

## WestEnd Advisors

4064 Colony Road, Suite 130  
Charlotte, North Carolina 28211

Style: Global Multi Asset  
Sub-Style: Global Tactical Asset Alloc  
Firm AUM: \$3.6 billion  
Firm Strategy AUM: \$1.3 billion

Year Founded: 2004  
GIMA Status: Approved  
Firm Ownership: Employee-Owned  
Professional-Staff: 13

## PRODUCT OVERVIEW

The cornerstone of WestEnd Advisors' investment philosophy is that the macroeconomic environment is a key driver of financial market returns. WestEnd Advisors conducts in-depth analysis of the global macroeconomic environment and allocates client portfolios to areas of the U.S. equity markets, international equity markets, and U.S. fixed income markets that we believe will benefit from economic tailwinds. Out-of-favor areas facing economic headwinds are underweighted or avoided. WestEnd invests in diversified, major-market Exchange Traded Funds (ETFs) in the Global Balanced strategy to express our outlook. We believe that these ETFs are the optimal investment vehicles to capitalize on market views because their performance is driven by broad macroeconomic trends. WestEnd's Investment Team has actively managed ETF-only portfolios since 2005. WestEnd collects and rigorously analyzes over 200 domestic and international data points using a time-tested, qualitative process. Our years of experience studying economic trends gives us the ability to determine which data is most important in the current economic environment. Performing in-depth macroeconomic research, however, is not enough. Many economists and investors analyze economic data, but what differentiates WestEnd is our ability to translate economic research into actionable investment decisions for clients. The Global Balanced strategy is invested in areas of the markets that we believe will perform well based upon our economic outlook.

## TARGET PORTFOLIO CHARACTERISTICS

Number of stock holdings:	8 to 15
Average dividend yield:	Similar to the
P/E ratio:	Similar to the
Cash level over market cycle:	2 to 5%
Risk (standard deviation):	Similar to/Below the
Average turnover rate:	6 to 60%
Number of bond holdings:	3 to 3
Average maturity:	—
Average credit quality:	—
Use ADRs:	No
Capitalization:	—
Emerging markets exposure:	—

## PORTFOLIO'S EQUITY SECTOR WEIGHTINGS \*

Sector	WestEnd	Index***	12/17
Energy	2.01	0.00	1.85
Materials	2.43	0.00	2.44
Industrials	3.81	0.00	3.83
Consumer Discretionary	17.17	0.00	17.15
Consumer Staples	13.25	0.00	9.79
Health Care	19.75	0.00	23.07
Financials	15.01	0.00	15.63
Information Technology	20.40	0.00	19.86
Telecomm Services	2.24	0.00	2.36
Utilities	0.90	0.00	0.86
Miscellaneous	0.10	0.00	0.19
Real Estate/REITs	0.93	0.00	0.97
Cash/Cash Equivalents	2.00	0.00	2.00

## PORTFOLIO STATISTICS

	-----06/18-----	12/17	
	WestEnd	Index***	WestEnd
Number of stock holdings	8	—	8
Wtd avg dividend yield	2.1%	—	2.0%
SEC Yield	—	—	—
Wtd avg P/E ratio <sup>1</sup>	18.50x	—	20.60x
Wtd avg portfolio beta	0.94	—	0.94
Mega capitalization <sup>+</sup>	0.0%	0.0%	0.0%
Large capitalization <sup>+</sup>	0.0%	0.0%	0.0%
Medium capitalization <sup>+</sup>	0.0%	0.0%	0.0%
Small capitalization <sup>+</sup>	0.0%	0.0%	0.0%
Micro capitalization <sup>+</sup>	0.0%	0.0%	0.0%
Number of bond holdings	—	—	—
Avg maturity	—	—	—
Avg credit quality	—	—	—

## PORTFOLIO'S TOP FIVE EQUITY HOLDINGS

	%
VANGUARD FTSE ALL-WORLD EX-U	14.3
HEALTH CARE SELECT SECTOR	11.2
TECHNOLOGY SELECT SECT SPDR	11.2
ISHARES FLOATING RATE BOND E	9.8
ISHARES IBOXX INVESTMENT GRA	9.8

## % PROCESS BASED ON

- 0 Asset allocation
- 0 Industry or sector weighting
- 0 Stock Selection
- 0 Duration Management
- 0 Yield Curve Management
- 0 Sector Selection
- 0 Bond Selection

## MANAGER'S INVESTMENT STRATEGY

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

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

<sup>2</sup>Total may not equal 100% due to rounding.

<sup>3</sup>\*\*Index : 65% MSCI World N/35% BC Gov/Cr

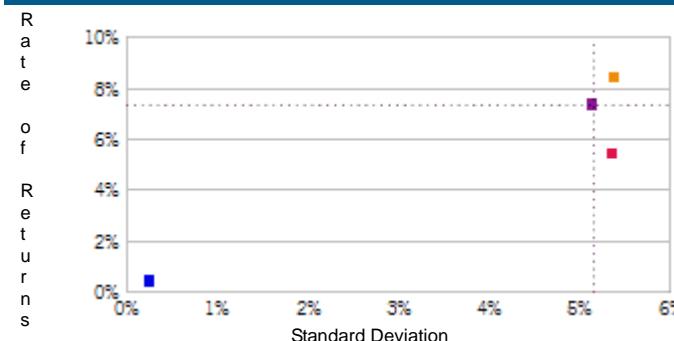
MANAGER'S INVESTMENT PROCESS		RISK CONSIDERATIONS	PORTFOLIO'S ALLOCATION HISTORY (%) *			
			06/18	03/18	12/17	09/17
• Overweights or underweights equity vs. fixed income based on the Investment Team's economic and market outlook.		Investing in securities entails risks, including: Equity portfolios are subject to the basic stock market risk that a particular security, or securities in general, may decrease in value. Fixed Income securities may be sensitive to changes in prevailing interest rates. When rates rise the value generally declines.	U.S. Stocks	45	45	45
• Overweights or underweights U.S. vs. international equity markets, as well as developed vs. emerging markets for the strategy's international equity allocation.		There is no assurance that the private guarantors or insurers will meet their obligations. International investing should be considered one component of a complete and diversified investment program. Investing in foreign markets entails greater risks than those normally associated with domestic markets such as foreign political, currency, economic and market risks.	Non-U.S. Stocks	19	19	19
• Overweights or underweights S&P 500 sectors for the large-cap U.S. portion of the equity allocation, and also overweights or underweights broad U.S. small/mid-cap exposure for the U.S. equity allocation.		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. 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.	Yankees	2	2	2
• Assesses the attractiveness of different types of fixed income based on WestEnd's interest rate outlook and an evaluation of monetary policy, demand for money and inflation trends to determine the appropriate duration and credit quality of the fixed income portion of the Global Balanced portfolio.			Short Term Investment	8	8	8
• Selects ETFs from leading U.S. providers to invest in favored segments of U.S. fixed income and global equity markets. WestEnd typically invests in eight to fifteen ETFs at any one time in the Global Balanced portfolio, including four to five sector ETFs, but may be invested in more or fewer sectors as conditions warrant. The result is a low-turnover portfolio of eight to fifteen ETFs that WestEnd believes will deliver superior returns given the firm's macroeconomic outlook			Grade Credit			
			Investment Grade	10	10	10
			Corporate Bond			
			Floating Rate Inv.	10	10	5
			Grade			
			Treasury Inflated	5	5	10
			Protected Securities	The asset allocation is		
			Cash/Cash Equivalents	2	2	2
FIXED INCOME SECTOR DISTRIBUTION (%) *						
			06/18	03/18	12/17	09/17
Investment Grade			28.01	28.01	28.01	28.01
Corporate Bond						
Treasury Inflated Protected			14.00	14.00	27.99	27.99
Sec.						
Short Term Investment			22.68	21.56	22.12	22.12
Grade						
Floating Rate Inv. Grade			27.99	27.99	14.00	14.00
Yankees			5.32	6.44	5.88	5.88
Cash/Cash Equivalents			2.00	2.00	2.00	2.00

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

<sup>2</sup>Total may not equal 100% due to rounding.

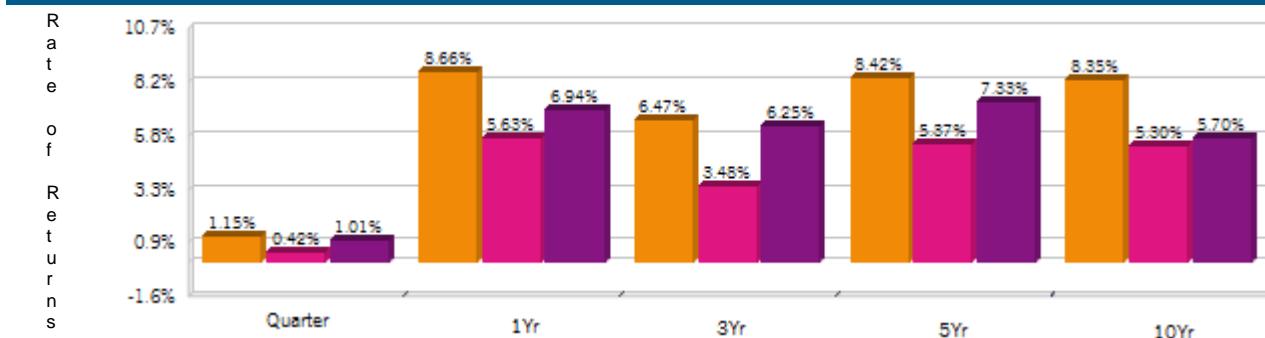
<sup>3</sup>\*\*Index : 65% MSCI World N/35% BC Gov/Cr

## RISK/RETURN ANALYSIS - 5 YEARS ENDING 06/30/18

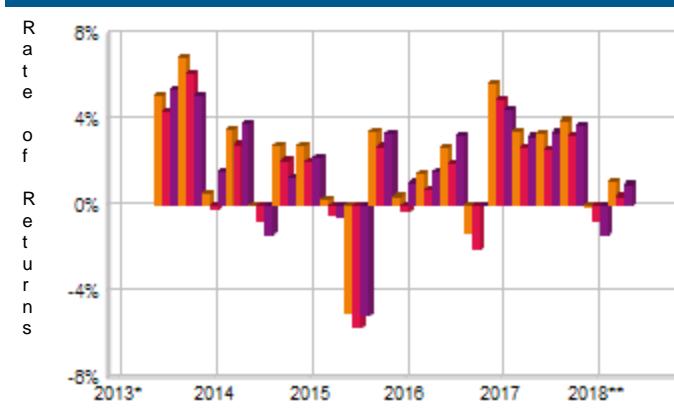


	STD	ROR
WestEnd (Gross)	5.39	8.42
WestEnd (Net)	5.37	5.37
65% MSCI World N/35% BC Gov/Cr Index	5.15	7.33
90-Day T-Bills	0.26	0.39

## AVERAGE ANNUAL TOTAL RETURN (%) - PERIODS ENDING 06/30/18



## RISK VOLATILITY (%)



\*07/01/13-12/31/13

\*\*01/01/18-06/30/18

## INVESTMENT RESULTS

	Annual Rates of Return (%)							10 Year - Ending 06/30/18				
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Annual	Std. Dev.
WestEnd (Gross)	-24.23	30.51	15.79	-0.92	15.83	19.91	7.14	1.37	3.34	17.51	8.35	12.02
WestEnd (Net)	-26.47	26.87	12.56	-3.66	12.57	16.61	4.09	-1.47	0.38	14.23	5.30	11.98
65% MSCI World N/35% BC Gov/Cr Index	-26.75	21.05	10.50	-0.39	12.11	15.79	5.38	-0.29	6.09	15.66	5.70	11.19

## PORTFOLIO'S QUARTERLY RETURNS (%)

	Quarter1		Quarter2		Quarter3		Quarter4	
	Gross	Net	Gross	Net	Gross	Net	Gross	Net
2008	-4.93	-5.64	-0.87	-1.56	-7.47	-8.14	-13.11	-13.83
2009	-4.60	-5.32	14.44	13.69	14.46	13.70	4.44	3.67
2010	4.32	3.55	-7.42	-8.08	11.43	10.68	7.59	6.84
2011	3.13	2.40	1.40	0.70	-12.00	-12.64	7.67	6.96
2012	11.60	10.84	-3.03	-3.73	6.12	5.37	0.86	0.12
2013	5.74	5.00	0.94	0.23	5.12	4.39	6.88	6.14
2014	0.59	-0.15	3.58	2.84	0.00	-0.73	2.83	2.10
2015	2.83	2.08	0.29	-0.42	-5.01	-5.68	3.48	2.77
2016	0.45	-0.29	1.49	0.76	2.70	1.98	-1.30	-2.02
2017	5.72	4.97	3.44	2.71	3.34	2.62	3.99	3.25
2018	-0.03	-0.72	1.15	0.42				

Related

Select UMA

## PORTFOLIO'S RISK STATISTICS - PERIODS ENDING 06/30/18<sup>1,2</sup>

3 Year 5 Year

Standard Deviation	5.72%	5.39%
Standard Deviation of Primary Benchmark	5.43%	5.15%
Sharpe Ratio	1.02	1.49
Sharpe Ratio of Primary Benchmark	1.03	1.35
Alpha	0.15%	1.10%
Beta	1.01	0.99
Downside Risk	0.95%	0.87%
R-Squared	0.93	0.90
Tracking Error	1.46%	1.71%
Information Ratio	0.15	0.64

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

R<sup>2</sup>  
WestEnd vs. 65% MSCI World N/35% BC Gov/Cr Index 0.95

+Statistics are calculated using gross of fee performance only.

1. Statistics are calculated using gross of fee performance only.

2. 65% MSCI World N/35% BC Gov/Cr Index 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, 2018, unless otherwise noted. All data are subject to change.*

## IMPORTANT NOTES AND DISCLOSURES

### COMPOSITE DISCLOSURES

**Past performance is no 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 work under all market conditions. Do not use 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 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.

**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) reflect the investment manager's results in managing Morgan Stanley program accounts, or the investment manager's results in managing accounts and investment products, in the same or a substantially similar investment discipline. (For periods through June 2012, the Fiduciary Services program operated through two channels - 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.) This information for the investment manager is presented solely to provide information about accounts that were managed according to investment objectives and strategies the same or substantially similar to the corresponding investment discipline in the Select UMA program. Although the Fiduciary Services and Select UMA programs are both Morgan Stanley managed account programs, the performance results and other features of similar investment disciplines in the two programs may differ due to investment and operational differences. For example, the individual investment disciplines in the Select UMA 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. Accordingly, the performance of the accounts in the Fiduciary Services program is not, and may differ significantly from, the performance of the accounts in the Select UMA program and should not be considered indicative of or a substitute for Select UMA performance. Similarly, performance results of the investment manager's composites may differ from those of Select UMA accounts managed in the same or a substantially similar investment discipline.

### Related Performance:

WestEnd Advisors' Global Balanced Composite includes all discretionary accounts invested in the Global Balanced model except for portfolios managed by WestEnd Advisors in a wrap-fee program. The Global Balanced Composite creation date is December 31, 2004, and the investment strategy for the Global Balanced Composite has been consistent since creation. WestEnd Advisors' Global Balanced Composite is invested in large-, mid-, and small-cap U.S. equities, international equities, U.S. fixed-income, and other assets, all through the use of exchange-traded funds, and/or high-grade money market instruments. Returns are achieved without the use of options, derivatives, or leverage of any kind. Results are calculated daily using the aggregate method, use trade date valuations, and include cash as well as the reinvestment of dividends, interest income and other earnings if applicable. Portfolio returns are weighted using beginning of period values plus weighted cash flows. Portfolios and composites are valued daily and are denominated in U.S. dollars only.

The performance shown is based on WestEnd Advisors' Global Balanced Composite which includes all fully discretionary accounts invested in the Global Balanced model except for Separately Managed Account (SMA) and Unified Managed Account (UMA) accounts. While the accounts in the Global Balanced Composite are invested according to the same model as SMA and UMA accounts, performance may differ between the Global Balanced Composite and SMA and UMA accounts due to a variety of factors, including but not limited to: fees assessed by SMA and UMA sponsors (e.g. wrap fees), SMA and UMA sponsor- and client-imposed investment restrictions, and WestEnd Advisors' lack of trading discretion over UMA accounts.

### Morgan Stanley Performance:

The composite consists of 145 account(s) with a market value of \$35.5 million as of 06/30/2018. In this profile, the performance from October 1, 2016, consists of 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:** WestEnd's gross results do not reflect a deduction of any investment advisory fees or program fees, charged by WestEnd or Morgan Stanley, but are net of commissions charged on securities transactions.

**Net Performance for all Periods:** Net performance results reflect a deduction of 0.7175% quarterly. This consists of three components: 0.625% maximum quarterly MS Advisory Fee and 0.0175% maximum quarterly Program Overlay Fee (which, together cover the services provided by Morgan Stanley), plus 0.075% quarterly SMA Manager Fees (being the fee currently charged by WestEnd 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 March 31, 2014.

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. CRC# Tracking# 1508045

Document Approval Date June 2016

### 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 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

### 65% MSCI World N/35% BC Gov/Cr Index

65% MSCI World(N)/35% BC Gov/Cr

### 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.

### 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 Depository 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).

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

**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' 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.