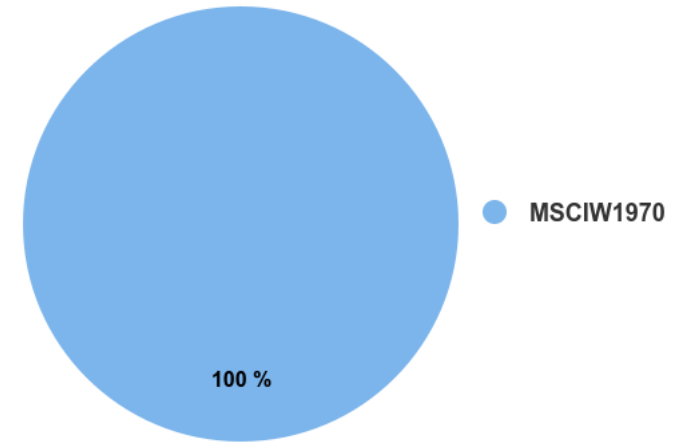


Report Parameters

Start Date	01/01/1970
End Date	06/30/2019
Initial Balance	\$10,000
Periodic Adjustment	None
Rebalancing	No rebalancing
Reinvest Dividends	Yes

MSCI World NR EUR

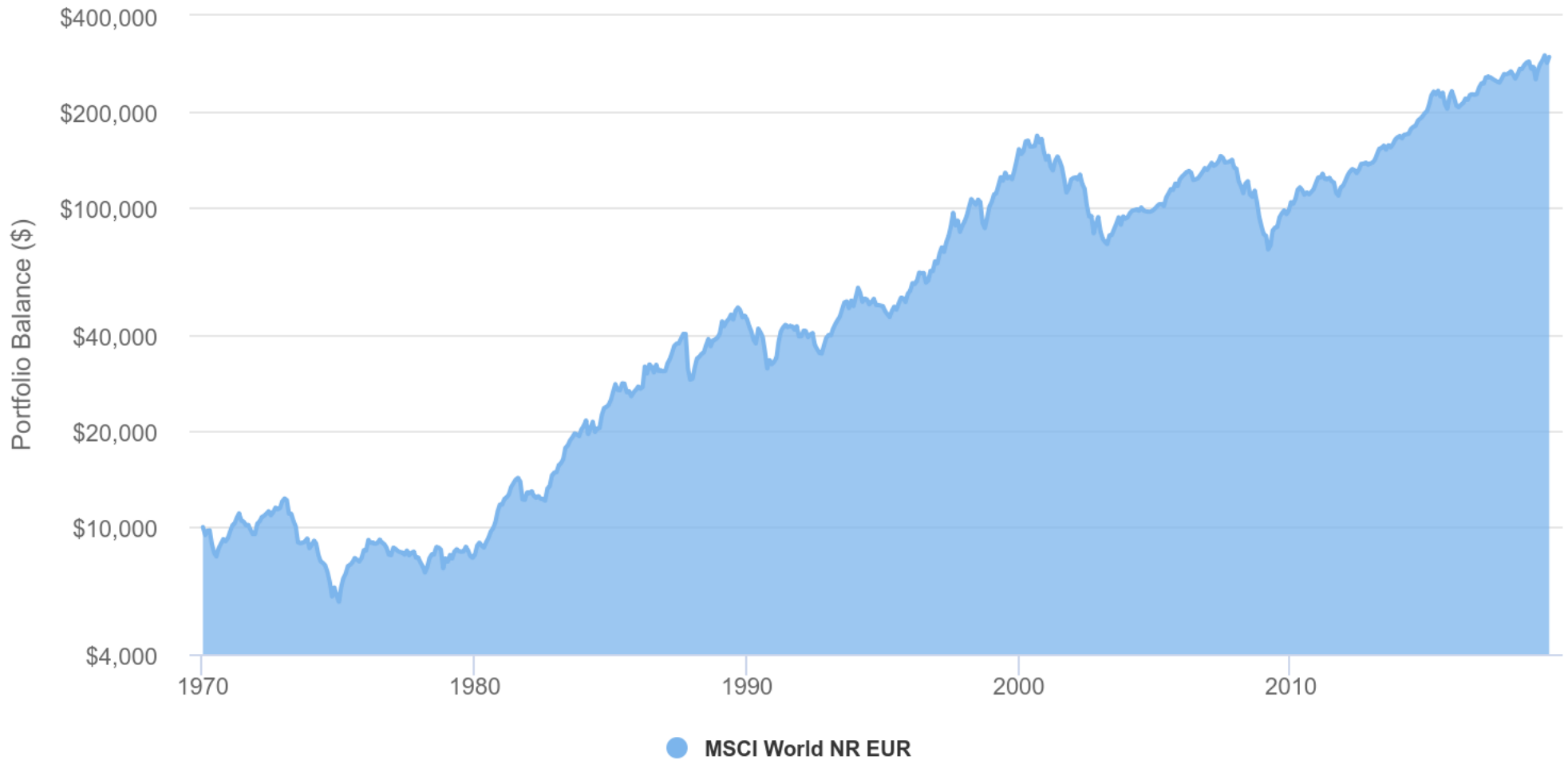
Ticker	Name	Allocation
MSCIW1970	MSCI World NR EUR 1970	100.00%



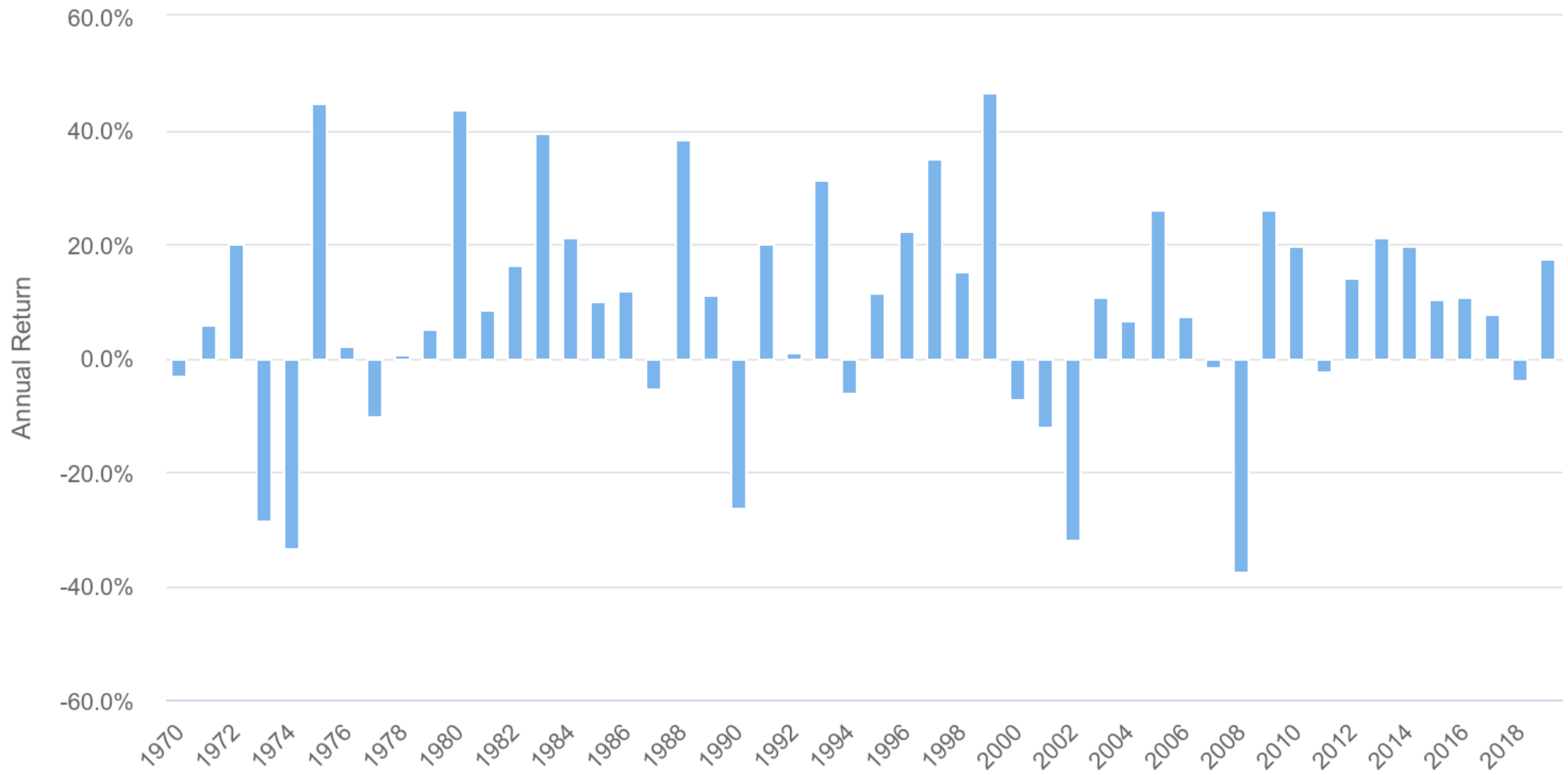
Portfolio Performance

Metric	MSCI World NR EUR
Start Balance	\$10,000
End Balance	\$297,085
End Balance (inflation adjusted)	\$43,726
CAGR	7.09%
CAGR (inflation adjusted)	3.03%
Stdev	15.23%
Best Year	46.36%
Worst Year	-37.64%
Max. Drawdown	-55.97%
Sharpe Ratio	0.23
Sortino Ratio	0.32
US Stock Market Correlation	0.78

Portfolio Growth



Annual Returns



Risk and Return Metrics

Metric	MSCI World NR EUR
Arithmetic Mean (monthly)	0.67%
Arithmetic Mean (annualized)	8.35%
Geometric Mean (monthly)	0.57%
Geometric Mean (annualized)	7.09%
Volatility (monthly)	4.40%
Volatility (annualized)	15.23%
Downside Deviation (monthly)	2.98%
Max. Drawdown	-55.97%
US Market Correlation	0.78
Beta (*)	0.77
Alpha (annualized)	-0.37%
R Squared	60.84%
Sharpe Ratio	0.23
Sortino Ratio	0.32
Treynor Ratio (%)	4.53
Calmar Ratio	0.90
Active Return	-3.14%
Tracking Error	10.20%
Information Ratio	-0.31
Skewness	-0.55
Excess Kurtosis	1.47
Historical Value-at-Risk (5%)	-7.66%
Analytical Value-at-Risk (5%)	-6.56%
Conditional Value-at-Risk (5%)	-10.05%
Upside Capture Ratio (%)	74.63
Downside Capture Ratio (%)	82.39
Safe Withdrawal Rate	2.23%
Perpetual Withdrawal Rate	2.96%
Positive Periods	356 out of 594 (59.93%)
Gain/Loss Ratio	0.99

(*) US stock market is used as the benchmark for calculations. Value-at-risk metrics are based on monthly values.

MSCI World NR EUR Returns

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Inflation	Balance
1970	-5.54%	3.12%	0.31%	-9.34%	-6.31%	-2.46%	6.20%	3.30%	3.23%	-1.48%	2.24%	4.96%	-3.09%	5.57%	\$9,691
1971	4.60%	1.05%	4.39%	3.27%	-5.20%	-0.60%	-2.63%	0.26%	-3.25%	-3.22%	-0.00%	7.81%	5.82%	3.27%	\$10,255
1972	1.65%	3.12%	0.93%	1.53%	1.76%	-2.84%	2.22%	3.34%	-1.14%	0.89%	4.95%	2.04%	19.84%	3.41%	\$12,290
1973	-1.17%	-9.28%	-0.14%	-5.01%	-4.06%	-10.71%	-0.60%	0.34%	0.91%	2.20%	-6.74%	2.39%	-28.44%	8.71%	\$8,795
1974	3.11%	-2.02%	-7.96%	-4.51%	-1.12%	-1.75%	-4.82%	-6.96%	-9.75%	6.60%	-5.52%	-4.39%	-33.62%	12.34%	\$5,838
1975	11.44%	6.24%	3.27%	5.73%	0.98%	1.65%	3.27%	-1.20%	-1.28%	2.55%	5.77%	-0.20%	44.66%	6.94%	\$8,446
1976	7.90%	-2.02%	0.08%	-0.74%	0.54%	2.40%	-2.03%	-1.13%	-2.44%	-4.96%	-0.43%	5.58%	2.09%	4.86%	\$8,623
1977	-0.92%	-1.43%	-0.96%	-0.16%	-1.50%	2.93%	-3.41%	1.86%	0.87%	-4.23%	0.03%	-3.49%	-10.15%	6.70%	\$7,747
1978	-2.92%	-4.16%	3.80%	6.87%	2.70%	-0.07%	5.45%	-0.26%	-1.49%	-12.60%	7.40%	-2.30%	0.65%	9.02%	\$7,797
1979	4.89%	-2.53%	5.17%	1.67%	-1.43%	-0.35%	0.22%	3.39%	-2.49%	-4.05%	-1.22%	2.10%	4.98%	13.29%	\$8,186
1980	7.03%	1.99%	-2.09%	-1.35%	4.01%	3.10%	4.70%	2.31%	4.14%	8.41%	5.07%	0.06%	43.73%	12.52%	\$11,766
1981	4.22%	1.01%	2.18%	5.44%	2.76%	2.70%	1.26%	-2.52%	-12.10%	-0.34%	5.36%	-0.45%	8.56%	8.92%	\$12,772
1982	1.41%	-3.13%	-1.58%	1.22%	-1.74%	-0.35%	-1.10%	9.19%	1.58%	8.29%	1.91%	0.34%	16.38%	3.83%	\$14,864
1983	5.31%	1.14%	3.12%	8.58%	1.62%	3.70%	2.28%	2.86%	-0.67%	-1.23%	4.96%	2.45%	39.49%	3.79%	\$20,733
1984	4.11%	-9.35%	4.45%	4.61%	-7.00%	2.47%	0.34%	10.02%	5.02%	0.78%	1.48%	3.83%	20.95%	3.95%	\$25,078
1985	6.18%	5.29%	-4.01%	-0.30%	5.03%	-0.14%	-5.98%	0.72%	-3.54%	2.91%	1.64%	2.45%	9.86%	3.80%	\$27,551
1986	-1.47%	1.09%	15.99%	-4.78%	6.64%	-1.59%	-4.04%	5.65%	-4.31%	0.24%	-0.51%	0.21%	11.95%	1.10%	\$30,845
1987	5.82%	2.71%	4.80%	5.22%	1.60%	0.17%	3.76%	3.27%	-0.05%	-22.16%	-7.68%	0.72%	-5.45%	4.43%	\$29,163
1988	8.65%	6.53%	1.19%	2.18%	1.02%	5.30%	4.57%	-4.99%	4.21%	0.61%	1.44%	2.90%	38.43%	4.42%	\$40,369
1989	9.27%	-3.39%	3.37%	1.72%	3.35%	-3.43%	6.49%	2.37%	-1.71%	-5.13%	1.08%	-2.33%	11.18%	4.65%	\$44,881
1990	-5.08%	-3.68%	-5.91%	-2.56%	11.25%	-2.47%	-3.42%	-10.30%	-11.14%	6.08%	-2.86%	1.92%	-26.47%	6.11%	\$33,000
1991	2.67%	11.83%	8.20%	2.99%	1.91%	-1.64%	0.82%	-0.29%	-2.27%	2.41%	-7.04%	0.06%	20.02%	3.06%	\$39,607
1992	4.11%	-0.23%	-4.28%	2.01%	0.93%	-8.25%	-3.00%	-2.69%	-0.42%	6.21%	5.48%	2.04%	0.91%	2.90%	\$39,969
1993	-0.22%	4.60%	3.64%	2.89%	2.57%	5.29%	5.25%	0.75%	-4.68%	5.46%	-3.75%	6.56%	31.39%	2.75%	\$52,516
1994	7.05%	-3.44%	-6.43%	2.30%	-0.58%	-3.46%	1.71%	2.31%	-4.30%	-0.08%	-0.38%	-0.36%	-6.21%	2.67%	\$49,255
1995	-3.73%	-1.98%	-2.06%	4.50%	3.08%	-2.10%	4.72%	4.03%	-0.36%	-2.61%	6.17%	1.91%	11.48%	2.54%	\$54,907
1996	5.81%	-0.64%	2.10%	6.30%	-0.33%	0.14%	-6.68%	1.47%	7.23%	-0.12%	7.26%	-1.36%	22.18%	3.32%	\$67,088
1997	7.53%	4.25%	-3.15%	7.17%	4.55%	7.25%	10.24%	-8.56%	3.42%	-7.70%	4.28%	3.16%	35.06%	1.70%	\$90,612
1998	4.48%	5.97%	6.19%	-2.03%	-1.91%	3.63%	-1.64%	-14.09%	-3.57%	8.03%	8.14%	3.31%	15.18%	1.61%	\$104,366
1999	5.65%	0.69%	5.90%	6.05%	-2.27%	5.83%	-3.95%	1.13%	-1.79%	6.58%	7.31%	8.57%	46.36%	2.68%	\$152,752
2000	-3.43%	1.88%	7.55%	0.56%	-4.24%	-0.00%	0.52%	7.60%	-4.62%	2.35%	-8.55%	-5.79%	-7.31%	3.39%	\$141,591
2001	2.90%	-7.43%	-2.82%	7.06%	3.23%	-3.03%	-4.54%	-8.31%	-9.06%	3.04%	6.53%	1.18%	-12.30%	1.55%	\$124,179
2002	0.28%	-1.35%	3.52%	-6.48%	-3.39%	-11.16%	-7.77%	0.14%	-11.69%	7.15%	4.91%	-9.81%	-32.02%	2.38%	\$84,411

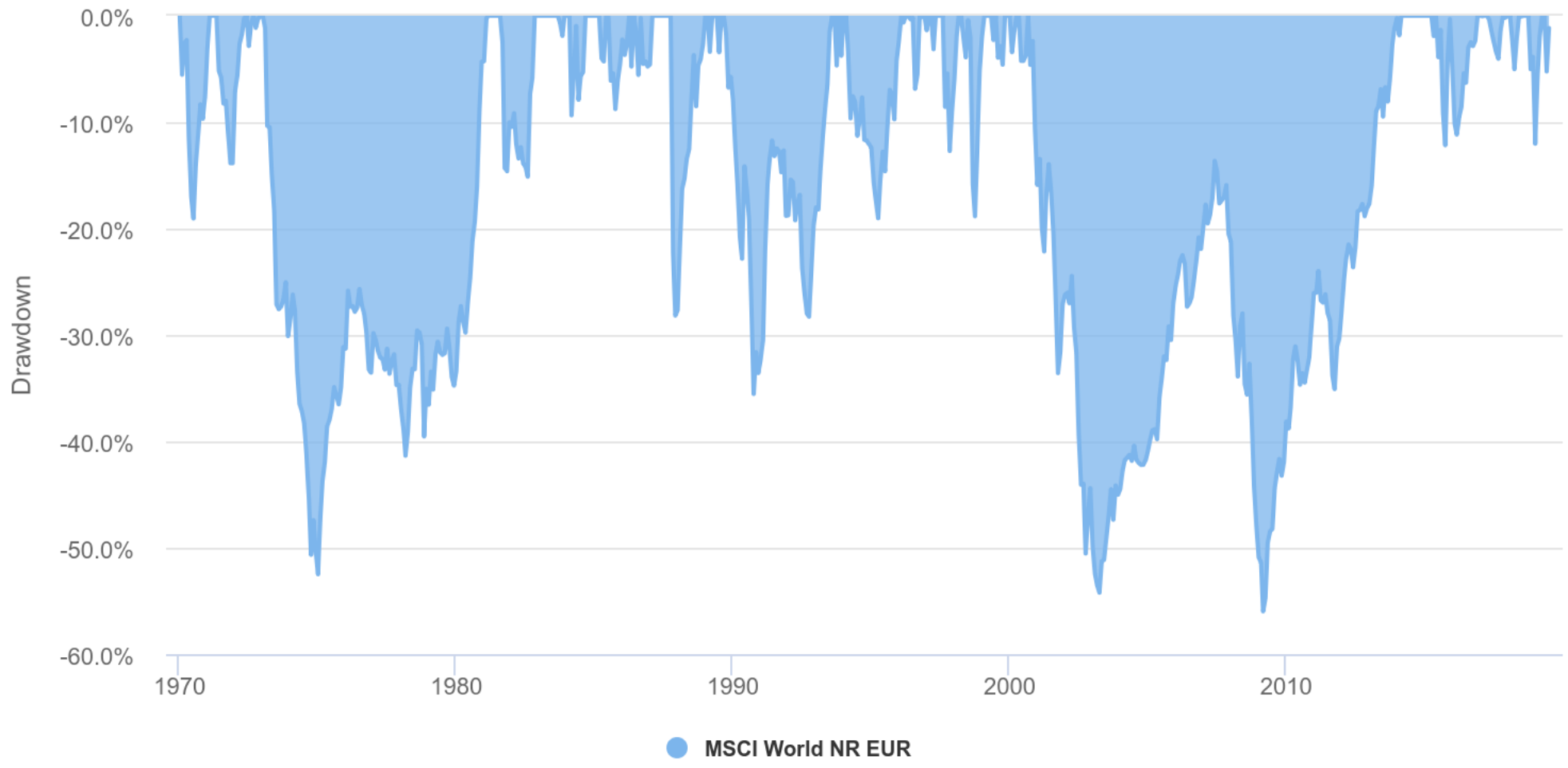
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Inflation	Balance
2003	-5.22%	-2.14%	-1.55%	6.44%	0.29%	4.18%	4.09%	4.72%	-5.16%	6.11%	-1.55%	0.99%	10.74%	1.88%	\$93,477
2004	3.16%	1.66%	0.44%	0.42%	-0.94%	2.43%	-2.24%	-0.50%	-0.30%	0.03%	0.74%	1.51%	6.46%	3.26%	\$99,514
2005	1.93%	1.32%	0.15%	-1.52%	6.41%	2.87%	3.15%	-0.49%	4.66%	-1.78%	4.98%	2.16%	26.17%	3.42%	\$125,552
2006	1.48%	1.70%	0.69%	-1.01%	-5.28%	0.42%	0.82%	2.28%	2.25%	2.89%	-1.35%	2.57%	7.40%	2.54%	\$134,843
2007	2.68%	-2.14%	1.05%	1.84%	4.26%	-1.13%	-3.52%	0.33%	0.42%	1.31%	-5.47%	-0.90%	-1.66%	4.08%	\$132,606
2008	-8.80%	-3.03%	-5.11%	7.13%	1.71%	-9.23%	-1.49%	4.49%	-7.65%	-10.23%	-6.54%	-5.79%	-37.64%	0.09%	\$82,691
2009	-1.03%	-9.43%	2.87%	11.44%	2.10%	0.46%	7.31%	2.87%	2.09%	-2.69%	2.29%	6.52%	25.94%	2.72%	\$104,140
2010	-1.04%	3.29%	7.10%	1.78%	-2.02%	-3.26%	1.64%	-1.32%	1.78%	1.88%	4.47%	4.17%	19.53%	1.50%	\$124,476
2011	0.06%	2.74%	-3.63%	-0.28%	1.06%	-2.41%	-0.94%	-7.23%	-1.96%	6.14%	1.08%	3.64%	-2.38%	2.96%	\$121,511
2012	4.14%	2.64%	1.74%	-0.53%	-2.20%	2.40%	4.37%	0.18%	0.67%	-1.39%	0.91%	0.51%	14.05%	1.74%	\$138,579
2013	2.07%	4.00%	4.20%	0.47%	1.77%	-2.75%	3.04%	-1.44%	2.28%	3.47%	1.62%	0.90%	21.20%	1.50%	\$167,961
2014	-1.60%	2.53%	0.36%	0.42%	3.61%	1.45%	0.70%	3.82%	1.44%	1.48%	2.52%	1.36%	19.50%	0.76%	\$200,708
2015	5.29%	6.50%	2.80%	-1.91%	2.56%	-3.89%	2.66%	-7.92%	-3.32%	9.06%	4.07%	-4.48%	10.42%	0.73%	\$221,625
2016	-5.61%	-1.16%	1.82%	1.07%	3.46%	-0.92%	3.54%	0.49%	-0.37%	0.53%	4.82%	2.98%	10.73%	2.07%	\$245,397
2017	-0.05%	4.53%	0.41%	-0.33%	-1.11%	-1.03%	-0.95%	-0.69%	2.82%	3.40%	-0.18%	0.64%	7.51%	2.11%	\$263,834
2018	1.48%	-2.09%	-2.99%	2.96%	4.15%	-0.07%	2.90%	1.81%	0.73%	-5.02%	1.21%	-8.48%	-4.11%	1.91%	\$252,997
2019	7.38%	3.80%	2.74%	3.74%	-5.23%	4.30%							17.43%	2.12%	\$297,085

Portfolio Returns Based Style Analysis

Style Category	MSCI World NR EUR
Large-cap Value	17.06%
Large-cap Growth	36.40%
Mid-cap Value	3.06%
Mid-cap Growth	5.05%
Small-cap Value	0.00%
Small-cap Growth	11.28%
Global ex-US Developed Markets	0.00%
Emerging Markets	0.00%
Corporate Bonds	0.00%
Long-Term Treasuries	0.00%
Intermediate-Term Treasuries	0.00%
Short-Term Treasuries	27.15%
R Squared	65.96%

Style analysis is based on monthly returns from Apr 2005 to Jun 2019 and uses total portfolio return with monthly rebalancing. Returns based style analysis aims to explain the portfolio returns based on asset class exposures, it does not identify the actual portfolio holdings.

Drawdowns



Drawdowns for Historical Market Stress Periods

Stress Period	Start	End	MSCI World NR EUR
Oil Crisis	Oct 1973	Mar 1974	-11.21%
Black Monday Period	Sep 1987	Nov 1987	-28.18%
Asian Crisis	Jul 1997	Jan 1998	-12.71%
Russian Debt Default	Jul 1998	Oct 1998	-18.50%
Dotcom Crash	Mar 2000	Oct 2002	-50.54%
Subprime Crisis	Nov 2007	Mar 2009	-47.63%

Drawdowns for MSCI World NR EUR (worst 10)

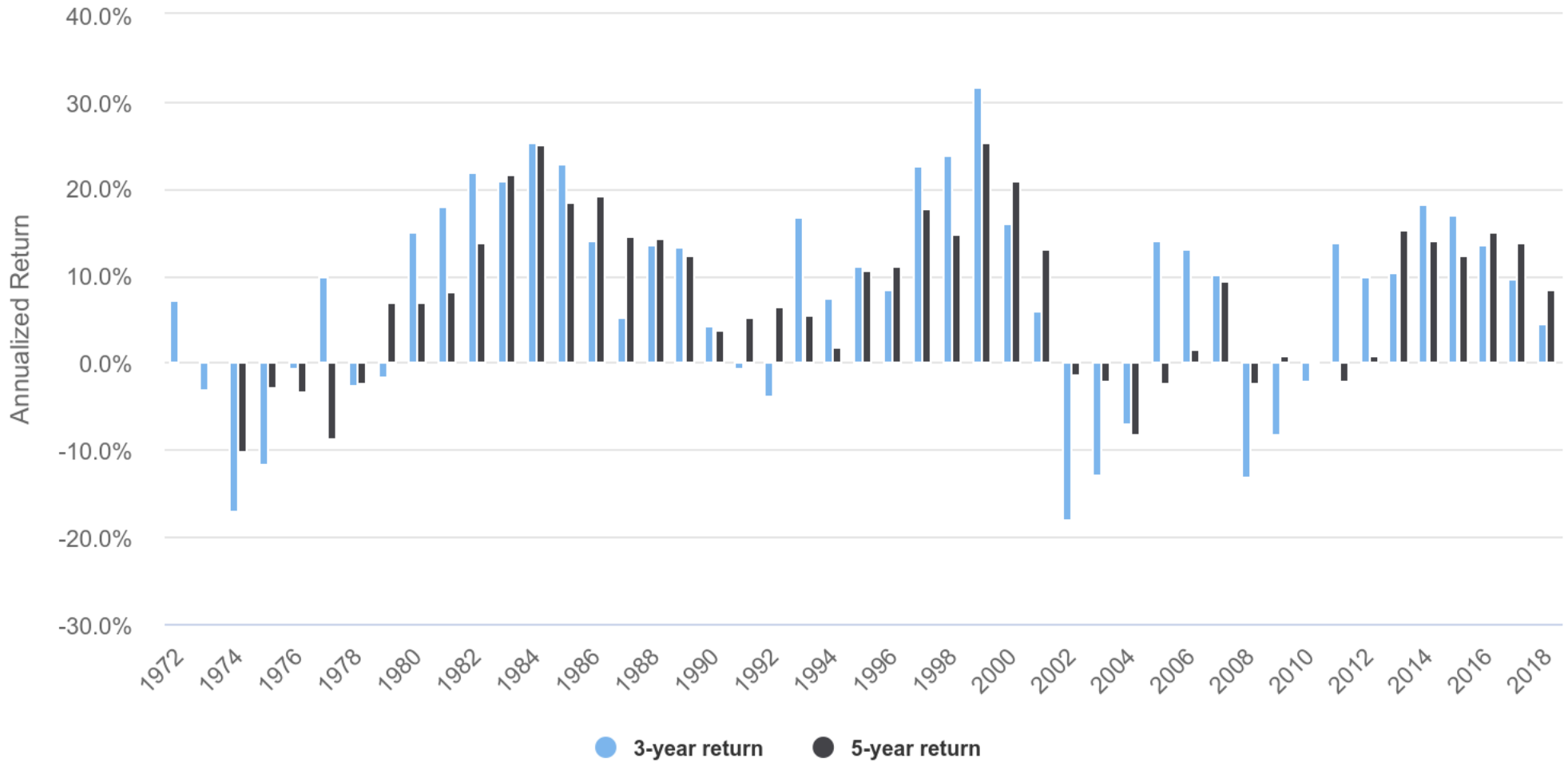
Rank	Start	End	Length	Recovery By	Recovery Time	Underwater Period	Drawdown
1	Sep 2000	Feb 2009	8 years 6 months	Feb 2014	5 years	13 years 6 months	-55.97%
2	Jan 1973	Dec 1974	2 years	Feb 1981	6 years 2 months	8 years 2 months	-52.50%
3	Sep 1989	Sep 1990	1 year 1 month	Jul 1993	2 years 10 months	3 years 11 months	-35.55%
4	Sep 1987	Nov 1987	3 months	Dec 1988	1 year 1 month	1 year 4 months	-28.18%
5	Jan 1970	Jun 1970	6 months	Jan 1971	7 months	1 year 1 month	-19.05%
6	Feb 1994	Mar 1995	1 year 2 months	Jan 1996	10 months	2 years	-19.03%
7	Apr 1998	Sep 1998	6 months	Jan 1999	4 months	10 months	-18.84%
8	Aug 1981	Jul 1982	1 year	Oct 1982	3 months	1 year 3 months	-15.13%
9	May 1971	Nov 1971	7 months	May 1972	6 months	1 year 1 month	-13.86%
10	Aug 1997	Oct 1997	3 months	Feb 1998	4 months	7 months	-12.71%

Rolling Returns

Roll Period	Average	High	Low
1 year	8.77%	46.36%	-37.64%
3 years	7.79%	31.56%	-17.94%
5 years	7.63%	25.40%	-10.20%
7 years	7.79%	21.11%	-5.64%
10 years	7.90%	18.55%	-3.76%
15 years	8.12%	14.56%	1.84%

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

MSCI 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.