



An educational review of basic investment concepts and techniques—in easy-to-understand terms.

Market Barometers: A Look at Stock Indexes And How They Work

You may not need a weather man to know which way the wind blows.

But in the financial world, you do need a stock market index to know which way the stock winds are currently blowing. That's why the broad market indexes are quoted daily by virtually every media source as a barometer of the state of the overall market.

How do these market indexes work and what are they telling you?

What It Is

A stock market index is simply a statistical composite that measures the ups and downs of the market it is designed to follow.

There are many indexes that follow numerous segments of the stock market, including the broad stock market and more narrow sectors such as specific industries or specific types of stocks (such as large or small firms).

Indexes serve purposes other than just stock market barometers. Investors use indexes in monitoring their own portfolios, and as benchmarks for performance comparisons. [For more on using indexes to monitor and benchmark your portfolio, see "A Performance Tape Measure: How to Benchmark Your Portfolio," by John Markese, in the November 2007 *AII Journal*].

How They Work

Most indexes calculate the value of their composite stocks at a certain point in time and set this value as the base, or starting point. All future values can be compared to this base.

For example, an index with a base of 100 (other bases may be used) and a current value of 200 has doubled over the time period.

While this approach is by far the most common construction, averages also exist—most notably the Dow Jones industrial average.

The Dow Jones industrial average deserves a special consideration because it represents a small sample

(currently, 30 stocks), and it is widely quoted.

Originally, the Dow was reported by adding up the prices of all its stocks and dividing by the number of stocks—a typical 'average' calculation. However, over the years, stock splits and stock dividends had to be taken into consideration, and this is done by changing the divisor. When you hear that the Dow is at 12,000, it means that the average share is worth \$12,000 before all splits and stock dividends over the years.

Beyond the restricted sample of only large stocks representing only major industries, the adjustment to the divisor has actually caused the growth in the average to be understated. Stocks that split have less future impact on the average, but the stocks that split tend to be the ones experiencing growth.

Although not technically an "index," the interpretation of the numbers is similar—when the Dow was first published in 1896 (with 12 stocks), it stood at a little over 40; when it topped 12,000 in 2006, it indicated that the average had risen 300 times.

Composition

A market index first and foremost consists of a defined sample of securities, selected by the creators of the index.

For stock market indexes, the sample is selected by many creators, as illustrated by the representative group in Table 1.

For example, most stock exchanges have their own indexes that measure the common stocks traded on that exchange.

The Dow Jones industrial average is a group of 30 major blue chip firms selected by the editors of the Wall Street Journal.

The Standard & Poor's 500, another commonly quoted index, consists of 500 stocks chosen to reflect the risk and return characteristics of large-cap stocks, and it is maintained by Standard & Poor's. Chosen stocks are in sectors such that the sector composition of the index is in line with the large-cap universe; currently, the largest sectors in the S&P 500 are: financials (16.8%), information technology (15.7%), energy (13.2%), industrials (12.2%),

Table 1: A Sample of Commonly Quoted Stock Market Indexes

Index	Weightings	Sample
Amex Composite	Market-Cap Weighted	All common stocks, ADRs, REITs, master limited partnerships, and closed-end investment vehicles listed on the Amex.
Dow Jones Wilshire 5000	Market-Cap Weighted	All U.S. stocks with readily available prices, designed to represent the performance of all U.S. stocks.
Dow Jones Industrial Average	Price-Weighted	30 of the largest and most widely held firms in the U.S.
NASDAQ Composite	Market-Cap Weighted	All domestic and international common stocks listed on the NASDAQ.
NASDAQ-100	Market-Cap Weighted	100 of the largest domestic and international non-financial companies listed on the NASDAQ.
NASDAQ-100 Equal-Weighted	Equal-Weighted	Same as NASDAQ-100.
NYSE Arca Tech 100	Price-Weighted	100 common stocks and ADRs of technology-related companies listed on U.S. exchanges, designed as a benchmark of companies using technology innovation across a broad spectrum of industries.
NYSE Composite	Market-Cap Weighted	All common stocks listed on the NYSE, including ADRs, REITs and tracking stocks.
Russell 2000	Market-Cap Weighted	Approximately 2,000 of the smallest U.S. securities, designed to measure the performance of small-cap stocks.
S&P 500	Market-Cap Weighted	500 stocks chosen to reflect the risk/return characteristics of large-cap stocks; currently, represents roughly 77% of the total market capitalization of all U.S. stocks.

and healthcare (11.7%).

The sample of stocks in an index is an important component that determines how the index will respond in various financial environments and how meaningful the index will be for the individual investor. For example, a market index that follows smaller firms, such as the Russell 2000, would typically behave much differently than an index that follows larger firms, such as the S&P 500. Similarly, a narrow market index, such as the NYSE Arca Tech 100, which follows technology-related stocks, would behave much differently than a broader-based stock market index.

The Weightings

The other issue in creating an index is the percentage amount of each stock that is represented in the index. Typically, this is referred to as the index “weighting.”

Most of the commonly quoted indexes are weighted based on a stock’s market capitalization (the price of each stock, multiplied by the number of common stock shares outstanding). For example, if a particular stock’s market capitalization is 2.7% of the market capitalization of all of the stocks in the index, then the index will reflect 2.7% of the performance of that stock.

In a capitalization-weighted index, the larger capitalization stocks will represent a greater proportion of the index, and changes in those stocks will have a bigger impact on the index value. For example, the S&P 500, a large-cap index, currently represents roughly 75% of the total market capitalization of all U.S. stocks. The performance of a total market index that embraces the S&P 500 but extends beyond to encompass smaller firms will nonetheless closely track the S&P 500, since 75% of its composition will be S&P 500 firms.

In a capitalization-weighted index, a stock’s price dictates how much of each firm is represented in the index

(since its market cap is number of shares outstanding times the stock price), and stocks that have hefty price increases automatically become larger holdings.

Another approach is to weight all stocks equally—in other words, stocks of all sizes have equal representation. For example, the NASDAQ-100 Equal-Weighted index uses all 100 of the stocks in the NASDAQ-100 index, but each stock represents exactly 1% of its holdings, whereas each stock is held in proportion to its market capitalization in the NASDAQ-100.

Equal-weighted indexes reflect the movements of all stocks in the index without regard to the price and shares outstanding; small stocks have just as much impact as large stocks.

The third method of determining the amount of stock to be represented in an index is based on price. Although not common, it is the method used by the Dow Jones industrial average.

In a price-weighted index, a stock's weight in the index is determined by share price alone, so that higher-priced stocks have more influence than lower-priced stocks. That means that a percentage increase in a higher-priced stock (for instance, a 1% price increase in a \$100 stock) will influence the index more than the same percentage increase in a lower-priced stock (for instance, a 1% price increase in a \$10 stock). On the other hand, a \$1 price change for an expensive stock will have the same effect as a \$1 price change for a lower-priced stock.

Other Indexes

The immense popularity of index funds—and now exchange-traded funds—has led to the creation of hundreds of new stock indexes.

The bulk of these indexes have been created to follow every conceivable stock market segment, and most of these are market-cap weighted.

Some have been created as equal-weighted indexes, using the sample of a market-weighted index but with equal stock representation, so that larger-cap stocks do not dominate the index.

And a new group of indexes has been created to allow the use of fundamental “qualitative” factors to determine stock composition, adding a semi-active flavor to the composition of the index.

These newer indexes are not typically quoted in the news media, and are not particularly useful as stock market barometers.

Instead, they have been created by investment companies for use in their index-related mutual fund and exchange-traded fund products. For more on these indexes, and the products based on them, see “The Actively Passive Trend: Indexes Get a Makeover,” by Maria Crawford Scott, in the October 2006 *AII Journal*.

Which Index Is Best?

Which market index should you follow?

There is no single index that encompasses all you need to know about stocks and the state of the market. The appropriate index depends on what you are attempting to measure.

Here are some points to keep in mind if you want a stock market weather report:

- Make sure you understand the composition of the index—whether it is broad-based, covers only a market segment, or excludes certain industries.
- Market-cap-weighted indexes will be dominated by larger firms, even if they are “total market” indexes covering firms of all sizes.
- Equal-weighted indexes will tell you how each of the sample stocks has performed, regardless of the size of the firm.
- Price-weighted indexes emphasize the performance of expensive stocks while cap-weighted indexes emphasize the performance of large-cap stocks.
- If you are using an index to monitor your own portfolio, make sure you use an index (or several indexes) that mirrors your own portfolio composition and diversity. Comparing performance of a portfolio to an inappropriate index may lead to less than optimal investment decisions. ▲