

How to Evaluate an Investment Strategy MANAGED ASSET PORTFOLIOS

It can be difficult to decide on a strategy and investment team in a sea of performance statistics. There is no perfect statistic or number for selecting a specific strategy; however, we believe some measures can be useful. This essay will walk through the common metrics used when discussing portfolio performance and provide some context for these numbers.

Deciding on an investment team is much like buying a vehicle. There are flashy statistics like horsepower and 0-60 times, but for most people, a Corvette is not a good choice for an every-day driver. Ideally, a vehicle is reliable, affordable, fuel-efficient, and safe. Driving, like investing, has risk. Good vehicles are designed for the worst-case scenario, like mechanical failures or accidents, while good managers plan for recessions and market panics.

What Matters

When assessing investment options, the first thing many investors look at is historical returns: if a strategy has outperformed its benchmark, it is viewed as a good strategy. If it underperforms its benchmark, investors start to question the strategy. However, returns do not tell the whole story. Risk plays a significant role in the performance results of a portfolio. Strategies that take on a lot of risk can look great in boom times, but become exposed when the bull market recedes.

The difficulty for investors is measuring risk. Admittedly, this is a complicated task, especially in a portfolio of 40-plus companies, each with exposure to a variety of geographies, markets, industries, cyclicalities, and other risk factors. It is partially because of this difficulty that the industry and academia have come up with a useful shorthand measurement for risk: volatility.

While volatility is not the perfect measure for risk and is only one (very small) factor among many that Managed Asset Portfolios' ("MAP") investment team weighs when analyzing companies, it helps evaluate past performance. Theoretically, a riskier strategy will be more volatile. This does not always hold true, and volatility can vary over time periods. However, it is the best shorthand measurement available.

Returning to the car analogy, it is useful to think of return as the flashy statistics of a vehicle (i.e., horsepower and top speed), while risk is more like a reliability rating, safety rating, or fuel efficiency metric. Every purchaser of a vehicle has a different combination of need and preference, just like every investor will have a different risk tolerance profile.

While MAP's marketed strategies have historically had return numbers to be proud of, we are more interested in our risk-adjusted numbers. Assessing risk is an essential part of our process, and we want to know how well we have vetted risks before investing.

Long-Term Thinking

Essential when considering these statistics is the period over which they are measured. Some strategies will appear great in bull markets but struggle in bear markets, while others will succeed in bear markets and lag in bull markets. The best way to evaluate a strategy is its performance over a complete market cycle. Additionally, investment team continuity is essential. Managers who

maintain their core portfolio team set themselves up for success. Outperformance over the long run and investment teams that have kept leadership in place are solid foundations for assessing a strategy.

Given this foundation, let's dive into some useful metrics.

The Metrics

No metric is perfect or comprehensive, but some are better than others. Here are some standard metrics used for evaluating a strategy's historical performance. Keep in mind: it is not easy to evaluate performance based on these numbers in a vacuum, so it is useful to compare these statistics within peer groups.

Sharpe Ratio

Sharpe Ratio is the original risk-adjusted performance measure as well as the most popular. Developed by William Sharpe in the 1960s, the Sharpe Ratio can be found in most historical performance discussions. The Sharpe Ratio is calculated by subtracting the risk-free rate (US Treasury bonds are often used as a proxy) from a portfolio's return. This number is then divided by the standard deviation of historical returns. Higher Sharpe Ratios indicate better historical risk-adjusted-performance.

Historically, as an investment manager, MAP has performed exceptionally well through the Sharpe Ratio lens: since inception, MAP's Global Equity Composite¹ is in the 100th percentile among peers with a Sharpe Ratio of 0.65. The Global Equity Composite has also ranked in the 100th percentile among peers in the turbulence of the last three years, registering a Sharpe Ratio of 0.46.

Sharpe Ratio	% of Peer Group 1 Yr Beaten		3 Yr	Peer Group G		% of Peer Group Beaten	Peer Peer		% of Peer Group 15 Yr Beaten		SI	% of Peer Group Beaten
MAP Global Equity Composite	0.33	75	0.46	100	0.79	98	0.78	90	0.63	100	0.65	100
MSCI ACWI Value GR USD	0.00	17	0.08	21	0.44	38	0.43	29	0.27	31	0.29	38
MSCI ACWI GR USD	0.63	99	0.49	100	0.77	97	0.64	71	0.40	88	0.38	63

Source: Morningstar World Large Stock Value Rankings; Numbers as of 12/31/2020; Data calculated gross of fees

While this measure is the most common among risk-adjusted statistics, it has a crucial flaw: it penalizes strategies with upside volatility. Upside volatility should not count against performance, and in fact, could mean that the strategy is doing its job: providing attractive returns. No one has ever been upset by an unexpectedly large gain.

Because of this flaw, MAP prefers other measures for evaluating historical performance, such as the Sortino Ratio.

Sortino Ratio

The Sortino Ratio is very similar to the Sharpe ratio, except that it eliminates the critical flaw mentioned above. Rather than accounting for both upside and downside volatility, the Sortino

¹ Please see the MAP Global Equity fact sheet for the period ending 12/31/2020 for additional detailed information.

Ratio only counts downside deviation when calculating volatility. A higher Sortino Ratio indicates better performance.

Again, MAP's Global Equity Composite 3-Year Sortino Ratio of 0.69 ranks it in the 100th percentile among its peers, while since inception, the strategy's 1.00 ratio places it in the 100th percentile.

Sortino Ratio	1 Yr	% of Peer Group Beaten	3 Yr	% of Peer Group Beaten	5 Yr	% of Peer Group Beaten	10 Yr	% of Peer Group Beaten	15 Yr	% of Peer Group Beaten	SI	% of Peer Group Beaten
MAP Global Equity Composite	0.48	75	0.69	100	1.23	99	1.22	90	0.93	100	1.00	100
MSCI ACWI Value GR USD	0.00	17	0.12	20	0.63	38	0.63	23	0.37	28	0.41	38
MSCI ACWI GR USD	1.00	99	0.74	100	1.18	97	0.99	76	0.57	84	0.54	63
Source: Morningstar World Large Stock	c Value Ra	nkings; Numb	ers as of	12/31/2020;	Data cale	culated gross	of fees					

Source: Morningstar world Large Stock value Rankings; Numbers as of 12/31/2020; Data calculated gross of fees

We believe this is a much-improved lens with which to view historical performance. A strategy's performance should be punished for volatility on the downside but rewarded for large excess returns.

Treynor Ratio

The Treynor Ratio is another useful metric to judge a portfolio's historical performance. Much like the Sharpe and Sortino ratios, the Treynor ratio's numerator is the portfolio's return less the risk-free rate. Also, as with the previous two mentioned ratios, the higher the ratio, the better the portfolio has performed on a volatility-adjusted basis.

However, the denominator is the beta of the portfolio. Beta measures how much the returns of an asset swing compared to a broader market index (in the case of MAP's Global Equity Composite, we use the MSCI ACWI, gross). This is often called systematic risk, as it measures the exposure to broad market risk, which cannot be wholly avoided when investing in stocks.

The index will always have a beta of 1, and portfolios with a beta of 1 will generally track the market more closely. A lower beta means that a portfolio is less volatile or less correlated than the comparative broader market index. In comparison, a higher beta implies that the portfolio is more volatile than the market or more correlated to the market.

Once again, MAP's Global Equity Composite has performed well according to the Treynor Ratio. On a three-year basis, the composite has registered a Treynor Ratio of 8.89, good enough to place it in the 100th percentile, while since inception, the composite has a Treynor Ratio of 11.86, also placing it in the 100th percentile.

Treynor Ratio	% of Peer Group			% of Peer Group		% of Peer Group		% of Peer Group 1		% of Peer Group		% of Peer Group	
	1 Yr I	Beaten	3 Yr	Beaten	5 Yr	Beaten	10 Yr	Beaten	Yr	Beaten	SI	Beaten	
MAP Global Equity Composite	8.56	75	8.89	100	12.57	98	11.55	89	10.97	100	11.86	100	
MSCI ACWI Value GR USD	0.03	17	1.55	20	6.83	35	6.16	24	4.39	28	4.62	38	
MSCI ACWI GR USD	16.37	99	8.99	100	11.55	94	9.05	66	6.52	78	6.00	63	

Source: Morningstar World Large Stock Value Rankings; Numbers as of 12/31/2020; Data calculated gross of fees

This ratio can be useful when deciding whether to add a new strategy to your portfolio. Portfolios with low betas often face muted effects in broad market downturns, allowing the portfolio to recover more quickly.

The Verdict

Investors should account for risk when assessing investment strategies. While high returns often get the most attention, high historical volatility can indicate that a portfolio has achieved those high returns by taking excess risk.

Think of choosing a strategy like you would select your next vehicle. Horsepower and appearance are nice to have. However, safety and reliability are also an essential part of the process. Many of the flashy and news-grabbing investment strategies have a lot of horsepower and have performed well during bull markets. However, they may not have the long-term track record and emphasis on managing risk.

While no measure of historical performance is perfect, and the phrase "past performance is not an indication of future results" exists for a reason, risk-adjusted metrics are more useful in judging a strategy than pure return. Of the above-highlighted metrics, we believe the Sortino Ratio is most fair for comparing strategies. It accounts for downside volatility while not punishing a portfolio for upside volatility.

Additionally, the long-term performance of a strategy is more reliable than short-term performance. Economies and markets move in cycles, and different strategies will benefit from different portions of the cycle. Portfolios and teams that have been around for entire market cycles and have performed well can be more reliable than strategies that have been around for a short duration and benefited from their portion of the cycle.

Assessing potential risk is an essential part of MAP's investment process, and historically our team has succeeded in reducing downside volatility. We continue to aim to capture the upside while muting the downside. No one strategy is perfect, and each will sustain periods of underperformance. However, MAP is in it for the long haul. We hope that you are too.

Managed Asset Portfolios Investment Team

Michael Dzialo, Karen Culver, Peter Swan, John Dalton, and Zachary Fellows

Research and analysis by Dustin Dieckmann

Certain statements made by us may be forward-looking statements and projections which describe our strategies, goals, outlook, expectations, or projections. These statements are only predictions and involve known and unknown risks, uncertainties, and other factors that may cause actual results to differ materially from those expressed or implied by such forward-looking statements. Past performance is no guarantee of future results.



MANAGED ASSET PORTFOLIOS

MAP GLOBAL EQUITY COMPOSITE

ANNUALIZED RETURNS AS OF DECEMBER 31, 2020

	Quarter	YTD	1 Year	3 Year	5 Year	7 Year	10 Year	SI 3/31/01
GrossComposite	12.80%	7.76%	7.76%	8.58%	11.05%	8.60%	9.72%	10.74%
Net ¹ Composite	12.47%	6.43%	6.43%	7.23%	9.68%	7.26%	8.37%	9.55%
Gross Ex-Options ²	13.50%	8.74%	8.74%	8.84%	11.14%	8.49%	9.33%	10.08%
Benchmark	14.79%	16.82%	16.82%	10.64%	12.86%	9.45%	9.71%	7.47%
Secondary Benchmark	16.80%	0.42%	0.42%	3.13%	8.18%	5.44%	6.85%	6.16%

ROLLING 36-MONTH RETURN ANALYSIS (MARCH 31, 2004 - DECEMBER 31, 2020)3

	MAP Global Equity Composite (Gross)	Benchmark (Gross)
Number of 36-Month Periods	202	202
Average 36-Month Annualized Return	10.69%	8.19%
Best 36-Month Annualized Return	30.24%	25.06%
Worst 36-Month Annualized Return	-4.99%	-14.52%
Standard Deviation of 36-Month Periods	7.03%	8.16%
Profitable Periods(%)	91.58%	84.65%
Average Profitable Period Return (Annualized)	11.84%	10.76%
Unprofitable Periods(%)	8.42%	15.35%
Average Unprofitable Period Return (Annualized)	-1.85%	-5.99%

FOULTY STATISTICS 3,4

EQUITY STATISTICS 3,4		RISK STATISTICS 3,4
Wtd. Market Cap(mil)	194,982	Beta vs. Benchmark⁵
PE	39.10	Sharpe Ratio⁵
Price to Sales	2.89	Alpha⁵
Price to Book	4.47	R2 vs. Benchmark ⁶
Dividend Yield	2.46%	Upside Capture Ratio ⁶
Turnover(TTM)	41.20%	Downside Capture Ratio ⁶

GROWTH OF A HYPOTHETICAL \$1,000,000 INVESTMENT (SINCE INCEPTION, NET1)



Results are presented net of actual fees until December 31, 2005; from January 1, 2006 through the present, net composite results are presented net of highest fee.

²Global Equity Ex-Options performance is reported gross of management fees. It is supplemental and complements the MAP Global Equity Composite Annual Disclosure Presentation. Quarter and YTD returns not annualized. MAP has been independently verified. Lifetime benchmark performance is not examined. ³The information provided is supplemental and complements the MAP Global Equity Composite presentation. Risk Statistics are presented gross-of-fees. 4Descriptive statistics derived from holdings based on the aggregate of individual client portfolios in the composite. Holdings of individual client portfolios in the composite may differ, sometimes significantly, from those shown. Based on the annualized quarterly returns of the Global Equity Composite compared to the annualized quarterly total returns of the MSCIACWI Index since inception. Based on the cumulative performance for the MSCIAC World (ACWI) Index's 57 positive quarters and 22 negative guarters between April 1, 2001 and December 31, 2020.

All investments are subject to risk, including the loss of principal

The continued impact of the novel coronavirus COVID-19 could extend for an undetermined amount of time resulting in a substantial economic downturn and negatively affect worldwide economic conditions. The full extent of COVID-19's impact remains uncertain and difficult to predict. Any such impact could adversely affect the future investment performance of the composite.

Past performance is no guarantee of future results.

The Global Investment Performance Standards are a trademark of CFA Institute. CFA Institute has not been involved in the preparation or review of this report/advertisement.

be employed to enhance income stream. Style - Value

Investment Objective

Strategy Goal

Market Capitalization Allocation - Large, Mid and Small

Long-term growth of capital by investing in a diversified global equity portfolio that is unconstrained by geography or market capitalization while being benchmark agnostic. Covered calls may

Stated Benchmark - MSCI All Country World Index

Secondary Benchmark - MSCI All Country World Value Index

Investable Universe - Approximately 15,000 securities

Typical # of Equity Positions Held - 35 to 50

Portfolio Construction Process - Bottom-up based on fundamentals

FIRM

Managed Asset Portfolios (MAP) is a boutique, independent SEC-registered investment advisory firm founded in 2000 as a Single-Family Investment Office. We opened our doors to outside investors in 2001. Today, the firm manages over \$900 million for individuals and institutions.

INVESTMENT PHILOSOPHY

MAP manages money guided by a strict value discipline and a focus on a margin of safety. The firm builds focused portfolios through a bottom-up process by investing in temporarily out-of-favor securities that show an attractive valuation compared to the company's net assets and earnings power and when there is a catalyst to unlock the intrinsic value of the company.

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- 32+ years of investment experience

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0.82

0.60

4.60%

0.73

105%

90%

MAP GLOBAL EQUITY COMPOSITE

DATAAS OF DECEMBER 31, 2020

SECTOR WEIGHTINGS*

Equity Sector	Composite ^{1,*}	MSCI ACWI
Communication Svcs.	9.7%	9.3%
Consumer Discr.	3.8%	13.0%
Consumer Staples	24.2%	7.4%
Energy	0.0%	3.0%
Financials	4.9%	13.5%
Health Care	13.7%	11.9%
Industrials	10.2%	9.7%
Information Tech.	18.5%	21.9%
Materials	9.3%	4.9%
Real Estate	0.0%	2.6%
Utilities	5.7%	3.0%

CAPITALIZATION COMPOSITION1*

Greater than \$10 billion	62.1%
\$2 billion - \$10 billion	28.0%
\$500 million - \$2 billion	8.1%
Less than \$500 million	1.8%

ASSET ALLOCATION^{1,*}

Cash 4.8% Fixed Income 2.6% U.S. Equities 49.5% Non-U.S. Equities 43.1%

TOP TEN HOLDINGS^{1,*}

Bunge LTD	4.72%
Micron Technology Inc	4.66%
Kratos Defense & Security	4.53%
Tetra Tech Inc	4.46%
Sprott Physical Gold & Silver Trust	4.18%
Novartis AG-ADR	3.85%
Microsoft	3.81%
eBay Inc	3.80%
Nestle – ADR	3.45%
Sanofi ADR	3.37%

* The information provided is supplemental and complements the MAP Global Equity Composite presentation.

¹Descriptive statistics derived from holdings based on the aggregate of individual client portfolios in the Composite. Holdings of individual client portfolios in the Composite may differ, sometimes significantly, from those shown. This information does not constitute, and should not be construed as, investment advice or recommendations with respect to the securities listed.

Definitions: Yield to Maturity: annualized rate of return an investor will receive if a debt instrument, such as a bond, is held to maturity: Maturity: data at which a debt instrument is due and payable. Duration: the approximate percentage change in price for a 100-basis point change in yield. A duration of 5 means that bond's price will change by 5% for a 100-basis point change in yield. Super a more likely to lead to a weekend capacity of the obligot to meet this financial commitment on the obligations performed by S8P. An obligation rated 'BBB' exhibits adequate protection parameters. However, adverse economic conditions or changing circumstances are more likely to lead to a weekend capacity of the obligor to meet this financial commitment on the obligations. Market Capitalization: total value of all the issued and outstanding common stock of a corporation. Dividend Yield: the annual percentage of the marred by an equity investor from the payment of dividends on common or preferred stock. Price to Sales Ratio: price of a stock divided by the training twelve months saming store to she capacity in the obligation and replaced with new securities annualy, expressed as a percentage of the composite's total assets. Beta: measures the composite's covariance relative to the memory shares (share price) over: the next of metal commuting the variability of the particles. The induces the mick permium return earded per unit of total risk. Alphar: measures the composite's covariance relative to the memory shares (share share box) everage returns adjusted for risk. Ratio: measures the strength of the linear relationship between the composite and list benchmark's. Owned capacity of the divide share has a manager that is able to outperform the benchmark's during out markets.

MAP GLOBAL EQUITY COMPOSITE GIPS REPORT

		Co	mposite Ass	ets ¹		Annual Performance Results				3-Year Annualized EX-POST Standard Deviation		
	Total Firm	UCD	% of Nor	Number of	Compo	osite	MECI	MEGI	Commonito			
Year End	Assets (millions)	USD (millions)	% of Non- Fee-Paying	Number of Accounts	Gross	Net	MSCI ACWI	MSCI ACWI Value	Composite Dispersion	Composite	MSCI ACWI	MSCI ACWI Value
2020	910	308	2%	311	7.76%	6.43%	16.82%	0.42%	2.26%	14.79%	18.12%	18.99%
2019	892	305	2%	344	19.97%	18.52%	27.30%	21.52%	2.06%	8.45%	11.21%	10.94%
2018	691	227	2%	313	-1.00%	-2.23%	-8.93%	-10.12%	1.03%	8.15%	10.48%	10.18%
2017	654	226	2%	299	18.42%	16.98%	24.62%	19.09%	1.47%	9.11%	10.36%	10.51%
2016	522	182	2%	254	11.42%	10.07%	8.48%	13.44%	1.43%	9.79%	11.07%	11.24%
2015	436	148	2%	231	0.11%	-1.13%	-1.84%	-5.58%	1.45%	10.00%	10.78%	11.09%
2014	413	144	2%	209	5.36%	4.06%	4.71%	3.56%	1.63%	9.23%	10.48%	10.73%
2013	351	108	2%	170	22.49%	21.01%	23.44%	23.26%	3.32%	11.20%	13.92%	13.98%
2012	281	72	15%	152	16.92%	15.49%	16.80%	16.42%	2.89%	12.81%	17.10%	17.02%
2011	239	55	8%	141	-0.93%	-2.15%	-6.86%	-6.71%	3.01%	13.10%	20.59%	22.00%

For the periods prior to 2017 composite assets are calculated based on composite membership as of 12/31. Composite assets include accounts that enter the composite on 12/31.

MaP Global Equity Composite seeks to generate long-term growth of capital by investing in a diversified equity portfolio. Investments may also include foreign-fisted stocks, fixed income securities, preferred stocks, overed call options and other securities. Effective 630/2020, the primary benchmark is the MSCI ACWI ladex and the secondary benchmark is the MSCI ACWI value Index as being compleximentary beaces the MAP Global Equity Composite sport(on composition is formed through a pocess centered around value investing techniques. Furthermore, when running a regression analysis over the last 10 years, the Composite has a higher correlation and R2 to the MSCI ACWI Value Index as being compleximentary beause the MAP Global Equity Composite's portfolio composition is formed through a pocess centered around value investing techniques. Furthermore, when running a regression analysis over the last 10 years, the Composite has a higher correlation and R2 to the MSCI ACWI Value Index as being compleximentary beauses the MAP Global Equity Composite's portfolio composition is formed through a pocess centered around value investing techniques. Furthermore, when running a regression analysis over the last 10 years, the Composite has a higher correlation and R2 to the MSCI ACWI Value Index that is growth counterpart, the MSCI ACWI Growth Index. The MSCI ACWI Value Index and micro gas ecurities exhibiting overall value style characteristics across 23 Developed Markets countries and R2 to the Science Comprising 23 developed Market science acquirus singe and micro gas ecurities exhibiting overall value style characteristics across 23 Developed Markets countries and 2 TE merging Market times three they should be prepared to bear, fliguid investments are not a material part of the concentration is (In the adviser emphasizes a particular industry or group of related industries). Investing in securities involves risk of loss of principal that they should be prepared to bear. Illiquid investments are not a material part of th

Managed Asset Portfolios, LLC claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS standards. Managed Asset Portfolios, LLC has been independently verified for the periods March 31, 2001 through June 30, 2020. A firm that claims compliance with the GIPS standards must establish policies and procedures for complying with all the applicable requirements of the GIPS standards. Verification provides assurance on whether the firm's policies and procedures related to composite and pooled fund maintenance, as well as the calculation, presentation, and distribution of performance, have been designed in compliance with the GIPS standards and have been implemented on a firm-wide basis. The MAP Global Equity Composite has had a performance examination for the periods March 31, 2001 through June 30, 2020. The verification and performance examination reports are available upon request.

Managed Asset Portfolics, LLC is a registered investment adviser. A list of composite descriptions, a list of broad distribution pooled funds and performance results are available upon request. Results are based on fully discretionary accounts under management, including those accounts no longer with the firm. Composite performance is presented gross of foreign withholding taxes. Non-fee-paying accounts are included in this composite. Past performance is not indicative of future results.

The U.S. Dollar is the currency used to express performance. Returns are presented gross and net of management fees and include the reinvestment of all income. Beginning November 30, 2011, the composite contains wrapbundled fee accounts. Wrap/bundled fee accounts (Wrap/bundled fee accounts performance) and the set of the set of

The management fee is generally 1.25% for the first \$5,000,000. The fee is negotiable for accounts over \$5,000,000. Actual investment advisory fees incurred by clients may vary.

The MAP Global Equity Composite was created and incepted on March 31, 2001.