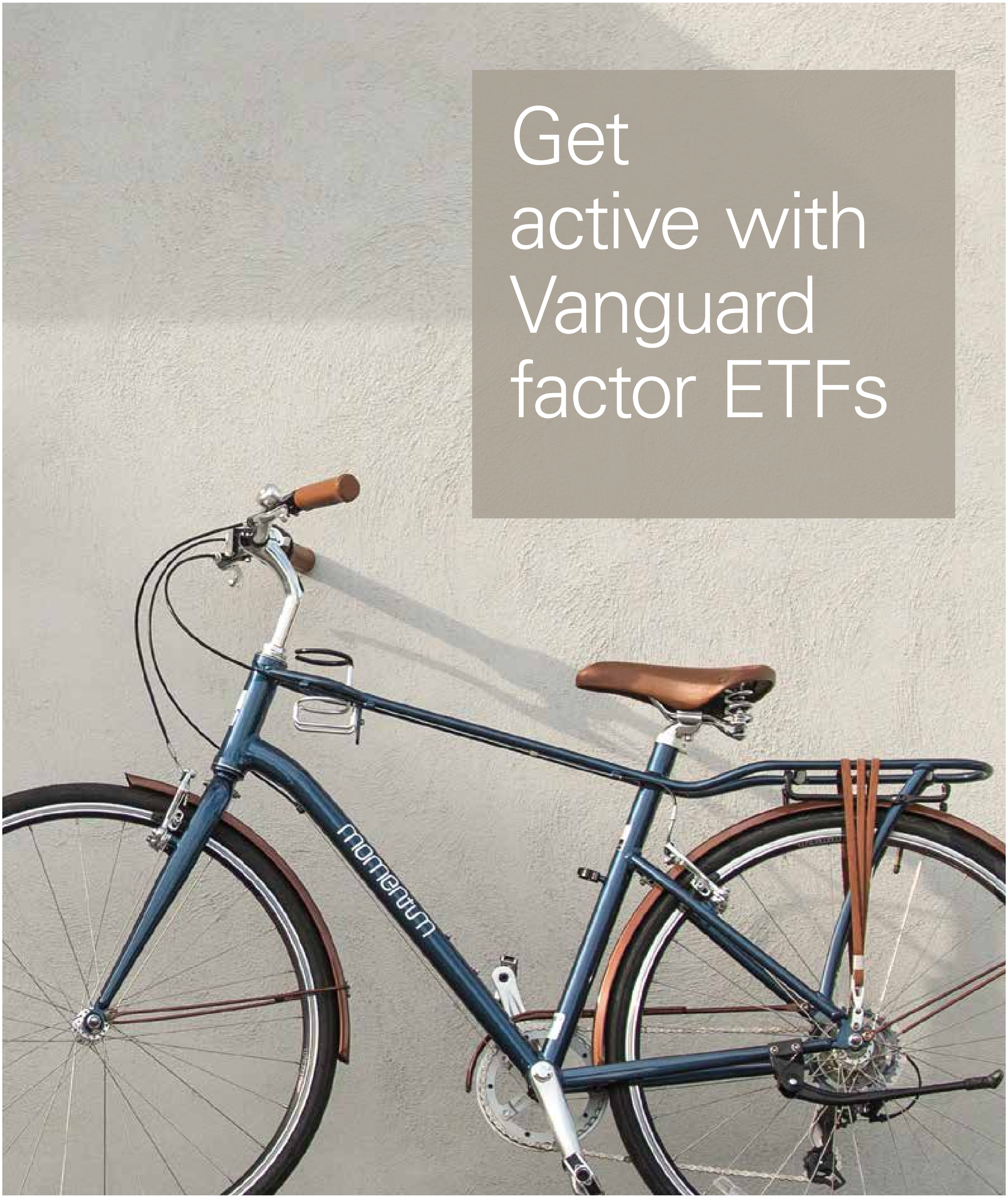
Vanguard®

Get active with Vanguard factor ETFs



Factor investing has gained attention in recent years, in part because of the rise of alternatively weighted indexes and ”smart-beta” products. Yet factor investing has existed in various forms for many decades.

One way to think about factors is as the DNA of an investment. They are underlying attributes that explain and influence how an investment behaves. By targeting these attributes, factor-based investments attempt to deliver an investment premium, such as market outperformance or reduced volatility.

Vanguard factor exchange-traded funds (ETFs) use a dynamic, rules-based active strategy to target the risk and return premiums of four well-documented factors. Our minimum volatility ETF aims to exhibit lower volatility than the global equity market while our value, momentum and liquidity ETFs seek market outperformance.

What is factor investing?

Every investment is influenced by underlying factors that help explain its risk and returns. One factor you're probably familiar with is the *market factor*. Also known as equity risk, the market factor shapes and explains the risk and returns of a market-capitalization weighted equity portfolio.

Historically, a portfolio exposed to the market factor has outperformed "risk-free" investments such as short-term government bonds. This return premium has been an investor's reward for bearing the additional risks of equity investing.

Value is another well-known factor. The value factor has outperformed not only risk-free investments, it has also outperformed the market factor. Traditional value investing—buying stocks that look inexpensive compared with a company's fundamental value—is one of the ways investors seek to earn the value factor premium.

Factors exist in fixed income markets too. The outperformance of long-maturity bonds relative to short-maturity bonds is known as the *term factor*, while the outperformance of low-credit-quality bonds relative to high-credit-quality bonds is called the *credit factor*.

Academic research has identified hundreds of factors. Some have earned historical return premiums, while others have produced premiums in the form of lower volatility. Many factors haven't produced any premiums at all.

Each Vanguard factor ETF seeks to earn the premiums associated with one of four well-documented factors:

- **Low volatility.** Stocks with low volatility have earned higher risk-adjusted returns than stocks with high volatility.
- **Value.** Stocks that are inexpensive relative to company fundamentals have earned higher returns than stocks that are expensive relative to company fundamentals.
- **Momentum.** Stocks with strong recent share-price performance have earned higher returns than stocks with weak recent performance.
- **Liquidity.** Stocks that are less frequently traded have earned higher returns than more liquid securities.

"Factors are the DNA of an investment portfolio. They determine how an investment behaves."

Joel Dickson
Principal in Vanguard Investment Strategy Group

Factors are everywhere

Many investors' portfolios tilt toward certain factors and away from others, whether they know it or not. These tilts explain much of the risk and returns across a range of investments, including "smart beta" products that track an index, traditional active funds as well as market-cap-weighted index funds that track a subset of the broad market (for example, value or growth stocks).

While factor tilts can be implemented actively or passively, it's important to keep in mind that any deviation from a market-cap-weighted portfolio is, in essence, an active decision.

Potential benefits of factor investing

All investing is influenced by factors, but that influence is often indirect or unintentional. Vanguard factor ETFs attempt to directly target factors. A direct targeting of factors offers potential benefits related to transparency, control and cost.

Transparency. By deliberately focusing on factor exposures, you can gain a clearer understanding of how factors drive the returns of a portfolio.

Control. Factor funds may provide a more consistent exposure to a given factor over time. While many investors let a fund manager or an index determine their factor exposure, factor investing lets you have control over the factors you are exposed to.

Cost. Investors often obtain exposure to factors through high-cost traditional active managers. Direct targeting of factors can offer a more cost-effective way to obtain the same exposures.

When factor theory meets investing reality

While academic studies shed light on the merits of factor investing, real-world issues can affect the success of the approach. A factor investment with high portfolio turnover, for example, could see its performance dragged down by transaction costs. Also, the performance of a factor investment will vary depending on the factors it's exposed to, how those factors are defined and, ultimately, whether the premiums associated with certain factors continue in the future.

As with any strategy, investor behaviour matters. Factor returns can be highly cyclical and individual factors may underperform for extended periods. Staying the course during periods of poor performance can improve your chances of success.

Using factors in a portfolio

Vanguard believes a market-cap-weighted index is the best starting point for building a portfolio. Factor investing offers a complementary approach for investors who wish to tilt their portfolios away from market-cap weightings. When evaluating factor-based strategies, investors should consider their tolerance for performance swings and understand the investment rationale supporting the factors they wish to target.

Above all, remember that factor investing is a form of active management and should be evaluated as such.

How we manage Vanguard factor ETFs

Vanguard factor ETFs are actively managed, globally diversified and low-cost. We believe this combination of attributes sets our ETFs apart from other factor investments.

Actively managed

Factor investing is inherently active because it involves making a decision to tilt a portfolio away from market-cap weightings. Even so, many investments that target factors do so by passively tracking an index.

We actively manage our factor ETFs rather than track an index. Not being tied to the rebalancing schedule of an index offers several advantages. It gives our portfolio managers the flexibility to add or reduce positions as needed to maintain continual, dynamic exposure to the desired factors, even as markets and shares change through time. It also helps us control costs. Our portfolio managers don't trade unless they determine that the benefits more than offset the resulting transaction costs.

Our factor ETFs are not only adaptable, they are transparent. Similar to an index provider, we define and build factors using a transparent, rules-based approach. However, unlike with indexes, we're also able to build the factors and monitor our portfolios daily to ensure that we maintain exposure to the current factor.

Ultimately, our aim is to offer investors the best of both worlds: flexible and efficient targeting of the desired factors and a clear understanding of how we build factors and assemble the ETF portfolios.

Who manages Vanguard factor ETFs?

Our factor ETFs are managed by Vanguard Quantitative Equity Group (QEG), which operates from Vanguard's global headquarters in Valley Forge, Pennsylvania. QEG manages about $33 billion across a wide range of active equity investments.[1] Its investment approach is defined by rigorous research, vigilant risk management, discipline and low costs.

QEG is staffed with a deep bench of credentialed professionals. Among its 23 strategists, analysts and portfolio managers, ten hold the CFA designation and six have PhDs. The team's smaller size promotes close collaboration among team members. Meanwhile, it benefits from the support of the larger Vanguard organization and leverages the best practices, low-cost execution and expertise of 39 traders in multiple markets around the globe.

QEG doesn't rely on a star manager or key individual. Since no one person is responsible for all portfolio management decisions, you can be assured of continuity in our investment approach.

1 All asset figures in Canadian dollars as of December 31, 2015.

Globally diversified

Our ETFs invest globally because the factors we target have been shown to work globally. A global equity portfolio also helps diversify risk while increasing investment capacity and liquidity.

Low-cost

Investors earn more when they pay less. The annual management fee of the Vanguard factor ETFs is just 0.35%. This compares favourably with the industry average management fee of 0.89% for actively managed mutual funds and 0.65% for actively managed ETFs.[2]

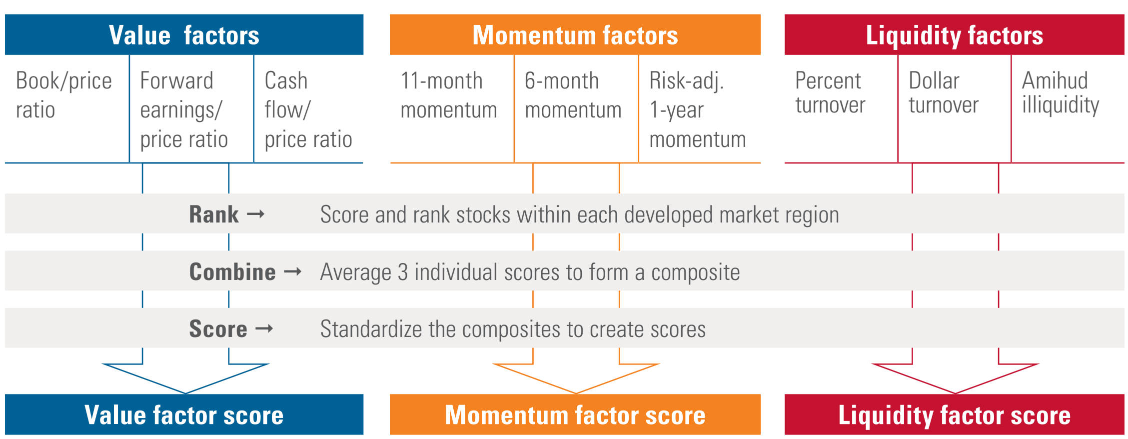
How we build the ETF portfolios

Although they each target a different factor, our value, momentum and liquidity ETFs use the same transparent quantitative process to analyze thousands of stocks each day.

We begin by dividing the investment universe into developed market regions—the United Kingdom, Europe ex-U.K., Japan, Asia Pacific ex-Japan, Canada and the United States. To account for the depth of the U.S. market, U.S. stocks are further divided into three market-cap size groups.

Our quantitative models use three metrics per ETF to gauge a stock's strength in a given factor. The metrics we use are the commonly recognized measures for each factor. We calculate an equal-weighted average of these metrics for each stock. Then we rank stocks within each region and country group, based on their factor strength. Only the highest-scoring stocks are included in each ETF portfolio. A stock's weight in the portfolio is determined by its factor score, subject to a set of risk controls.

Scoring value, momentum and liquidity factor strength



Note: Chart represents Vanguard's proprietary factor portfolio construction process and is for illustration purposes only.

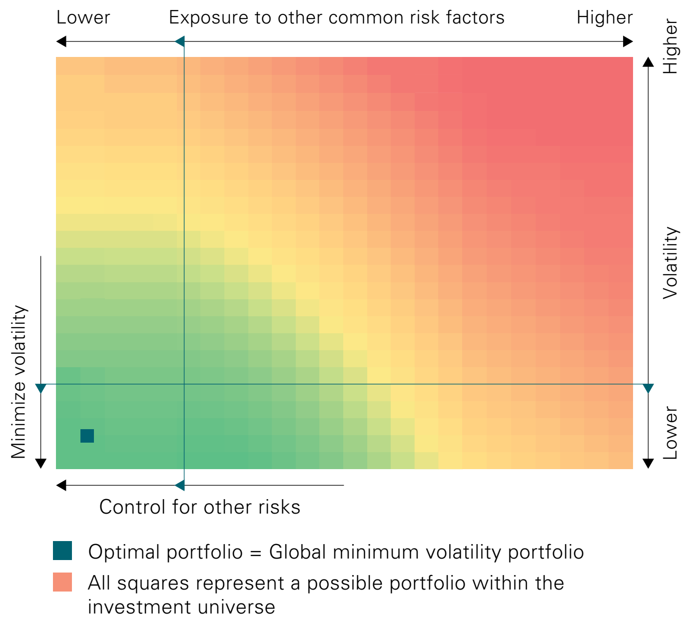
2 The figures provided are a straight average, as of December 31, 2015. The average management fee for industry mutual funds was provided by Investor Economics and includes Series F mutual funds only and excludes ETFs, funds with performance fees, money market funds, funds with management fees charged at account level, hedge funds, index funds and LSVCC funds. The average management fee for industry ETFs was provided by Bloomberg and Vanguard and excludes funds with performance fees, funds with management fees charged at account level and index funds.

Each day, we repeat the same process. By continually assessing the factor strength of each stock in the investment universe, we can buy or sell shares as needed to maintain dynamic exposure to the desired factors.

Our minimum volatility ETF also uses a rules-based active strategy to build its portfolio. We select stocks from developed and emerging markets that display a combination of factors that can result in lower portfolio volatility. We assess not only the volatility of individual stocks, but also the correlation of returns among stocks. Our aim is to create a global equity portfolio that's less volatile than the overall equity market.

While the portfolio targets minimum volatility, we also put additional risk controls in place around country, sector, individual stock weights and other factors. These controls help ensure diversification and liquidity, while avoiding concentrated exposure to major risk factors. Our quantitative models then identify the most appropriate portfolio given these restrictions. To further reduce volatility, we hedge the portfolio to the Canadian dollar.

Creating a minimum volatility portfolio



Source: Vanguard. Chart represents Vanguard's proprietary portfolio construction process and is for illustration purposes only.

Risk management is an integrated part of our process

Vanguard factor ETFs are subject to independent monitoring by Vanguard Risk Management Group (RMG). RMG monitors portfolio positions against limits, undertakes attribution analysis and works with our portfolio managers to make sure risks are identified and managed.

RMG's reporting structure distinguishes our approach to risk management. RMG's head reports directly to The Vanguard Group, Inc.'s chief investment officer. This structure keeps RMG close to our investment process and ensures we're aware of rapid changes to markets and portfolios, along with their related risks and potential effects on strategies.

Factor ETF product summaries

Vanguard Global Minimum Volatility ETF

Why target minimum volatility stocks?

Investors committed to an equity allocation in pursuit of their long-term investment objectives can find near-term volatility unsettling. Minimum volatility investing attempts to capture a significant share of stock market performance, while avoiding the sharpest market highs and lows. This allows investors to maintain exposure to equities with the potential for improving risk-adjusted returns.

Investment objective

The ETF seeks to provide long-term capital appreciation with less volatility than the global equity market.

Investment approach

The ETF uses a rules-based active strategy to select stocks from developed and emerging markets that display a combination of factors that can result in lower portfolio volatility. Its dynamic quantitative approach is designed to minimize volatility while limiting exposure to common risk factors, even in changing market environments.The ETF will generally seek to hedge most of its currency exposure back to the Canadian dollar, with the aim of further reducing volatility.

Key facts

Ticker	VVO
Management fee[3]	0.35%
Investment universe[4]	FTSE Global All Cap Index
Inception date	June 14, 2016
Distribution schedule	Annually, if any
Exchange	Toronto Stock Exchange
Currency	CAD

VVO

3 The management fee is equal to the fee paid by the Vanguard ETF to Vanguard Investments Canada Inc. and does not include applicable taxes or other fees and expenses of the Vanguard ETF.

4 The Vanguard Global Minimum Volatility ETF is actively managed and does not seek to track the performance of a benchmark. Benchmark data is used for reference only.

Vanguard Global Value Factor ETF

Why target the value factor?

A portfolio of stocks with low share prices relative to the company's book value, earnings or other measures is likely to have exposure to the value factor. Historically, a portfolio exposed to the value factor has outperformed the broad equity market. This return premium can be explained in part by investor behavioural biases, such as the tendency to shun companies that may be struggling in the short term, while overpaying for companies exhibiting recent growth.

Investment objective

The ETF seeks to provide long-term capital appreciation.

Investment approach

The ETF uses a rules-based active strategy to select stocks from developed markets that display the strongest value factor characteristics. Its dynamic quantitative approach is designed to ensure the portfolio maintains significant exposure to the value factor, even in changing market environments.

Key facts

Ticker	VVL
Management fee[5]	0.35%
Investment universe[6]	FTSE Developed All Cap Index, Russell 3000 Index
Inception date	June 14, 2016
Distribution schedule	Annually, if any
Exchange	Toronto Stock Exchange
Currency	CAD

VVL

5 The management fee is equal to the fee paid by the Vanguard ETF to Vanguard Investments Canada Inc. and does not include applicable taxes or other fees and expenses of the Vanguard ETF.

6 The Vanguard Global Value Factor ETF is actively managed and does not seek to track the performance of a benchmark. Benchmark data is used for reference only.

Vanguard Global Momentum Factor ETF

Why target the momentum factor?

Studies have shown that stocks with strong recent performance have tended to outperform over subsequent short-term periods. This phenomenon—called the momentum factor—may exist because of certain investor behavioural biases, such as the tendency to overreact or underreact to new information and base decisions on recent market activity.

Investment objective

The ETF seeks to provide long-term capital appreciation.

Investment approach

The ETF uses a rules-based active strategy to select stocks from developed markets that display the strongest momentum factor characteristics. Its dynamic quantitative approach is designed to ensure the portfolio maintains significant exposure to the momentum factor, even in changing market environments.

Key facts

Ticker	VMO
Management fee[7]	0.35%
Investment universe[8]	FTSE Developed All Cap Index, Russell 3000 Index
Inception date	June 14, 2016
Distribution schedule	Annually, if any
Exchange	Toronto Stock Exchange
Currency	CAD

VMO

7 The management fee is equal to the fee paid by the Vanguard ETF to Vanguard Investments Canada Inc. and does not include applicable taxes or other fees and expenses of the Vanguard ETF.

8 The Vanguard Global Momentum Factor ETF is actively managed and does not seek to track the performance of a benchmark. Benchmark data is used for reference only.

Vanguard Global Liquidity Factor ETF

Why target the liquidity factor?

The liquidity factor was identified in research showing that less frequently traded stocks have earned higher returns than stocks that are more frequently traded. One explanation for this phenomenon is that investors perceive less liquid securities as being more risky, and thus expect a return premium for holding them.

Investment objective

The ETFs seeks to provide long-term capital appreciation.

Investment approach

The ETF uses a rules-based active strategy to select stocks from developed markets that display the strongest liquidity factor characteristics, such as low share-trading and dollar-trading volume. Its dynamic quantitative approach is designed to ensure the portfolio maintains significant exposure to the liquidity factor, even in changing market environments.

Key facts

Ticker	VLQ
Management fee[9]	0.35%
Investment universe[10]	FTSE Developed All Cap Index, Russell 3000 Index
Inception date	June 14, 2016
Distribution schedule	Annually, if any
Exchange	Toronto Stock Exchange
Currency	CAD

VLQ

9 The management fee is equal to the fee paid by the Vanguard ETF to Vanguard Investments Canada Inc. and does not include applicable taxes or other fees and expenses of the Vanguard ETF.

10 The Vanguard Global Liquidity Factor ETF is actively managed and does not seek to track the performance of a benchmark. Benchmark data is used for reference only.

Vanguard Investments Canada Inc.
Bay Adelaide Centre
22 Adelaide Street West, Suite 2500
Toronto, ON M5H 4E3

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