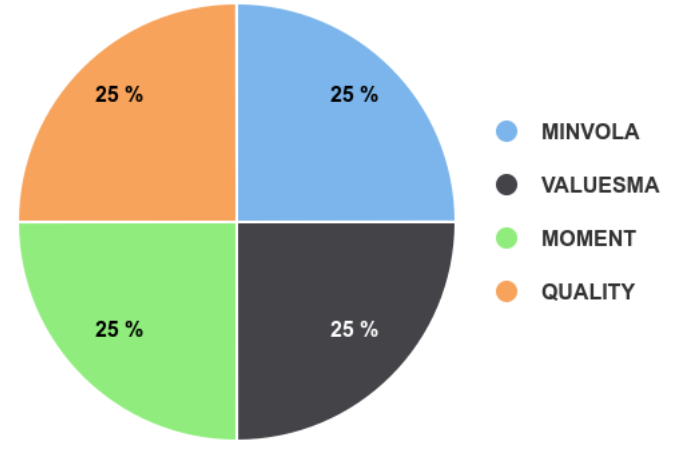


Report Parameters

Start Date	01/01/2001
End Date	01/31/2020
Initial Balance	\$10,000
Periodic Adjustment	None
Rebalancing	Rebalance annually
Reinvest Dividends	Yes
Benchmark	WORLD NR EUR

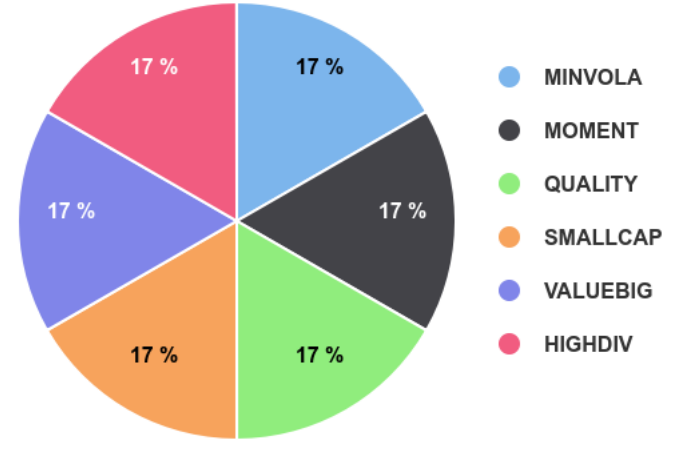
Portfolio 1

Ticker	Name	Allocation
MINVOLA	WORLD MINIMUM VOLATILITY	25.00%
VALUESMA	WORLD SMALL VALUE	25.00%
MOMENT	WORLD MOMENTUM	25.00%
QUALITY	WORLD QUALITY	25.00%



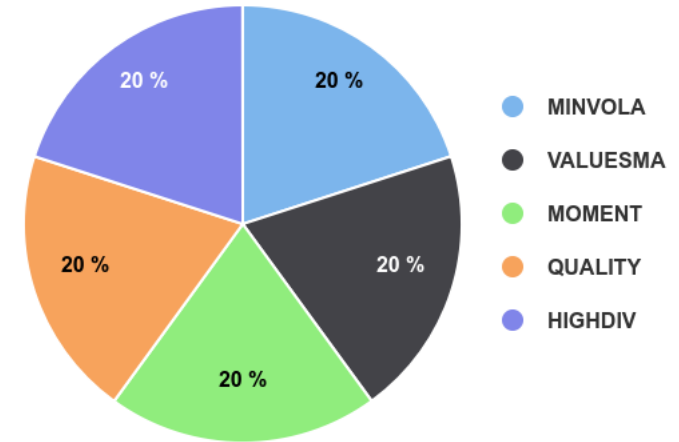
Portfolio 2

Ticker	Name	Allocation
MINVOLA	WORLD MINIMUM VOLATILITY	16.67%
MOMENT	WORLD MOMENTUM	16.67%
QUALITY	WORLD QUALITY	16.67%
SMALLCAP	WORLD SMALL CAP	16.67%
VALUEBIG	WORLD VALUE	16.66%
HIGHDIV	WORLD HIGH DIVIDEND	16.66%



Portfolio 3

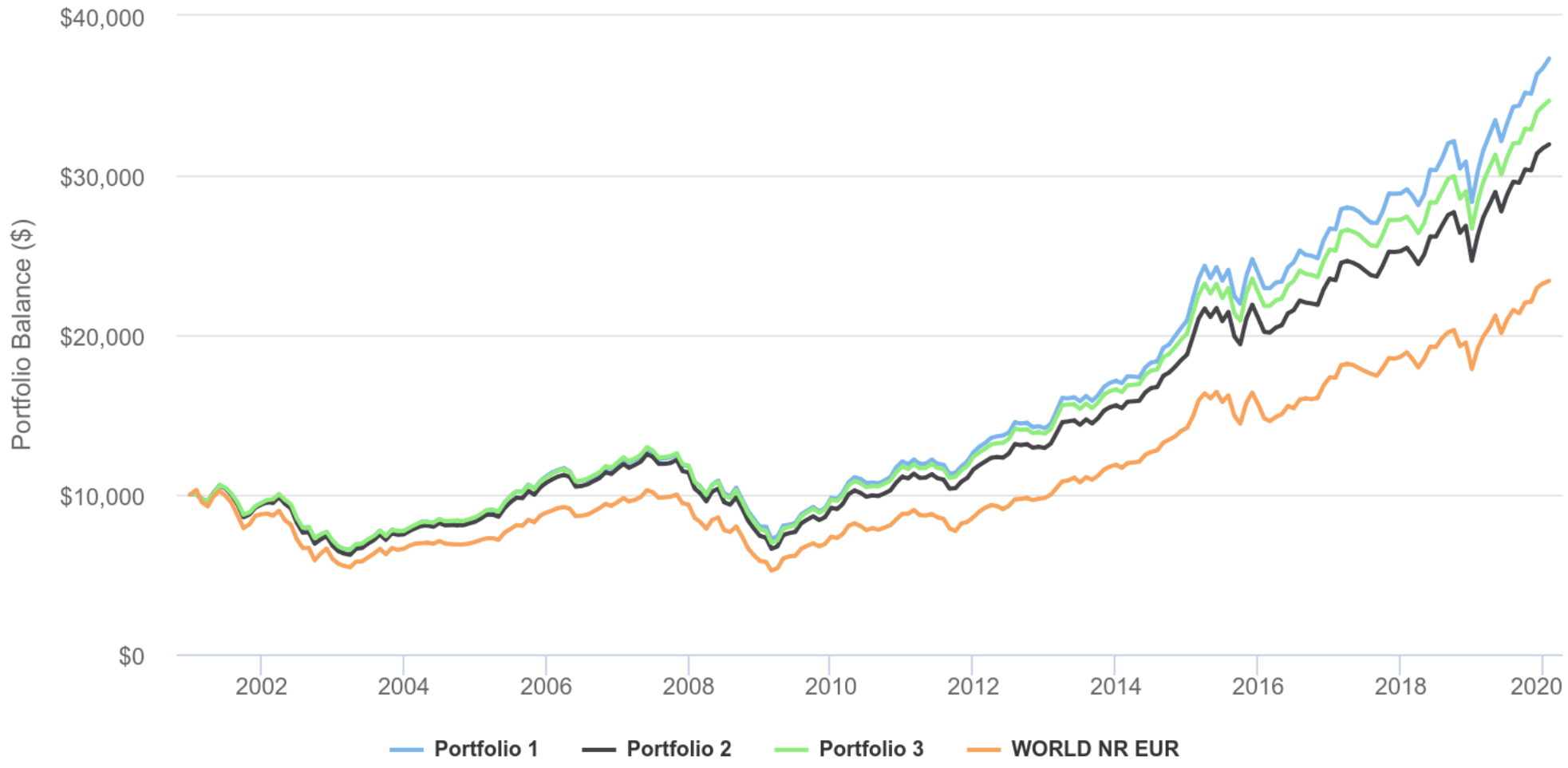
Ticker	Name	Allocation
MINVOLA	WORLD MINIMUM VOLATILITY	20.00%
VALUESMA	WORLD SMALL VALUE	20.00%
MOMENT	WORLD MOMENTUM	20.00%
QUALITY	WORLD QUALITY	20.00%
HIGHDIV	WORLD HIGH DIVIDEND	20.00%



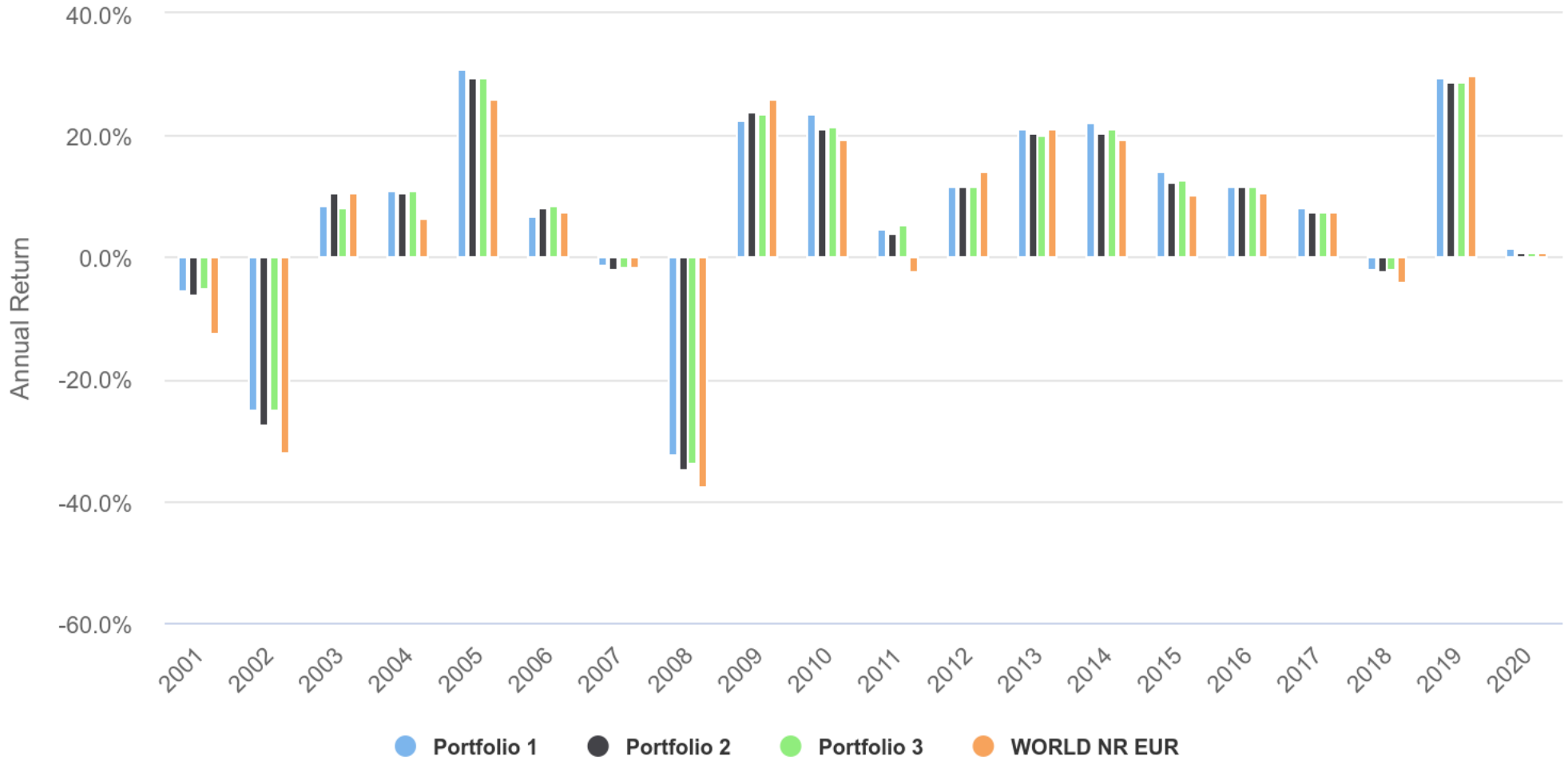
Portfolio Performance (Jan 2001 - Jan 2020)

Metric	Portfolio 1	Portfolio 2	Portfolio 3	WORLD NR EUR
Start Balance	\$10,000	\$10,000	\$10,000	\$10,000
End Balance	\$37,317	\$31,940	\$34,678	\$23,387
End Balance (inflation adjusted)	\$25,268	\$21,627	\$23,481	\$15,836
CAGR	7.14%	6.27%	6.73%	4.55%
CAGR (inflation adjusted)	4.98%	4.12%	4.57%	2.44%
Stdev	11.95%	12.29%	11.93%	13.51%
Best Year	30.75%	29.44%	29.41%	30.02%
Worst Year	-32.26%	-34.96%	-33.81%	-37.64%
Max. Drawdown	-43.73%	-47.34%	-46.19%	-49.12%
Sharpe Ratio	0.52	0.44	0.49	0.29
Sortino Ratio	0.75	0.62	0.69	0.40
US Stock Market Correlation	0.75	0.78	0.77	0.83

Portfolio Growth



Annual Returns



Risk and Return Metrics (Jan 2001 - Jan 2020)

Metric	Portfolio 1	Portfolio 2	Portfolio 3	WORLD NR EUR
Arithmetic Mean (monthly)	0.64%	0.57%	0.60%	0.45%
Arithmetic Mean (annualized)	7.91%	7.08%	7.50%	5.52%
Geometric Mean (monthly)	0.58%	0.51%	0.54%	0.37%
Geometric Mean (annualized)	7.14%	6.27%	6.73%	4.55%
Volatility (monthly)	3.45%	3.55%	3.44%	3.90%
Volatility (annualized)	11.95%	12.29%	11.93%	13.51%
Downside Deviation (monthly)	2.34%	2.47%	2.36%	2.81%
Max. Drawdown	-43.73%	-47.34%	-46.19%	-49.12%
US Market Correlation	0.75	0.78	0.77	0.83
Beta (*)	0.85	0.89	0.86	1.00
Alpha (annualized)	3.05%	2.06%	2.63%	0.00%
R Squared	92.85%	96.21%	94.28%	100.00%
Sharpe Ratio	0.52	0.44	0.49	0.29
Sortino Ratio	0.75	0.62	0.69	0.40
Treynor Ratio (%)	7.28	6.09	6.78	3.95
Calmar Ratio	1.00	0.99	1.01	0.87
Active Return	2.59%	1.72%	2.18%	N/A
Tracking Error	3.77%	2.80%	3.44%	N/A
Information Ratio	0.69	0.61	0.63	N/A
Skewness	-0.60	-0.68	-0.64	-0.69
Excess Kurtosis	0.48	0.78	0.74	0.83
Historical Value-at-Risk (5%)	-6.82%	-7.00%	-6.72%	-7.84%
Analytical Value-at-Risk (5%)	-5.02%	-5.25%	-5.05%	-5.97%
Conditional Value-at-Risk (5%)	-7.92%	-8.58%	-8.18%	-9.47%
Upside Capture Ratio (%)	94.19	95.12	93.15	100.00
Downside Capture Ratio (%)	79.24	85.14	80.38	100.00
Safe Withdrawal Rate	5.58%	5.22%	5.49%	4.20%
Perpetual Withdrawal Rate	4.76%	3.98%	4.39%	2.39%
Positive Periods	142 out of 229 (62.01%)	144 out of 229 (62.88%)	148 out of 229 (64.63%)	145 out of 229 (63.32%)
Gain/Loss Ratio	0.98	0.89	0.86	0.78

(*) WORLD NR EUR is used as the benchmark for calculations. Value-at-risk metrics are based on monthly values.

Portfolio 1 Returns

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Inflation	Balance
2001	0.11%	-3.47%	-1.58%	5.22%	5.31%	-1.41%	-3.77%	-5.52%	-8.04%	1.89%	4.58%	2.00%	-5.59%	1.55%	\$9,441
2002	2.08%	0.27%	3.18%	-3.64%	-3.03%	-9.08%	-6.98%	0.59%	-7.88%	2.51%	1.85%	-7.21%	-25.08%	2.38%	\$7,073
2003	-5.16%	-1.83%	-0.75%	5.00%	0.44%	3.74%	3.24%	4.80%	-4.34%	5.32%	-1.17%	-0.40%	8.48%	1.88%	\$7,673
2004	3.11%	2.14%	2.61%	-0.01%	-0.91%	3.05%	-2.06%	0.29%	0.08%	-0.43%	1.59%	1.28%	11.15%	3.26%	\$8,528
2005	2.61%	2.75%	0.44%	-1.62%	6.80%	4.22%	3.17%	-0.25%	4.49%	-2.45%	4.55%	2.82%	30.75%	3.42%	\$11,150
2006	2.18%	1.22%	1.02%	-1.60%	-5.68%	0.44%	0.68%	1.64%	1.39%	3.63%	-0.60%	2.65%	6.85%	2.54%	\$11,914
2007	2.79%	-1.90%	1.50%	1.41%	4.01%	-1.60%	-3.47%	0.36%	0.57%	1.46%	-5.43%	-0.41%	-1.08%	4.08%	\$11,785
2008	-8.59%	-2.25%	-5.15%	6.33%	2.35%	-7.20%	-1.97%	5.47%	-6.77%	-7.67%	-5.67%	-5.74%	-32.26%	0.09%	\$7,983
2009	0.02%	-9.36%	1.69%	9.52%	0.57%	1.31%	6.77%	2.67%	2.42%	-2.88%	2.04%	7.10%	22.56%	2.72%	\$9,785
2010	-0.55%	3.86%	6.58%	2.89%	-0.90%	-2.41%	0.28%	-0.53%	1.75%	1.90%	5.62%	3.15%	23.43%	1.50%	\$12,077
2011	-1.49%	2.46%	-2.17%	-0.03%	2.25%	-2.17%	-0.43%	-4.93%	0.70%	3.58%	2.54%	4.82%	4.78%	2.96%	\$12,655
2012	2.73%	1.75%	2.42%	0.74%	0.35%	1.44%	4.56%	-0.57%	0.41%	-1.96%	0.44%	-0.90%	11.84%	1.74%	\$14,152
2013	1.94%	5.38%	5.56%	-0.14%	0.45%	-1.57%	2.08%	-1.88%	2.21%	3.23%	1.47%	0.76%	20.99%	1.50%	\$17,123
2014	-0.84%	2.48%	-0.05%	-0.28%	3.62%	1.71%	0.30%	4.69%	1.08%	2.80%	2.44%	2.39%	22.15%	0.76%	\$20,916
2015	6.72%	5.35%	3.49%	-3.19%	2.95%	-3.52%	2.91%	-6.88%	-2.11%	7.98%	4.44%	-3.57%	14.13%	0.73%	\$23,872
2016	-3.92%	-0.03%	1.56%	0.23%	3.80%	1.31%	3.04%	-1.09%	-0.22%	-0.63%	4.50%	2.82%	11.65%	2.07%	\$26,654
2017	-0.11%	4.75%	0.31%	-0.21%	-0.73%	-1.34%	-1.12%	-0.10%	2.74%	3.96%	-0.01%	0.07%	8.30%	2.11%	\$28,866
2018	0.90%	-1.29%	-2.13%	2.33%	5.42%	-0.08%	2.38%	3.10%	0.43%	-5.35%	1.42%	-8.20%	-1.85%	1.91%	\$28,331
2019	6.92%	4.26%	3.00%	2.87%	-3.96%	3.52%	3.07%	0.22%	2.36%	-0.19%	3.50%	1.08%	29.65%	2.29%	\$36,730
2020	1.60%												1.60%	0.00%	\$37,317

Portfolio 2 Returns

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Inflation	Balance
2001	0.72%	-3.46%	-1.60%	5.63%	4.68%	-1.87%	-4.01%	-5.81%	-8.69%	2.15%	4.89%	2.09%	-6.24%	1.55%	\$9,376
2002	1.53%	-0.53%	3.96%	-4.25%	-3.10%	-9.70%	-7.74%	0.45%	-9.46%	3.89%	2.82%	-8.19%	-27.62%	2.38%	\$6,786
2003	-5.15%	-2.11%	-1.27%	6.02%	0.84%	4.10%	3.24%	4.90%	-4.56%	5.85%	-1.31%	0.37%	10.57%	1.88%	\$7,504
2004	2.94%	2.13%	1.88%	0.27%	-1.01%	2.93%	-1.71%	0.18%	0.06%	-0.15%	1.36%	1.35%	10.58%	3.26%	\$8,298
2005	2.56%	2.65%	0.13%	-1.56%	6.29%	3.98%	2.98%	-0.28%	4.66%	-2.33%	4.55%	2.84%	29.44%	3.42%	\$10,740
2006	1.99%	1.53%	0.94%	-0.99%	-5.57%	0.36%	1.01%	1.91%	1.68%	3.36%	-0.96%	2.93%	8.18%	2.54%	\$11,619
2007	2.55%	-2.02%	1.58%	1.69%	3.93%	-1.32%	-3.60%	0.04%	0.41%	1.69%	-5.83%	-0.72%	-2.01%	4.08%	\$11,386
2008	-8.88%	-2.86%	-5.03%	6.52%	1.66%	-8.16%	-1.61%	4.88%	-6.84%	-8.55%	-5.96%	-5.90%	-34.96%	0.09%	\$7,406
2009	-1.37%	-9.64%	2.28%	10.67%	1.51%	0.93%	7.16%	2.78%	2.43%	-2.70%	2.12%	6.82%	23.76%	2.72%	\$9,165
2010	-0.81%	3.33%	6.67%	2.37%	-1.49%	-2.38%	0.83%	-0.40%	1.62%	1.84%	4.80%	3.43%	21.26%	1.50%	\$11,114
2011	-0.93%	2.70%	-2.39%	0.20%	1.90%	-2.21%	-0.78%	-5.21%	0.33%	3.99%	2.12%	4.79%	4.13%	2.96%	\$11,573
2012	2.33%	1.88%	1.96%	0.39%	-0.33%	2.12%	4.70%	-0.51%	0.49%	-1.69%	0.39%	-0.49%	11.67%	1.74%	\$12,924
2013	2.05%	4.77%	5.18%	0.32%	0.47%	-1.90%	2.35%	-1.73%	2.23%	3.27%	1.40%	0.72%	20.59%	1.50%	\$15,585
2014	-1.10%	2.59%	0.20%	0.20%	3.32%	1.68%	0.33%	4.22%	1.17%	2.05%	2.28%	1.89%	20.41%	0.76%	\$18,766
2015	6.16%	5.49%	3.05%	-2.47%	2.68%	-3.80%	2.76%	-7.17%	-2.45%	8.22%	4.20%	-3.79%	12.25%	0.73%	\$21,064
2016	-4.16%	-0.20%	1.59%	0.67%	3.63%	0.91%	2.82%	-0.58%	-0.24%	-0.40%	4.38%	2.97%	11.67%	2.07%	\$23,521
2017	-0.39%	4.66%	0.46%	-0.44%	-0.78%	-1.22%	-1.21%	-0.36%	2.94%	3.53%	-0.05%	0.20%	7.35%	2.11%	\$25,250
2018	0.85%	-1.75%	-2.32%	2.41%	4.54%	-0.00%	2.67%	2.44%	0.64%	-4.67%	1.66%	-8.17%	-2.40%	1.91%	\$24,645
2019	6.64%	4.24%	2.84%	2.80%	-4.20%	3.80%	2.79%	-0.22%	2.82%	-0.20%	3.53%	1.06%	28.66%	2.29%	\$31,708
2020	0.73%												0.73%	0.00%	\$31,940

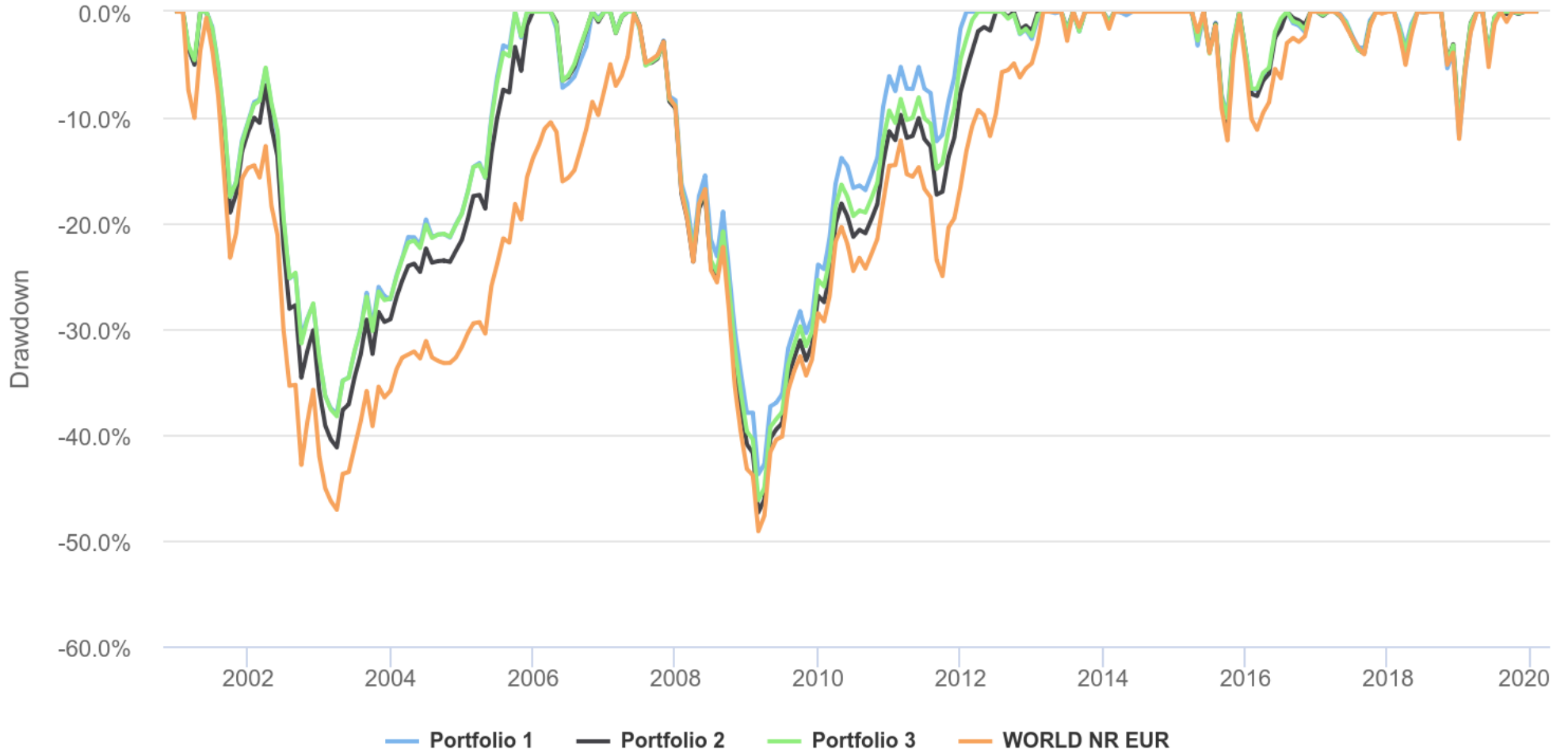
Portfolio 3 Returns

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Inflation	Balance
2001	0.42%	-3.18%	-1.44%	5.12%	5.14%	-1.55%	-3.64%	-5.42%	-8.06%	1.66%	4.45%	2.19%	-5.20%	1.55%	\$9,480
2002	1.94%	0.36%	3.42%	-3.56%	-2.85%	-9.09%	-7.25%	0.66%	-8.86%	3.33%	2.09%	-7.11%	-24.86%	2.38%	\$7,123
2003	-5.37%	-1.97%	-1.03%	5.44%	0.43%	3.91%	2.99%	4.42%	-4.44%	5.30%	-1.08%	0.18%	8.33%	1.88%	\$7,716
2004	2.85%	2.24%	2.02%	0.25%	-0.90%	2.83%	-1.56%	0.42%	0.06%	-0.32%	1.39%	1.33%	11.03%	3.26%	\$8,567
2005	2.59%	2.81%	0.25%	-1.40%	6.39%	4.09%	2.94%	-0.34%	4.41%	-2.31%	4.35%	2.67%	29.41%	3.42%	\$11,087
2006	1.99%	1.54%	0.83%	-1.20%	-5.39%	0.53%	1.14%	1.83%	1.58%	3.43%	-0.80%	2.89%	8.37%	2.54%	\$12,015
2007	2.63%	-2.00%	1.61%	1.66%	3.89%	-1.54%	-3.61%	0.37%	0.42%	1.51%	-5.54%	-0.65%	-1.65%	4.08%	\$11,817
2008	-8.64%	-2.80%	-4.92%	6.27%	1.77%	-8.08%	-1.44%	5.10%	-6.47%	-8.15%	-5.97%	-5.75%	-33.81%	0.09%	\$7,821
2009	-1.27%	-9.64%	2.14%	10.44%	1.28%	1.07%	7.24%	2.83%	2.50%	-2.67%	2.03%	6.97%	23.72%	2.72%	\$9,677
2010	-0.80%	3.44%	6.53%	2.55%	-1.37%	-2.21%	0.64%	-0.22%	1.62%	1.83%	4.80%	3.18%	21.48%	1.50%	\$11,755
2011	-1.29%	2.52%	-2.16%	0.23%	2.14%	-2.17%	-0.55%	-4.78%	0.66%	3.64%	2.38%	4.98%	5.30%	2.96%	\$12,378
2012	2.10%	1.79%	2.13%	0.64%	0.09%	1.92%	4.80%	-0.65%	0.40%	-1.79%	0.45%	-0.70%	11.57%	1.74%	\$13,810
2013	2.01%	5.12%	5.37%	0.23%	0.07%	-1.80%	2.17%	-1.85%	2.20%	3.30%	1.26%	0.69%	20.12%	1.50%	\$16,589
2014	-1.03%	2.62%	0.20%	0.22%	3.41%	1.59%	0.33%	4.35%	1.07%	2.33%	2.33%	1.98%	21.06%	0.76%	\$20,083
2015	6.56%	5.24%	3.14%	-2.71%	2.64%	-3.82%	2.83%	-6.97%	-2.12%	8.15%	4.17%	-3.68%	12.87%	0.73%	\$22,668
2016	-3.76%	0.03%	1.61%	0.49%	3.61%	1.28%	2.78%	-0.90%	-0.21%	-0.61%	4.24%	2.96%	11.83%	2.07%	\$25,350
2017	-0.30%	4.76%	0.40%	-0.40%	-0.68%	-1.39%	-1.23%	-0.21%	2.82%	3.54%	-0.03%	0.09%	7.39%	2.11%	\$27,224
2018	0.71%	-1.62%	-2.22%	2.38%	4.79%	-0.02%	2.59%	2.62%	0.57%	-4.74%	1.65%	-8.08%	-2.06%	1.91%	\$26,663
2019	6.59%	4.19%	2.95%	2.66%	-3.99%	3.63%	2.79%	0.08%	2.76%	-0.14%	3.34%	1.10%	28.80%	2.29%	\$34,342
2020	0.98%												0.98%	0.00%	\$34,678

WORLD NR EUR Returns

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Inflation	Balance
2001	2.90%	-7.43%	-2.82%	7.06%	3.23%	-3.02%	-4.54%	-8.32%	-9.06%	3.04%	6.54%	1.18%	-12.30%	1.55%	\$8,770
2002	0.28%	-1.35%	3.52%	-6.48%	-3.39%	-11.15%	-7.77%	0.14%	-11.69%	7.15%	4.91%	-9.81%	-32.02%	2.38%	\$5,962
2003	-5.22%	-2.15%	-1.55%	6.44%	0.30%	4.18%	4.08%	4.72%	-5.16%	6.11%	-1.55%	0.99%	10.74%	1.88%	\$6,602
2004	3.16%	1.66%	0.44%	0.41%	-0.95%	2.43%	-2.24%	-0.49%	-0.31%	0.03%	0.74%	1.51%	6.45%	3.26%	\$7,028
2005	1.93%	1.32%	0.15%	-1.52%	6.41%	2.87%	3.16%	-0.49%	4.66%	-1.79%	4.98%	2.16%	26.17%	3.42%	\$8,867
2006	1.48%	1.70%	0.69%	-1.01%	-5.29%	0.42%	0.83%	2.28%	2.25%	2.89%	-1.36%	2.57%	7.39%	2.54%	\$9,523
2007	2.68%	-2.14%	1.05%	1.84%	4.26%	-1.13%	-3.52%	0.33%	0.42%	1.31%	-5.46%	-0.90%	-1.65%	4.08%	\$9,365
2008	-8.81%	-3.03%	-5.11%	7.12%	1.71%	-9.23%	-1.49%	4.50%	-7.66%	-10.22%	-6.54%	-5.78%	-37.64%	0.09%	\$5,840
2009	-1.04%	-9.42%	2.87%	11.42%	2.10%	0.46%	7.31%	2.88%	2.09%	-2.69%	2.30%	6.52%	25.93%	2.72%	\$7,355
2010	-1.05%	3.28%	7.11%	1.78%	-2.01%	-3.26%	1.63%	-1.31%	1.77%	1.89%	4.46%	4.17%	19.52%	1.50%	\$8,791
2011	0.06%	2.74%	-3.63%	-0.29%	1.06%	-2.41%	-0.93%	-7.23%	-1.96%	6.15%	1.08%	3.64%	-2.38%	2.96%	\$8,581
2012	4.15%	2.64%	1.74%	-0.53%	-2.20%	2.39%	4.37%	0.18%	0.66%	-1.38%	0.90%	0.50%	14.05%	1.74%	\$9,787
2013	2.08%	4.00%	4.20%	0.47%	1.76%	-2.75%	3.05%	-1.44%	2.28%	3.47%	1.62%	0.90%	21.20%	1.50%	\$11,862
2014	-1.60%	2.52%	0.36%	0.42%	3.61%	1.45%	0.69%	3.82%	1.44%	1.48%	2.51%	1.36%	19.50%	0.76%	\$14,175
2015	5.29%	6.50%	2.80%	-1.91%	2.56%	-3.89%	2.66%	-7.92%	-3.32%	9.06%	4.08%	-4.49%	10.42%	0.73%	\$15,652
2016	-5.61%	-1.15%	1.82%	1.07%	3.46%	-0.92%	3.54%	0.49%	-0.37%	0.54%	4.82%	2.98%	10.73%	2.07%	\$17,331
2017	-0.04%	4.52%	0.41%	-0.33%	-1.11%	-1.03%	-0.95%	-0.69%	2.82%	3.40%	-0.18%	0.64%	7.51%	2.11%	\$18,633
2018	1.48%	-2.09%	-2.99%	2.96%	4.15%	-0.07%	2.90%	1.81%	0.73%	-5.02%	1.21%	-8.49%	-4.11%	1.91%	\$17,867
2019	7.38%	3.80%	2.74%	3.75%	-5.23%	4.30%	2.79%	-0.96%	3.16%	0.21%	4.00%	1.17%	30.02%	2.29%	\$23,231
2020	0.67%												0.67%	0.00%	\$23,387

Drawdowns



Drawdowns for Historical Market Stress Periods

Stress Period	Start	End	Portfolio 1	Portfolio 2	Portfolio 3	WORLD NR EUR
Subprime Crisis	Nov 2007	Mar 2009	-42.15%	-45.81%	-44.58%	-47.63%

Drawdowns for Portfolio 1 (worst 10)

Rank	Start	End	Length	Recovery By	Recovery Time	Underwater Period	Drawdown
1	Jun 2007	Feb 2009	1 year 9 months	Jan 2012	2 years 11 months	4 years 8 months	-43.73%
2	Jun 2001	Mar 2003	1 year 10 months	Sep 2005	2 years 6 months	4 years 4 months	-37.98%
3	Oct 2018	Dec 2018	3 months	Mar 2019	3 months	6 months	-11.88%
4	Apr 2015	Sep 2015	6 months	Nov 2015	2 months	8 months	-9.80%
5	Dec 2015	Feb 2016	3 months	Jul 2016	5 months	8 months	-7.38%
6	Apr 2006	May 2006	2 months	Oct 2006	5 months	7 months	-7.19%
7	Feb 2001	Mar 2001	2 months	May 2001	2 months	4 months	-5.00%
8	May 2019	May 2019	1 month	Jul 2019	2 months	3 months	-3.96%
9	Apr 2017	Aug 2017	5 months	Oct 2017	2 months	7 months	-3.46%
10	Feb 2018	Mar 2018	2 months	May 2018	2 months	4 months	-3.40%

Drawdowns for Portfolio 2 (worst 10)

Rank	Start	End	Length	Recovery By	Recovery Time	Underwater Period	Drawdown
1	Jun 2007	Feb 2009	1 year 9 months	Jun 2012	3 years 4 months	5 years 1 month	-47.34%
2	Jun 2001	Mar 2003	1 year 10 months	Dec 2005	2 years 9 months	4 years 7 months	-41.20%
3	Oct 2018	Dec 2018	3 months	Mar 2019	3 months	6 months	-11.01%
4	Jun 2015	Sep 2015	4 months	Nov 2015	2 months	6 months	-10.48%
5	Dec 2015	Feb 2016	3 months	Jul 2016	5 months	8 months	-7.97%
6	Apr 2006	May 2006	2 months	Oct 2006	5 months	7 months	-6.50%
7	Feb 2001	Mar 2001	2 months	Apr 2001	1 month	3 months	-5.00%
8	May 2019	May 2019	1 month	Jul 2019	2 months	3 months	-4.20%
9	Feb 2018	Mar 2018	2 months	May 2018	2 months	4 months	-4.03%
10	Apr 2017	Aug 2017	5 months	Oct 2017	2 months	7 months	-3.95%

Drawdowns for Portfolio 3 (worst 10)

Rank	Start	End	Length	Recovery By	Recovery Time	Underwater Period	Drawdown
1	Jun 2007	Feb 2009	1 year 9 months	Mar 2012	3 years 1 month	4 years 10 months	-46.19%
2	Jun 2001	Mar 2003	1 year 10 months	Sep 2005	2 years 6 months	4 years 4 months	-38.25%
3	Oct 2018	Dec 2018	3 months	Mar 2019	3 months	6 months	-11.00%
4	Apr 2015	Sep 2015	6 months	Nov 2015	2 months	8 months	-10.07%
5	Dec 2015	Jan 2016	2 months	Jul 2016	6 months	8 months	-7.30%
6	Apr 2006	May 2006	2 months	Oct 2006	5 months	7 months	-6.53%
7	Feb 2001	Mar 2001	2 months	Apr 2001	1 month	3 months	-4.58%
8	May 2019	May 2019	1 month	Jul 2019	2 months	3 months	-3.99%
9	Apr 2017	Aug 2017	5 months	Oct 2017	2 months	7 months	-3.86%
10	Feb 2018	Mar 2018	2 months	May 2018	2 months	4 months	-3.80%

Drawdowns for WORLD NR EUR (worst 10)

Rank	Start	End	Length	Recovery By	Recovery Time	Underwater Period	Drawdown
1	Feb 2001	Feb 2009	8 years 1 month	Feb 2013	4 years	12 years 1 month	-49.12%
2	Jun 2015	Sep 2015	4 months	Nov 2016	1 year 2 months	1 year 6 months	-12.17%
3	Oct 2018	Dec 2018	3 months	Mar 2019	3 months	6 months	-12.03%
4	May 2019	May 2019	1 month	Jul 2019	2 months	3 months	-5.23%
5	Feb 2018	Mar 2018	2 months	May 2018	2 months	4 months	-5.02%
6	Apr 2017	Aug 2017	5 months	Oct 2017	2 months	7 months	-4.04%
7	Jun 2013	Jun 2013	1 month	Jul 2013	1 month	2 months	-2.75%
8	Apr 2015	Apr 2015	1 month	May 2015	1 month	2 months	-1.91%
9	Jan 2014	Jan 2014	1 month	Feb 2014	1 month	2 months	-1.60%
10	Aug 2013	Aug 2013	1 month	Sep 2013	1 month	2 months	-1.44%

Portfolio Components (Jan 2001 - Jan 2020)

Name	CAGR	Stdev	Best Year	Worst Year	Max DD	Sharpe Ratio	Sortino Ratio	US Mkt Correlation
WORLD MINIMUM VOLATILITY	6.30%	10.58%	26.82%	-26.04%	-39.39%	0.49	0.72	0.55
WORLD SMALL VALUE	7.91%	14.99%	38.38%	-35.47%	-54.61%	0.49	0.73	0.79
WORLD MOMENTUM	7.14%	13.37%	47.28%	-37.10%	-46.23%	0.48	0.69	0.65
WORLD QUALITY	6.49%	12.64%	38.59%	-30.41%	-41.33%	0.45	0.63	0.74
WORLD SMALL CAP	7.90%	15.80%	39.63%	-38.87%	-53.88%	0.47	0.69	0.80
WORLD VALUE	3.92%	13.79%	26.25%	-37.30%	-53.61%	0.24	0.33	0.81
WORLD HIGH DIVIDEND	5.01%	12.71%	28.36%	-40.03%	-55.39%	0.34	0.46	0.78

Monthly Correlations (Jan 2001 - Jan 2020)

Name	WORLD MINIMUM VOLATILITY	WORLD SMALL VALUE	WORLD MOMENTUM	WORLD QUALITY	WORLD SMALL CAP	WORLD VALUE	WORLD HIGH DIVIDEND
WORLD MINIMUM VOLATILITY	-	0.77	0.81	0.85	0.76	0.83	0.87
WORLD SMALL VALUE	0.77	-	0.77	0.81	0.98	0.92	0.88
WORLD MOMENTUM	0.81	0.77	-	0.86	0.82	0.80	0.79
WORLD QUALITY	0.85	0.81	0.86	-	0.84	0.89	0.87
WORLD SMALL CAP	0.76	0.98	0.82	0.84	-	0.91	0.85
WORLD VALUE	0.83	0.92	0.80	0.89	0.91	-	0.96
WORLD HIGH DIVIDEND	0.87	0.88	0.79	0.87	0.85	0.96	-

Portfolio Return Decomposition (Jan 2001 - Jan 2020)

Name	Portfolio 1	Portfolio 2	Portfolio 3
WORLD MINIMUM VOLATILITY	\$6,354	\$3,753	\$4,852
WORLD SMALL VALUE	\$6,010		\$4,644
WORLD MOMENTUM	\$7,731	\$4,572	\$5,914
WORLD QUALITY	\$7,222	\$4,246	\$5,505
WORLD SMALL CAP		\$3,946	
WORLD VALUE		\$2,519	
WORLD HIGH DIVIDEND		\$2,905	\$3,763

Portfolio Risk Decomposition (Jan 2001 - Jan 2020)

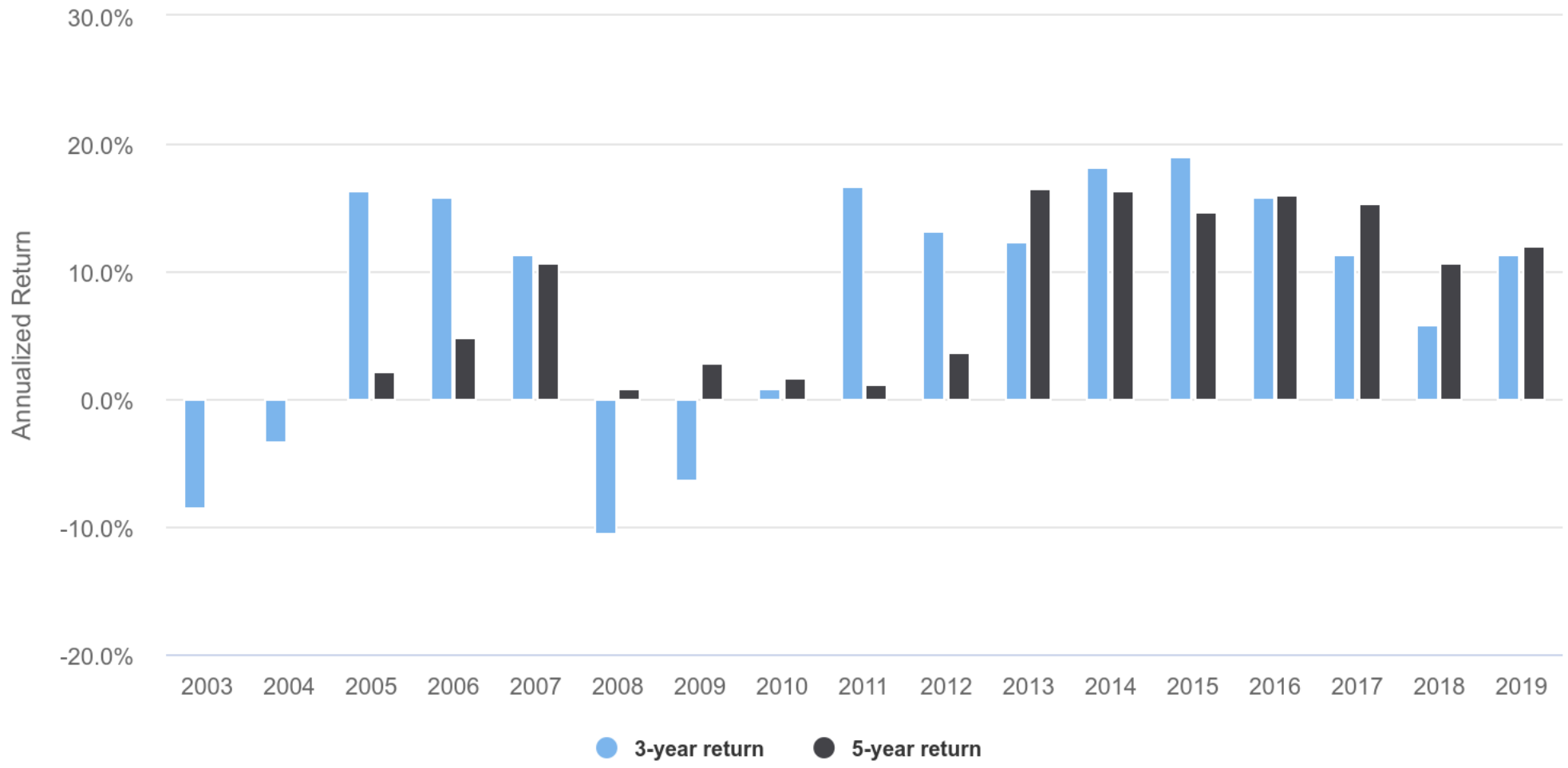
Name	Portfolio 1	Portfolio 2	Portfolio 3
WORLD MINIMUM VOLATILITY	20.27%	12.98%	16.28%
WORLD SMALL VALUE	28.72%		23.11%
WORLD MOMENTUM	26.01%	16.43%	20.44%
WORLD QUALITY	25.00%	16.21%	19.98%
WORLD SMALL CAP		19.97%	
WORLD VALUE		18.03%	
WORLD HIGH DIVIDEND		16.37%	20.19%

Rolling Returns (Jan 2001 - Jan 2020)

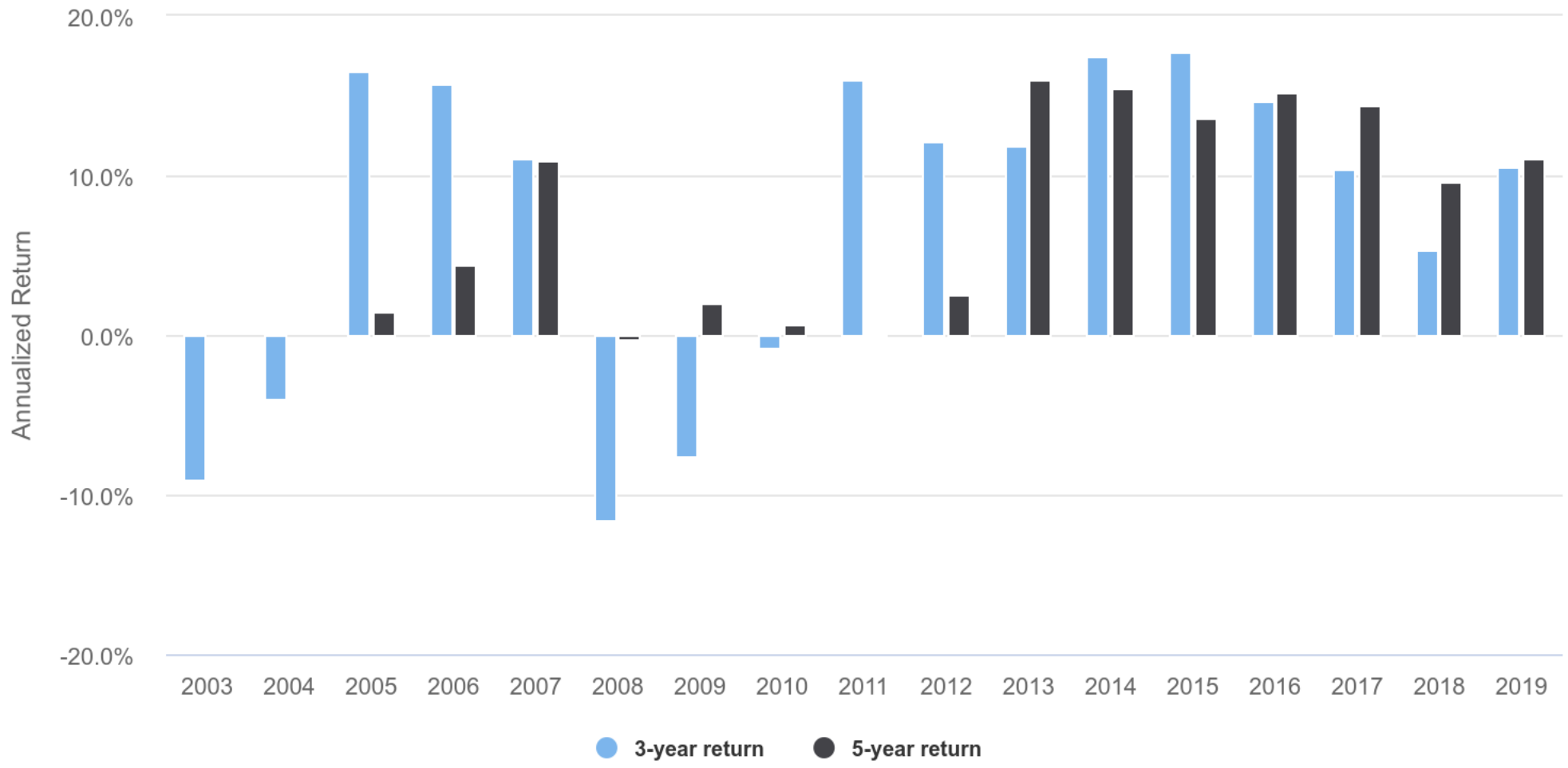
Roll Period	Portfolio 1			Portfolio 2			Portfolio 3			WORLD NR EUR		
	Average	High	Low	Average	High	Low	Average	High	Low	Average	High	Low
1 year	8.47%	30.75%	-32.26%	7.75%	29.44%	-34.96%	8.09%	29.41%	-33.81%	6.29%	30.02%	-37.64%
3 years	8.20%	19.04%	-10.54%	7.43%	17.68%	-11.66%	7.78%	17.96%	-10.98%	5.94%	18.21%	-12.99%
5 years	8.62%	16.49%	0.80%	7.80%	16.05%	-0.26%	8.17%	16.23%	0.27%	6.34%	15.22%	-2.42%
7 years	8.23%	16.94%	-2.37%	7.38%	16.11%	-3.31%	7.76%	16.42%	-2.71%	5.99%	15.12%	-5.64%
10 years	8.31%	14.14%	1.91%	7.45%	13.21%	1.06%	7.84%	13.50%	1.63%	6.00%	12.19%	-1.28%
15 years	8.46%	10.22%	5.97%	7.63%	9.35%	5.09%	8.01%	9.70%	5.61%	6.15%	8.30%	3.03%

Result statistics are based on annualized rolling returns over full calendar year periods

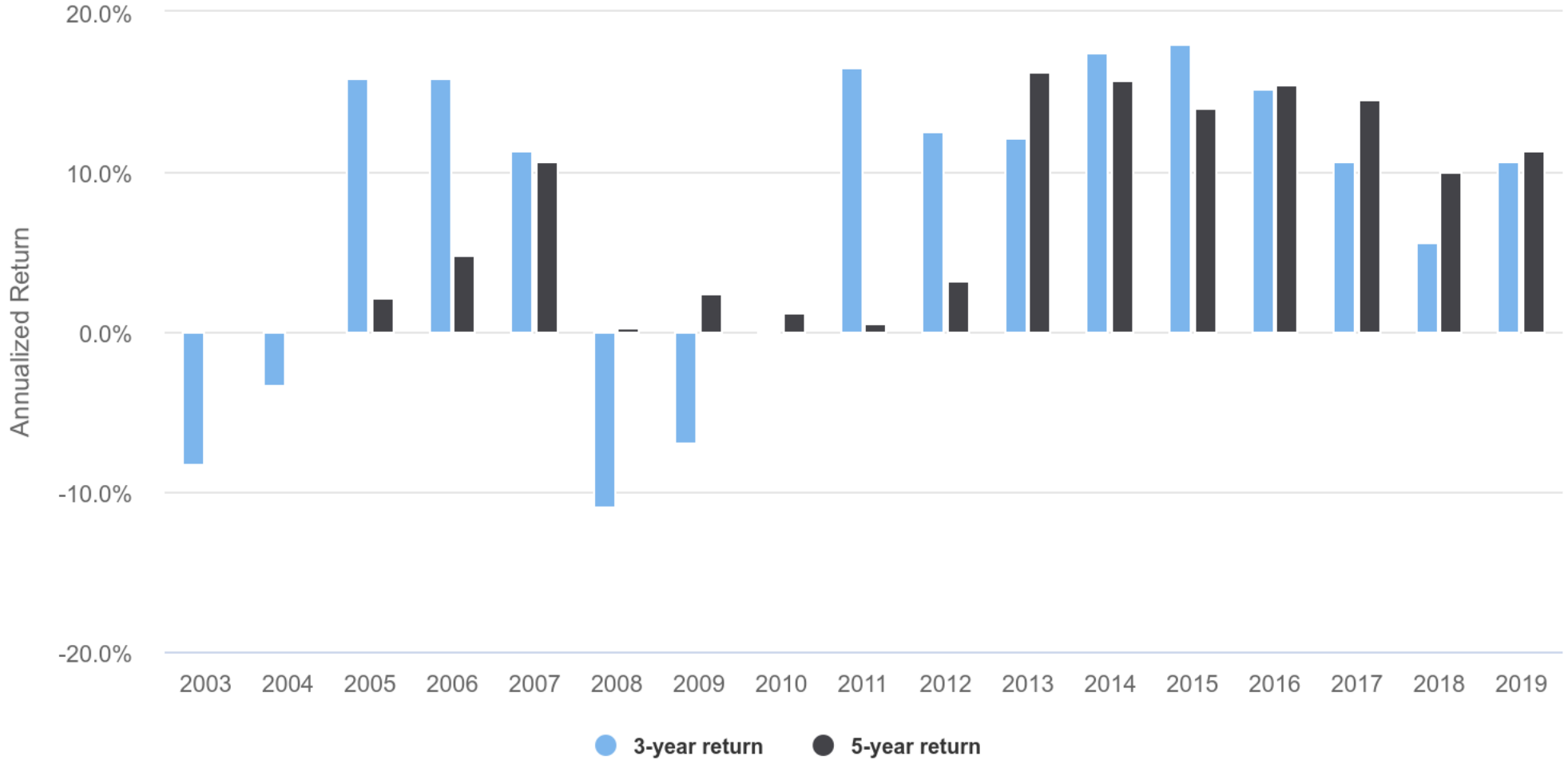
Portfolio 1 Rolling Returns



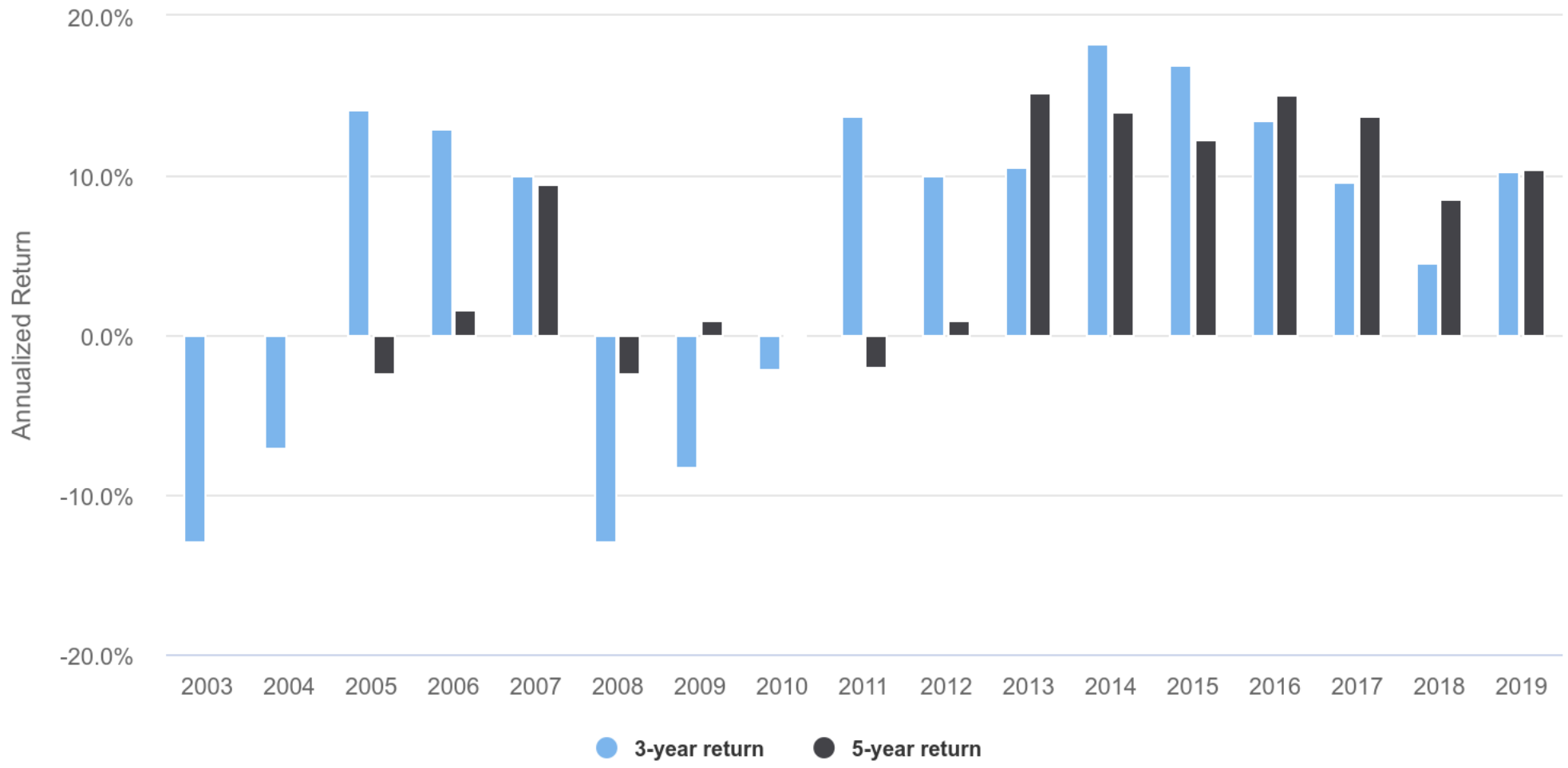
Portfolio 2 Rolling Returns



Portfolio 3 Rolling Returns



WORLD NR EUR Rolling Returns



Disclosures:
 • Fairvalue ist ein unabhängiges Onlinemagazin für Geldanleger, die langfristig Vermögen aufbauen, erhalten und vermehren wollen. Im Mittelpunkt stehen diversifizierte Anlagestrategien und deren praktische Umsetzung. Unsere Beiträge stützen sich auf eigene quantitative Analysen und andere aktuelle Erkenntnisse der Finanzmarktforschung. Gründer und Herausgeber von Fairvalue ist der Finanzjournalist und Sachbuchautor Markus Neumann. Er war zuvor u. a. für die Stiftung Warentest / Finanztest und das Verbraucherportal Finanztip tätig.