AIIEX	Invesco International Growth A	23.8	4.3	7.3	2.7	10.8	2.8
	IZIAX	Invesco International Companies A	27.5					
	PXH	PowerShares FTSE RAFI Emerging Mkts ET	21.8	5.1	2.8	0.2	20.9	10.3
	GTDDX	Invesco Developing Markets A	28.4	4.9	3.6	2.6	15.7	5.4
	LVLAX	Invesco Low Volatility Emerging Mkts A	25.6	2.0			15.5	4.4
FI	ACPSX	Invesco Core Plus Bond A	5.2	3.2	3.3		3.0	0.8
	VKMGX	Invesco Quality Income A	1.8	2.0	2.1	3.0	1.9	1.5
	PLW	PowerShares 1-30 Laddered Treasury ETF	3.5	2.1	1.8	4.9	6.7	3.1
	STBAX	Invesco Short Term Bond A	1.9	1.6	1.5	1.6	1.1	0.4
	AMHYX	Invesco High Yield A	7.1	4.0	4.7	6.8	5.3	1.1
Alt	ASRAX	Invesco Global Real Estate Income A	10.0	3.7	5.4	4.9	6.8	4.1
	CPNAX	Invesco All Cap Market Neutral A	-8.0	-0.3			9.5	9.3
	LSQAX	Invesco Long/Short Equity A	18.2	8.9			11.7	9.5
	ABRZX	Invesco Balanced-Risk Allc A	9.5	4.5	4.3		5.5	4.6

Past performance is no guarantee of future results. Performance figures do not reflect applicable sales charges.

# Portfolio holdings and performance

## Benchmark

					Weights
		Ticker	Name		%
Eq	100%	US Lg	RU30INTR	Russell 3000	70.0
		Int Dev	M1EA	MSCI EAFE-NR	30.0
					100.0

Investments cannot be made directly into an index.

# Portfolio holdings and performance

## Portfolio benchmark performance

			1 year return %	3 year return %	5 year return %	10 year return %	3 year vol %	3 year sharpe
Eq	Ticker	Name						
	RU30INTR	Russell 3000	22.3	10.8	15.6	8.4	10.2	1.01
	M1EA	MSCI EAFE-NR	27.3	6.0	8.2	1.5	12.2	0.46

Investments cannot be made directly into an index. Past performance is no guarantee of future results.

# Portfolio holdings and performance

## Generic benchmark performance

	Ticker	Name	1 year return %	3 year return %	5 year return %	10 year return %	3 year vol %	3 year sharpe
Equity	SPXT	S&P 500 (TR)	22.9	10.9	15.7	8.3	10.1	1.05
	RU10INTR	Russell 1000	22.6	10.7	15.7	8.4	10.1	1.02
	RU10VATR	Russell 1000 Value	14.8	8.3	14.2	6.8	10.3	0.77
	RU10GRTR	Russell 1000 Growth	30.8	13.1	17.1	9.9	10.8	1.18
	RU20INTR	Russell 2000	18.3	11.1	15.0	8.7	14.1	0.76
	RUMCINTR	Russell Midcap	18.8	9.3	15.3	9.0	10.5	0.85
	RU30INTR	Russell 3000	22.3	10.8	15.6	8.4	10.2	1.01
	M1EA	MSCI EAFE-NR	27.3	6.0	8.2	1.5	12.2	0.46
	M1EF	MSCI EM (Emerging Markets)-NR	32.8	6.1	4.6	1.4	15.8	0.37
	M1WDU	MSCI All Country World ex USA-NR	27.6	5.7	7.1	1.5	12.2	0.44
	M1WD	MSCI All Country World Index-NR	24.6	8.0	10.9	4.4	10.6	0.72
FI	LD12TRUU	Bloomberg Barclays 1-3 Month Treasury Bill Index	0.8	0.3	0.2	0.4	0.1	0.00
	LBUSTRUU	Bloomberg Barclays US Aggregate Index	3.2	2.1	2.0	4.0	2.8	0.63
	LF98TRUU	Bloomberg Barclays U.S. Corporate High Yield Index	9.2	5.7	6.0	8.0	5.8	0.93
	JPEIDIVR	JP Morgan EMBI Global Diversified	10.9	6.0	4.6	7.3	5.4	1.05
	LEGATRUU	Bloomberg Barclays Global Aggregate Index	6.5	1.7	0.7	3.0	4.9	0.27
Alt	FNER	FTSE NAREIT All Equity REIT Index	13.9	7.2	10.7	7.2	12.7	0.54
	HFRIMI	HFRI Macro (Total) Index	2.5	0.5	1.5	2.0	3.9	0.05
	AMZ	Alerian MLP Index	-6.8	-12.4	-1.6	5.6	19.3	-0.66

Investments cannot be made directly into an index. Past performance is no guarantee of future results.

# Portfolio holdings and performance

## Performance summary

### Absolute performance

	1 year	3 year	5 year
Annualized return (%)	13.72	6.42	8.54
Annualized volatility (%)	2.05	6.23	6.16
Sharpe ratio	6.32	0.98	1.35
Sortino ratio		1.42	2.20
Max drawdown (%)	0.00	-7.28	-7.28

### Relative performance

	1 year	3 year	5 year
Active Return (%)	-8.30	-3.14	-4.72
Tracking Error (%)	1.67	4.86	4.43
Information Ratio	-4.96	-0.65	-1.07
Capture Ratio Up	0.58	0.51	0.49
Capture Ratio Down		0.51	0.61
Batting Average	0.08	0.33	0.32
Beta	0.58	0.57	0.60
R-Squared	0.72	0.90	0.90
Correlation	0.85	0.95	0.95

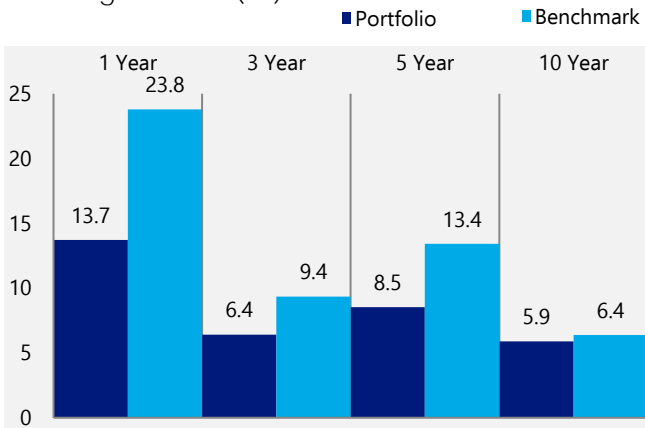
Past performance is not a guarantee of future results.



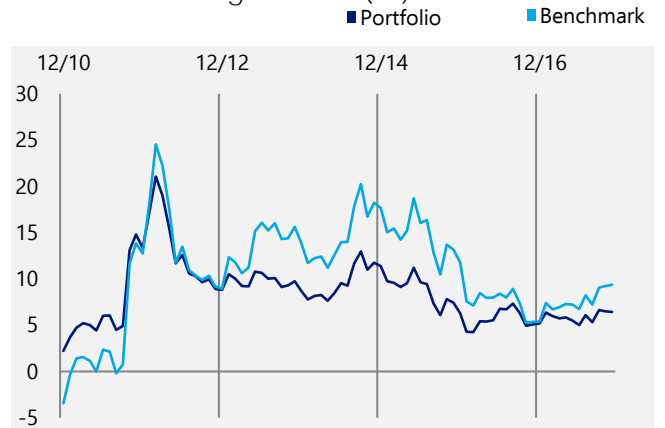
# Portfolio holdings and performance

## Absolute performance

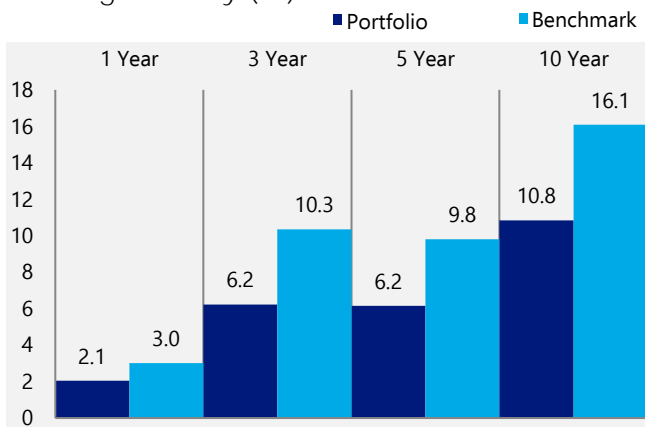
Trailing returns (%)



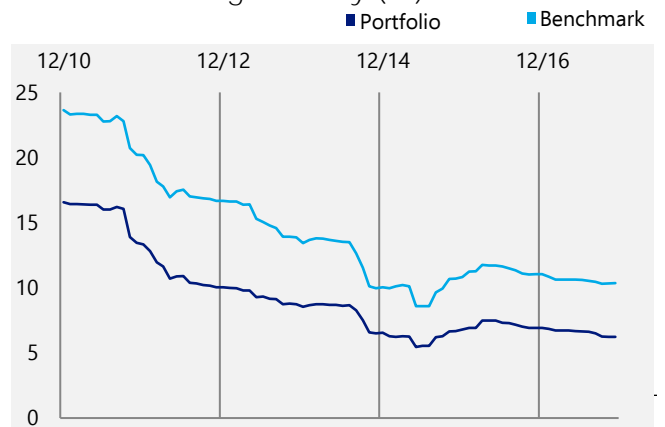
36 Month rolling returns (%)



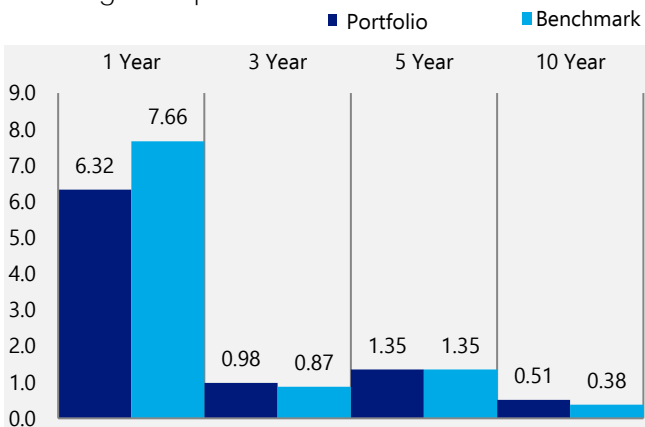
Trailing volatility (%)



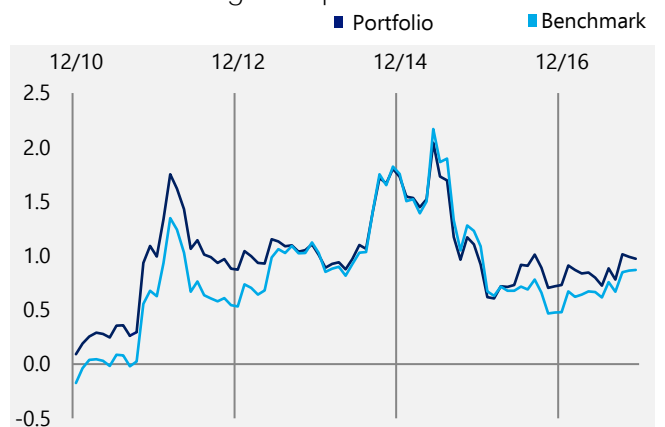
36 Month rolling volatility (%)



Trailing Sharpe ratio



36 Month rolling Sharpe ratio

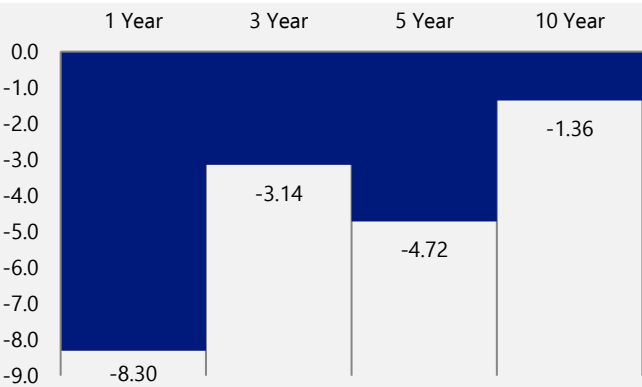


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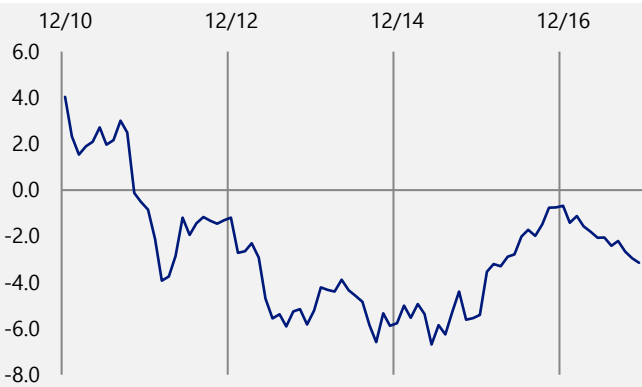
# Portfolio holdings and performance

Relative to benchmark performance

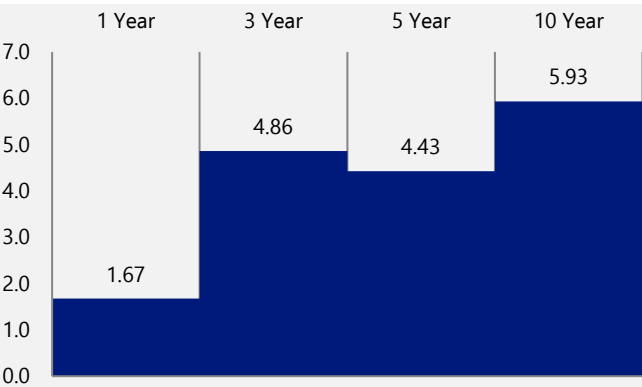
Trailing excess returns (%)



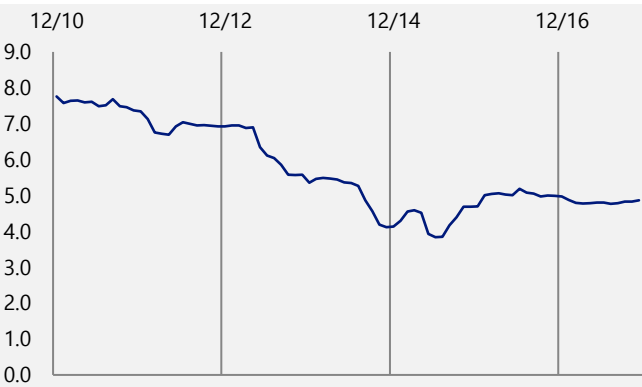
36 Month rolling excess returns (%)



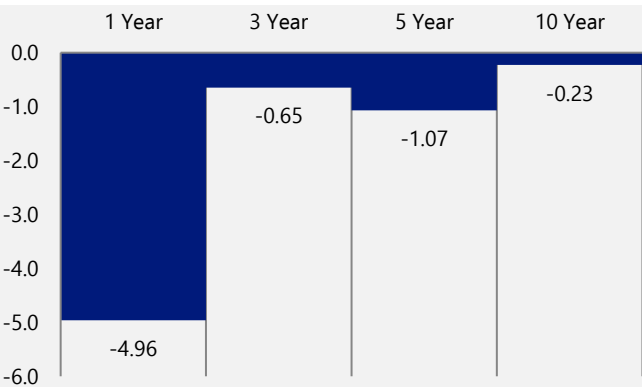
Trailing tracking error (%)



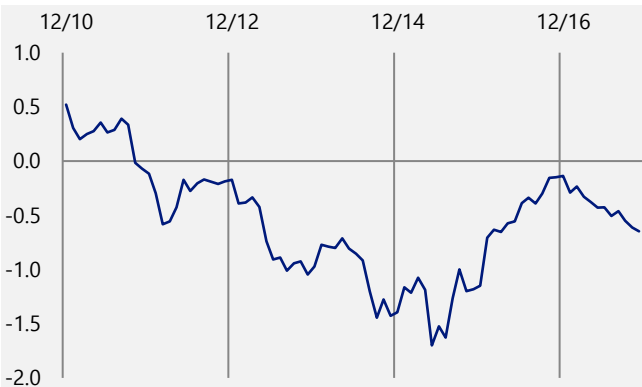
36 Month rolling tracking error (%)



Trailing Information ratio



36 Month rolling Information ratio

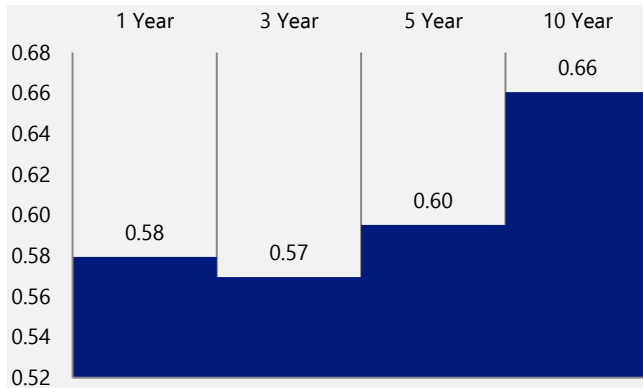


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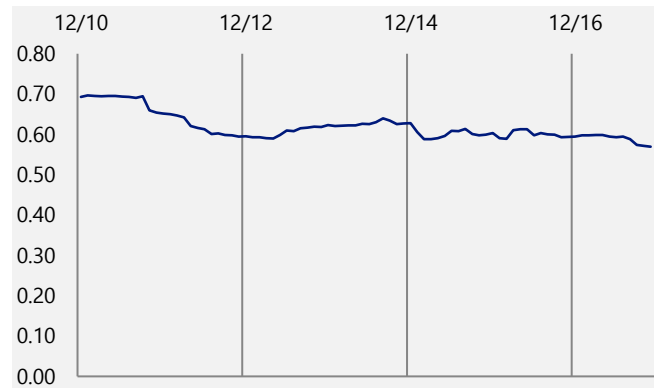
# Portfolio holdings and performance

Relative to benchmark performance

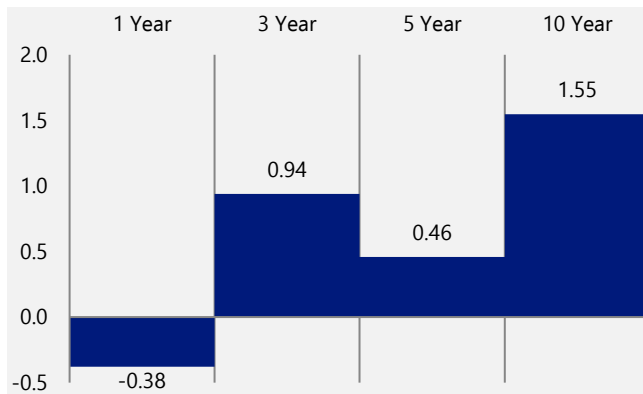
Trailing beta



36 Month rolling beta



Trailing alpha (%)



36 Month rolling alpha (%)



Past performance is not a guarantee of future results.

# Portfolio holdings and performance

## Fund performance attribution

	Ticker	Name	Weight %	Cont to Risk %	Cont to Return %	Risk/ Allocation	Return/ Allocation
Equity	VADAX	Invesco Equally-Wtd S&P 500 A	8.5	12.8	15.6	1.5	1.8
	PXLG	PowerShares Russell Top 200 Pure Gr ETF	4.7	6.6	9.1	1.4	1.9
	VAFAX	Invesco American Franchise A	4.7	7.5	8.8	1.6	1.9
	LCEAX	Invesco Diversified Dividend A	10.0	11.0	15.4	1.1	1.5
	ACSTX	Invesco Comstock A	4.8	7.4	8.1	1.5	1.7
	ATDAX	Invesco Endeavor A	2.1	2.8	3.1	1.3	1.5
	XMLV	PowerShares S&P MidCap Low Volatil ETF	2.1	2.7	4.3	1.3	2.1
	SMEAX	Invesco Small Cap Equity A	2.1	3.4	2.9	1.6	1.4
	XSLV	PowerShares S&P SmallCap Low Volatil ETF	2.1	2.6	4.6	1.2	2.2
	AIIEX	Invesco International Growth A	5.2	7.9	4.5	1.5	0.9
	IZIAX	Invesco International Companies A	2.1	3.4	2.5	1.6	1.2
	PXH	PowerShares FTSE RAFI Emerging Mkts ET	5.3	11.7	1.8	2.2	0.3
	GTDDX	Invesco Developing Markets A	1.6	3.1	0.7	1.9	0.4
	LVLAX	Invesco Low Volatility Emerging Mkts A	1.6	2.9	0.4	1.8	0.3
FI	ACPSX	Invesco Core Plus Bond A	10.5	2.5	4.1	0.2	0.4
	VKMGX	Invesco Quality Income A	5.3	0.3	1.3	0.1	0.2
	PLW	PowerShares 1-30 Laddered Treasury ETF	5.2	0.0	1.1	0.0	0.2
	STBAX	Invesco Short Term Bond A	3.1	0.3	0.5	0.1	0.2
	AMHYX	Invesco High Yield A	3.7	2.6	2.1	0.7	0.6
Alt	ASRAX	Invesco Global Real Estate Income A	3.1	2.8	2.0	0.9	0.6
	CPNAX	Invesco All Cap Market Neutral A	3.2	-1.0	1.0	-0.3	0.3
	LSQAX	Invesco Long/Short Equity A	2.1	1.9	2.7	0.9	1.3
	ABRZX	Invesco Balanced-Risk Allc A	6.9	4.9	3.6	0.7	0.5
Total			100.0	100.0	100.0	1.0	1.0

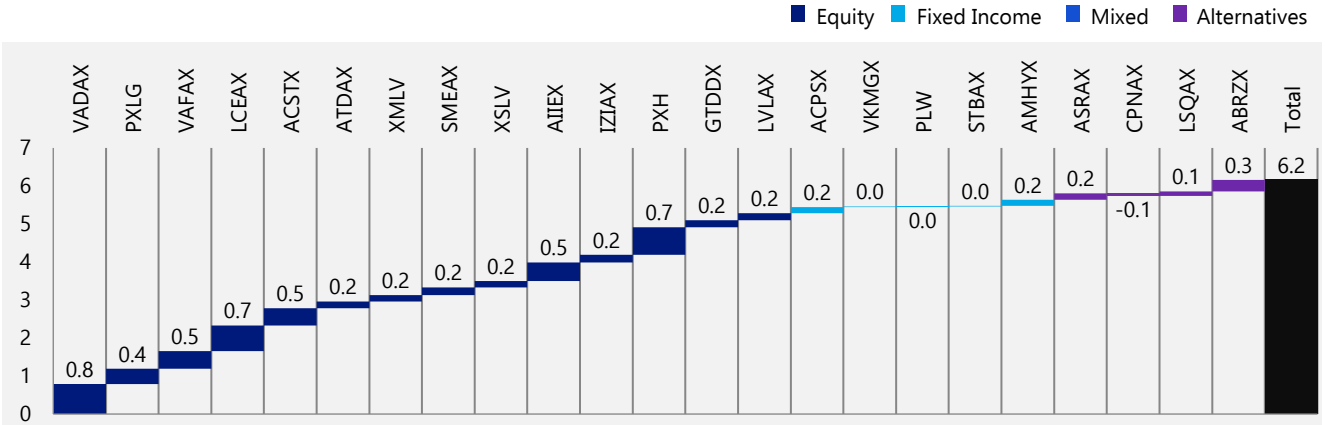
Based on last 5 years of data.

Past performance is not a guarantee of future results.

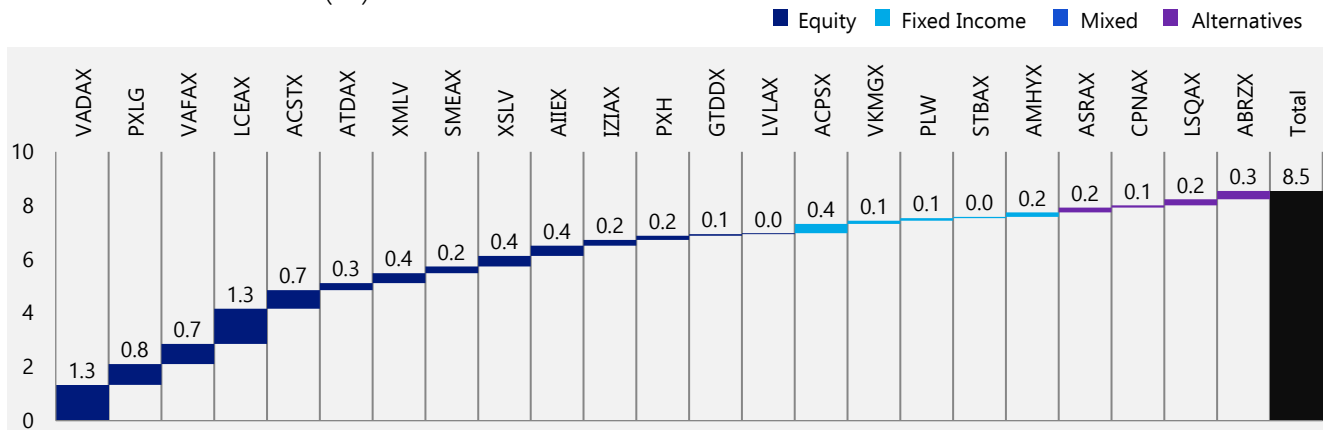
# Portfolio holdings and performance

## Fund performance attribution

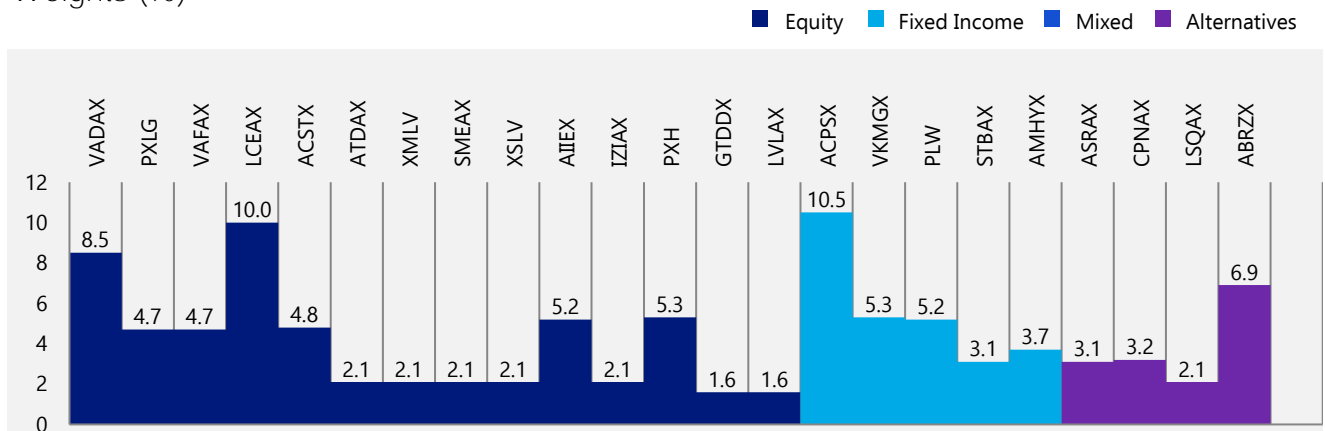
### Contribution to risk (%)



### Contribution to return (%)



### Weights (%)



Based on last 5 years of data.

Past performance is not a guarantee of future results.

# Portfolio holdings and performance

## Fund correlations

		Equity																FI				Alt		
		Portfolio	VADAX	PXLG	VAFAX	LCEAX	ACSTX	ATDAX	XMLV	SMEAX	XSLV	AIIEX	IZIAX	PXH	ACPSX	VKMGX	PLW	STBAX	AMHYX	ASRAX	CPNAX	ABRZX		
Equity	Portfolio	1.0	0.9	0.8	0.8	0.9	0.8	0.7	0.8	0.8	0.7	0.9	0.9	0.7	0.5	0.2	0.0	0.6	0.8	0.7	-0.3	0.8		
	VADAX	0.9	1.0	0.9	0.8	0.9	0.9	0.8	0.8	0.9	0.8	0.8	0.8	0.5	0.2	-0.1	-0.3	0.3	0.7	0.5	-0.3	0.5		
	PXLG	0.8	0.9	1.0	0.9	0.8	0.8	0.6	0.6	0.7	0.5	0.8	0.8	0.5	0.2	-0.1	-0.2	0.3	0.6	0.4	-0.3	0.5		
	VAFAX	0.8	0.8	0.9	1.0	0.7	0.7	0.6	0.6	0.7	0.5	0.8	0.8	0.4	0.2	0.0	-0.2	0.3	0.6	0.4	-0.3	0.6		
	LCEAX	0.9	0.9	0.8	0.7	1.0	0.8	0.7	0.8	0.8	0.7	0.7	0.7	0.4	0.3	0.0	-0.1	0.4	0.6	0.5	-0.1	0.5		
	ACSTX	0.8	0.9	0.8	0.7	0.8	1.0	0.9	0.6	0.9	0.7	0.7	0.6	0.5	0.0	-0.3	-0.5	0.2	0.6	0.3	-0.2	0.4		
	ATDAX	0.7	0.8	0.6	0.6	0.7	0.9	1.0	0.5	0.8	0.7	0.6	0.5	0.4	0.0	-0.3	-0.4	0.2	0.6	0.3	-0.2	0.3		
	XMLV	0.8	0.8	0.6	0.6	0.8	0.6	0.5	1.0	0.7	0.8	0.6	0.6	0.3	0.4	0.2	0.2	0.4	0.5	0.7	-0.1	0.6		
	SMEAX	0.8	0.9	0.7	0.7	0.8	0.9	0.8	0.7	1.0	0.9	0.7	0.6	0.3	0.0	-0.3	-0.4	0.2	0.6	0.3	-0.3	0.4		
	XSLV	0.7	0.8	0.5	0.5	0.7	0.7	0.7	0.8	0.9	1.0	0.5	0.4	0.2	0.0	-0.2	-0.2	0.2	0.4	0.4	0.0	0.3		
	AIIEX	0.9	0.8	0.8	0.8	0.7	0.7	0.6	0.6	0.7	0.5	1.0	0.9	0.7	0.4	0.1	-0.1	0.5	0.7	0.6	-0.4	0.6		
	IZIAX	0.9	0.8	0.8	0.8	0.7	0.6	0.5	0.6	0.6	0.4	0.9	1.0	0.7	0.5	0.2	0.0	0.6	0.8	0.6	-0.4	0.7		
	PXH	0.7	0.5	0.5	0.4	0.4	0.5	0.4	0.3	0.3	0.2	0.7	0.7	1.0	0.5	0.2	0.0	0.6	0.7	0.5	-0.3	0.6		
FI	ACPSX	0.5	0.2	0.2	0.2	0.3	0.0	0.0	0.4	0.0	0.0	0.4	0.5	0.5	1.0	0.8	0.8	0.8	0.6	0.8	-0.1	0.7		
	VKMGX	0.2	-0.1	-0.1	0.0	0.0	-0.3	-0.3	0.2	-0.3	-0.2	0.1	0.2	0.2	0.8	1.0	0.8	0.6	0.3	0.5	0.0	0.5		
	PLW	0.0	-0.3	-0.2	-0.2	-0.1	-0.5	-0.4	0.2	-0.4	-0.2	-0.1	0.0	0.0	0.8	0.8	1.0	0.5	0.0	0.5	0.1	0.4		
	STBAX	0.6	0.3	0.3	0.3	0.4	0.2	0.2	0.4	0.2	0.2	0.5	0.6	0.6	0.8	0.6	0.5	1.0	0.7	0.6	-0.1	0.7		
	AMHYX	0.8	0.7	0.6	0.6	0.6	0.6	0.6	0.5	0.6	0.4	0.7	0.8	0.7	0.6	0.3	0.0	0.7	1.0	0.6	-0.3	0.7		
Alt	ASRAX	0.7	0.5	0.4	0.4	0.5	0.3	0.3	0.7	0.3	0.4	0.6	0.6	0.5	0.8	0.5	0.5	0.6	0.6	1.0	-0.1	0.7		
	CPNAX	-0.3	-0.3	-0.3	-0.3	-0.1	-0.2	-0.2	-0.1	-0.3	0.0	-0.4	-0.4	-0.3	-0.1	0.0	0.1	-0.1	-0.3	-0.1	1.0	-0.2		
	ABRZX	0.8	0.5	0.5	0.6	0.5	0.4	0.3	0.6	0.4	0.3	0.6	0.7	0.6	0.7	0.5	0.4	0.7	0.7	0.7	-0.2	1.0		

Based on last 5 years of data. Monthly returns are used to calculate correlation.  
Past performance is not a guarantee of future results.

# Portfolio holdings and performance

## Fund active correlations

		<div><div>0.25-0.5</div><div>0.5-0.75</div><div>0.75-0.9</div><div>0.9-1</div></div>																				
		Equity												FI				Alt				
	Portfolio	Portfolio	VADAX	PXLG	VAFAX	LCEAX	ACSTX	ATDAX	XMLV	SMEAX	XSLV	AIIEX	IZIAX	PXH	ACPSX	VKMGX	PLW	STBAX	AMHYX	ASRAX	CPNAX	ABRZX
Portfolio	1.0	-0.1	0.1	-0.3	0.6	-0.5	0.2	0.5	-0.3	0.5	0.1	0.2	0.0	-0.2	0.1	-0.4	-0.2	-0.3	0.6	0.4	0.7	
Equity	VADAX	-0.1	1.0	-0.4	-0.2	-0.1	0.1	0.2	-0.2	-0.3	-0.3	0.3	0.3	0.2	0.1	-0.1	0.1	0.0	0.1	-0.2	-0.2	-0.1
	PXLG	0.1	-0.4	1.0	-0.1	0.0	0.0	0.2	0.0	0.0	-0.1	0.1	-0.1	0.2	0.0	0.0	0.0	0.0	-0.1	0.0	0.1	-0.1
	VAFAX	-0.3	-0.2	-0.1	1.0	-0.2	-0.1	-0.4	-0.1	0.3	-0.1	-0.3	0.0	-0.1	0.2	-0.2	0.0	0.1	0.3	-0.2	-0.2	-0.1
	LCEAX	0.6	-0.1	0.0	-0.2	1.0	-0.7	-0.1	0.7	-0.1	0.6	-0.1	0.0	-0.2	-0.1	0.1	-0.4	-0.3	-0.2	0.3	0.4	0.5
	ACSTX	-0.5	0.1	0.0	-0.1	-0.7	1.0	0.3	-0.7	-0.1	-0.6	0.1	-0.1	0.3	0.1	0.1	0.5	0.4	0.1	-0.1	-0.1	-0.4
	ATDAX	0.2	0.2	0.2	-0.4	-0.1	0.3	1.0	-0.3	-0.3	-0.3	0.1	0.0	0.2	0.0	0.1	0.2	0.3	-0.2	0.1	0.1	-0.1
	XMLV	0.5	-0.2	0.0	-0.1	0.7	-0.7	-0.3	1.0	0.0	0.9	-0.1	0.1	-0.2	0.0	-0.2	-0.6	-0.3	-0.1	0.1	0.3	0.5
	SMEAX	-0.3	-0.3	0.0	0.3	-0.1	-0.1	-0.3	0.0	1.0	0.1	-0.3	-0.1	-0.4	-0.1	0.1	0.0	0.2	0.2	-0.1	-0.1	-0.1
	XSLV	0.5	-0.3	-0.1	-0.1	0.6	-0.6	-0.3	0.9	0.1	1.0	-0.1	0.0	-0.3	-0.1	0.0	-0.4	-0.1	-0.2	0.1	0.5	0.4
	AIIEX	0.1	0.3	0.1	-0.3	-0.1	0.1	0.1	-0.1	-0.3	-0.1	1.0	0.0	0.3	0.0	0.1	0.2	0.0	-0.1	0.1	0.2	-0.1
	IZIAX	0.2	0.3	-0.1	0.0	0.0	-0.1	0.0	0.1	-0.1	0.0	0.0	1.0	0.3	0.1	-0.3	-0.1	0.1	-0.1	-0.2	-0.1	0.1
	PXH	0.0	0.2	0.2	-0.1	-0.2	0.3	0.2	-0.2	-0.4	-0.3	0.3	0.3	1.0	0.3	-0.2	0.1	0.0	0.1	-0.2	-0.2	-0.1
FI	ACPSX	-0.2	0.1	0.0	0.2	-0.1	0.1	0.0	0.0	-0.1	-0.1	0.0	0.1	0.3	1.0	-0.4	-0.2	0.2	0.4	-0.4	-0.2	-0.2
	VKMGX	0.1	-0.1	0.0	-0.2	0.1	0.1	0.1	-0.2	0.1	0.0	0.1	-0.3	-0.2	-0.4	1.0	0.5	-0.1	-0.3	0.4	0.2	0.0
	PLW	-0.4	0.1	0.0	0.0	-0.4	0.5	0.2	-0.6	0.0	-0.4	0.2	-0.1	0.1	-0.2	0.5	1.0	0.4	-0.2	0.1	0.0	-0.4
	STBAX	-0.2	0.0	0.0	0.1	-0.3	0.4	0.3	-0.3	0.2	-0.1	0.0	0.1	0.0	0.2	-0.1	0.4	1.0	0.1	-0.1	0.0	-0.3
	AMHYX	-0.3	0.1	-0.1	0.3	-0.2	0.1	-0.2	-0.1	0.2	-0.2	-0.1	-0.1	0.1	0.4	-0.3	-0.2	0.1	1.0	-0.2	-0.1	-0.2
Alt	ASRAX	0.6	-0.2	0.0	-0.2	0.3	-0.1	0.1	0.1	-0.1	0.1	0.1	-0.2	-0.2	-0.4	0.4	0.1	-0.1	-0.2	1.0	0.3	0.5
	CPNAX	0.4	-0.2	0.1	-0.2	0.4	-0.1	0.1	0.3	-0.1	0.5	0.2	-0.1	-0.2	-0.2	0.2	0.0	0.0	-0.1	0.3	1.0	0.3
	ABRZX	0.7	-0.1	-0.1	-0.1	0.5	-0.4	-0.1	0.5	-0.1	0.4	-0.1	0.1	-0.1	-0.2	0.0	-0.4	-0.3	-0.2	0.5	0.3	1.0

Based on last 5 years of data. Monthly returns are used to calculate correlation.  
Past performance is not a guarantee of future results.





# 3



# Returns based analysis

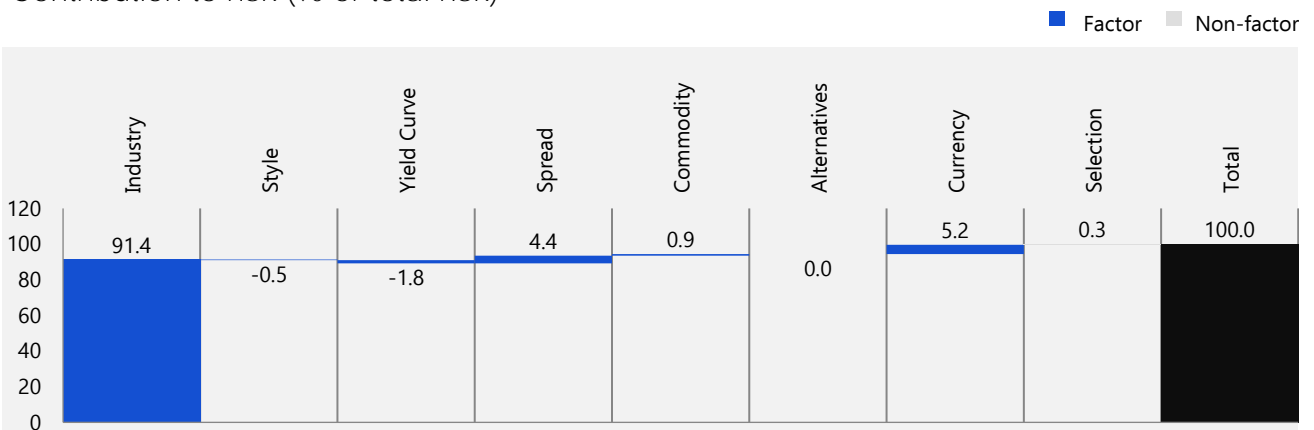
## Portfolio Risk

### Summary

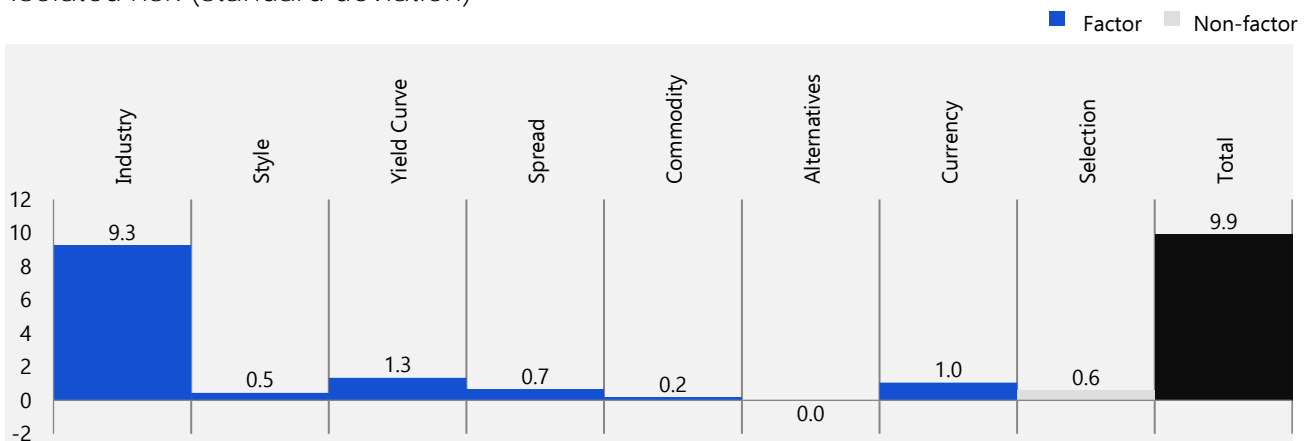
#### Summary

Total Risk	9.91%
Tracking Error	5.9%
VaR 99%	16.31%
GL Mkt -10%	-6.47%
USD Shift +100bps	3.51%
Oil -10%	-0.85%

### Contribution to risk (% of total risk)



### Isolated risk (standard deviation)



Based on the BarraOne Risk Model

Past performance is not a guarantee of future results.

# Returns based analysis

## Portfolio Risk

### Contribution to Risk - Fund Level

■ Top 2

		Weight	Industry	Style	Yield Curve	Spread	Commodity	Alternative	Currency	Selection	Total
	Portfolio	100.0	91.5	-0.5	-1.8	4.4	0.9	-	5.2	0.3	100.0
	Benchmark	-	96.6	0.3	-	-	-	-	2.9	0.2	100.0
Equity	Invesco Equally-Wtd S&P 500 A	8.5	12.7	0.5	-	-	-	-	-	0.0	13.2
	PowerShares Russell Top 200 Pure Gr ETF	4.7	7.2	-0.4	-	-	-	-	-	0.0	6.7
	Invesco American Franchise A	4.7	7.2	0.4	-	-	-	-	0.0	0.0	7.6
	Invesco Diversified Dividend A	10.0	13.6	-1.8	-	-	-	-	0.4	0.0	12.2
	Invesco Comstock A	4.8	7.4	0.2	-	-	-	-	-	0.0	7.7
	Invesco Endeavor A	2.1	3.2	0.8	-	-	-	-	0.1	0.0	4.0
	PowerShares S&P MidCap Low Volatil ETF	2.1	2.8	-0.2	-	-	-	-	-	0.0	2.6
	Invesco Small Cap Equity A	2.1	3.2	0.9	-	-	-	-	-	0.0	4.1
	PowerShares S&P SmallCap Low Volatil ETF	2.1	3.1	-0.1	-	-	-	-	-	0.0	3.0
	Invesco International Growth A	5.2	6.1	0.0	-	-	-	-	1.1	0.0	7.3
	Invesco International Companies A	2.1	2.6	0.0	-	-	-	-	0.4	0.0	3.0
	PowerShares FTSE RAFI Emerging Mkts ETF	5.3	7.3	0.6	-	-	-	-	1.9	0.0	9.8
	Invesco Developing Markets A	1.6	2.1	0.0	-	-	-	-	0.4	0.0	2.5
	Invesco Low Volatility Emerging Mkts A	1.6	2.0	0.1	-	-	-	-	0.8	0.0	2.8
FI	Invesco Core Plus Bond A	10.5	-	-	-0.6	2.0	-	-	-	0.0	1.4
	Invesco Quality Income A	5.3	-	-	-0.2	0.2	-	-	-	0.0	0.1
	PowerShares 1-30 Laddered Treasury ETF	5.2	-	-	-0.6	0.1	-	-	-	0.0	-0.5
	Invesco Short Term Bond A	3.1	-	-	-0.1	0.2	-	-	-	0.0	0.2
	Invesco High Yield A	3.7	-	-	-0.1	1.8	-	-	-	0.0	1.7
Alt	Invesco Global Real Estate Income A	3.1	4.5	-0.5	-	-	-	-	0.1	0.0	4.1
	Invesco All Cap Market Neutral A	3.2	-	-0.5	-	-	-	-	-	0.1	-0.4
	Invesco Long/Short Equity A	2.1	2.6	-0.3	-	-	-	-	-	0.0	2.4
	Invesco Balanced-Risk Allc A	6.9	3.8	-0.1	-0.3	0.1	0.9	-	0.1	0.0	4.5

Based on the BarraOne Risk Model

Past performance is not a guarantee of future results.

# Returns based analysis

## Portfolio Risk

### Isolated Risk - Fund Level

■ Top 2

		Weight	Industry	Style	Yield Curve	Spread	Commodity	Alternative	Currency	Selection	Total
	Portfolio	100.0	9.3	0.5	1.3	0.7	0.2	-	1.0	0.6	9.9
	Benchmark	-	14.8	0.3	-	-	-	-	2.1	0.7	15.2
Equity	Invesco Equally-Wtd S&P 500 A	8.5	15.5	2.0	-	-	-	-	-	0.7	16.1
	PowerShares Russell Top 200 Pure Gr ETF	4.7	16.1	3.6	-	-	-	-	-	2.1	15.8
	Invesco American Franchise A	4.7	16.1	2.9	-	-	-	-	0.7	2.6	17.4
	Invesco Diversified Dividend A	10.0	14.1	3.8	-	-	-	-	1.4	1.5	13.0
	Invesco Comstock A	4.8	16.3	1.5	-	-	-	-	-	2.5	17.0
	Invesco Endeavor A	2.1	16.0	5.7	-	-	-	-	0.8	4.3	20.9
	PowerShares S&P MidCap Low Volatil ETF	2.1	14.1	2.8	-	-	-	-	-	3.7	13.7
	Invesco Small Cap Equity A	2.1	16.0	6.9	-	-	-	-	-	2.3	21.0
	PowerShares S&P SmallCap Low Volatil ETF	2.1	15.4	5.7	-	-	-	-	-	4.0	16.4
	Invesco International Growth A	5.2	12.8	0.9	-	-	-	-	5.1	3.9	15.5
	Invesco International Companies A	2.1	13.3	1.2	-	-	-	-	5.4	5.2	16.4
	PowerShares FTSE RAFI Emerging Mkts ETF	5.3	16.7	2.3	-	-	-	-	5.5	1.7	22.0
	Invesco Developing Markets A	1.6	14.2	0.8	-	-	-	-	5.5	7.5	18.4
	Invesco Low Volatility Emerging Mkts A	1.6	14.6	2.0	-	-	-	-	6.8	2.5	20.5
FI	Invesco Core Plus Bond A	10.5	-	-	4.0	2.9	-	-	-	0.9	3.9
	Invesco Quality Income A	5.3	-	-	2.5	0.8	-	-	-	1.2	2.8
	PowerShares 1-30 Laddered Treasury ETF	5.2	-	-	8.6	0.2	-	-	-	1.2	8.6
	Invesco Short Term Bond A	3.1	-	-	1.4	1.2	-	-	-	0.5	1.5
	Invesco High Yield A	3.7	-	-	2.3	7.5	-	-	-	1.8	7.1
Alt	Invesco Global Real Estate Income A	3.1	16.1	4.7	-	-	-	-	1.8	2.6	15.4
	Invesco All Cap Market Neutral A	3.2	-	4.8	-	-	-	-	-	8.8	10.0
	Invesco Long/Short Equity A	2.1	13.0	3.5	-	-	-	-	-	10.3	15.9
	Invesco Balanced-Risk Allc A	6.9	5.7	0.8	3.7	0.1	2.8	-	1.0	0.0	7.5

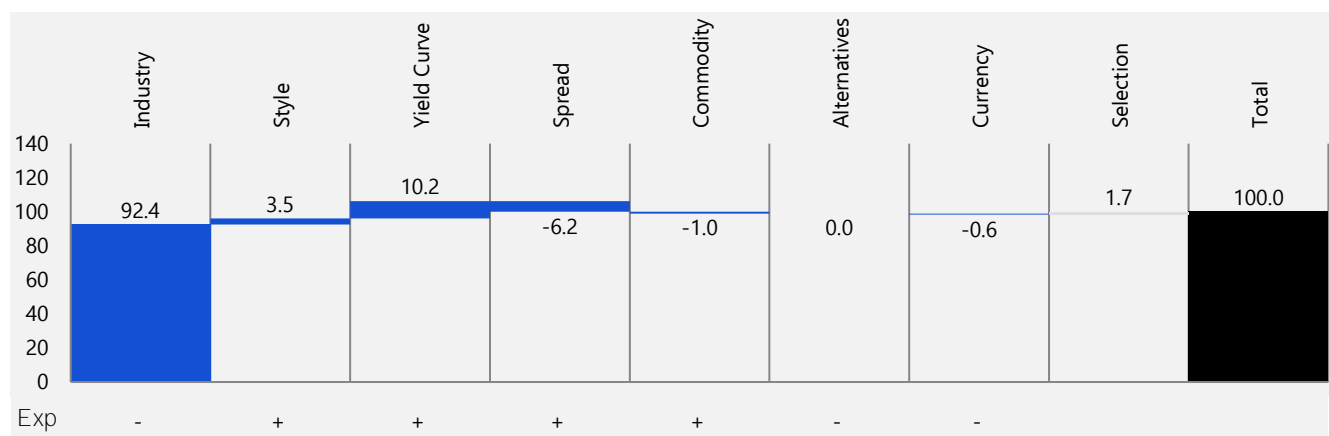
Based on the BarraOne Risk Model

Past performance is not a guarantee of future results.

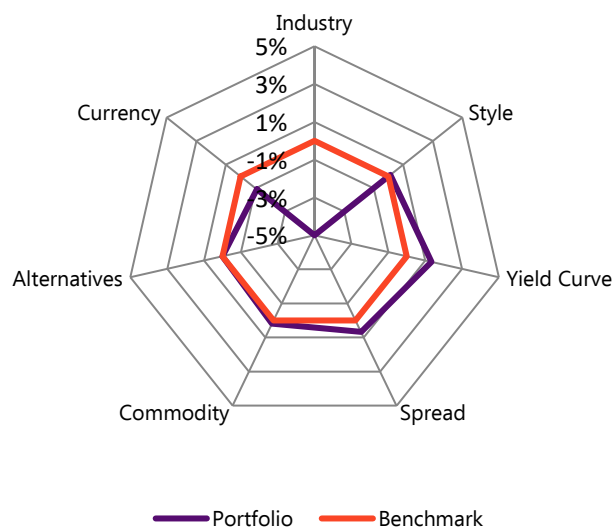
# Returns based analysis

## Portfolio Risk

Active contribution to risk (% of total active risk)



Active exposure (isolated risk%)

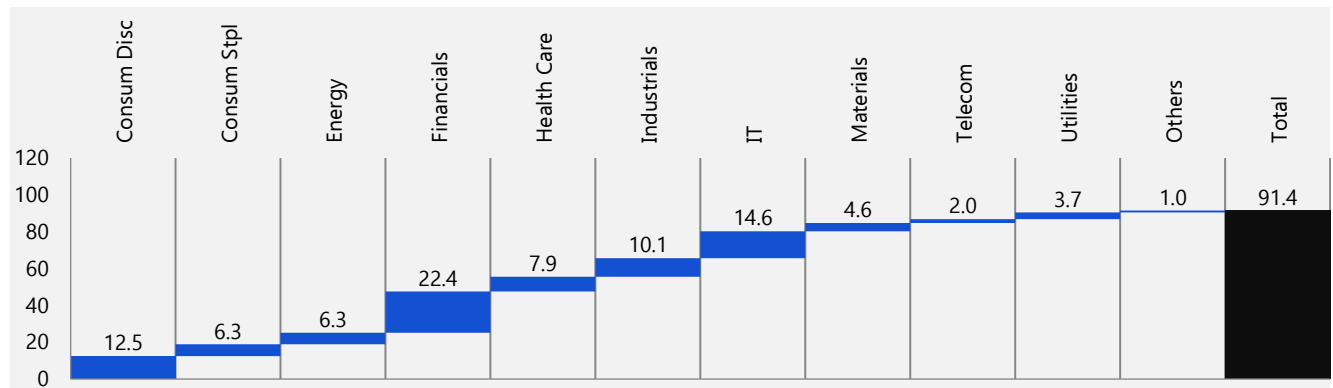


Based on the BarraOne Risk Model  
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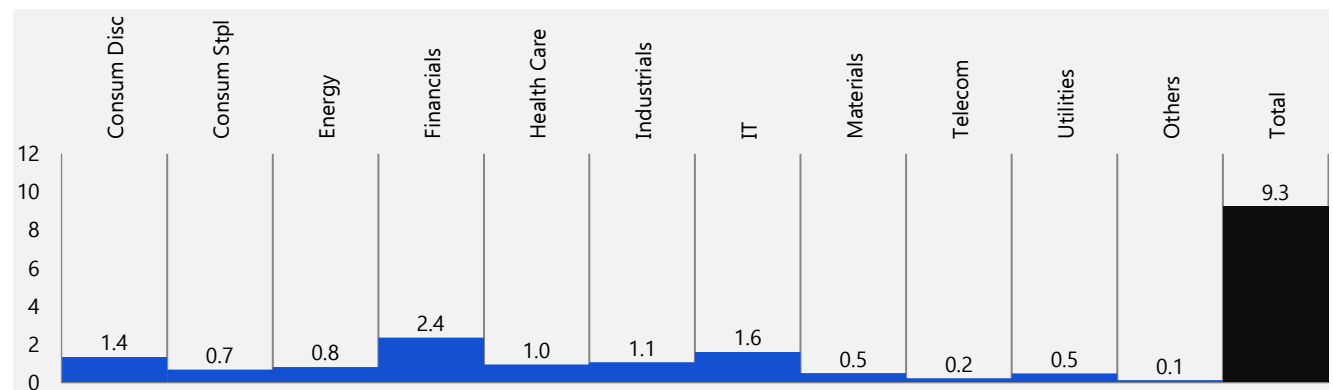
# Returns based analysis

## Industry Risk

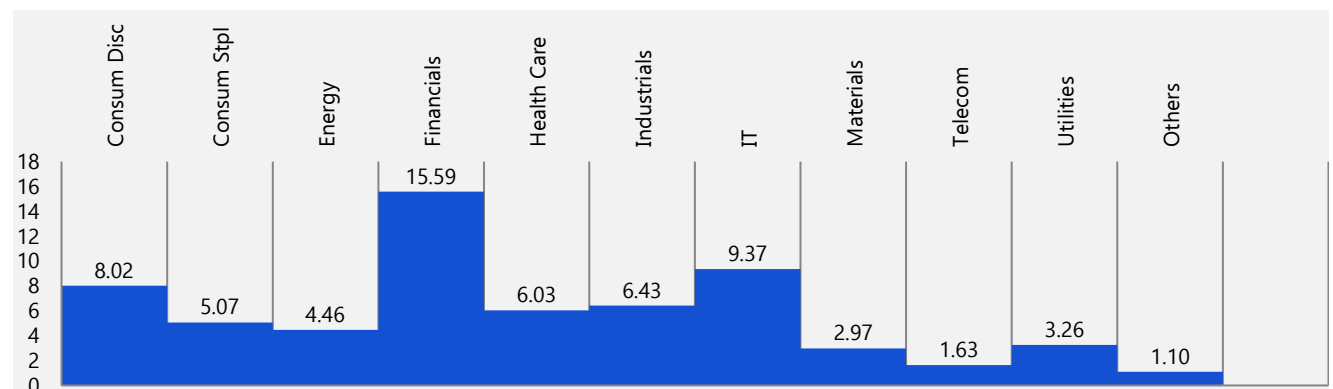
### Contribution to risk (% of total risk)



### Isolated risk (standard deviation)



### Exposure (% weight)



Based on the BarraOne Risk Model

Past performance is not a guarantee of future results.

# Returns based analysis

## Industry Risk

### Isolated Risk - Fund Level

■ Top 2

		Weight	Consum Disc	Consum Stpl	Energy	Financials	Health Care	Industrials	IT	Materials	Telecom	Utilities	Others	Total
	Portfolio	100.0	1.4	0.7	0.8	2.4	1.0	1.1	1.6	0.5	0.2	0.5	0.1	9.3
	Benchmark	-	2.2	1.1	1.1	3.1	2.0	1.7	3.2	0.8	0.4	0.5	0.3	14.8
Equity	Invesco Equally-Wtd S&P 500 A	8.5	2.9	1.0	1.6	3.1	2.1	2.4	2.7	0.9	0.1	0.9	-	15.5
	PowerShares Russell Top 200 Pure Gr ETF	4.7	4.6	1.2	-	1.2	2.7	1.4	6.2	0.5	-	-	-	16.1
	Invesco American Franchise A	4.7	3.8	0.5	0.4	0.5	2.4	1.0	8.1	0.4	0.2	-	0.8	16.1
	Invesco Diversified Dividend A	10.0	1.4	3.1	1.6	2.8	1.1	1.8	0.1	0.6	0.9	2.8	-	14.1
	Invesco Comstock A	4.8	1.6	0.1	3.0	6.7	2.8	1.9	1.8	0.6	0.1	0.2	-	16.3
	Invesco Endeavor A	2.1	3.6	-	1.2	3.6	2.3	4.3	3.0	-	-	-	-	16.0
	PowerShares S&P MidCap Low Volatil ETF	2.1	3.4	0.5	0.5	4.4	1.2	1.3	2.1	0.8	0.2	1.4	-	14.1
	Invesco Small Cap Equity A	2.1	2.3	0.3	1.3	3.6	1.9	3.8	3.6	0.8	0.3	0.1	-	16.0
	PowerShares S&P SmallCap Low Volatil ETF	2.1	3.4	0.3	0.5	5.9	1.4	1.6	2.2	0.8	0.2	0.6	-	15.4
	Invesco International Growth A	5.2	1.6	1.2	0.9	3.2	1.2	1.5	1.6	1.0	0.5	0.4	0.6	12.8
	Invesco International Companies A	2.1	1.6	1.3	1.0	3.2	1.0	1.5	1.8	1.2	0.6	0.5	0.7	13.3
	PowerShares FTSE RAFI Emerging Mkts ETF	5.3	0.6	0.6	3.7	6.8	0.1	0.6	2.4	1.8	1.2	0.4	0.3	16.7
	Invesco Developing Markets A	1.6	1.7	1.2	1.2	3.6	1.0	1.5	1.9	1.2	0.6	0.5	0.7	14.2
	Invesco Low Volatility Emerging Mkts A	1.6	1.7	1.5	1.2	2.2	1.1	2.3	1.8	2.7	0.3	0.6	1.3	14.6
FI	Invesco Core Plus Bond A	10.5	-	-	-	-	-	-	-	-	-	-	-	-
	Invesco Quality Income A	5.3	-	-	-	-	-	-	-	-	-	-	-	-
	PowerShares 1-30 Laddered Treasury ETF	5.2	-	-	-	-	-	-	-	-	-	-	-	-
	Invesco Short Term Bond A	3.1	-	-	-	-	-	-	-	-	-	-	-	-
	Invesco High Yield A	3.7	-	-	-	-	-	-	-	-	-	-	-	-
Alt	Invesco Global Real Estate Income A	3.1	0.2	-	0.3	14.9	-	0.5	0.3	-	-	0.3	0.1	16.1
	Invesco All Cap Market Neutral A	3.2	-	-	-	-	-	-	-	-	-	-	-	-
	Invesco Long/Short Equity A	2.1	1.5	0.9	1.1	2.9	1.7	1.3	4.1	0.7	0.2	0.4	-	13.0
	Invesco Balanced-Risk Allc A	6.9	0.8	0.4	0.4	1.2	0.7	0.8	1.0	0.4	0.2	0.2	0.2	5.7

Based on the BarraOne Risk Model

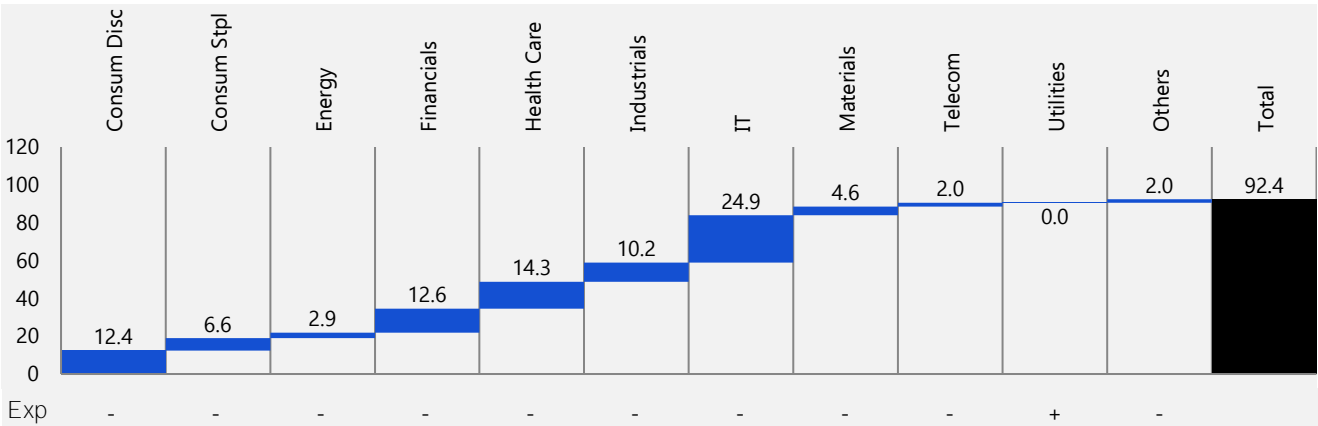
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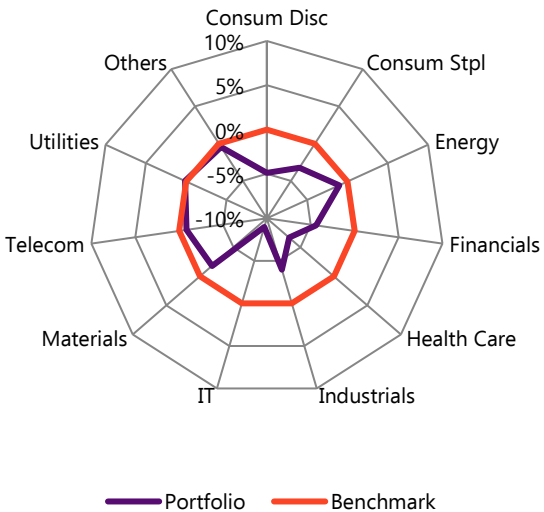
# Returns based analysis

## Industry Risk

Active contribution to risk (% of total active risk)



Active exposure (% weight)

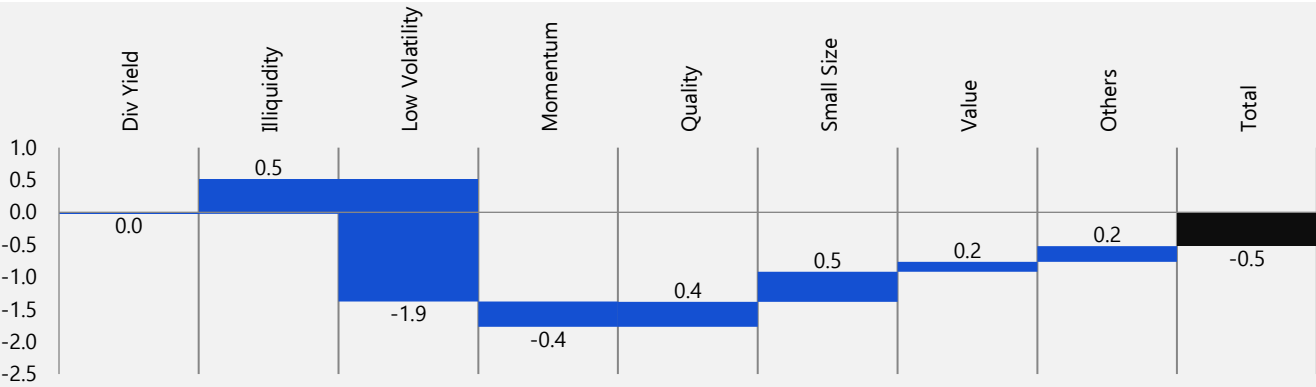


Based on the BarraOne Risk Model  
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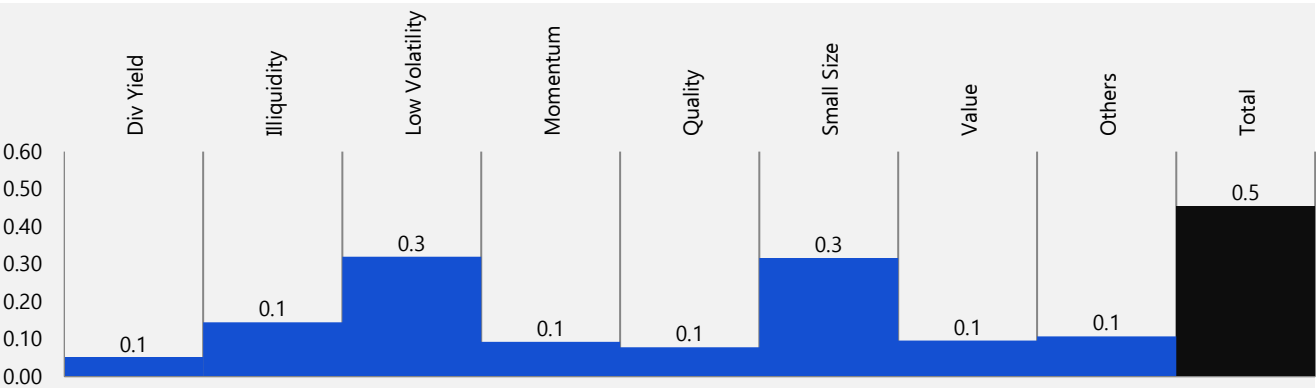
# Returns based analysis

## Style Risk

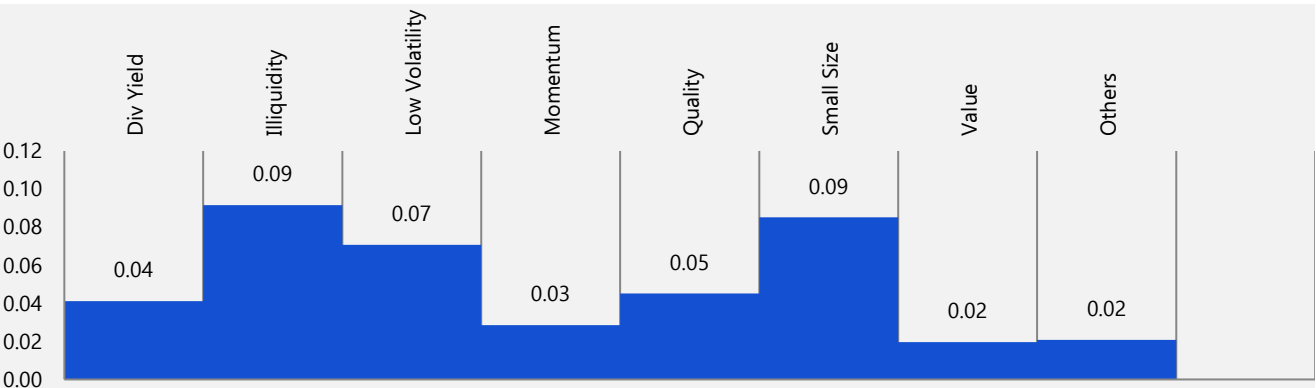
Contribution to risk (% of total risk)



Isolated risk (standard deviation)



Exposure (z-score)



Based on the BarraOne Risk Model  
Past performance is not a guarantee of future results.

# Returns based analysis

## Style Risk

### Isolated Risk - Fund Level

■ Top 2

		Weight	Div Yield	Illiquidity	Low Volatility	Momentum	Quality	Small Size	Value	Others	Total
	Portfolio	100.0	0.1	0.1	0.3	0.1	0.1	0.3	0.1	0.1	0.5
	Benchmark	-	0.0	0.1	0.1	0.0	0.0	0.2	0.1	0.1	0.3
Equity	Invesco Equally-Wtd S&P 500 A	8.50	0.0	0.7	0.5	0.8	0.2	1.3	0.3	0.3	2.0
	PowerShares Russell Top 200 Pure Gr ETF	4.70	0.7	0.4	0.5	1.6	0.7	0.8	1.5	0.9	3.6
	Invesco American Franchise A	4.70	0.9	0.5	1.6	0.8	0.5	1.1	0.9	0.9	2.9
	Invesco Diversified Dividend A	10.00	1.0	0.2	3.4	1.4	0.4	0.4	0.5	0.8	3.8
	Invesco Comstock A	4.80	0.1	0.2	0.4	0.6	0.3	0.5	0.8	0.2	1.5
	Invesco Endeavor A	2.10	1.2	1.0	3.5	1.3	0.6	2.6	0.8	0.4	5.7
	PowerShares S&P MidCap Low Volatil ETF	2.10	0.3	0.1	1.7	0.2	0.4	2.4	0.3	0.0	2.8
	Invesco Small Cap Equity A	2.10	1.0	1.0	4.9	0.7	0.2	4.4	0.4	0.2	6.9
	PowerShares S&P SmallCap Low Volatil ETF	2.10	0.5	0.0	0.8	0.6	0.4	5.5	0.7	0.0	5.7
	Invesco International Growth A	5.20	0.0	0.2	0.3	0.9	0.0	0.3	0.1	0.3	0.9
	Invesco International Companies A	2.10	0.0	0.2	0.3	1.2	0.1	0.2	0.1	0.3	1.2
	PowerShares FTSE RAFI Emerging Mkts ETF	5.30	0.1	0.6	0.9	0.4	0.2	0.8	0.6	1.2	2.3
	Invesco Developing Markets A	1.60	0.1	0.2	0.3	0.7	0.0	0.3	0.1	0.4	0.8
FI	Invesco Low Volatility Emerging Mkts A	1.60	0.5	0.6	1.1	0.4	0.3	0.9	0.5	1.1	2.0
	Invesco Core Plus Bond A	10.50	-	-	-	-	-	-	-	-	-
	Invesco Quality Income A	5.30	-	-	-	-	-	-	-	-	-
	PowerShares 1-30 Laddered Treasury ETF	5.20	-	-	-	-	-	-	-	-	-
	Invesco Short Term Bond A	3.10	-	-	-	-	-	-	-	-	-
Alt	Invesco High Yield A	3.70	-	-	-	-	-	-	-	-	-
	Invesco Global Real Estate Income A	3.10	1.6	0.2	4.2	2.1	0.9	1.4	0.9	0.9	4.7
	Invesco All Cap Market Neutral A	3.20	-	-	-	4.1	-	-	3.0	-	4.8
	Invesco Long/Short Equity A	2.10	0.0	0.0	0.1	3.5	0.0	0.1	0.0	-	3.5
	Invesco Balanced-Risk Allc A	6.90	0.1	0.0	0.1	0.2	0.0	0.7	0.2	0.1	0.8

x.x represents negative exposure.

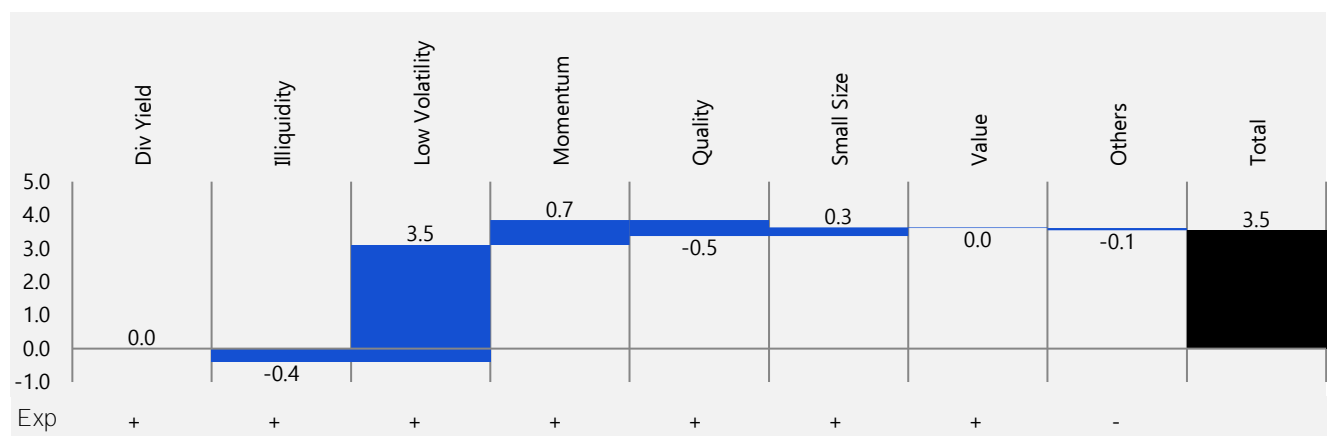
Based on the BarraOne Risk Model

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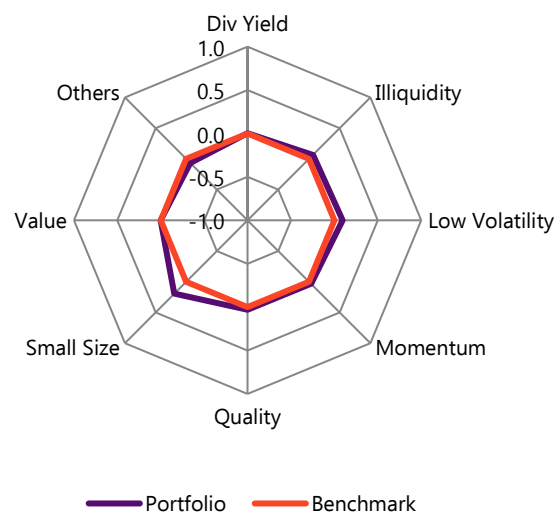
# Returns based analysis

## Style Risk

Active contribution to risk (% of total active risk)



Active exposure (z-score)

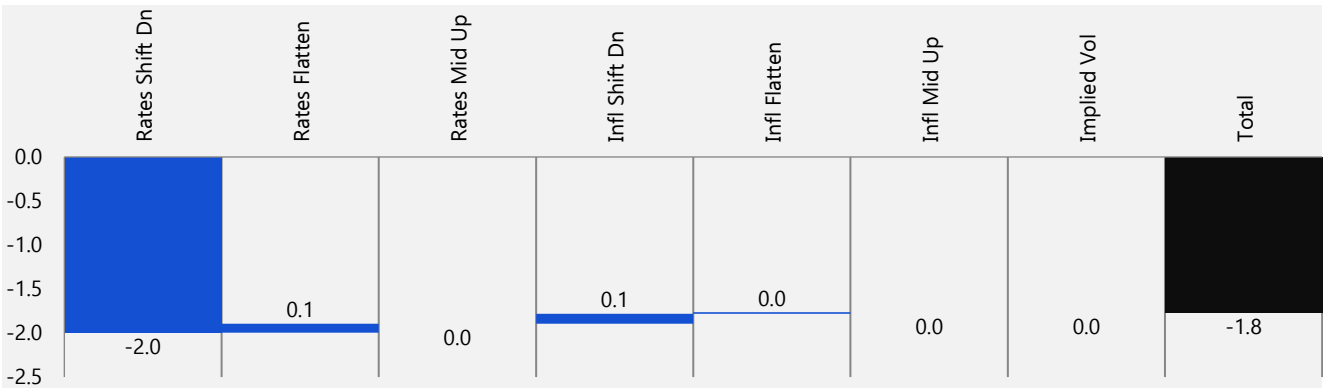


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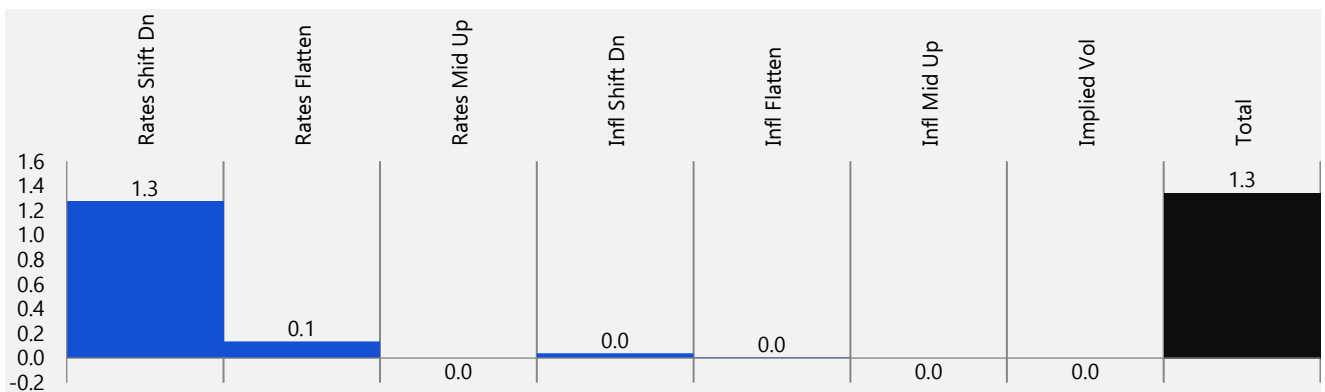
# Returns based analysis

## Yield Curve Risk

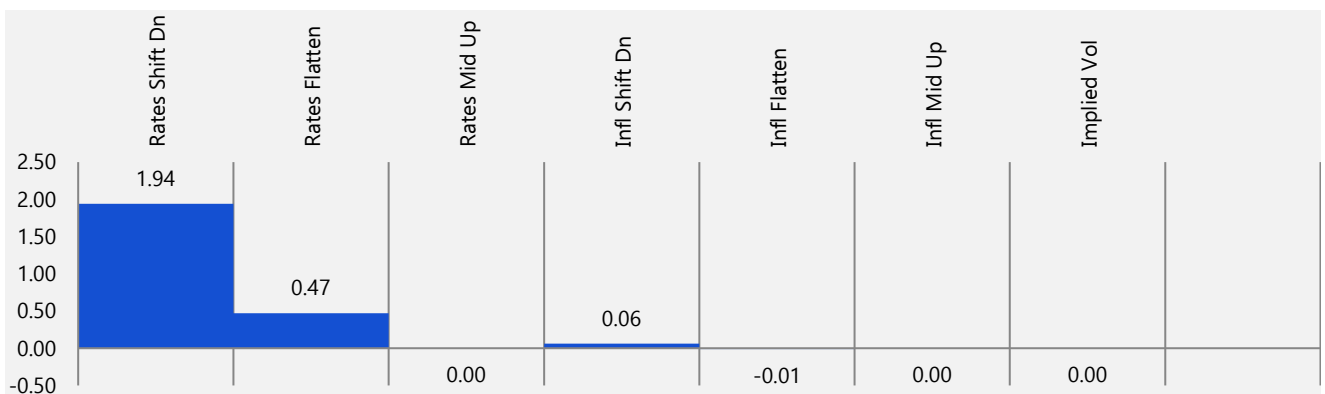
### Contribution to risk (% of total risk)



### Isolated risk (standard deviation)



### Exposure



Based on the BarraOne Risk Model

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# Returns based analysis

## Yield Curve Risk

### Isolated Risk - Fund Level

■ Top 2

		Weight	Rates Shift Dn	Rates Flatten	Rate Mid Up	Infl Shift Dn	Infl Flatten	Infl Mid Up	Implied Vol	Total
	Portfolio	100.0	1.3	0.1	-	0.0	0.0	-	-	1.3
	Benchmark	-	-	-	-	-	-	-	-	-
Equity	Invesco Equally-Wtd S&P 500 A	8.5	-	-	-	-	-	-	-	-
	PowerShares Russell Top 200 Pure Gr ETF	4.7	-	-	-	-	-	-	-	-
	Invesco American Franchise A	4.7	-	-	-	-	-	-	-	-
	Invesco Diversified Dividend A	10.0	-	-	-	-	-	-	-	-
	Invesco Comstock A	4.8	-	-	-	-	-	-	-	-
	Invesco Endeavor A	2.1	-	-	-	-	-	-	-	-
	PowerShares S&P MidCap Low Volatil ETF	2.1	-	-	-	-	-	-	-	-
	Invesco Small Cap Equity A	2.1	-	-	-	-	-	-	-	-
	PowerShares S&P SmallCap Low Volatil ETF	2.1	-	-	-	-	-	-	-	-
	Invesco International Growth A	5.2	-	-	-	-	-	-	-	-
	Invesco International Companies A	2.1	-	-	-	-	-	-	-	-
	PowerShares FTSE RAFI Emerging Mkts ETF	5.3	-	-	-	-	-	-	-	-
	Invesco Developing Markets A	1.6	-	-	-	-	-	-	-	-
	Invesco Low Volatility Emerging Mkts A	1.6	-	-	-	-	-	-	-	-
FI	Invesco Core Plus Bond A	10.5	3.9	0.2	-	0.1	0.0	-	-	4.0
	Invesco Quality Income A	5.3	2.4	0.2	-	0.2	0.1	-	-	2.5
	PowerShares 1-30 Laddered Treasury ETF	5.2	7.6	2.3	-	0.0	0.1	-	-	8.6
	Invesco Short Term Bond A	3.1	1.5	0.5	-	0.0	0.1	-	-	1.4
	Invesco High Yield A	3.7	2.1	0.2	-	0.3	0.1	-	-	2.3
Alt	Invesco Global Real Estate Income A	3.1	-	-	-	-	-	-	-	-
	Invesco All Cap Market Neutral A	3.2	-	-	-	-	-	-	-	-
	Invesco Long/Short Equity A	2.1	-	-	-	-	-	-	-	-
	Invesco Balanced-Risk Allc A	6.9	3.5	0.3	-	0.2	0.0	-	-	3.7

x.x represents negative exposure.

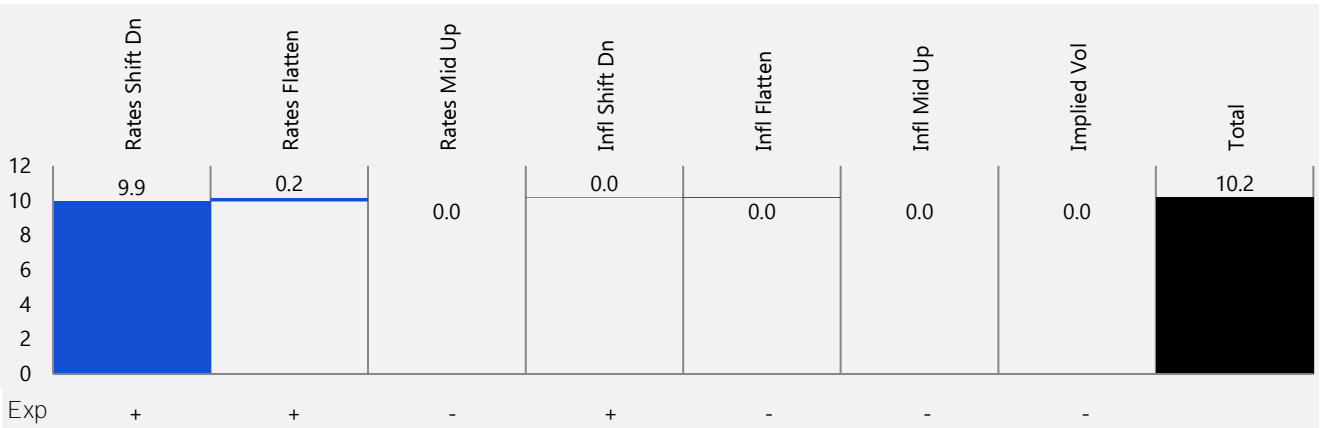
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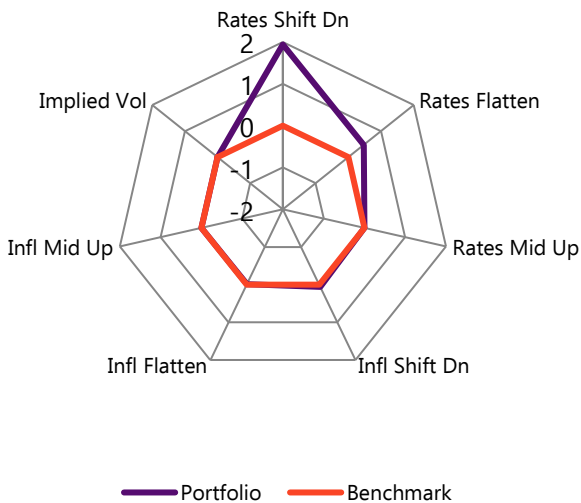
# Returns based analysis

## Yield Curve Risk

Active contribution to risk (% of total active risk)



## Active exposure

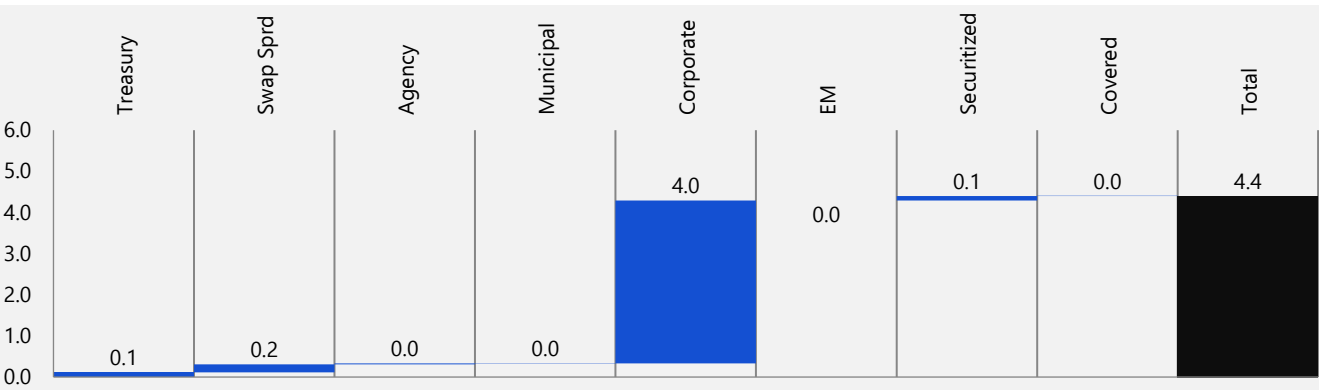


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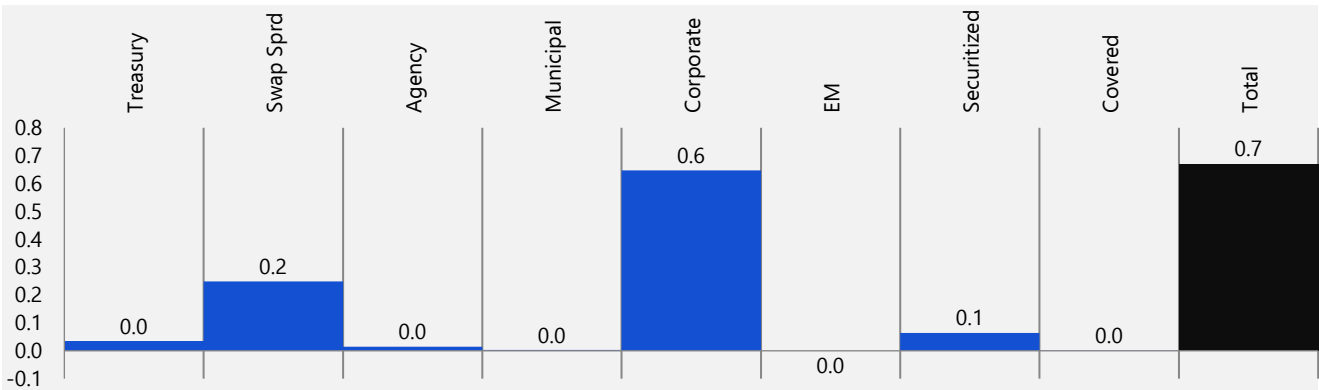
# Returns based analysis

## Spread Risk

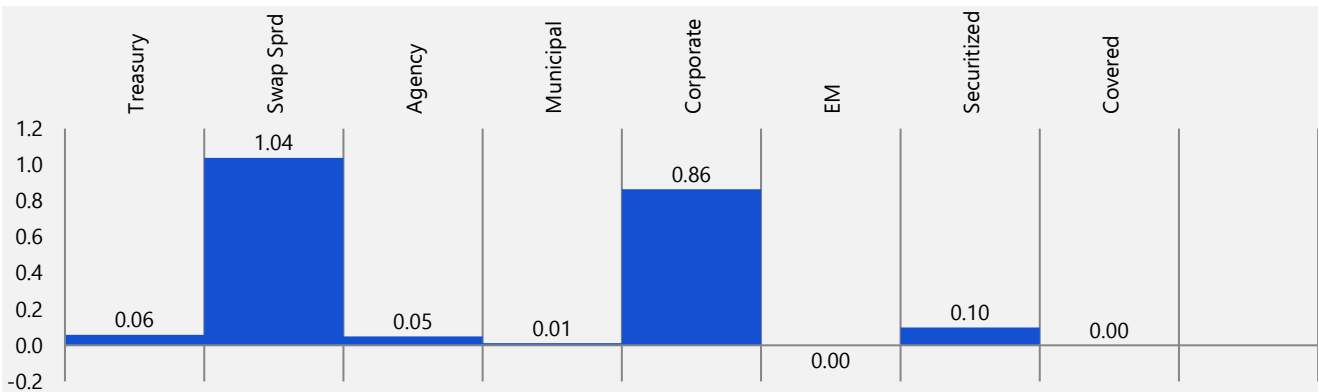
Contribution to risk (% of total risk)



Isolated risk (standard deviation)



Exposure (spread duration)



Based on the BarraOne Risk Model  
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# Returns based analysis

## Spread Risk

### Isolated Risk - Fund Level

■ Top 2

		Weight	Treasury	Swap Sprd	Agency	Municipal	Corporate	EM	Securitized	Covered	Total
	Portfolio	100.0	0.0	0.2	0.0	0.0	0.6	-	0.1	0.0	0.7
	Benchmark	-	-	-	-	-	-	-	-	-	-
Equity	Invesco Equally-Wtd S&P 500 A	8.5	-	-	-	-	-	-	-	-	-
	PowerShares Russell Top 200 Pure Gr ETF	4.7	-	-	-	-	-	-	-	-	-
	Invesco American Franchise A	4.7	-	-	-	-	-	-	-	-	-
	Invesco Diversified Dividend A	10.0	-	-	-	-	-	-	-	-	-
	Invesco Comstock A	4.8	-	-	-	-	-	-	-	-	-
	Invesco Endeavor A	2.1	-	-	-	-	-	-	-	-	-
	PowerShares S&P MidCap Low Volatil ETF	2.1	-	-	-	-	-	-	-	-	-
	Invesco Small Cap Equity A	2.1	-	-	-	-	-	-	-	-	-
	PowerShares S&P SmallCap Low Volatil ETF	2.1	-	-	-	-	-	-	-	-	-
	Invesco International Growth A	5.2	-	-	-	-	-	-	-	-	-
	Invesco International Companies A	2.1	-	-	-	-	-	-	-	-	-
	PowerShares FTSE RAFI Emerging Mkts ETF	5.3	-	-	-	-	-	-	-	-	-
	Invesco Developing Markets A	1.6	-	-	-	-	-	-	-	-	-
	Invesco Low Volatility Emerging Mkts A	1.6	-	-	-	-	-	-	-	-	-
FI	Invesco Core Plus Bond A	10.5	0.1	1.2	0.1	0.0	2.9	-	0.2	-	2.9
	Invesco Quality Income A	5.3	0.2	0.5	0.1	0.0	0.5	-	0.5	-	0.8
	PowerShares 1-30 Laddered Treasury ETF	5.2	0.0	0.2	0.1	0.0	0.2	-	0.0	-	0.2
	Invesco Short Term Bond A	3.1	0.0	0.6	0.0	0.0	1.2	-	0.0	-	1.2
	Invesco High Yield A	3.7	0.3	1.9	0.0	0.0	7.2	-	0.6	-	7.5
Alt	Invesco Global Real Estate Income A	3.1	-	-	-	-	-	-	-	-	-
	Invesco All Cap Market Neutral A	3.2	-	-	-	-	-	-	-	-	-
	Invesco Long/Short Equity A	2.1	-	-	-	-	-	-	-	-	-
	Invesco Balanced-Risk Allc A	6.9	0.0	0.1	0.0	0.0	0.1	-	-	0.0	0.1

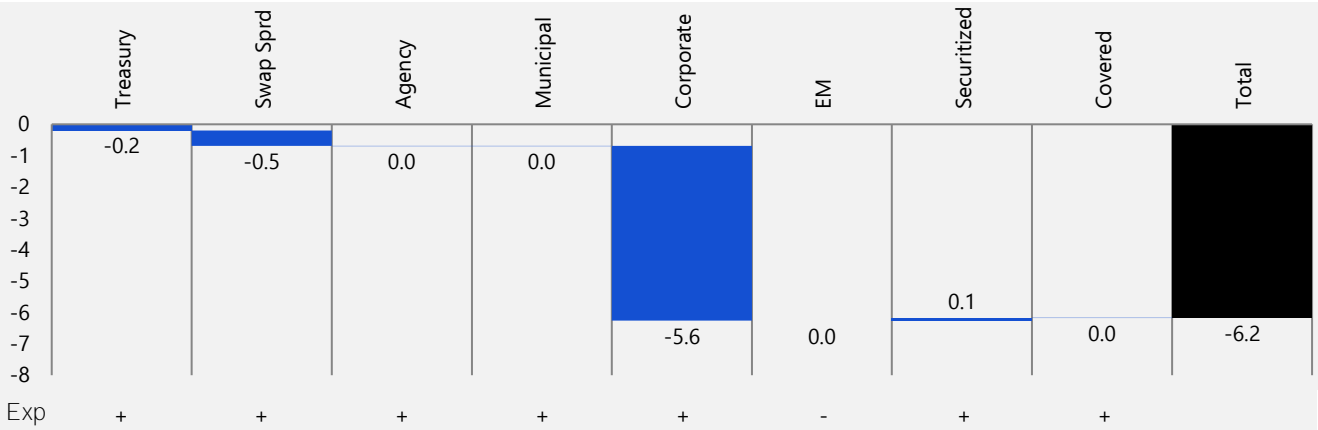
Based on the BarraOne Risk Model

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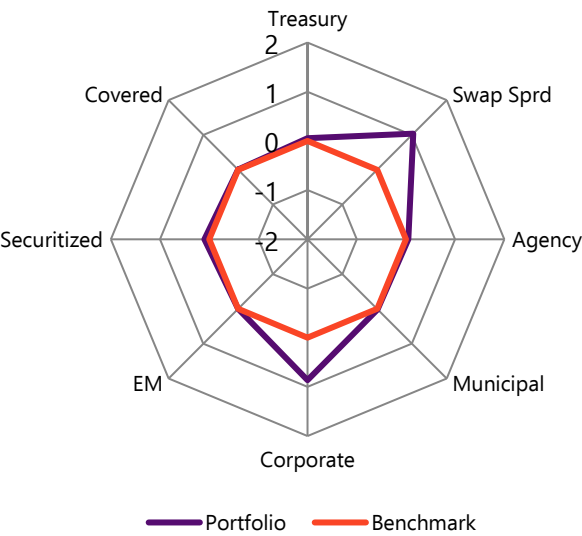
# Returns based analysis

## Spread Risk

Active contribution to risk (% of total active risk)



Active exposure (spread duration)

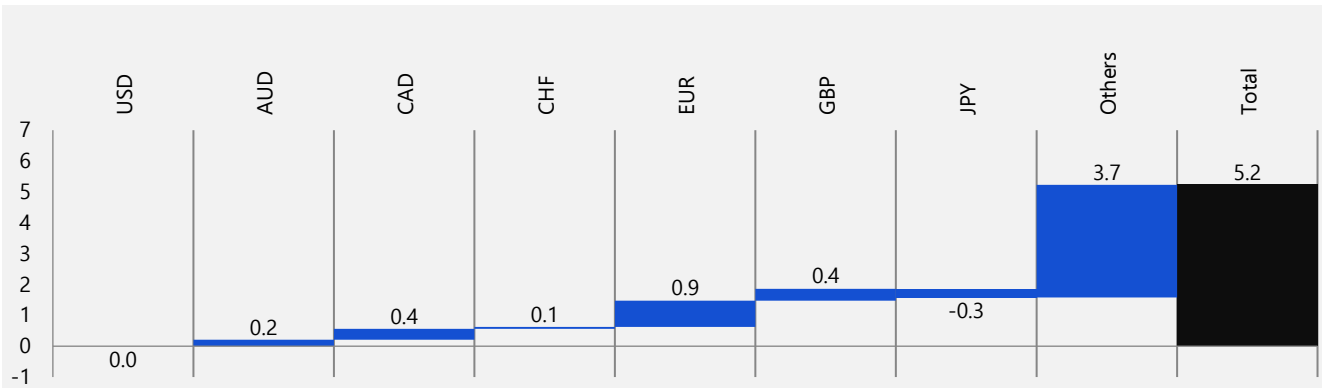


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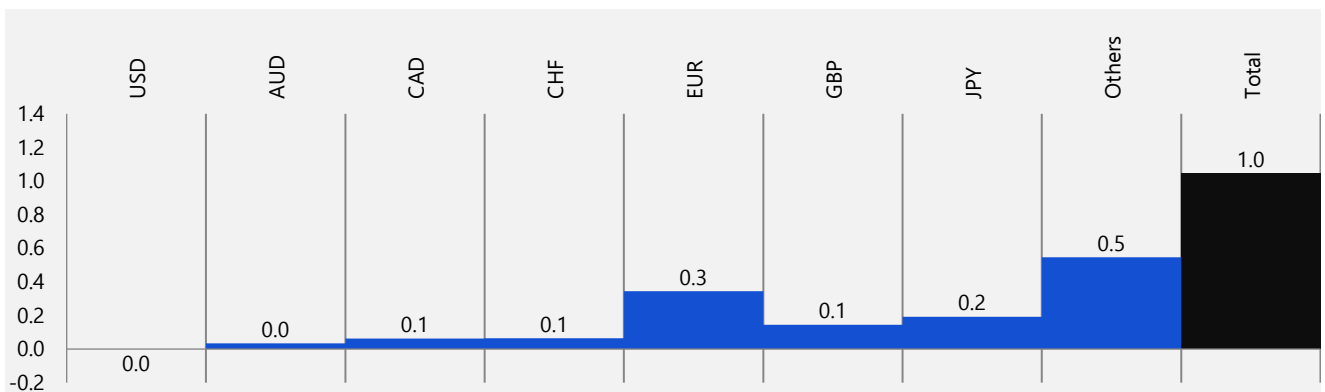
# Returns based analysis

## Currency Risk

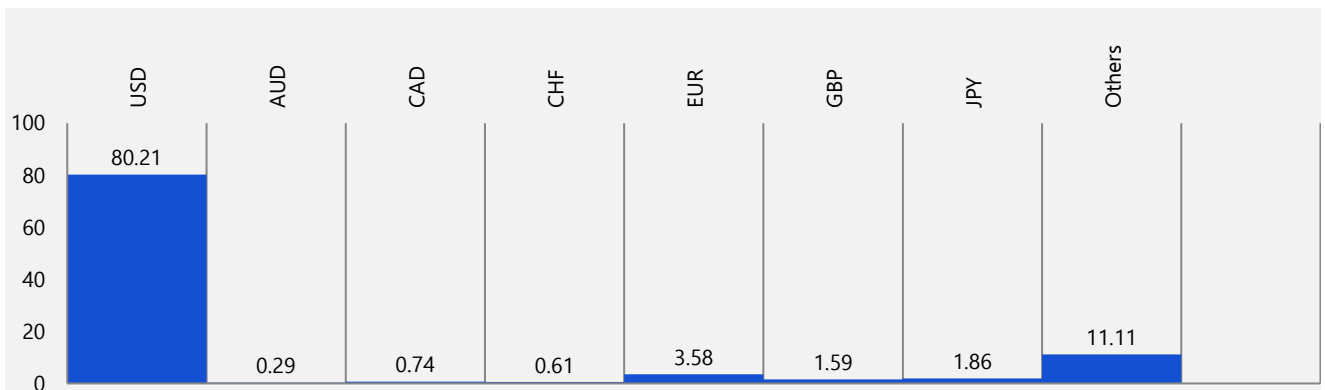
### Contribution to risk (% of total risk)



### Isolated risk (standard deviation)



### Exposure (% weight)



Based on the BarraOne Risk Model

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# Returns based analysis

## Currency Risk

### Isolated Risk - Fund Level

■ Top 2

		Weight	USD	AUD	CAD	CHF	EUR	GBP	JPY	Others	Total
	Portfolio	100.0	-	0.0	0.1	0.1	0.3	0.1	0.2	0.5	1.0
	Benchmark	-	-	0.2	-	0.3	0.9	0.5	0.7	0.2	2.1
Equity	Invesco Equally-Wtd S&P 500 A	8.5	-	-	-	-	-	-	-	-	-
	PowerShares Russell Top 200 Pure Gr ETF	4.7	-	-	-	-	-	-	-	-	-
	Invesco American Franchise A	4.7	-	-	0.0	-	0.1	0.1	0.6	0.0	0.7
	Invesco Diversified Dividend A	10.0	-	-	0.2	0.1	0.9	0.3	-	-	1.4
	Invesco Comstock A	4.8	-	-	-	-	-	-	-	-	-
	Invesco Endeavor A	2.1	-	-	0.2	-	0.7	-	-	-	0.8
	PowerShares S&P MidCap Low Volatil ETF	2.1	-	-	-	-	-	-	-	-	-
	Invesco Small Cap Equity A	2.1	-	-	-	-	-	-	-	-	-
	PowerShares S&P SmallCap Low Volatil ETF	2.1	-	-	-	-	-	-	-	-	-
	Invesco International Growth A	5.2	-	0.3	0.2	0.5	1.9	1.2	1.0	1.7	5.1
	Invesco International Companies A	2.1	-	0.3	0.3	0.5	2.0	1.0	1.3	1.7	5.4
	PowerShares FTSE RAFI Emerging Mkts ETF	5.3	-	-	-	-	-	-	-	5.5	5.5
	Invesco Developing Markets A	1.6	-	0.4	0.6	0.5	1.9	0.9	1.4	1.8	5.5
	Invesco Low Volatility Emerging Mkts A	1.6	-	-	-	-	-	-	-	6.8	6.8
FI	Invesco Core Plus Bond A	10.5	-	-	-	-	-	-	-	-	-
	Invesco Quality Income A	5.3	-	-	-	-	-	-	-	-	-
	PowerShares 1-30 Laddered Treasury ETF	5.2	-	-	-	-	-	-	-	-	-
	Invesco Short Term Bond A	3.1	-	-	-	-	-	-	-	-	-
	Invesco High Yield A	3.7	-	-	-	-	-	-	-	-	-
Alt	Invesco Global Real Estate Income A	3.1	-	-	0.1	0.1	0.6	0.2	1.2	0.2	1.8
	Invesco All Cap Market Neutral A	3.2	-	-	-	-	-	-	-	-	-
	Invesco Long/Short Equity A	2.1	-	-	-	-	-	-	-	-	-
	Invesco Balanced-Risk Allc A	6.9	-	0.1	0.1	0.0	0.6	0.1	0.4	0.0	1.0

x.x represents negative exposure.

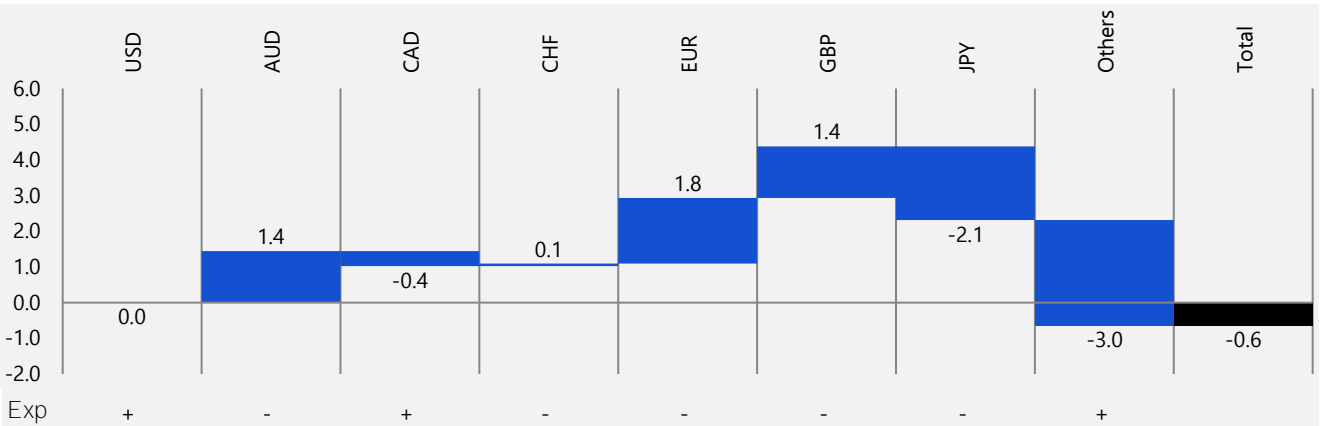
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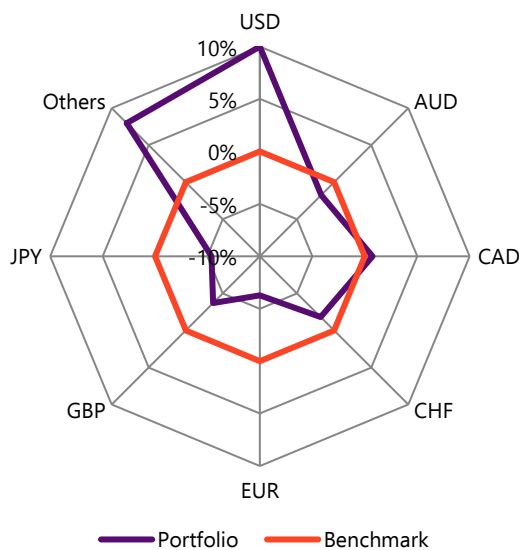
# Returns based analysis

## Currency Risk

Active contribution to risk (% of total active risk)



Active exposure (% weight)



Based on the BarraOne Risk Model

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# Returns based analysis

## Asset based representation

### Implied weight (%)

		<div><div></div><div>10-25</div><div>25-50</div><div>50-100</div></div>													
		Weight	Cash	US Large Eq	US Small Eq	Intl Dev Eq	EM Eq	US Tsy	US Mtgs	US IG	US HY	Intl Govt	EM Debt	R Squared	
Portfolio		100.0	8	36	7	8	9	11	3	9	4	3	1	0.99	
Benchmark		0.0	0	61	9	30	0	0	0	0	0	0	0	1.00	
Equity	Invesco Equally-Wtd S&P 500 A	8.5	0	74	21	1	2	0	0	0	2	0	0	0.98	
	PowerShares Russell Top 200 Pure Gr ETF	4.7	0	90	8	0	1	1	0	0	0	0	0	0.91	
	Invesco American Franchise A	4.7	0	71	16	3	10	0	0	0	0	0	0	0.92	
	Invesco Diversified Dividend A	10.0	0	73	0	9	0	0	2	3	3	9	0	0.90	
	Invesco Comstock A	4.8	0	81	18	1	0	0	0	0	0	0	0	0.96	
	Invesco Endeavor A	2.1	0	25	66	7	2	0	0	0	0	0	0	0.95	
	PowerShares S&P MidCap Low Volatil ETF	2.1	6	51	26	0	0	0	3	14	1	0	0	0.95	
	Invesco Small Cap Equity A	2.1	0	13	84	0	2	0	0	0	0	0	0	0.99	
	PowerShares S&P SmallCap Low Volatil ETF	2.1	8	20	58	0	0	1	0	11	2	0	0	0.93	
	Invesco International Growth A	5.2	11	2	2	58	23	0	0	0	2	0	1	0.99	
	Invesco International Companies A	2.1	8	0	2	57	28	0	0	0	1	3	1	0.99	
	PowerShares FTSE RAFI Emerging Mkts ETF	5.3	0	0	0	1	99	0	0	0	0	0	0	0.94	
	Invesco Developing Markets A	1.6	0	1	3	56	34	0	0	0	3	3	1	0.99	
	Invesco Low Volatility Emerging Mkts A	1.6	0	0	4	7	82	0	0	0	0	0	7	0.94	
FI	Invesco Core Plus Bond A	10.5	24	0	0	0	0	23	8	32	11	1	0	0.97	
	Invesco Quality Income A	5.3	48	0	0	0	0	29	11	8	2	1	0	0.96	
	PowerShares 1-30 Laddered Treasury ETF	5.2	0	0	0	0	0	70	30	0	0	0	0	0.80	
	Invesco Short Term Bond A	3.1	77	0	0	0	0	3	1	12	5	1	0	0.83	
	Invesco High Yield A	3.7	27	1	1	0	1	0	0	2	63	0	4	0.87	
Alt	Invesco Global Real Estate Income A	3.1	0	31	10	19	12	0	0	18	2	7	2	0.71	
	Invesco All Cap Market Neutral A	3.2	93	0	0	0	0	7	0	0	0	0	0	0.01	
	Invesco Long/Short Equity A	2.1	22	66	10	0	0	2	0	0	0	0	0	0.93	
	Invesco Balanced-Risk Alloc A	6.9	0	22	0	15	4	37	0	8	2	11	1	0.85	

Based on the BarraOne Risk Model

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# Returns based analysis

## Regime analysis

Implied return (%)

■ < -10 ■ > 10

		Weight	Bull Markets	Bear Markets	Low Vol	High Vol	Early Exp	Late Exp	Early Con	Late Con	YC Flatten	YC Steep	Dollar App	Dollar Dep
	Portfolio	100.0	10.0	-16.6	9.2	1.1	17.0	7.1	-20.2	9.6	7.5	-5.9	5.5	7.6
	Benchmark	0.0	14.0	-28.1	13.6	-1.4	22.2	10.1	-31.8	7.0	10.7	-12.7	7.7	7.4
Equity	Invesco Equally-Wtd S&P 500 A	8.5	12.2	-24.0	11.9	-1.2	21.8	8.2	-27.4	7.2	8.7	-10.0	7.9	5.0
	PowerShares Russell Top 200 Pure Gr ETF	4.7	14.1	-26.9	12.6	-2.7	17.9	11.6	-32.7	2.5	11.0	-12.1	10.3	4.0
	Invesco American Franchise A	4.7	15.6	-34.0	13.0	1.2	19.7	11.9	-40.1	7.7	12.1	-16.6	8.7	5.0
	Invesco Diversified Dividend A	10.0	10.7	-17.6	10.9	-0.3	19.4	7.7	-17.6	3.0	7.7	-5.7	7.2	6.4
	Invesco Comstock A	4.8	12.5	-26.2	12.2	-4.0	21.5	9.0	-28.2	3.9	9.2	-10.4	8.3	5.6
	Invesco Endeavor A	2.1	11.1	-33.5	12.2	-5.0	23.0	5.6	-38.9	11.6	6.9	-17.3	3.7	4.1
	PowerShares S&P MidCap Low Volatil ETF	2.1	11.0	-22.4	10.8	-4.0	19.4	7.7	-25.9	6.4	8.0	-9.7	6.9	5.2
	Invesco Small Cap Equity A	2.1	14.0	-32.3	13.4	-2.2	25.5	8.7	-37.1	12.3	9.8	-15.4	6.9	5.4
	PowerShares S&P SmallCap Low Volatil ETF	2.1	14.7	-20.8	13.9	-2.0	26.3	10.4	-24.5	13.7	10.8	-7.1	10.3	8.3
	Invesco International Growth A	5.2	15.3	-30.9	16.7	-4.4	23.8	11.0	-37.2	12.2	12.0	-14.6	4.5	14.8
	Invesco International Companies A	2.1	16.2	-31.7	17.4	-4.6	25.2	11.8	-38.2	13.1	12.7	-14.7	4.6	16.6
	PowerShares FTSE RAFI Emerging Mkts ETF	5.3	16.4	-32.7	15.4	-1.7	29.7	8.9	-41.6	40.9	10.1	-10.8	1.1	23.6
	Invesco Developing Markets A	1.6	16.6	-33.7	17.6	-4.2	26.8	11.4	-40.7	15.9	12.6	-15.8	4.0	17.1
	Invesco Low Volatility Emerging Mkts A	1.6	16.2	-30.6	16.6	-1.6	34.0	8.3	-43.2	41.5	10.2	-9.5	1.1	23.7
FI	Invesco Core Plus Bond A	10.5	2.6	2.6	0.9	6.2	6.8	1.4	0.4	7.7	1.5	1.7	2.1	2.5
	Invesco Quality Income A	5.3	1.2	4.8	0.1	4.6	3.1	1.0	5.5	4.2	0.8	3.7	1.5	2.1
	PowerShares 1-30 Laddered Treasury ETF	5.2	3.1	12.5	0.6	10.1	5.7	3.4	19.4	4.5	3.6	9.7	3.6	6.4
	Invesco Short Term Bond A	3.1	0.9	2.2	0.2	3.1	2.9	0.4	1.2	4.0	0.3	1.8	0.9	1.1
	Invesco High Yield A	3.7	3.8	-9.0	2.3	2.4	11.5	0.8	-19.5	12.6	1.2	-7.3	1.4	0.4
Alt	Invesco Global Real Estate Income A	3.1	10.0	-29.2	12.3	-11.1	20.4	5.4	-31.4	5.9	7.5	-17.6	1.2	10.1
	Invesco All Cap Market Neutral A	3.2	6.7	12.0	6.4	2.9	6.9	7.7	11.1	2.5	6.7	9.8	8.5	7.8
	Invesco Long/Short Equity A	2.1	15.0	-18.4	13.7	-2.8	19.7	13.4	-22.0	2.2	12.7	-4.7	12.5	8.4
	Invesco Balanced-Risk Allc A	6.9	8.7	-10.2	7.6	2.5	16.0	6.6	-12.4	8.4	7.1	-2.2	4.3	10.1

Based on the BarraOne Risk Model

Past performance is not a guarantee of future results.





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# Efficient frontier analysis

## Capital market assumptions

		Owned	10 year historical return %	10 year historical risk %	10 year CMA expected return %	10 year CMA expected risk %
Equity	Portfolio	✓	5.9	10.8	5.0	11.7
	US Large Cap	✓	8.3	15.1	5.7	16.5
	US Growth	✓	9.9	15.4	5.7	19.3
	US Value	✓	6.8	15.9	5.8	16.1
	US Small Cap	✓	8.7	19.9	6.2	22.3
	US Low Volatility		10.2	11.1	5.3	12.1
	International Developed	✓	2.0	18.5	5.9	18.6
	Emerging Markets	✓	1.7	22.8	7.1	25.6
	Developed World		2.0	18.4	5.9	18.6
	All World		4.9	16.8	6.0	16.6
	Cash		0.4	0.2	1.9	1.7
Fixed income	US Aggregate	✓	4.0	3.2	3.1	6.1
	US Treasury	✓	3.3	4.1	2.7	5.8
	US Corporate	✓	5.6	6.0	2.5	7.7
	US Securitized	✓	3.8	2.5	3.3	6.8
	US High Yield	✓	8.0	10.6	4.6	10.1
	US TIPS		3.4	6.1	2.5	5.9
	US Municipals		4.5	4.9	3.4	8.2
	US Bank Loans		4.6	7.5	4.3	8.3
	Global Aggregate x US		2.3	8.3	0.7	10.7
	Emerging Markets Debt		7.0	9.6	4.0	13.7
	Global Aggregate		3.0	5.8	1.7	7.0
Alternatives	Commodities		-10.0	23.1	5.4	22.6
	Private Eq		1.1	27.6	7.3	27.3
	Real Estate	✓	7.2	24.7	3.8	19.3
	Hedge Funds	✓	3.2	6.0	4.2	8.6
	Infrastructure		3.5	16.1	5.1	17.0
	Risk Parity	✓	3.9	9.7	5.1	9.6
MA	Balanced Aggressive		7.6	12.1	5.2	12.4
	Balanced Moderate		6.9	9.2	4.7	9.7
	Balanced Conservative		6.0	6.4	4.1	7.4

Past performance is not a guarantee of future results. CMA expected return and risk information is forward looking. Forward looking statements are not guarantees, and they involve risks, uncertainties and assumptions.

# Efficient frontier analysis

## Portfolio implied return

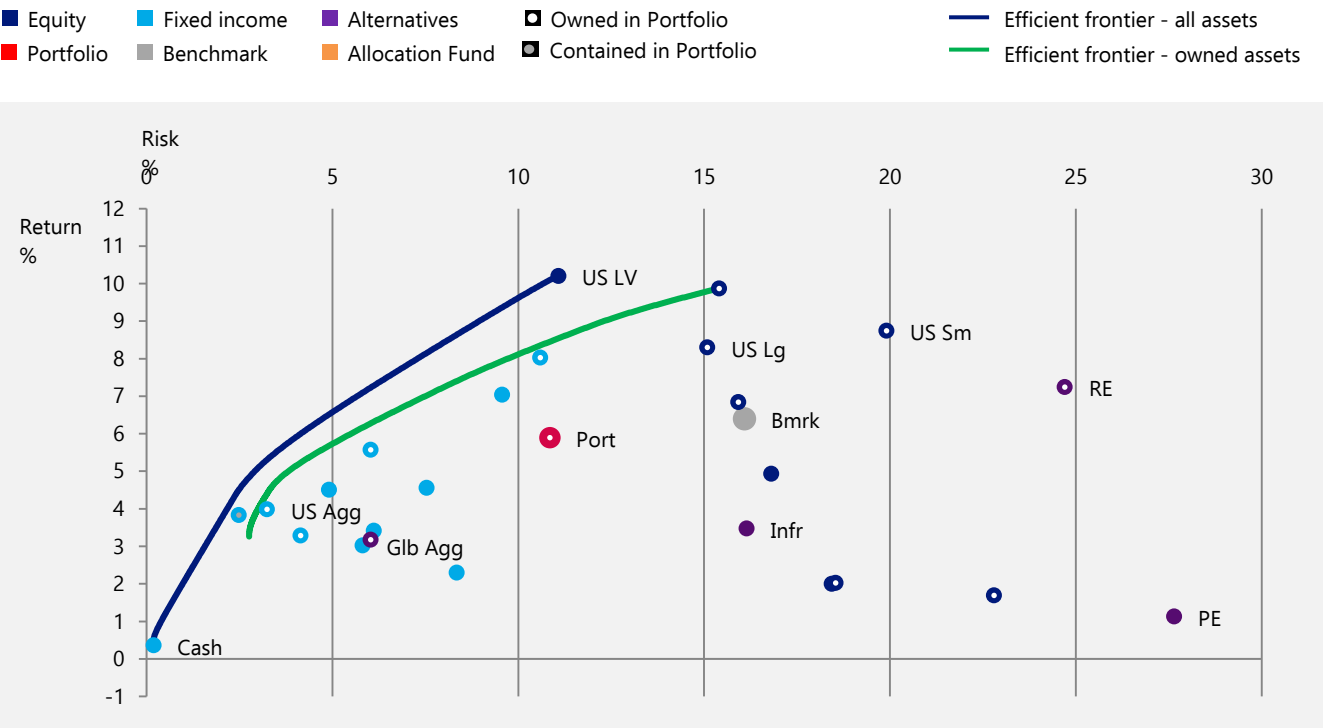
		Weight %	Portfolio implied return %	10 year historical return %	10 year CMA expected return %	10 year historical risk %	10 year CMA expected risk %
	Portfolio	100.0	5.6	5.9	5.0	10.8	11.7
Equity	US Large Cap	8.5	7.2	8.3	5.7	15.1	16.5
	US Growth	9.4	7.3	9.9	5.7	15.4	19.3
	US Value	14.8	7.5	6.8	5.8	15.9	16.1
	US Small Cap	8.4	8.9	8.7	6.2	19.9	22.3
	International Developed	7.3	8.6	2.0	5.9	18.5	18.6
	Emerging Markets	8.5	10.1	1.7	7.1	22.8	25.6
FI	US Aggregate	15.8	0.3	4.0	3.1	3.2	6.1
	US Treasury	5.2	-0.4	3.3	2.7	4.1	5.8
	US Corporate	3.1	1.5	5.6	2.5	6.0	7.7
	US High Yield	3.7	4.3	8.0	4.6	10.6	10.1
Alt	Real Estate	3.1	9.9	7.2	3.8	24.7	19.3
	Hedge Funds	5.3	2.7	3.2	4.2	6.0	8.6
	Risk Parity	6.9	4.2	3.9	5.1	9.7	9.6

Past performance is not a guarantee of future results. CMA expected return and risk information is forward looking. Forward looking statements are not guarantees, and they involve risks, uncertainties and assumptions.

# Efficient frontiers

## Efficient frontiers

Based on historical values (last 10 years)



Based on Invesco capital market assumptions



Past performance is not a guarantee of future results. CMA expected return and risk information is forward looking. Forward looking statements are not guarantees, and they involve risks, uncertainties and assumptions.

# Important information

All material presented is compiled from sources believed to be reliable and current, but accuracy cannot be guaranteed. This is being provided for informational purposes only, is not to be construed as an offer to buy or sell any financial instruments and should not be relied upon as the sole factor in any investment making decision. This should not be considered a recommendation to purchase any investment product. As with all investments, there are associated inherent risks.

This does not constitute a recommendation of any investment strategy for a particular investor. Investors should consult a financial professional before making any investment decisions if they are uncertain whether an investment is suitable for them. Please read all financial material carefully before investing. For additional educational information about these strategies, contact Invesco. Portfolio holdings and characteristics are subject to change. The opinions expressed herein are based on current market conditions and are subject to change without notice. These opinions may differ from those of other Invesco investment professionals.

Past performance does not guarantee future results. Total returns are historical and include reinvestment of dividends and capital gains, if any. Life-of-fund figures are reported as of the commencement date to the period indicated. Share price, yield and return will vary, and you may have a gain or loss when you sell your shares. Performance figures do not reflect any applicable sales charges. Performance would be lower if applicable sales charges were deducted. This presentation may include forward-looking statements. Forward-looking statements are not guarantees, and they involve risks, uncertainties and assumptions. When comparing the performance of different managers, keep in mind that there may be differences in the investment styles of managers even though they may be in the same investment category. Your clients choice of investment managers depends upon several factors including their investment goals, risk tolerance, and time frame. The techniques and analysis used may not produce the desired results.

In general, stock values fluctuate, sometimes widely, in response to activities specific to the company as well as general market, economic and political conditions.

Fixed-income investments are subject to credit risk of the issuer and the effects of changing interest rates. Interest rate risk refers to the risk that bond prices generally fall as interest rates rise and vice versa. An issuer may be unable to meet interest and/or principal payments, thereby causing its instruments to decrease in value and lowering the issuer's credit rating. Junk bonds involve a greater risk of default or price changes due to changes in the issuer's credit quality. The values of junk bonds fluctuate more than those of high quality bonds and can decline significantly over short time periods.

Alternative products typically hold more non-traditional investments and employ more complex trading strategies, including hedging and leveraging through derivatives, short selling and opportunistic strategies that change with market conditions. Investors considering alternatives should be aware of their unique characteristics and additional risks from the strategies they use.

Investing in foreign securities involve risks not associated with domestic securities, such as currency fluctuations, differing political and economic conditions, and different accounting standards.

Investments in small- and mid-cap stocks carry special risks, including narrower markets, limited financial resources, less liquidity, and greater volatility than large company stocks.

Value stocks may fall out of favor with investors and underperform growth stocks during given periods. Likewise, growth stocks may fall out of favor and underperform value stocks.

Investments in real estate related instruments may be subject to the risks associated with the real estate market and mortgage investing. These risks include fluctuating property values, changes in interest rates, property taxes, and mortgage-related risks.

A portfolio that holds fewer securities than a non-concentrated portfolio, or focuses its investments in one sector or industry, may involve greater risks and price volatility than more broadly diversified portfolios.

Asset allocation, diversification and low or negative correlation do not guarantee a profit or eliminate the risk of loss.

All data as of 11/30/2017 unless stated otherwise.

Invesco Advisers, Inc. is an investment adviser; it provides investment advisory services to individual and institutional clients and does not sell securities.

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# Appendix

## Asset class index cross-reference

Asset class	Asset class short	Benchmark
US Large Cap	US Lg	S&P 500
US Growth	US Grth	Russell 1000 Growth
US Value	US Val	Russell 1000 Value
US Small Cap	US Sm	Russell 2000
US Low Volatility	US LV	S&P Low Volatility
International Developed	Int Dev	MSCI EAFE
Emerging Markets	EM	MSCI Emerging Markets
Developed World	Dev Wrld	MSCI World
All World	All Wrld	MSCI All Country World
Cash	Cash	Citigroup 3 Month Treasury Bill
US Aggregate	US Agg	Bloomberg Barclays US Aggregate
US Treasury	US Tsy	Bloomberg Barclays US Treasury
US Corporate	US Corp	Bloomberg Barclays US Corporate
US Securitized	US Sec	Bloomberg Barclays US Securitized
US High Yield	US HY	Bloomberg Barclays US High Yield
US TIPS	US TIPS	Bloomberg Barclays US TIPS
US Municipals	US Muni	BofA ML US Taxable Muni
US Bank Loans	US BL	Credit Suisse Leveraged Loan
Global Aggregate x US	Glb AxUS	Bloomberg Barclays Global Aggregate ex US
Emerging Markets Debt	EM	Bloomberge Barclays EM Aggregate
Global Aggregate	Glb Agg	Bloomberg Barclays Global Aggregate
Commodities	Cmdty	Bloomberg Commodity
Private Eq	PE	Dow Jones Private Equity TR
Real Estate	RE	FTSE NAREIT Composite
Hedge Funds	HF	Well Fargo Hedge Fd TR
Infrastructure	Infr	S&P Global Infrastructure
Risk Parity	RP	60% MSCI WORLD / 40% BBG BARC Global Aggregate
Balanced Aggressive	Bal Agg	80% S&P 500 / 20% BBG BARC US Aggregate
Balanced Moderate	Bal Mod	60% S&P 500 / 40% BBG BARC US Aggregate
Balanced Conservative	Bal Cons	40% S&P 500 / 60% BBG BARC US Aggregate

# Appendix

## Statistical definitions

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**Alpha** - Measures return above or below the benchmark after adjusting for the beta to that benchmark. A positive alpha indicates that the manager(s) adds risk-adjusted value relative to the benchmark. Conversely, a negative alpha indicates risk-adjusted value destruction in relation to a benchmark.

**Batting Average** - Measures the percentage frequency with which the manager has beaten the benchmark over a given time frame.

**Beta** - Measures a security's volatility in relation to a benchmark where the benchmark beta equals one. A beta greater than one indicates that it is riskier than the benchmark. Beta only considers risk in relation to the benchmark and does not account for risk specific to the security.

**Capture Ratio** - A measure of a manager's performance in up and down markets relative to the market itself.

**Efficient Frontier** - Set of investment portfolios which occupy the "efficient" part of the risk-return spectrum.

**Excess Return** - The percentage of return over the return of the relative benchmark.

**Information Ratio** - Calculated using tracking error and excess return to determine reward per unit of risk.

**Max Drawdown** - Maximum Drawdown is the worst period of "peak to valley" performance for the return series, regardless of whether or not the drawdown consistence of consecutive months of negative performance.

**R-Squared** - The portion of a change in the value of the investment explained by the change in value of its benchmark. An R-squared of 1.00 indicates 100% of a change is explained by the change in the benchmark. For example, an index fund will typically have an R-squared of at least 0.97.

**Sharpe Ratio** - Calculated using standard deviation and excess return to determine reward per unit of risk. For example, to calculate a three-year Sharpe ratio, the 36-month annualized monthly return of the three-month Treasury bill is subtracted from 36-month annualized monthly total return. The difference in total return represents excess return beyond that of the three-month Treasury bill, a risk-free investment. To show a relationship between excess return and risk, this number is then divided by the portfolio's standard deviation. The higher the Sharpe ratio, the better the historical risk-adjusted performance.

**Sortino Ratio** - calculated by subtracting the risk-free interest rate from the rate of return of a portfolio then dividing the result by the downside deviation of the portfolio returns (note that this is different from the standard deviation used in the Sharpe ratio).

**Standard Deviation** - Measures the total risk of a security or market. Standard deviation accounts for both market risk and specific risk by measuring the dispersion of returns over time.

**Tracking Error** - Measures the standard deviation of excess returns. Tracking error accounts for both market risk and specific risk by measuring to dispersion of excess returns over time.

# Appendix

## Index definitions

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Bloomberg Barclays Emerging Markets USD Aggregate is an unmanaged index that tracks total returns for USD-denominated debt from sovereign, quasi-sovereign, and corporate EM issuers.

Bloomberg Barclays Global Aggregate is an unmanaged index considered representative of global investment-grade debt from twenty-four local currency markets. This multi-currency benchmark includes treasury, government-related, corporate and securitized fixed-rate bonds from both developed and emerging markets issuers.

Bloomberg Barclays Global Aggregate x USD is an unmanaged index considered representative of global investment-grade debt from twenty-three local currency markets. This multi-currency benchmark includes treasury, government-related, corporate and securitized fixed-rate bonds from both developed and emerging markets issuers, excluding the US.

Bloomberg Barclays US Aggregate is an unmanaged index considered representative of the US investment-grade, fixed-rate bond market.

Bloomberg Barclays US Aggregate Credit - Corporate - High Yield is an unmanaged index considered representative of fixed-rate, noninvestment-grade debt.

Bloomberg Barclays US Aggregate Credit - Corporate - Investment Grade is an unmanaged index considered representative of fixed-rate, investment-grade debt.

Bloomberg Barclays US Aggregate Government - Treasury measures US dollar-denominated, fixed-rate, nominal debt issued by the US Treasury. Treasury bills are excluded by the maturity constraint, but are part of a separate Short Treasury Index.

Bloomberg Barclays US Aggregate Government - Treasury - Long measures US dollar-denominated, fixed-rate, nominal debt issued by the US Treasury, which has a remaining maturity of 10 or more years.

Bloomberg Barclays US Aggregate Government - Treasury - Intermediate measures US dollar-denominated, fixed-rate, nominal debt issued by the US Treasury, which has a remaining maturity of greater than or equal to 1 year and less than 10 years.

Bloomberg Barclays US Aggregate Securitized - MBS represents mortgage-backed pass-through securities of Ginnie Mae, Fannie Mae and Freddie Mac.

Bloomberg Barclays US Treasury Inflation Protected Notes (TIPS) consists of inflation-protection securities issued by the US Treasury.

BofA Merrill Lynch US Municipal Securities is an unmanaged, market-weighted index comprised of investment-grade, fixed rate, coupon bearing municipal bonds.

CitiGroup 3 Month Treasury Bill is an unmanaged index representing monthly return equivalents of yield averages of the last 3 month Treasury Bill issues.

Credit Suisse Leveraged Loan represents tradable, senior-secured, US-dollar-denominated, noninvestment-grade loans.

FTSE EPRA/NAREIT Developed is an unmanaged index considered representative of listed real estate companies and REITs worldwide.

MSCI World is a free float-adjusted market capitalization index that is designed to measure equity market performance of developed markets. The index is computed using the net return, which withholds applicable taxes for non-resident investors.

MSCI AC World is a free float-adjusted market capitalization index that is designed to measure equity market performance of developed and emerging markets. The index is computed using the net return, which withholds applicable taxes for non-resident investors.

MSCI EAFE is an unmanaged index considered representative of stocks of Europe, Australasia and the Far East. The index is computed using the net return, which withholds applicable taxes for non-resident investors.

MSCI EM (Emerging Markets) is an unmanaged index considered representative of stocks of developing countries. The index is computed using the net return, which withholds applicable taxes for non-resident investors.

Private Equity TR is an unmanaged index considered representative of stocks of developing countries. The index is computed using the net return, which withholds applicable taxes for non-resident investors.

Russell 1000 Growth is an unmanaged index considered representative of large-cap growth stocks. The Russell 1000 Growth Index is a trademark/service mark of the Frank Russell Co. Russell® is a trademark of the Frank Russell Co.

Russell 1000 Value is an unmanaged index considered

# Appendix

## Index definitions (continued)

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Russell 3000 is an unmanaged index considered representative of the US stock market. The Russell 3000 Index is a trademark/service mark of the Frank Russell Co. Russell® is a trademark of the Frank Russell Co.

S&P 500 is an unmanaged index considered representative of the US stock market.

S&P Global Infrastructure is designed to track 75 companies from around the world chosen to represent the listed infrastructure industry while maintaining liquidity and tradability. To create diversified exposure, the index includes three distinct infrastructure clusters: energy, transportation, and utilities.

S&P GSCI is recognized as a leading measure of general price movements and inflation in the world economy. The index, representing market beta, is world-production weighted. It is designed to be investable by including the most liquid commodity futures, and provides diversification with low correlations to other asset classes.

S&P Low Volatility measures performance of the 100 least volatile stocks in the S&P 500. The index benchmarks low volatility or low variance strategies for the U.S. stock market. Constituents are weighted relative to the inverse of their corresponding volatility, with the least volatile stocks receiving the highest weights.

Wells Fargo Hedge Fd TR measures the real-time performance of the 100 largest positions in equities and equity-related securities as reported quarterly to the Securities and Exchange Commission (SEC) by hedge funds or managed accounts.