



# Keeping “track” of ETF performance

## How ETFs attempt to track index performance

“Stock markets are up today”

“Markets fell 1% in today’s trading”

“Stocks were flat most of the day”

These are all very common quotes that can be heard daily in the news. When you hear that the stock market increased, decreased or was flat on any given day, what’s being measured is the change in the value of a particular stock index. Sounds simple enough, but for many investors it begs the question—what is an index?

An index is designed to measure the performance of the particular market it tracks. For example, a broad Canadian stock index would contain possibly all, or more likely a selection of Canadian stocks, that represent all the stocks listed on stock exchanges in Canada. The change in the value of the index provides us with an indication of how well (or poorly) that particular stock market is performing.

Many Exchange-Traded Funds (“ETFs”) have been designed to replicate the performance of a given index. Essentially, these indexed ETFs are investing in the securities held by the index in such a manner so that when the index goes up or down, the ETF goes up or down by approximately the same relative amount. Today, more than 70% of the money flowing into ETFs have the objective to track a benchmark index\*.

## The different types of indexes

The indexes that ETFs track can be based on a number of market characteristics, from broad markets, select portions of broad markets, specific market capitalizations or sectors, styles (growth, dividend etc.) and many more. The list of possibilities keeps expanding. Some indexes are not very diversified by design, while others are more diversified. Also, how stocks or bonds are selected for the index (i.e. the methodology for creating the index), can affect its performance results. So, it is important to understand the exposures and amount of diversification of the underlying index that a particular ETF seeks to track.

The most common index type is called a **market capitalization (or "cap") weighted index**. This is where the underlying securities are weighted based on how much they represent in the particular market. This is generally determined by the number of shares outstanding and the price of those shares (or by the amount of debt outstanding when it comes to bonds). Essentially, the bigger the company, the bigger its weighting in the index will be, and the more of it will be held by any index tracking fund.

Market cap indexes may also cover a particular country (Canada, the U.S., Japan, etc.), a particular sector of the stock market (technology, financial, etc.), or bond market (government bonds, corporate bonds, etc.). Some indexes are even divided by looking at the underlying company information and deciding on whether it is a value or growth stock.

## Various methods of constructing an index

Aside from market cap indexes, there are other ways to construct an index. **Equal-weighted indexes**, for example, give each security an equal share in the index, whereas a **fundamental index** looks at the underlying company's financial statements and may weigh each security based on a

ranking system of the company's financial figures, including revenues, sales and dividends. There are also **low volatility indexes** which weigh securities in such a manner that they try to minimize the overall ups and downs of the index. Sometimes these are referred to as "Smart Beta indexes", where the market cap index is considered "beta" or the baseline performance you will get if you invest in a certain market. A Smart Beta index will provide investors with a different result than the ordinary market cap index.

Moreover, there are also indexes that are created based on research of a particular aspect of investing that is believed will result in better performance than a market cap index. An index based on one investing premise is called a **single-factor index**, and an index that combines multiple investing premises is referred to as a **multi-factor index**. These factor indexes are also sometimes grouped together under the Smart Beta category and sound very similar to an active indexing strategy, leaving investors to wonder what the differences between the two are – and for good reason. Both, after all, try to beat the performance of the traditional market cap weighted index by having their own systems and strategy in place. Some would define the factor-based approach to investing as more systematic and transparent (in terms of what they are actually doing and the investments being held) than a strategy that bills itself as "active". "Active" generally involves the portfolio manager's individual discretion in deciding which investments are suitable for the strategy, a level of customization which cannot be systematically replicated.

## A deeper dive into indexing methodology

The way stocks and bonds are selected by a portfolio manager trying to replicate the performance of an index can affect its performance results relative to the index. Generally there are two main different methods that portfolio managers use and one lesser used alternative method:

## Full replication

Here, the portfolio manager purchases all the securities in a given index in the same proportion as the index itself. For example, if the ETF was designed to track the performance of the top 500 U.S. stocks by market capitalization and shares of Apple Inc. represented 4% of the index, the manager would ensure that 4% of the ETF's assets were also used to purchase Apple Inc. shares.

The advantage of the full replication method is that it will track the index quite closely. Small differences in performance may result depending on how the portfolio manager manages cash flows and executes changes to the portfolio when there are changes to the index.

Overall, full replication strategies are more often used where the:

- securities in the index are all easily purchased and sold;
- index has a manageable number of securities (in the hundreds or less);
- ETF itself has enough assets to make it cost effective to purchase small positions of holdings.



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## Stratified sampling & optimization

There are certain cases where it's not possible to buy all the constituents to an index. In other cases, some indexes have so many securities (in the thousands) that purchasing them all is not practical. In these cases, stratified sampling or optimization techniques will be used.

Stratified sampling is an indexing method where the ETF portfolio manager will divide an index into different buckets, where each bucket represents different characteristics of the index. The portfolio manager then chooses securities that will track the characteristics of each bucket, which in aggregate, should be representative of the index being tracked. For example, a portfolio manager tasked with trying to track a bond index, that has all its bonds issued in Canada, may break down the index by maturity and/or duration (2 – 5yrs, 5 – 10yrs, 10 – 20yrs, 20yrs +), market sectors (Government of Canada, Provincial, Municipal, Corporate, Mortgage Backed, etc.), credit rating (AAA, AA, A, BBB) and so on. If provincial bonds make up 40% of the index, they would then choose a selection of provincial bonds to make up 40% of the fund that would be representative of provincial bonds in the index in terms of maturity and credit rating as well.

Optimization takes stratified sampling a step further and looks at how all the securities in the index interrelate with each other and relative to the benchmark, therefore

“optimizing” or improving how well the index tracks the benchmark index. The success of an optimized approach is dependent on the portfolio manager's models for how the securities interrelate.

The advantage of a stratified sampling or optimization methods is that the portfolio manager doesn't need to purchase every security in the index, which in turn helps reduce the overall costs of acquiring and holding the portfolio of securities. The disadvantage is that securities could be selected that don't perform in line with the index causing differences in performance between the ETF and the index it is trying to replicate. Generally speaking, for ETFs using sampling/optimization techniques, the more assets they have to invest, the more securities they can select in an effort to closely track its index.

Stratified sampling/ optimization strategies are more often used where the:

- securities in the index may not be easily purchased and sold;
- index has a large number of securities (in the thousands);
- ETF itself does not have enough assets to make it cost effective to purchase all the index holdings.



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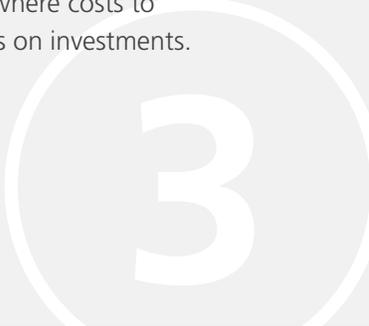
## Synthetic Replication

Is a less used alternative form of indexing. This method involves the use of derivatives (an investment that derives its value based on another investment) to track a benchmark index. For example, instead of buying the underlying securities in the top 500 U.S. stock index, an ETF portfolio manager may approach an investment dealer and agree to swap the performance of the index in exchange for a flat fee. If the index increases, the ETF receives a payment from the investment dealer representative based on the amount the index has increased, and if the index decreases, the ETF pays the investment dealer the value of the decrease.

The fee paid also reduces the overall return. However, the ETF doesn't have the expense of purchasing, selling or for the safekeeping of the individual stocks. Also, the derivative usually doesn't require the ETF to put up

cash to "invest" in it. Therefore, often times the cash within the ETF will be invested in short term fixed income securities to earn additional income.

The drawback for synthetic portfolios is that they are usually not that efficient for developed liquid markets (like an ETF trying to track the top 500 U.S. stocks), however, they can work well for obscure or inefficient markets (like some emerging market countries) or for commodity based indexes (like gold) where costs to invest are high or there are restrictions on investments.



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## Summary

There are many different ways an ETF can seek to track the performance of an index, just as there are many ways to construct an index itself. If you are looking to be able to say "me too" when the news says "the stock markets are up today", you now know that you could buy an ETF that tracks the index the newscaster speaks of. But, in selecting an ETF that tracks an index, it is important to know both how the index itself is constructed and also how the ETF portfolio manager will invest your money to try to replicate the index performance. It's important to do your research or consult your advisor before you invest.



\*Source: Morningstar Direct, TDAM. As of Aug. 31, 2017.

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