

## Columbia Management Investment Advisers, LLC

225 Franklin Street  
Boston, Massachusetts 02110

Style: US Large Cap Value  
Sub-Style: Relative Value  
Firm AUM: \$337.1 billion  
Firm Strategy AUM: \$5,237.0 billion

Year Founded: 1985  
GIMA Status: Focus  
Firm Ownership: Ameriprise Financial  
Professional-Staff: 1128

## PRODUCT OVERVIEW

Columbia Threadneedle Investments (Columbia Threadneedle) is the global brand name of the Columbia and Threadneedle group of companies. Columbia Management Investment Advisers, LLC (CMIA), an SEC-registered investment adviser, is a wholly-owned subsidiary of Ameriprise Financial, Inc. Columbia Management Capital Advisers is an operating division of CMIA that offers investment management and related services to clients participating in various types of wrap programs. Certain investment teams manage institutional assets that are not part of the wrap firm. As a result, assets under management for Columbia Management Capital Advisers may differ from assets under management for CMIA. Ameriprise Financial under its brand name Columbia Management Advisers, LLC (Columbia), formerly Seligman Investments, believes that short-term market inefficiencies can create long-term investment opportunities. Columbia's large cap value equity portfolio employs a bottom-up, fundamental investment process that seeks to invest in a concentrated portfolio of undervalued large cap companies that Columbia believes will benefit from improving fundamentals and earnings acceleration. Columbia believes that with time and patience the stock market will reward these types of companies. Columbia tries to identify catalysts that can accelerate the rate of earnings growth. Columbia's goal is to outperform the S&P 500 Index over a three-to-five year time horizon while maintaining low turnover. Columbia's process may, at times, result in portfolios that will be over/underweighted in particular sectors/industries versus the S&P 500 Index. **The portfolio characteristics, portfolio statistics, portfolio weightings, allocation history and top five holdings are based on a representative account managed by the investment manager in the same or a substantially similar investment discipline and/or on information that the manager has provided to Morgan Stanley. The performance data and related analyses are based on the performance of the investment manager's composite described on page 3.**

## MANAGER'S INVESTMENT STRATEGY

- ☐ Top-down / portfolio structures based on economic trends  
☒ Bottom-up / portfolio structure based on individual securities

## TARGET PORTFOLIO CHARACTERISTICS

Number of stock holdings:	30 to 35
P/E ratio:	Similar to/Below the S&P 500
Cash level over market cycle:	0 to 5%
Risk (standard deviation):	Above the S&P 500
Average turnover rate:	20 to 30%
Use ADRs:	0 to 0%
Capitalization:	Mega, Large and Medium companies

## PORTFOLIO'S EQUITY SECTOR WEIGHTINGS \*

	-----06/19-----	12/18	
Sector	Columbia	Index***	Columbia
Energy	11.51	9.25	13.17
Materials	9.17	4.45	7.02
Industrials	8.84	9.72	7.67
Consumer Discretionary	4.76	5.94	5.88
Consumer Staples	5.61	8.74	6.88
Health Care	12.38	12.90	11.67
Financials	22.47	23.45	22.36
Information Technology	12.62	5.94	11.24
Communication Services	4.40	8.00	4.98
Utilities	5.36	6.50	6.29
Miscellaneous	0.00	0.00	2.84
Real Estate/REITs	0.00	5.10	0.00
Cash/Cash Equivalents	2.87	0.00	0.00

## PORTFOLIO STATISTICS

	-----06/19-----	12/18	
	Columbia	Index***	Columbia
Number of stock holdings	37	761	37
Dividend Yield	2.4%	2.6%	2.9%
Distribution Rate	—	—	—
Wtd avg P/E ratio <sup>1</sup>	17.54x	16.20x	22.64x
Wtd avg portfolio beta	—	—	—
Mega capitalization <sup>+</sup>	0.0%	38.6%	0.0%
Large capitalization <sup>+</sup>	0.0%	45.5%	0.0%
Medium capitalization <sup>+</sup>	0.0%	15.5%	0.0%
Small capitalization <sup>+</sup>	0.0%	0.3%	0.0%
Micro capitalization <sup>+</sup>	0.0%	0.0%	0.0%

## PORTFOLIO'S TOP FIVE EQUITY HOLDINGS

	%
FMC	4.4
Verizon Communications	4.4
Corning	3.9
Humana	3.9
Tyson Foods Cl A	3.7

## % PROCESS BASED ON

0	Asset allocation - cash vs. stock
10	Industry or sector weighting
90	Stock Selection

<sup>1</sup>The P/E used here is calculated by the harmonic mean.

<sup>+</sup>Total may not equal 100% due to rounding.

\*\*\*Index : Russell 1000 VI

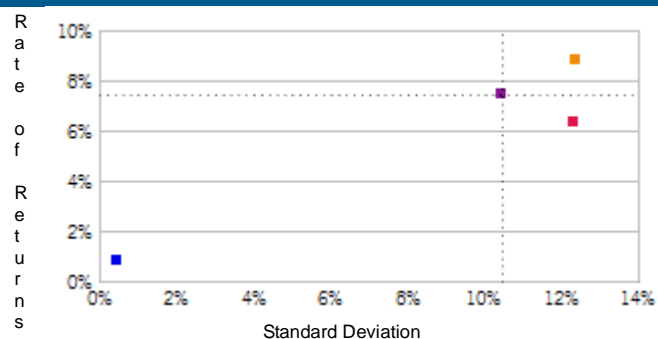
MANAGER'S INVESTMENT PROCESS	RISK CONSIDERATIONS	PORTFOLIO'S ALLOCATION HISTORY (%) +				
<ul style="list-style-type: none"><li>• Begin with a bottom-up, fundamental investment process that seeks to invest in a concentrated portfolio of undervalued companies with improving fundamentals and earnings acceleration</li><li>• Screen over 1,500 companies, focusing on financial analysis, management, valuation assessment, new products/product enhancements and peer market analysis</li><li>• Identify a catalyst that can lead to accelerated future growth of earnings</li><li>• Columbia seeks to sell a security when the manager believes its fundamentals have deteriorated, it has become fully valued, or there is a better investment opportunity.</li></ul>	<p>Equity securities prices may fluctuate in response to specific situations for each company, industry, market conditions and general economic environment. Companies paying dividends can reduce or cut payouts at any time. Strategies that invest a large percentage of assets in only one industry sector (or in only a few sectors) are more vulnerable to price fluctuation than portfolios that diversify among a broad range of sectors. Investing in securities entails risks, including: When investing in value securities, the market may not necessarily have the same value assessment as the manager, and, therefore, the performance of the securities may decline. Value investing involves the risk that the market may not recognize that securities are undervalued and they may not appreciate as anticipated. Growth investing does not guarantee a profit or eliminate risk. The stocks of these companies can have relatively high valuations. Because of these high valuations, an investment in a growth stock can be more risky than an investment in a company with more modest growth expectations. Value investing does not guarantee a profit or eliminate risk. Not all companies whose stocks are considered to be value stocks are able to turn their business around or successfully employ corrective strategies which would result in stock prices that do not rise as initially expected. Bonds rated below investment grade may have speculative characteristics and present significant risks beyond those of other securities, including greater credit risk and price volatility in the secondary market. Investors should be careful to consider these risks alongside their individual circumstances, objectives and risk tolerance before investing in high-yield bonds. If a strategy expects to hold a concentrated portfolio of a limited number of securities, it should be noted that a decline in the value of these investments would cause the portfolio's overall value to decline to a greater degree than that of a less concentrated portfolio.</p>					
			06/19	03/19	12/18	09/18
		U.S. Stocks	94	93	95	94
		Non-U.S. Stocks	3	4	2	2
		Cash/Cash Equivalents	3	3	3	4

<sup>1</sup>The P/E used here is calculated by the harmonic mean.

<sup>+</sup>Total may not equal 100% due to rounding.

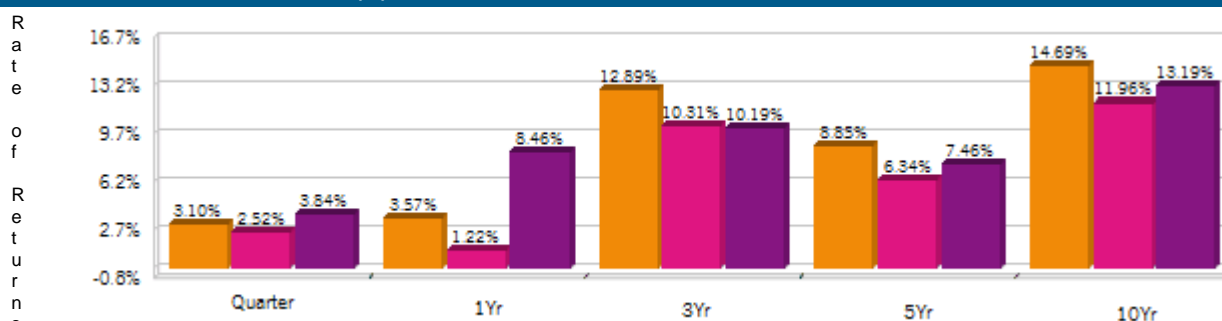
<sup>\*\*\*</sup>Index : Russell 1000 VI

## RISK/RETURN ANALYSIS - 5 YEARS ENDING 06/30/19



	STD	ROR
Columbia (Gross)	12.35	8.85
Columbia (Net)	12.30	6.34
Russell 1000 VI	10.46	7.46
90-Day T-Bills	0.44	0.84

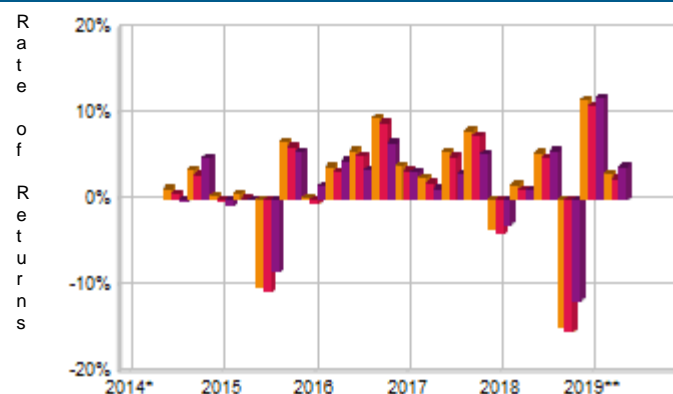
## AVERAGE ANNUAL TOTAL RETURN (%) - PERIODS ENDING 06/30/19



## INVESTMENT RESULTS

	Annual Rates of Return (%)										10 Year - Ending 06/30/19	
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Annual	Std. Dev.
Columbia (Gross)	26.24	19.41	2.34	16.73	38.18	13.85	-2.80	20.69	21.95	-11.58	14.69	15.71
Columbia (Net)	22.85	16.17	-0.20	14.03	35.09	11.18	-5.04	17.86	19.14	-13.64	11.96	15.66
Russell 1000 VI	19.69	15.51	0.39	17.50	32.54	13.46	-3.84	17.33	13.66	-8.27	13.19	13.72

## RISK VOLATILITY (%)



\*07/01/14-12/31/14

\*\*01/01/19-06/30/19

	Number Of	Up Qtrs.	Down Qtrs.
Columbia (Gross)	17	3	3
Columbia (Net)	15	5	5
Russell 1000 VI	15	5	5

## PORTFOLIO'S QUARTERLY RETURNS (%)

	Quarter1		Quarter2		Quarter3		Quarter4	
	Gross	Net	Gross	Net	Gross	Net	Gross	Net
2009	-13.37	-14.08	20.95	20.24	17.90	17.19	2.19	1.48
2010	11.36	10.65	-12.71	-13.42	9.36	8.64	12.34	11.62
2011	10.10	9.39	-2.21	-2.93	-17.60	-18.10	15.35	14.75
2012	13.30	12.66	-6.22	-6.78	6.01	5.39	3.63	3.03
2013	13.69	13.07	4.55	3.94	5.74	5.15	9.94	9.31
2014	3.53	2.91	4.81	4.19	1.31	0.71	3.56	2.97
2015	0.53	-0.09	0.72	0.13	-10.10	-10.63	6.78	6.21
2016	0.23	-0.41	3.89	3.29	5.73	5.13	9.63	8.98
2017	4.03	3.42	2.65	2.05	5.64	5.03	8.10	7.48
2018	-3.42	-3.97	1.76	1.17	5.53	4.93	-14.74	-15.28
2019	11.65	11.05	3.10	2.52				

Related

Select UMA

PORTFOLIO'S RISK STATISTICS - □ PERIODS ENDING 06/30/19 <sup>1 2</sup>

	3 Year	5 Year
Standard Deviation	13.80%	12.35%
Standard Deviation of Primary Benchmark	11.48%	10.46%
Sharpe Ratio	0.84	0.65
Sharpe Ratio of Primary Benchmark	0.77	0.63
Alpha	1.14%	0.47%
Beta	1.18	1.15
Downside Risk	1.92%	1.92%
R-Squared	0.96	0.95
Tracking Error	3.56%	3.26%
Information Ratio	0.76	0.42

PORTFOLIO DIVERSIFICATION - R<sup>2</sup>(INCEPTION THROUGH 12/14)+

	R <sup>2</sup>
Columbia vs. Russell 1000 VI	0.96

+Statistics are calculated using gross of fee performance only.

- Statistics are calculated using gross of fee performance only.
- Russell 1000 VI was used as the primary benchmark and the 90-Day T-Bills Index as the risk-free benchmark.

See important notes and disclosures pages for a discussion of the sources of the performance data used to calculate the performance results and related analyses shown above.

Past performance is no guarantee of future results. This profile is not complete without the pages, which contain important notes, including disclosures about the composite, index descriptions and a glossary of terms. Information shown is as of June 30, 2019, unless otherwise noted. All data are subject to change.

## IMPORTANT NOTES AND DISCLOSURES

## COMPOSITE DISCLOSURES

**The disclosures provided below apply to performance information in this profile, if any. Past performance is not a guarantee of future results. Actual individual account results may differ from the performance shown in this profile. There is no guarantee that this investment strategy will achieve its intended results under all market conditions. Do not rely upon this profile as the sole basis for your investment decisions.**

Performance results in this profile are calculated assuming reinvestment of dividends and income. Returns for more than one calendar year are annualized and based on quarterly data. Returns for periods of less than a calendar year show the total return for the period and are not annualized. No representation is being made that any portfolio will or is likely to achieve profits or losses similar to those shown. Returns will fluctuate and an investment upon redemption may be worth more or less than its original value. Performance shown does not reflect the impact of fees and expenses of the underlying mutual fund and ETFs, as applicable.

**Sources of Performance Results and Other Data:** The performance data and certain other information for this strategy (including the data on page 1 of this profile) may include one or more of the following: (i) the performance results of a composite of Morgan Stanley accounts managed by the third party investment manager, (ii) the performance results for accounts and investment products managed by the third party investment manager, in the same or a substantially similar investment strategy outside of the applicable Morgan Stanley program, and/or (iii) in the case of Model Portfolio Strategies, the Model Portfolio Provider's results in managing institutional accounts outside of the Morgan Stanley Select UMA program prior to Model Portfolio Strategy's inception in the Morgan Stanley Select UMA program. For periods through June 2012, the Fiduciary Services program operated through two channels – the Morgan Stanley channel and the Smith Barney channel and any performance and other data relating to Fiduciary Services accounts shown here for these periods is calculated using accounts in only one of the these channels.) Please note that the Fiduciary Services program was closed on January 2, 2018. Although the Fiduciary Services and Select UMA programs are both Morgan Stanley managed account programs, the performance results and other features of similar investment strategies in the two programs may differ due to investment and operational differences. Performance in one program is not indicative of potential performance in the other. For example, the individual investment strategies in Select UMA program accounts may contain fewer securities, which would lead to a more concentrated portfolio. The automatic rebalancing, wash sale loss and tax harvesting features of the Select UMA program, which are not available in Fiduciary Services, also could cause differences in performance. In addition, any performance results included in this profile that are based on a third party investment manager's accounts that are not part of the Morgan Stanley program accounts or institutional accounts that are part of the Model Portfolio strategy may differ due to investment and operational differences as well. As such, performance results of the third party investment manager's composites and the third party Model Portfolio Strategies may differ from those of Select UMA accounts managed in the same or a substantially similar investment strategy. For example, in the case of Model Portfolio Strategies, Morgan Stanley, as the investment manager, may deviate from the Third Party Model Portfolios.

**Related Performance:**

Columbia Management Investments's (Columbia) large cap value equity performance prior to 10/1/1998 represents a composite of all institutional fully discretionary fee-paying large cap value equity accounts over \$5 million and under management for one full month by Columbia. Performance from 10/1/1998 to 9/30/2005 represents a composite of all large cap value equity separately managed (wrap) fee-paying accounts managed on a fully discretionary basis for one full quarter by Columbia. The composite consisted of 1,080 accounts with a market value of \$372.8 million as of 9/30/2005. Effective November 7, 2008, J. & W. Seligman & Co. Incorporated was acquired by and became a wholly-owned subsidiary of RiverSource and its investment advisory contracts were transferred to RiverSource. The performance of the accounts before November 7, 2008 reflects the performance of those accounts while managed by J. & W. Seligman & Co. Incorporated.

**Morgan Stanley Performance:**

The composite consists of **309** account(s) with a market value of **\$116.6 million** as of **06/30/2019**. In this profile, the performance from October 1, 2005 through June 30, 2012 consists of accounts managed by the investment manager in this strategy in either the Morgan Stanley or the Smith Barney form of the Fiduciary Services program. From July 1, 2012 through December 31, 2015, performance consists of all Fiduciary Services (FS) accounts managed by the investment manager in this strategy, subject to any other limitations stated in this profile. From January 1, 2016, performance consists of the performance of all FS accounts (as described in the previous sentence) as well as the performance of all single style Select UMA accounts managed by the investment manager in this strategy, subject to any other limitations stated in this profile. Performance composites calculated by Morgan Stanley include all fee-paying portfolios with no investment restrictions. New accounts are included beginning with the second full calendar month of performance. Terminated accounts are removed in the month in which they terminate (but prior performance of terminated accounts is retained). Performance is calculated on a total return basis and by asset weighting the individual portfolio returns using the beginning of period values.

**Gross Performance:** Columbia's gross results do not reflect a deduction of any investment advisory fees or program fees, charged by Columbia or Morgan Stanley, but are net of commissions charged on securities transactions.

**Net Performance for all Periods:** Net performance results reflect a deduction of 0.5875% quarterly. This consists of three components: 0.5% maximum quarterly MS Advisory Fee and 0.0175% maximum quarterly Program Overlay Fee (which, together cover the services provided by Morgan Stanley), plus 0.07% quarterly SMA Manager Fees (being the fee currently charged by Columbia to new clients for managing their assets in the Select UMA program). The SMA Manager Fees may differ from manager to manager, and managers may change their fee to new clients from time to time. If you select this manager for your account, check the SMA Manager Fees specified in the written client agreement, in case these have changed since you received this profile. Historical net fees reflect the Advisory Fee Schedule as of October 1, 2018. Morgan Stanley program fees are usually deducted quarterly, and have a compounding effect on performance. The Morgan Stanley program fee, which differs among programs and clients, is described in the applicable Morgan Stanley ADV brochure, which is available at [www.morganstanley.com/ADV](http://www.morganstanley.com/ADV) or on request from your Financial Advisor or Private Wealth Advisor.

**Focus List, Approved List, and Watch Status:**

Global Investment Manager Analysis ("GIMA") uses two methods to evaluate investment products in applicable advisory programs. In general, strategies that have passed a more thorough evaluation may be placed on the "Focus List", while strategies that have passed through a different and less comprehensive evaluation process may be placed on the "Approved List". Sometimes an investment product may be evaluated using the Focus List process but then placed on the Approved List instead of the Focus List.

Investment products may move from the Focus List to the Approved List, or vice versa. GIMA may also determine that an investment product no longer meets the criteria under either evaluation process and will no longer be recommended in investment advisory programs (in which case the investment product is given a "Not Approved" status).

GIMA has a "Watch" policy and may describe a Focus List or Approved List investment product as being on "Watch" if GIMA identifies specific areas that (a) merit further evaluation by GIMA and (b) may, but are not certain to, result in the investment product becoming "Not Approved". The Watch period depends on the length of time needed for GIMA to conduct its evaluation and for the investment manager to address any concerns. GIMA may, but is not obligated to, note the Watch status in this report with a "W" or "Watch" on the cover page.

For more information on the Focus List, Approved List, and Watch processes, please see the applicable Morgan Stanley ADV brochure ([www.ms.com/adv](http://www.ms.com/adv)). Your Financial Advisor or Private Wealth Advisor can provide on request a copy of a paper entitled "GIMA: At A Glance".

## ADDITIONAL DISCLOSURES

The information about a representative account is for illustrative purposes only. Actual account holdings, performance and other data will vary depending on the size of an account, cash flows within an account, and restrictions on an account. Holdings are subject to change daily. The information in this profile is not a recommendation to buy, hold or sell securities.

Actual portfolio statistics may vary from target portfolio characteristics.

The Model Portfolio Provider or Investment Manager may use the same or substantially similar investment strategies, and may hold similar portfolios of investments, in other portfolios or products it manages (including mutual funds). These may be available at Morgan Stanley or elsewhere, and may cost an investor more or less than this strategy in Morgan Stanley's Select UMA program.

The portfolio may, at times, invest in exchange-traded funds (ETFs), which are a form of equity security in seeking to maintain continued full exposure to the broad equity market.

Morgan Stanley investment advisory programs may require a minimum asset level and, depending on your specific investment objectives and financial position, may not be suitable for you. Investment advisory program accounts are opened pursuant to a written client agreement.

The investment manager acts independently of, and is not an affiliate of, Morgan Stanley Smith Barney LLC.

Diversification does not guarantee a profit or protect against a loss.

### *No obligation to notify*

Morgan Stanley has no obligation to notify you when information in this profile changes.

### *Sources of information*

Material in this profile has been obtained from sources that we believe to be reliable, but we do not guarantee its accuracy, completeness or timeliness. Third party data providers make no warranties or representations relating to the accuracy, completeness or timeliness of the data they provide and are not liable for any damages relating to this data.

### *No tax advice*

Morgan Stanley and its affiliates do not render advice on legal, tax and/or tax accounting matters to clients. Each client should consult his/her personal tax and/or legal advisor to learn about any potential tax or other implications that may result from acting on a particular recommendation.

### *Not an ERISA fiduciary*

Morgan Stanley is not acting as a fiduciary under either the Employee Retirement Income Security Act of 1974, as amended, or under section 4975 of the Internal Revenue Code of 1986, as amended, in providing the information in this profile.

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## INDEX DESCRIPTIONS

### 90-Day T-Bills

The 90-Day Treasury Bill is a short-term obligation issued by the United States government. T-bills are purchased at a discount to the full face value, and the investor receives the full value when they mature. The difference of discount is the interest earned. T-bills are issued in denominations of \$10,000 auction and \$1,000 increments thereafter.

### Russell 1000 VI

The Russell 1000 Value Index is representative of the U.S. market for large capitalization stocks containing those companies in the Russell 1000 Index with lower price-to-book ratios and lower forecasted growth.

### S&P 500

The S&P 500 Total Return has been widely regarded as the best single gauge of the large cap U.S. equities market since the index was first published in 1957. The index has over \$5.58 trillion benchmarked, with index assets comprising approximately \$1.31 trillion of this total. The index includes 500 leading companies in leading industries of the U.S. economy, capturing 75% coverage of U.S. equities. This index includes dividend reinvestment.

**Indices are unmanaged and have no expenses. You cannot invest directly in an index.**

## GLOSSARY OF TERMS

**Alpha** is a mathematical estimate of risk-adjusted return expected from a portfolio above and beyond the benchmark return at any point in time.



**American Depositary Receipts (ADRs)** are receipts for shares of a foreign-based corporation held in the vault of a U.S. bank.

**Average Portfolio Beta** is a measure of the sensitivity of a benchmark or portfolio's rates of return to changes against a market return. The market return is the S&P 500 Index. It is the coefficient measuring a stock or a portfolio's relative volatility.

**Beta** is a measure of the sensitivity of a portfolio's rates of return to changes in the market return. It is the coefficient measuring a stock or a portfolio's relative volatility.

**Bottom-Up Stock Selection** Emphasis primarily on individual stock selection. Considerations of economic and industry factors are of secondary importance in the investment decision-making process.

**Capitalization** is defined as the following: Mega (Above \$100 billion), Large (\$12 to \$100 billion), Medium (\$2.5 - \$12 billion), Small (\$.50 - \$2.5 billion) and Micro (below \$.50 billion).

**Distribution Rate** is defined as the most recent distribution paid, annualized, and then divided by the current market price. Distribution rate may consist of investment income, short-term capital gains, long-term capital gains, and /or returns of capital.

**Dividend** a portion of a company's profit paid to common and preferred shareholders.

**Dividend Yield** annual dividend per share divided by price per share. Dividend Yield for the portfolio is a weighted average of the results for the individual stocks in the portfolio.

**Downside Risk** is a measure of the risk associated with achieving a specific target return. This statistic separates portfolio volatility into downside risk and upside uncertainty. The downside considers all returns below the target return, while the upside considers all returns equal to or above the target return.

**Duration** is a measure of price sensitivity expressed in years.

**High Grade Corporate Bonds** corporate bonds from issuers with credit ratings of AA or AAA.

**Information Ratio** is a measure of the investment manager's skill to add active value against a given benchmark relative to how stable that active return has been. Essentially, the information ratio explains how significant a manager's alpha is. Therefore, the higher the information ratio, the more significant the alpha.

**Investment Grade Bonds** are those rated by Standard & Poor's AAA (highest rated), AA, A or BBB (or equivalent rating by other rating agencies or, in the case of securities not rated, by the investment manager).

**Price/Book Ratio (P/B)** weighted average of the stocks' price divided by book value per share. Book value per share is defined as common equity, including intangibles, divided by shares outstanding times the adjustment factor.

**Price/Cash Flow Ratio** a ratio used to compare a company's market value to its cash flow. It is calculated by dividing the company's market cap by the company's operating cash flow in the most recent fiscal year (or the most recent four fiscal quarters); or, equivalently, divide the per-share stock price by the per-share operating cash flow.

**Price/Earnings Ratio (P/E Ratio)** shows the multiple of earnings at which a stock sells. Determined by dividing current stock price by current earnings per share (adjusted for stock splits). Earnings per share for the P/E ratio are determined by dividing earnings for past 12 months by the number of common shares outstanding. The P/E ratio shown here is calculated by the harmonic mean.

**Price/Sales Ratio** determined by dividing current stock price by revenue per share (adjusted for stock splits). Revenue per share for the P/S ratio is determined by dividing revenue for past 12 months by number of shares outstanding.

**R2 (R-Squared)/Portfolio Diversification** indicates the proportion of a security's total variance that is benchmark-related or is explained by variations in the benchmark.

**Sharpe Ratio** measures the efficiency, or excess return per unit of volatility, of a manager's returns. It evaluates managers' performance on a volatility-adjusted basis.

**Standard Deviation** is a statistical measure of historical variability or spread of returns around a mathematical average return that was produced by the investment manager over a given measurement period. The higher the standard deviation, the greater the variability in the investment manager's returns relative to its average return.

**Top-Down/Economic Analysis** Emphasis primarily on macroeconomic trends as opposed to bottom-up stock selection.

**Tracking Error** represents the standard deviation of the difference between the performance of the investment strategy and the benchmark. This provides a historical measure of the variability of the investment strategy's returns relative to its benchmark.

**U.S. Treasury Bonds** a marketable, fixed interest U.S. government debt security with a maturity of more than 10 years. Treasury bonds make interest payments semi-annually and the income that holders receive is only taxed at the federal level.

**Volatility** a measure of risk based on the standard deviation of the asset return. Volatility is a variable that appears in option pricing formulas, where it denotes the volatility of the underlying asset return from now to the expiration of the option. There are volatility indexes. Such as a scale of 1-9; a higher rating means higher risk.