

# **NEW CONCEPTS IN INDEX CATEGORIZATION**

**WITH EXCERPTS FROM**

## **THE ETF BOOK**

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# INTRODUCTION

Index investing is booming and it is revolutionizing the way people manage their portfolios. Indexed assets already exceed 10 percent of the value of the U.S. equity market, and by the end of 2008, there will likely be over 1,500 index products available to investors in the form of open-end mutual funds and exchange-traded funds (ETFs). Unfortunately, investors have become overwhelmed with all the different funds available and cannot keep up with the new indexing strategies being introduced. This paper examines the burgeoning index fund marketplace and introduces a new classification method to help investors understand how various indexes are constructed and maintained.

Financial indexes were created in the 19th century to reflect the general price level of securities that traded on the financial markets. The first indexes were calculated using a simple method that combined the prices of a few stocks. As data gathering methods improved and technology reduced calculation time, index methods advanced to include far more securities. When the price of a stock is multiplied by the shares outstanding the value of a company is measured, and adding all companies together resulted in the value of a market. So-called capitalization weighted indexes have become the standard for index methodology in every market around the globe.

In the 21st century, the definition of an index has expanded far beyond price and market capitalization. Gone are the days when we thought of indexes as measurements of value. Today, indexes include virtually any basket of publicly traded securities that are selected and weighted based on a set of predefined rules. This new direction in indexing is much different intent than the original intent to be an indicator of financial market price and value. The new indexing rules are often designed as investment strategies that are created solely for commercial products. The firms licensing those indexes are in the business of gathering assets and charging management fees on those assets.

Traditional indexes are commonly separated by company size and style factors, i.e. large, small, value and growth. The new index strategies have become far too complex for factor classification methods. What was needed is a sensible way to classify indexes so that investors can easily differentiate one index from another based on the rules for construction. The index categorization methodology proposed in this paper is a two stage process. The first step defines the purpose of an index and the second classifies the strategy. There is a significant difference between an index that was formed primarily to be a market indicator and one that was formed primarily to be an investment product.

Index Strategy Boxes™ represent a logical way to classify index funds. Index providers must follow self-created rules for construction and maintenance. Index Strategy Boxes™ differentiates those rules. The process focuses on two primary axes that set apart most indexes; security selection and security weighting. Each axis is divided into three primary categories creating nine boxes. Every index falls into one of those boxes. The system can be applied to all asset classes including stocks, bonds, and commodities.

*The ETF Book* will cover the Index Strategy Box system in greater detail. In addition, The Index Strategy Database™ will have deeper analysis of index construction rules. The Index Strategy Database™ will be available in the third quarter 2007 at [www.ETFguide.com](http://www.ETFguide.com) as part of an existing database of exchange-traded funds (ETFs).

# THE STATE OF INDEXES

Accurate price information for goods and property goes back thousands of years. Prices of commodities have been recorded as far back as ancient times. Detailed interest rate levels have been recorded back to the Middle Ages. Reliable stock price information dates back to the world's first stock exchange created in Amsterdam in 1602.

The measurement of financial price levels has not changed much over the years. The market price of an asset is still the last price contracted between a willing seller and a willing buyer. What has changed over time is the method used to collect and package price data and how that data is presented to the marketplace. Today, modern technology and telecommunications allow an investor in one country to instantaneously know what the price is for any exchange traded security or commodity in another country. In addition, price data has is being multiplied by other financial data to create indexes stretching beyond a measurement of price levels.

By multiplying security prices by the number of certificates issued for each security the capitalization of the issue is known. The capitalization of securities can then be added together to measure the capitalization of an entire market. Indexes that use market capitalization figures have long been the global standard used by economists to compare market valuations and measure investor sentiment. They are also used by investors making asset allocation decisions and by which all active investment strategies are measured against. Over the last thirty years, the capitalization weighted indexes have become a widely used strategy by institutional investors, index funds and ETFs.

Recently, selected price data has been blended with other financial factors such as dividends, earnings, and qualitative information to create new indexes. Thus far, those new indexes have found use as investment products primarily in the mutual fund and ETF marketplace. However, the indexes are not used as market indicators or in asset allocation or benchmarking active management. The promoters of the new indexes are trying to force a debate in the investment community that would expand the use of those concepts.

## CHARACTERISTICS OF A GOOD INDEX

The CFA Institute established guidelines for the creation of benchmarks in the early 1990s. The CFA Institute is an organization of over 80,000 investment analysts that lead the investment industry globally by setting the highest standards of ethics, education, and professional excellence. The guidelines were published to ensure relevance, clarity, integrity and consistency in the creation and maintenance of indexes used as benchmarks for financial markets. According to the CFA Institute, securities indexes that are used as benchmarks should have the following characteristics:

**Simple and objective selection criteria:** There should be a clear set of rules governing the inclusion of bonds, equities, or other securities in an index, and investors should be able to forecast and agree on changes in composition of securities in an index.

**Comprehensive:** An index should include all opportunities that are realistically available to be purchased by all market participants under normal market conditions. Both new and existing securities should have frequent pricing available so the index level can be accurately measured.

**Replicable:** An index must represent a realistic baseline strategy that a passive investor could follow. The total return reported for an index should be replicable by market participants. Accordingly, information about index composition and historical returns should be readily available. It must also be fair to investment managers who are measured against it, and to sponsors who pay fees or award management assignments based on performance relative to it.

**Stability:** The index should not change composition frequently, and all changes should be easily understood and highly predictable. The index should not be subject to opinions about which bonds or equities to include on any particular day. Conversely, index composition is expected to change occasionally to ensure that it accurately reflects the structure of the market. A key virtue of an index is to provide a passive benchmark. As such, investors should not be forced to execute a significant number of transactions just to keep pace.

**Relevance:** The index should be relevant to investors. At a minimum, it should track those markets and market segments of most interest to investors.

**Barriers to entry:** The markets or market segments included in an index should not contain significant barriers to entry. This guideline is especially applicable to an international index in which an included country may discourage foreign ownership of its bonds or participation in its equity market.

**Expenses:** In the normal course of investing, expenses related to withholding tax, safekeeping, and transactions are incurred. For a market or market segment to be included, these ancillary expenses should be well understood by market participants and should not be excessive. For example, if expenses are unpredictable or inconsistently applied, an index cannot hope to fairly measure market performance.

The CFA Institute guidelines were an important step to ensure integrity of benchmarks in the investment community. Unfortunately, guidelines are not rules. That is the clear message from the many index providers who have shifted far away from the guidelines to create customized indexes to be used exclusively as commercial products.

I am not implying that any investment product that follows an index that does not follow the guidelines is a poor investment choice. Nor am I implying that investment products that only follow the guidelines are the best choice. To the contrary, there are excellent investments that follow custom indexes and there are less desirable investments that follow market indexes. Understanding is the key. Investors will make better choices if they have a handle on the index methodologies and understand the tradeoffs among index products.

The purpose for including the CFA guidelines in this paper is to illustrate that the issues facing index investing today have been considered in the past at the highest levels. However, the guidelines were arrived at during a different time and under different circumstances than we find in the industry today. The 21<sup>st</sup> century has brought new products, new issues, and new considerations. As such, an open dialog needs to take place among academics, exchanges, the SEC, index providers, and product producers to reexamine the many roles indexes play in the financial markets. In part, the industry needs to make clear to the public what is an index and what it is not.

## **A SYSTEM FOR INDEX CATEGORIZING**

By 2002, there were already several thousand indexes covering all markets around the globe. Almost all of those indexes were capitalization weighted since their primary purpose is to measure the price and value performance of a financial market or a segment of a market. Several hundred of those global market indexes also became the basis for index funds and exchange-traded funds (ETF).

The world has become more complex since 2002 with the introduction of custom indexes that use alternative methods of security selection or capitalization weighting, or both. The introduction of ETFs benchmarked to custom indexes reverberated through the investment community and has captured the interest of the public. Where there is public interest, there is product proliferation. As of June 2007, more than 200 custom indexes are used as the basis for index fund and ETFs, and at least 200 more funds are projected to be launched after review by the Securities and Exchange Commission (SEC). The recent popularity of custom index products has made index analysis more challenging.

The analysis of indexes can be an ominous task without clear methods for index categorization. At their basic level, indexes need to be divided into those with the primary role of measuring the value and returns of markets and those with the primary role of creating an investment strategy by which investment firms can create products.

The second level of analysis is index construction. All indexes should have published rules that the index provider follows. Those rules can be categorized into two types; security selection and security weighting. The different methodologies used to select securities and weight those securities in an index can have a profound impact on the risk and return characteristics of a mutual fund or ETF that follows that index.

Index Strategy Boxes™ represent a simplistic way to categorize the security selection and weighting strategies used in the management of those indexes. Index Strategy Boxes can be applied to all asset classes including stocks, bonds, and commodities.

Index Strategy Boxes are a major step forward in index product analysis. Knowing how a target index is constructed and managed goes a long way toward understanding why a mutual fund or ETF is expected to exhibit certain risk and return characteristics. Incorporating Index Strategy Box analysis will greatly reduce the time needed to analyze indexes and enhance the search for the right investment vehicles.

# MARKET AND CUSTOM INDEXES

There are two types of indexes; market indexes and custom indexes. A market index is primarily a measurement tool. The intent is to measure the general price level and value of a financial market or a segment of a market. A custom index is primarily an investment strategy. The purpose is to create and maintain lists of securities that can be used as the basis for index funds and ETFs.

Custom indexes have a different primary purpose than market indexes. They are product blueprints rather than market valuation yardsticks. It is an important difference that must be clear in the minds of investors.

Nonetheless, there are claims made by a few custom index providers and the companies that license those indexes that the products are 'better' or 'more modern' than market index methodology. Advertisements by those firms often infer that investors will achieve higher returns by using custom index products. Astute observers will look past the marketing claims and realize that, after adjusting for fees one type of indexing strategy is not better than the other. They all have strengths and weaknesses.

## Market Indexes

U.S. market measurement began in the summer of 1884. That was when Charles Dow published the first general indicator of 11 stock prices. Dow simply added the prices of eleven New York Stock Exchange stocks and that was the published market indicator. The Dow Jones Averages are still calculated using the same basic method today after adjusting for stock splits, divided payments and other corporate actions.

Alfred Cowles introduced a more advanced capitalization weighted technique for measuring the U.S. financial markets in the middle of the 20th century. The methodology used in the Cowles Index measured market value rather than stock prices. The capitalization weighted process is now the standard around the world, underscoring the important role of the Cowles Index as the forerunner of the S&P 500 Index.

Market indexes tend to be passive in nature, meaning that security selection and security weighting is based on a natural state of a market. The market capitalization of a company is based on the last price of each company's stock multiplied by the number of outstanding shares for that company. Adding the market capitalization of all companies together provides the total market value of an index. Size matters in a capitalization weighted index. Large companies have a greater bearing on the index level than smaller companies. The index process is an accurate measure of market value because the price information comes from public auctions that are conducted on free and fair exchanges.

Market indexes are important financial indicators. They are the standard applied throughout the world as valuation yardsticks. They are the benchmarks used at the highest levels of economic analysis including the U.S. Federal Reserve. Market index methodology is the preferred methodology used in research by all top academic institutions. Virtually all asset allocation decisions are made with market index data, whether those decisions are being made by individual investors who use simple asset allocation models or by large institutional investors who use sophisticated modeling.

In addition to financial indicators, market indexes are the standard to which all active management strategies are measured. The general disappointing results of active management has led to the large and growing business of index investing. The methodology dominates the industry by the number of portfolios and the dollar amount invested. Capitalization weighted indexes are still the basis for the majority of the index products designed for individual investors including index funds and ETFs.

Typically, all securities that trade on a market are not used in market indexes. Rather, index providers take an unbiased 'sampling' of the liquid securities that regularly trade in a market. The goal of sampling is to track the market as closely as possible without having to include securities that may have biases in prices due to infrequent trading or other factors. Sampled securities are weighted in the index based on the capitalization of each security relative to all other securities in the index.

## **Custom Indexes**

Custom indexes are investment strategies not market valuation benchmarks. They are generally created and managed to whatever specific purpose the index provider or index licensee has in mind. Custom indexes are typically engineered using a highly controlled security selection method or a modified security weighting method, or both.

Custom index providers have the primary intent to create and maintain investment strategies that can be turned into financial products. The index provider receives licensing fees from non-affiliated investment firms that uses the custom indexes as a basis for a managed portfolio. The investment firms earn management fees from investors who place money in their mutual funds, ETFs and private accounts.

Custom indexes are not to be confused with market indexes. Market indexes are the preferred yardstick for measuring the value and return of markets and their components. They are also the basis for economic analysis, asset allocation decisions, and a yardstick to compare active strategies against. Custom indexes are not intended to measure the value or performance of financial markets, sectors, or styles, nor are they used in economic study, asset allocation decisions, or active management comparison. They are simply investment strategies that are designed for commercial purposes.

Custom indexes have captured the attention of the public and mass media due to the large marketing efforts by providers and fund companies. The marketing momentum has led to a growing number of new investment products that track a wide range of custom indexes.

The custom index business has become very competitive. The providers range from large research firms that also provide thousands of markets indexes to small research companies that only provide a few custom indexes. One of the largest providers of custom indexes is Standard and Poor's (S&P), which ironically is the provider of the bellwether S&P 500 index. Company analysts work with product providers to create custom indexes that emulate a variety of investment strategies. S&P earns fees for developing and maintaining those indexes.

# INDEX RULES

An index can be any basket of securities that is selected and weighted based on a set of predefined rules. Rules for index construction can be simple and elegant or complex and cumbersome. Adherence to the rules by index providers is what makes an index and a provider credible. If an index provider does not follow their own rules, or if they change those rules frequently due to poor performance or operational issues, then the index provider risks losing credibility in the marketplace.

The rules for index construction and maintenance should be published by the index provider and a licensee that uses in index as the basis for an investment product. Those rules should be presented in such a way so that; 1) they are easy to find, 2) written in an unsophisticated way so investors can gain a working knowledge of how each index works, 3) cover security selection methods, security weighting methods, and reconstitution periods. At a minimum, the rules should be thoroughly explained on the websites of fund companies that have products based on an index. In addition, the rules should be published on index providers' websites and in public filings with the SEC.

Unfortunately, what should happen and what does happen in the indexing industry can be quite different. It would seem as though the index providers and companies that create index portfolios would be eager to explain how their products work. However, many explanations of index methodology are difficult to find and even more difficult to comprehend. Some providers are very forthcoming while others are woefully inadequate. In some cases, investors must dig deeply to get basic information on how an index is maintained and how an index fund or ETF is managed to track an index.

During my research, I uncovered several instances in which certain companies were providing only vague information on how securities are selected or weighted in the index products they promote. These companies routinely state that the custom index methodology their product follows is 'proprietary' and cannot be disclosed. Yet in their marketing material, the same companies will proudly display hypothetical performance charts that infer outstanding results from the indexing method. Those firms show you what they want you to see, not what informed investors should know.

Index funds and ETFs are a fabulous innovation. The evolution of these products has lowered investment costs, added trading flexibility, and created tax-efficiency. It is unfortunate that the disclosure practices and marketing tactics at a few fund companies have not evolved along with their products.

## INDEX STRATEGY BOXES™

Index rules tend to be similar enough across index providers so that a broad based classification system of those rules can be created. The rules for index construction generally fall under two categories; security selection and security weighting. How securities are selected for an index is the first step in index construction, and how the selected securities are weighted in the index is the second step. The two categories of

security selection and security weighting are the two dimensions in Index Strategy Boxes™.

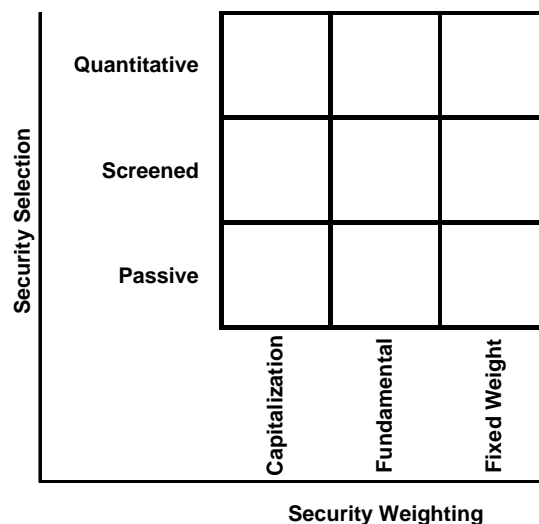
Index Strategy Boxes™ make index security selection and security weighting methodologies easily identifiable. Knowing how securities are chosen and allocated within an index can explain a large amount about how a fund that tracks that index will move in relation to general market trends. The information provided by the Index Strategy Box™ along with the Index Strategy Database™ will greatly reduce the time it takes to analyze and select investments for a portfolio.

In the 1990s, Morningstar Incorporated popularized their Morningstar Style Boxes™ to help investors identify the style of a mutual fund. Style boxes categorize equity and fixed income funds into nine tic-tac-toe boxes. The two axes of an equity style box divide mutual funds into three size and three style categories. Fixed income style boxes categorize funds into the nine tic-tac-toe boxes using the average maturity of a bond fund on one axis and the average credit quality of a bond fund on the other.

Index Strategy Boxes™ use a similar tic-tac-toe illustration, although the purpose of the classification methodology is quite different than Morningstar Style Boxes. There are nine boxes representing different index strategies. Each index fits into one of the nine boxes based on how securities for that index are selected and weighted. The methodology is used for both market indexes and custom indexes.

On the vertical axis of an Index Strategy Box are three broad security selection methods; passive, screened, and quantitative. The horizontal axis categorizes indexes based on three broad security weighting methods; capitalization, fundamental, and fixed-weight. Figure 1 illustrates the tic-tac-toe design.

**Figure 1 - Index Strategy Boxes™**



An appealing aspect of Index Strategy™ is that they can be used in any asset class. The methodology can be used for equity, fixed income and commodity indexes.

Almost every sector of a broad market index fits cleanly into one of the nine boxes. For example, the Russell 3000 is a market index that passively selects securities and weights those stocks by capitalization. Thus, it fits in the lower left-hand passive selection/capitalization weighted strategy box. The Research Affiliates Index 1000 (RAFI 1000) is a passively selected and fundamentally weighted index. Accordingly, the RAFI goes into the passive selection and fundamental weighted strategy box. While there are always exceptions to the methodology, the process is relatively straightforward once you understand the basics.

Index Strategy™ assist in understanding of how an index is constructed and managed based on its published rules. In which box an index sits provides clues as to how an index fund or ETF that follows the index is expected to perform over various phases of a market cycle.

When using Index Strategy™, it is assumed that an investor has already decided on a particular style of investing (fixed income, equity value, equity growth, etc.). The next step is evaluation how indexes are constructed across that style. The third step is analyzing selecting index funds and ETFs based on the index methodology.

For example, assume an investor has decided to buy a large-cap U.S. value ETF. The next step is to visit [www.ETFguide.com](http://www.ETFguide.com) to analyze the various large-cap U.S. value indexes available using the Index Strategy Database. Screening the database by index strategy allows an investor to see low-cost market index ETFs and higher cost custom index ETFs. Screens for various custom index types refine the search. The screening tool will allow the investor to hone their search for a large-cap U.S. value ETF based on indexing strategy and select the appropriate fund for their needs.

## The Security Selection Axis

On the vertical axis of Index Strategy™ is Security Selection. Each row represents a primary strategy used to select securities from the financial markets. The three selection categories are passive, screened, and quantitative. Indexes that fall into each category typically have one of the security selection methods found in Table 1. The table is a partial list of selection methods. An expanded list of methodologies can be viewed at the end of this paper.

**Table 1 – Security Selection Categories and Methods**

<b>Passive ( P )</b>	<b>Screened ( S )</b>	<b>Quantitative ( Q )</b>
- Full Replication	- Fundamentals	- Economic Cycles
- Sampling Strategies	- Exchange Listing	- Fundamentals
- Buy & Hold	- Thematic	- Momentum /Technical
- Single Securities	- Social Responsible	- Multi-factor

Source: Portfolio Solutions, LLC

## Passive Security Selection

The first category is Passive security selection. Passive selection replicates a broad market or a segment of a market. Most passive indexes sample the securities that trade on a market, although it is the intent of the index provider to represent the broad market. Passive indexes typically hold enough securities so the basket has similar risk and return characteristics to the market as a whole. Figure 2 illustrates the three boxes covered under passive security selection.

**Figure 2 - Passive Security Selection**

Quantitative			
Screened			
Passive			
	C	F	X

There are typically few requirements for a security to be a potential member of a passive index. Those requirements include a minimum number of shares outstanding, a certain minimum daily trading volume, and minimum market capitalization. The constraints placed on some passively selected indexes will not materially impact the performance of the index relative to a complete broad market index.

There are different types of passive selection used by index providers and fund managers. They include completion methods, sampling and optimization methods, buy & hold strategies, and the use of derivatives such as options, futures, and swaps. A single constituent such as the price of gold or a currency also falls under passive selection. The premise behind all passive security selection is that the composite portfolio closely tracks the price movement of the securities in a market or segment of a market they represent regardless of the mechanics behind the process.

Passive selection is the most widely used method of security selection in the global marketplace today. It has been applied to all financial markets including stocks, bonds, commodities, currencies, and real estate. There is no bias in a passive selection process that might materially affect its mission of representing the securities or market being tracked, and there is no forecasting of prices in an attempt to outperform.

The Standard and Poor's 500 Index (S&P 500) and the Dow Jones Industrial Average (DJIA) are considered passively selected benchmarks even though the index providers can impart subjectively into the security selection process. However, it is the intent of the providers to select securities that provide broad market representation. When analyzing an index to determine selection classification, the number of securities in an index and exact process of selection are secondary to the intent of the provider. *The ETF Book* covers selection methodologies in much greater detail.

## Screened Security Selection

The second category is Screened security selection. Filtering lists of securities using computer screens weeds out the unwanted issues. Screening starts with a broad market universe of securities and then eliminates those that do not meet certain criteria. Screens may include fundamental factors, social issues, environmental issues, exchange preferences, and a variety of other factors. The idea of screening is to structure a list of securities that contains only those that have certain desirable characteristics. Figure 2 illustrates the three boxes covered under screened security selection.

**Figure 3 - Screened Security Selection**

Quantitative			
Screened			
Passive			
	C	F	X

Index providers can create many screens to eliminate securities that possess undesirable qualities or lack desirable ones. One of the most popular screens is for fundamental data. For example, index providers looking for fundamentally strong companies may eliminate those that have high debt or those with no earnings.

Dividend screens are a popular fundamental filter. Typically, companies that do not pay a regular quarterly dividend are filtered out of dividend indexes. The remaining securities form a high dividend paying index with a value stock style bias. A second filter could be added to ensure a company has paid dividends for a certain amount of time, and a third filter could be put in place that ensures a company has not reduced or cut their dividend in recent years. The remaining securities represent a basket of stocks that meet the provider's intent, and those stocks become the basis for the dividend index.

Socially responsible stock indexes screen for companies that are believed to be in a socially harmful business or follow socially unacceptable business practices. Typically undesirable companies that are screened out include tobacco, alcohol, and gaming business. After screening for social issues, the remaining companies are responsible companies according to the index provider's criterion.

One characteristic of screened indexes is that the companies that are filtered out are not used placed in an alternative index. For example, dividend index providers do not create alternative indexes consisting of companies that do not meet dividend screens. Companies that are eliminated from socially responsible indexes do not go into socially *irresponsible* indexes. All screened indexes are reconstructed periodically to add new securities and eliminate those that no longer qualify.

## Quantitative Security Selection

The third category is Quantitative security selection. Securities in a quantitative index are selected using advanced computer modeling that employs complex equations. The intent of quantitative selection is to identify securities that are believed to have superior return prospects over the universe of securities they are selected from.

**Figure 4 – Quantitative Security Selection**

Quantitative			
Screened			
Passive			
	C	F	X

Quantitative index providers program their software to isolate what they believe is predictive information in securities data and prices. The intent is to identify potentially market beating securities among all securities based on a proprietary scoring system. Securities are compared to each other through rankings in quantitative scores. The top quintile securities are ‘optimized’ with each using other mathematical methods in an attempt to find an ideal mix of securities to put into a potentially market beating index.

In 2002, PowerShares was founded by former Nuveen Investments sales and marketing executive H. Bruce Bond. The company launched the first quantitatively managed ETFs. The engine used to select securities in several PowerShares funds is called Intellidex. The Intellidex indexes are maintained by the American Stock Exchange. Detailed methods used in Intellidex indexes are not available. What has been disclosed is that the system uses 25 selection criteria broken into four main groups: risk factors, momentum, fundamental growth, and stock valuations. Indexes are formed using a combination of those 25 factors in a proprietary model.

Since PowerShares debut, a number of quantitatively driven indexes and products have become available primarily in the ETF marketplace. Many of the indexes use proprietary programming methods often referred to as “black boxes.” The details of black box programs are held tight by the index providers for fear that outsiders will exploit the methodology, thus rendering the system useless. Skeptics claim that disclosure of the index selection methods would have no effect on performance, and that vague disclosure goes against the spirit, intent, and guidelines of index investing.

It is too early to judge if the forward looking quantitative security selection methods will achieve their stated goal of outperforming market indexes. However, one fact is clear today; the fees charged for products that use quantitative selection methods are significantly higher than those that follow market index strategies.

# The Security Weighting Axis

The first part of index construction is security selection and the second part is security weighting. Once securities are selected for an index, they need to be given a weight in the index. Understanding security weighting is important because different methods it can radically change the fundamentals of an index.

The horizontal axis of Index Strategy™ classifies weighting methodology into three categories; capitalization weight, fundamental weight, and fixed weight. When the same basket of securities is weighted using different methods, its fundamental makeup changes as does the basket's risk and return expectations. Examples of weighting categories and methodologies are also shown in Table 2.

**Table 2 – Security Weighting Categories and Methods**

<b>Capitalization ( C )</b>	<b>Fundamental ( F )</b>	<b>Fixed Weight ( X )</b>
- Full Cap	- Dividends	- Equal Weight
- Free Float	- Financial	- Modified Equal
- Constrained	- Security Prices	- Leveraged
- Liquidity	- Momentum	- Short (inverse)
- Production	- Qualitative Factors	- Long/Short

Source: Portfolio Solutions, LLC

Index providers allocate securities in an index using one of the three basic methods. A capitalization weighted index bases the allocation on the relative market value of each security in that index. Fundamentally weighted indexes use financial ratios or qualitative factors to allocate among index constituencies. Fixed weighting assigns a set weight to each security in an index. Leverage, short, and long-short funds are also considered fixed weighted indexes because the weighting of the entire index is changed by a fixed amount.

Security weighting methods can have a profound impact on equity index size and style characteristics. For example, some fundamental weighting techniques result in an equity portfolio that has strong value characteristics. Those characteristics include lower price-to-earnings (P/E) and price-to-book (P/B) ratios and higher dividend yield than the weighting of the same basket of stocks using marketing capitalization methods.

The performance of a fixed weight index may take on a size bias as the percent allocated to each security is spread more equally across all securities. Applying equal weighting to a broad basket of passively selected stocks creates a portfolio with emphases on smaller stocks compared to a large stock bias capitalization index. For example, the company size characteristic of the S&P 500 is cut by about two-thirds. What is primarily a large cap index under capitalization weighting becomes a mid cap oriented index under equal weighting.

There are a few indexes that could fit into two security weighing categories depending on how a person interprets the process. In those cases, the weighting category should favor the index providers' intent. For example, leveraged indexes are fixed weight because it is the provider's intent to achieve 2 times the return of an index daily.

## Capitalization Weighting

Capitalization weighting is the traditional methodology for constructing most market indexes. Securities in a capitalization weighted index are allocated based on the market value of each security relative to all other securities in the index. In the U.S. alone, there are hundreds of capitalization weighted stock indexes covering all corners of the market.

The largest market in the world is the fixed income market. Most bond index providers use capitalization weighting as well, although a more appropriate description would be value weighted. The driving factor for weighting bonds in an index is the market value of the bonds rather than the market value of the entity that issued them.

**Figure-5 - Capitalization Weighted Index**

Q			
S			
P			
	Capitalization	Fundamental	Fixed Weight

There are four basic methods of capitalization weighting used by index providers. They are full cap, free-float, constrained (or capped), and liquidity. The difference between full cap and free float is that the former includes the entire value of securities in the index while the later only includes the value of shares that are available in the public markets.

A security may trade a large number of shares regularly, but if the value of shares traded is minimal, it is difficult to manage that security in an index fund. Liquidity weighting eliminates that problem because it eliminates the security from the index. Liquidity weighting is based on the value of securities that trade on a market rather than the number of shares. The method is a particularly useful in hard to trade foreign markets.

Some index funds and ETFs follow indexes that have concentrated positions in one or more securities. The funds are restrained from investing in a full index weight in particular securities. Constrained (or capped) indexes are designed to keep a fund within strict SEC requirements for diversification according to the Investment Company Act of 1940. A constrained index adjusts a market capitalization index to ensure the concentrated securities never go above a certain percentage in the index. For example, an index provider may have as a rule that no security can become more than 5 percent in an index and no industry can become more than 15 percent in an index.

Products that follow capitalization indexes have the advantage of low transaction costs. The indexes flow with the markets and thus few trades are needed to stay in line. An exception would be a constrained index when a large position is over the limit.

## Fundamental Weighting

The second category is Fundamental weighting. A fundamental weighted index relies on a factor or set of factors other than market capitalization to weight stocks in an index. Information that may be used includes financial factors such as dividend yield or earnings yield, earnings predictions; or other factors such as security price, price momentum, and qualitative rankings.

**Figure-6 - Fundamental Weighted Index**

Q			
S			
P			
	Capitalization	Fundamental	Fixed Weight

Many fundamental weighted indexes derive factors from corporate financial statements. A weighting factor can be a single variable such as dividend yield, or it can be a complex multi-factor model that brings several pieces of data into the equation. An example of a weighting factor is stock dividend yield. The greater the dividend yield of a company, the greater that company's weighting in the index. Multi-factor weighting formulas use a combination of many fundamental variables to allocate securities in an index.

Fundamental factors can also be qualitative such as environmental stewardship, rating of workplace practices and level of community involvement. An index that tracks environmental issues may assign higher weightings to those companies that are exploring more responsible 'clean' policies or have historically been environmentally conscious.

Most fundamentally weighted indexes need to be reconstructed periodically to realign the index with changing fundamental conditions. A large number of small trades can take place during those reconstruction periods. Theoretically, the more trading that takes place in a portfolio the higher the trading cost and lower tax efficiency. ETF managers have methods to offset taxable events that can occur during reconstitution.

Ironically, the first U.S. market indicators to use a fundamental weighting are also the oldest market indicators known to U.S. investors. The Dow Jones Industrial Average (DJIA) is a price weighted index. The amount of weighting that each company in the DJIA receives is dependent solely on the dollar price of each stock. The DJIA measures price changes, not market values. That makes it a price indicator rather than a market index. The DJIA is properly labeled as an 'indicator' by the Dow Jones & Company.

## Fixed Weighting

Fixed weighting is the third security weighting category. Fixed weighted indexes assign fixed allocations to the components in an index or baskets of securities in an index. The index providers need to rebalanced securities back to their fixed targets periodically because the components of any fixed weight methodology with market movement will quickly shift from the fixed weight. There are five basic types of fixed weighting methods; equal, modified equal, leveraged, inverse, and long-short strategies.

**Figure–7 - Fixed Weighted Index**

Q			
S			
P			
	Capitalization	Fundamental	Fixed Weight

An equal weight allocation assigns the same percentage to every security. For example, in a 100 bond index, each bond is weighted to 1 percent of the index. Modified equal weights are used to allocate securities among two or more fixed percentages based on some manner of priority. Larger stocks might be weighted 2 percent whereas small stocks might only get 1 percent. Securities can also receive a fixed weight based on a ranking system using quantitative methods. For example, securities in the top quintile group might be allocated 2 percent each and securities in the second quintile group might be 1 percent. The weightings in fixed weight indexes are realigned regularly.

The remaining fixed weight methods are leveraged, short, and long-short, and market neutral. Leverage indexes double the daily magnitude of market movements while inverse (or short) indexes go in the opposite direction. A long-short weighting methodology overweighs securities that are believed to provide market beating returns and shorts securities thought to be underperformers. Market-neutral strategies are long and short securities by the same dollar amount, thus capturing the difference in performance between the long and short positions.

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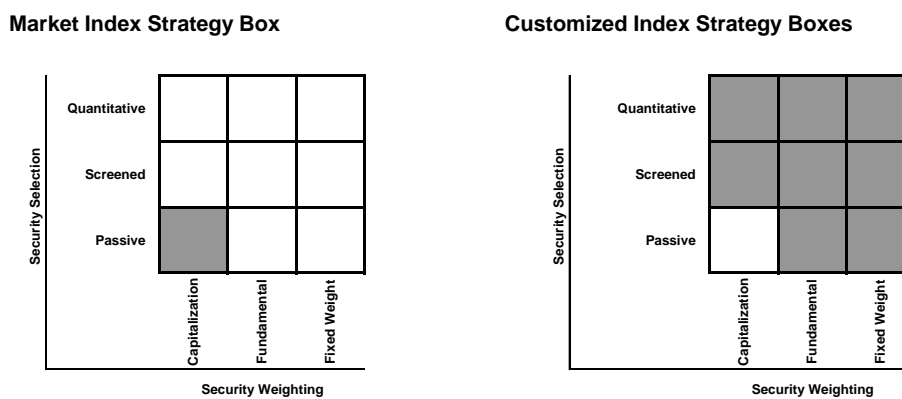
## Summary

Index categorization is a step forward in analyzing index based products for investment. The separation of Market Indexes and Custom Indexes define the primary role of each index type. The main purpose of a Market Index is to reflect the value and general price movements in a financial market. They are used in virtually all financial

research and as a benchmark for comparing active strategies. Market Indexes also are heavily used in the formation of investment products. The main purpose of a Custom Index is to create and maintain a list of securities that is used in the formation and management of investment products. Custom Indexes are not designed as measures of market value or as a benchmark for comparing active strategies.

Customized indexes are set apart from market indexes by their security selection and security weighting methods. They include screens to filter out undesirable securities, or through complex quantitative methods thought to separate superior securities from inferior ones. Customized security weighting can be in the form of fundamental weighting and various fixed weight methods as illustrated in Figure 8 below.

**Figure 8: Index Strategy Box Breakdown**



Index Strategy™ are summarized in Table 3. Each box represents a different investment strategy used by index providers to create and maintain their indexes. Those boxes will not change since all indexes are required to follow a predefined set of rules. Detailed information on each index will be available in the Index Strategy Database™ at [www.ETFGuide.com](http://www.ETFGuide.com) and a link to that database can be found at [www.theETFbook.com](http://www.theETFbook.com).

**Table 3: Summary of Index Types and Index Strategy™**

STRATEGY BOX	INDEX TYPE	SECURITY SELECTION	SECURITY WEIGHTING
	Market	Passive	Capitalization
	Custom	Passive	Fundamental
	Custom	Passive	Fixed Weight
	Custom	Screened	Capitalization
	Custom	Screened	Fundamental
	Custom	Screened	Fixed Weight
	Custom	Quantitative	Capitalization
	Custom	Quantitative	Fundamental
	Custom	Quantitative	Fixed Weight

Source: Portfolio Solutions, LLC

Index categorization is a much needed step toward understanding and selecting index based products. The methodology will improve investor comprehension and reduce research time. Comments from the public on improving the methodology are encouraged.

# INDEX STRATEGY BOX™ GUIDE

Index Strategy™ have three categories for security selection and three for security weighting. There are many security selection and weighting methodologies that fall under the three categories, and many methods yet to be used. The left column lists security selection categories and several weighting methodologies. The right column lists security weighting categories and the several weighting methodologies. See the Glossary of Terms for definitions the methodologies provided.

## Security Selection

### PASSIVE SELECTION

- All Securities
- Sampling
- Buy & Hold (HOLDRs)
- Single Issue (commodity, currency)

### SECURITY SCREENING

- Fundamentals (dividends, earnings...)
- Exchange List (NASDAQ, NYSE)
- Momentum or Technical Factors
- Analysts Ratings (ValueLine, BIR...)
- Themes (social, environmental, corporate)
- Multi-factor Models

### QUANTITATIVE

- Economic Cycles
- Earnings Forecasts
- Change in Earnings Momentum
- Multi-factor (fundamental & momentum)
- Proprietary Methods\*

\* Only vague information disclosed by provider.

## Security Weighting

### CAPITALIZATION WEIGHT

- Full Capitalization
- Free Float
- Constrained (capped)
- Liquidity
- Production (commodity indexes)

### FUNDAMENTAL WEIGHT

- Single Factor (dividend yield, stock price)
- Multi-Factor Financial Models
- Price Momentum Rankings
- Qualitative (non-financial rankings)

### FIXED WEIGHT

- Equal (rebalanced regularly)
- Modified Equal (two or more fixed tiers)
- Equal Once (then securities float)
- Leveraged Indexes
- Inverse (short) and Leverage Inverse
- Long/Short and Market Neutral

# GLOSSARY OF TERMS

**active management** An investment strategy that seeks to outperform the average returns of the financial markets. Active managers rely on research, market forecasts, and their own judgment and experience in selecting securities to buy and sell.

**annual turnover** Percentage of value of stocks in a portfolio that are sold and replaced with new stocks each year.

**AP** See “authorized participant.”

**ask price** The price at which a security is offered for sale. For a no-load mutual fund, the asked price is the same as the fund’s net asset value per share. Also called offering price.

**authorized participant (AP)** An institutional investor that is authorized to buy and sell ETF creation units directly with a fund company.

**benchmark index** An appropriate market index used as the basis for an index fund and to measure a fund manager’s performance.

**bid-ask spread** The difference between what a buyer is willing to bid (pay) for a security and the seller’s ask (offer) price.

**book value** A company’s assets minus any liabilities and intangible assets.

**broad market index** A basket of securities that covers all securities on an entire market, or samples the spectrum of securities to achieve a return close to the market. Examples would be the Russell 3000 Index and the Lehman Brothers Aggregate Bond Index.

**buy & hold** An investment strategy of investing in securities and holding them for the long-term. Also describes HOLDRs, and ETF structure that buys securities one time in a portfolio and does not replace or rebalance those securities.

**capped index** see *constrained index*

**commodities** Unprocessed goods such as grains, metals, and minerals traded in large amounts on a commodities exchange.

**commodity futures** See futures.

**constrained index** Portfolios that are constrained or capped restrict the amount any security can be represented in an index or and ETF.

**corporate actions** Financial decisions made by a corporate board of directors that directly affect the shareholders of a corporation or fund.

**creation unit** A basket of shares or securities equaling a certain number that makes up one unit of the fund held by the trust that underlies an exchange-traded fund (ETF). One creation unit is the denomination of underlying assets that can be redeemed for a certain number of ETF shares.

**currency risk** The fluctuation of value between one currency and another. The risk is possibility that returns could be lower by investing in foreign securities because of a rise in the value of the U.S. dollar against foreign currencies. Also called exchange-rate risk.

**derivative** A financial contract whose value is based on, or “derived” from, a traditional security (e.g., a stock or bond), an asset (e.g., a commodity), or a market index (e.g., the S&P 500 Index).

**earnings per share** A company’s earnings divided by the number of common shares outstanding.

**economic cycle** refers to the fluctuations of economic activity about its long term growth trend. The cycle involves shifts over time between recovery and prosperity and contraction or recession. The fluctuations are often measured using the real gross domestic product (GDP).

**equal weighted** A portfolio weighting methodology whereby each security in a basket has the same percentage allocation. Also see *modified equal weighted*.

**equal once then securities float** A portfolio weighting methodology whereby each security in a basket is initially weight the same percentage and then the securities are left to float with market capitalization changes to those securities. Used in HOLDRs.

**exchange** The physical location or a computer based system used to trade public securities between buyers and sellers.

**exchange-traded fund (ETF)** An exchange-traded fund is an index fund that trades on the stock market. A common ETF is Standard & Poor’s Depository Receipts (SPY), which tracks the S & P 500.

**expense ratio** The percentage of a portfolio’s average assets used to pay its annual expenses. The expense ratio, which includes management

fees, administrative fees, and any 12b-1 fees, directly reduces returns to investors.

**factor** A broad term that describes any fundamental, qualitative, or quantitative measure of a security, i.e. financial ratios are common factors.

**Federal Reserve** The central bank that regulates the supply of money and credit throughout the United States. The Federal Reserve's board of governors, appointed by the president, has significant influence on U.S. monetary and economic policy.

**free float** Shares of a public company that are freely available to the investing public. A free float index does not include the value of shares held by large owners or stock with sales restrictions (restricted stock that cannot be sold until they become unrestricted stock).

**full capitalization (or full cap)** A market capitalization weighting methodology that uses all stock outstanding regardless of who holds that stock.

**full replication** An ETF strategy that mirrors the securities and weighting of an underlying index. Typical of unit investment trusts (UITs).

**fundamentals** Financial information about a company derived from its balance sheet, income statement, statement of cash flow and other publicly released information.

**fundamental analysis** A process of examining a company's financial statements and operations as a means of forecasting stock price movements.

**futures** A contract to buy or sell specific amounts of a specific commodity (e.g., grain or foreign currency) for an agreed upon price at a certain time in the future.

**global fund** A mutual fund that invests in stocks of companies in the United States and foreign countries.

**hedge** A strategy in which one investment is used to offset the risk of another security.

**HOLDRs** HOLding Company Depositary Receipts are securities that represent an investor's ownership in the common stock or American Depositary Receipts of specified companies in a particular industry, sector, or group.

**indexing** An investment strategy to match the average performance of a market or group of stocks. Usually this is accomplished by buying a small amount of each stock in a market.

**index providers** Companies that construct and maintain stock and bond indexes. The main providers

are S&P, Dow Jones, Lehman Brothers, MSCI, Russell, and Wilshire.

**indicative optimized portfolio value** See *intraday value*.

**international fund** A mutual fund that invests in securities traded in markets outside of the United States. Foreign markets present additional risks, including currency fluctuation and political instability. In the past these risks have made prices of foreign stocks more volatile than those of U.S. stocks.

**intraday value** An ongoing estimate of a underlying value of securities and cash that make up ETF shares that is quoted every 15 seconds by the exchange listing the ETF. In various places also listed the Intraday Indicative Value, Underlying Trading Value, Indicative Optimized Portfolio Value.

**inverse fund** An fund designed to go in the opposite direction of an index. Also referred to as a short fund.

**investment adviser** A person or organization that makes the day-to-day investment decisions regarding the management of a portfolio.

**leveraged fund** An fund that is designed to move more than an index, but in proportion to the index. A leveraged S&P 500 fund that has a 2-to-1 ratio will go up or down twice as much as the S&P 500 index.

**liquidity** How easily a security can be purchased at a fair price and how quickly it can be sold at a fair price and converted to cash.

**management fee** Also called an advisory fee, the amount a mutual fund pays to its investment adviser for the work of overseeing the fund's holdings.

**market capitalization** or market cap. A measurement of corporate or economic size equal to the stock price times the number of shares outstanding of a public company. Determination by multiplying the total number of company stock shares outstanding by the price per share.

**market neutral** An investment strategy that buys equity investments believed to achieve superior returns and shorts an equal amount of a broad market index fund, negating the impact of market returns on the portfolio.

**modified equal weighted** A portfolio weighting methodology whereby securities in a portfolio

are assigned fixed percentages based on a securities size or their ranking in a quantitative model.

**momentum** Refers to the statistical strength of price and earnings trends. It can also be applied to the direction and strength of analyst earnings estimates and revision to those estimates.

**Morningstar Style Box™** Morningstar, Inc. has broken down the world of domestic mutual funds into small, medium, and large-cap funds and into objective growth, value, or blend. A funds style is illustrated using a tic-tac-toe categorization figure.

**net asset value (NAV)** The market value of a mutual fund's total assets, minus liabilities, divided by the number of shares outstanding. The value of a single share is called its share value or share price.

**open-end fund** An investment entity that has the ability to issue or redeem the number of shares outstanding on a daily basis. Prices are quoted once per day, at the end of the day, at the net asset value (NAV) of the fund.

**operating expenses** The amount paid for fund asset management and administration. Operating expenses are subtracted directly from a fund.

**optimization** A mathematical process of selecting and weighting a portfolio of securities in an attempted to achieve the highest probability of achieving a certain desired risk and return outcome.

**option** A contract in which a seller gives a buyer the right, but not the obligation, to buy or sell securities at a specified price on or before a given date.

**portfolio composition file** A daily lists the exact names and quantity of the underlying securities and cash that need to be turned on by an AP to receive one Creation Unit.

**portfolio transaction costs** The expenses associated with buying and selling securities, including commissions, purchase and redemption fees, exchange fees, and other miscellaneous costs. In a mutual fund prospectus, these expenses would be listed separately from the fund's expense ratio. Does not include the bid/ask spread.

**premium** An amount that exceeds the face value or redemption value of a security or of a comparable security or group of investments. It may indicate that a security is favored highly by investors. Also refers to a fee for obtaining insurance coverage.

**price-to-book ratio (P/B)** The price per share of a stock divided by its book value (i.e., net worth) per share. For a portfolio the ratio is the weighted average price-to-book ratio of the stocks it holds.

**price-to-earnings ratio (P/E)** The share price of a stock divided by its per-share earnings over the past year. For a portfolio, the weighted average P/E ratio of the stocks in the portfolio. P/E is a good indicator of market expectations about a company's prospects; the higher the P/E, the greater the expectations for a future growth in earnings.

**product description** A document containing important information about ETF fees, objectives, and mechanics of share purchase in the secondary market. Not intended to be a substitute for a prospectus

**production weighted** Based on the average quantity of production of each commodity in the index over a specific period, normally 5 years.

**proprietary** An opaque investment strategy used by an index providers and investment managers. The strategy is intentionally not fully disclosed to investors. The lack of transparency means investors can never be entirely sure why investments are being added or replaced in an index or a fund.

**prospectus** A legal document that gives prospective investors information about a mutual fund, including discussions of its investment objectives and policies, risks, costs, and past performance. A prospectus must be provided to a potential investor before he or she can establish an account and must also be filed with the SEC.

**qualitative** A process of rating securities based on non-financial information such as the treatment of employees, the quality of products, the remaining patent life on those products, and the level of environmental stewardship.

**quantitative analysis** In securities, an assessment of specific measurable factors (e.g., cost of capital, value of assets) and projections of sales, costs, earnings, and profits. Combined with more subjective or qualitative considerations (e.g., management effectiveness), quantitative analysis can enhance investment decisions and portfolios.

**real estate investment trust (REIT)** A company that manages a group of real estate investments and distributes to its shareholders at least 90 percent of its net earnings annually. Types include property (an equity REIT) and loans to building developers (a mortgage REIT).

**real return** The return received on an investment after factoring in inflation. For example, if the nominal investment return for a

particular period was 8 percent and inflation was 3 percent, the real return would be 5 percent.

**record date** The date used to determine who is eligible to receive a company or fund's next distribution of dividends or capital gains.

**redemption** Authorized participant turns in an ETF Creation Unit and receive in-kind distribution of shares.

**redemption fee** 1) A fee charged by some open-end some mutual funds when an investor sells shares within a short period of time. 2) A fee charge to APs for the creation or redemption of a creation unit

**registered investment adviser (RIA)** An investment advisor who has filed disclosure documents with the Securities and Exchange Commission or the state the RIA does business in. RIAs recommend investment products and manage investment accounts.

**registered investment company (RIC)** Common type of ETF that tracks indexes closely, allows sampling (not every stock in index is necessarily purchased) and derivatives in its operations. Examples include iShares, Sector SPDRs.

**replication** See *full replication*

**sampling** A strategy of selecting securities from a market or index that represents the characteristics of that market or index without owning all of the securities that trade on the market or index.

**sector fund** A mutual fund that concentrates on a relatively narrow market sector. These funds can experience higher share-price volatility than some diversified funds because sector funds are subject to issues specific to a given sector.

**shares outstanding** The number of ETF shares issued as of the closing on the prior trading day. It is the number used to calculate the NAV. Since ETFs are constantly being created and redeemed during a trading day, outstanding shares change each day.

**Sharpe ratio** A measure of risk-adjusted return. To calculate a Sharpe ratio, an asset's excess returns (its return in excess of the return generated by risk-free assets such as Treasury bills) are divided by the asset's standard deviation. Should be compared to an appropriate benchmark.

**short** Borrowing securities that do not belong to you and selling them on an exchange. The short must eventually be covered with a buy.

**short fund** see *inverse fund*.

**spread** The difference between the bid (sell) price and the ask (buy) price of a security.

**standard deviation** An average error by which a fund's period returns vary from its simple average return. The larger a fund's standard deviation the greater the period performances fluctuated from the simple average return.

**Statement of Additional Information (SAI)**

The SAI goes into detail about many matters found in a mutual fund prospectus, particularly the tax consequences of fund distributions.

**thematic** A strategy of portfolio management that tends to be based on an emotionally charged topic. Examples include clean air and water, corporate actions, and social responsibility.

**total return** A percentage change, over a specified period, in a mutual fund's net asset value, with the ending net asset value adjusted to account for the reinvestment of all distributions of dividends and capital gains.

**trading spread** see *spread*

**transaction fee/commission** A charge assessed by an intermediary, such as a broker-dealer or a bank, for assisting in the sale or purchase of a security.

**turnover rate** An indication of trading activity during the past year. Portfolios with high turnover rates incur higher transaction costs and are more likely to distribute capital gains.

**unit investment trust (UIT)** Common type of ETF that requires the full replication of index. Also prohibits derivatives in fund operation. Like Management Investment Trusts. Examples include SPY and QQQQ.

**underlying trading value** See intraday value.

**volatility** The degree of fluctuation in the value of a security, mutual fund, or index. Often expressed as a mathematical measure such as standard deviation or beta. The greater a fund's volatility, the wider the fluctuations between its high and low prices.

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