

Vanguard[®]

Understanding ETF liquidity and trading

ETF liquidity and trading can seem complex. For example, you may have heard that ETFs with lower average daily trading volumes (ADVs) aren't as liquid as others with higher ADVs. In fact, ADV is only a small part of an ETF's total liquidity profile.

Here, we explain why ADV provides an incomplete measure of ETF liquidity, explore the sources of ETF liquidity and offer some ETF trading best practices.

Why ETF volume doesn't equal ETF liquidity

To understand ETF liquidity, it helps to remember the basic differences between ETFs and stocks.

A single stock's price is based on market supply and demand. Is there a buyer or seller for the stock? Or is there any type of market news or news about the company that could drive the stock price higher or lower throughout the day?

An ETF is a portfolio made up of multiple securities. While market supply and demand could affect its price in certain circumstances, a much greater factor is the value of the ETF's underlying portfolio.

The relationship between ADV and liquidity is also different for ETFs and stocks. A single stock's liquidity is based on its trading activity on the stock exchange, which reflects investor demand for a fixed supply of shares. Since ADV measures trading activity, it provides a good indication of a stock's liquidity.

With ETFs, ADV provides only a partial indication of liquidity. That's because unlike single stocks, the supply of ETFs is open-ended. New ETF units can be created and existing units redeemed based on investor demand.

ETF creation and redemption works by tapping into the liquidity of an ETF's underlying portfolio of securities. The benefit to investors is they can trade ETFs in amounts that far exceed an ETF's ADV without significantly affecting the ETF's price.

Figure 1. Some differences between ETFs and single stocks

	ETFs	Single stocks
Price	Based on the value of the underlying portfolio	Based on supply of/demand for available shares
Supply of units/shares	Open-ended	Closed-ended
Primary source of liquidity	Trading activity of securities in the underlying portfolio	Trading activity of the stock
Best measure of liquidity	ADV of securities in underlying portfolio	ADV of the stock

The sources of ETF liquidity

Before we explore how ETFs get liquidity from their underlying securities, let’s look at some other ways ETFs get liquidity. We’ll begin with the source of liquidity that’s easiest to see—an ETF’s trading activity on the stock exchange.

Visible liquidity on the stock exchange

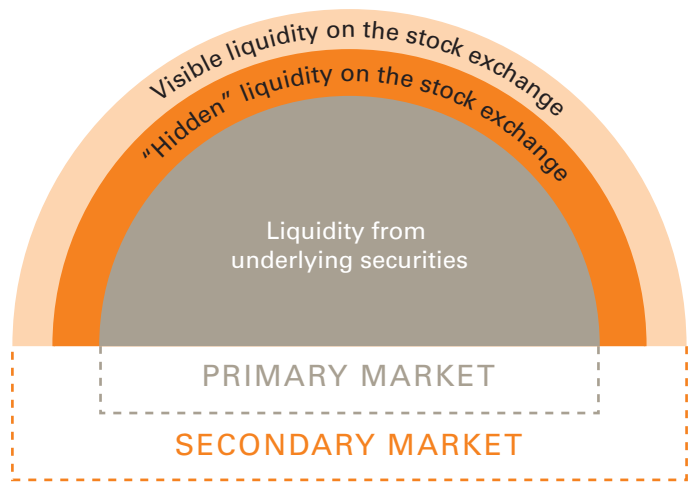
The most visible source of ETF liquidity is the trading activity of buyers and sellers in the secondary market that takes place on an exchange. ADV is a measure of this trading activity, but it doesn’t indicate an ETF’s total liquidity.

The natural liquidity of ETFs trading in the secondary market is enhanced by exchange-registered traders called market makers. Market makers help maintain a fair and orderly market by selling ETF units to potential buyers and by buying ETF units from potential sellers. In the absence of another buyer or seller, a market maker can often match the other side of a pending order.

“Hidden” liquidity on the stock exchange

Not all of an ETF’s liquidity in the secondary market is readily visible. If you’re a typical investor, your “on screen” view is probably limited to what’s available through public financial websites. This means you’ll have access to an ETF’s highest bid and lowest ask, but you won’t be able to see all the quotes in an ETF’s order book. These quotes are another source of ETF liquidity because they represent additional prices at which ETF units can be traded.

Figure 2. The layers of ETF liquidity



An ETF's liquidity can be hidden in other ways too. For example, some ETFs trade on more than one exchange. So your "on screen" view may display an ETF's trading volume on TSX but not show its volume on Alpha, Chi-X or other exchanges. Without seeing consolidated trading information, you can't accurately assess an ETF's liquidity.

Liquidity from underlying securities

Although trading activity and market depth on the stock exchange contribute to ETF liquidity, most of an ETF's liquidity comes from its underlying securities, as shown in **Figure 3**. ETFs tap into this liquidity with the help of large institutions who act as authorized dealers to create and redeem large blocks of ETF units directly from the ETF manager. This activity takes place in what's called the primary market.

The creation/redemption process supports ETF liquidity by regulating the supply of ETF units in the secondary market as needed to meet investor demand. It also allows investors to execute large buy and sell orders for lower-volume ETFs—with little or no market impact.

An example: The ETF creation/redemption process

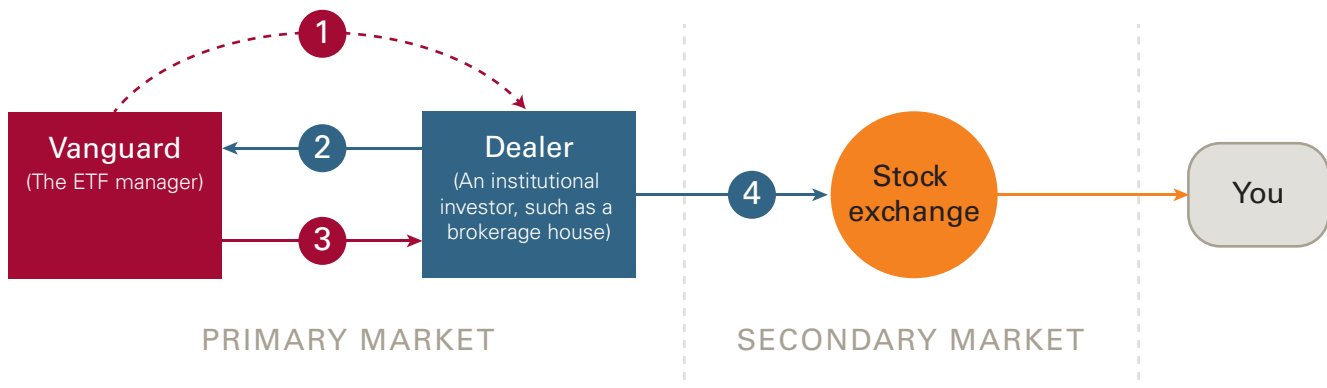
Imagine you want to buy \$100 million of Vanguard FTSE Canada Index ETF (VCE). You happen to notice that VCE's 20-day ADV is only about \$900,000, so you contact your block desk to make sure liquidity exists for the trade.

Your block desk then works with a dealer to determine the best way to source liquidity for your order. In this particular case, it's determined that new units of VCE should be created.

Even though your order is more than 100 times VCE's ADV, a dealer can easily source liquidity for the trade using the ETF creation process shown in Figure 3.

The redemption process is simply the reverse of the creation process. To create liquidity for a large sell order, an authorized dealer can buy ETF units from the seller and then redeem them with the ETF manager in exchange for the underlying basket securities.

Figure 3. The ETF creation process in action



- Step 1:** Vanguard publishes a list of holdings that constitute VCE's creation basket.
 - Step 2:** The authorized dealer assembles and delivers the basket of securities to Vanguard for the creation of \$100 million of new VCE units.
 - Step 3:** Once Vanguard receives the basket, it delivers \$100 million of new VCE units to the authorized dealer.
 - Step 4:** The authorized dealer sells \$100 million of new VCE units to you on the stock exchange.
- Note:** Authorized dealers can fill ETF orders in several ways, including using their existing inventory, purchasing units in the secondary market, borrowing units or using the creation process to create units. As a result, Step 4 may occur simultaneously to Steps 2 and 3.

What motivates authorized dealers to play such an active role in ETF liquidity? Dealers earn a commission on their transactions. For example, a dealer can acquire ETF units from the ETF manager at the cost of acquiring the underlying securities, then sell the ETF units in the secondary market at a small margin above that cost. Fortunately, competition between dealers helps minimize the costs investors incur.

A notable aspect of ETF creation/redemption is how little of each underlying security a dealer may need to trade in order for the process to work.

In our creation example, the order amount was more than 100 times greater than VCE's ADV. But as **Figure 4** shows, creating new ETF units for a \$100 million trade required a maximum trade of only 4.6% of the ADV of any single underlying stock.

The creation/redemption process allows ETFs to get most of their liquidity from their underlying securities. As long as a dealer can efficiently trade the securities in the ETF basket, it can adjust the supply of ETF units in the secondary market as needed to meet investor demand. In our example, VCE's basket of stocks had ample liquidity to support the creation of new ETF units.

As we've seen, ADV may be the most visible measure of ETF liquidity, but it tells only a small part of the story.

Every ETF has a unique liquidity profile that is based on how easy it is to trade the ETF's underlying securities, the costs associated with the creation/redemption process and other considerations. Understanding these facets is critical to your ability to execute trades within an acceptable price range.

Figure 4. Authorized dealers can create/redeem ETF units by trading a fraction of underlying stock ADV

Underlying stock	Amount required to create \$100 million of VCE	20-day ADV	% of ADV traded to create \$100 million of VCE
CI FINANCIAL CORP	\$401,006	\$8,656,766	4.63%
BROOKFIELD ASSET MANAGE CL A	\$1,801,026	\$40,008,810	4.50%
FAIRFAX FINANCIAL HLDGS LTD	\$676,425	\$16,496,890	4.10%
PEMBINA PIPELINE CORP	\$893,197	\$25,438,220	3.51%
ENBRIDGE INC	\$2,947,277	\$85,457,230	3.45%
CANADIAN NATL RAILWAY CO	\$3,391,878	\$99,134,200	3.42%
CANADIAN UTILITIES LTD A	\$526,075	\$15,810,770	3.33%
VALEANT PHARMACEUTICALS INTE	\$3,545,769	\$111,316,200	3.19%
FINNING INTERNATIONAL INC	\$350,582	\$10,962,070	3.20%
ROYAL BANK OF CANADA	\$7646,325	\$244,216,200	3.13%

Source: Vanguard, Bloomberg L.P.

Note: The table shows the stocks that will be most heavily traded (as a percent of each stock's ADV) in the creation of \$100 million of VCE. This is a hypothetical example only. The data are provided for informational purposes only and are not intended for trading purposes.

Best practices for ETF trading

When you buy or sell an ETF, you want to execute your trade as effectively as possible. You're more likely to do so, even when markets are volatile, by being aware of a few trading best practices.

Remember a few basics

Use limit orders. A limit order lets you set the price at which you buy or sell an ETF. If you use a market order instead, you may pay more or receive less than you would have liked. With a limit order, however, units may not be available at your specified price and not all of your trade may be executed. **Figure 5** lists other common order types, and explains how they are used.

Consider market volatility. Market conditions can affect bid-ask spreads, or the difference between the price at which an investor can sell a security and the higher price required to buy the same security. During volatile periods, fewer units may be listed at best-bid and best-ask prices, increasing the importance of using the appropriate order type and monitoring your trades.

Keep abreast of the news. ETFs can briefly trade at a premium or a discount to the net asset value of their underlying holdings. Such swings can result from the release of economic indicators or statements from central banks, as well as earnings and other news from companies that are large constituents of an ETF and its benchmark.

Understand liquidity. Remember that ETF units can be created or redeemed at any time, so the liquidity of the underlying securities in the creation/redemption basket is what matters most. When the underlying securities are difficult to trade, the market maker's costs may increase, resulting in wider bid-ask spreads than usual or compared with ETFs in other asset classes. Liquidity of the underlying securities is known as primary market liquidity, while an ETF's ADV is known as secondary market liquidity.

Figure 5. Some common order types

Market order	You buy or sell immediately at the best available current price. When you place a market order, your priority is making the trade quickly, not securing a particular price.
Stop order	You set a price—the stop price—at which you automatically buy or sell. When the market hits the stop price, <i>your stop order becomes a market order</i> . The price you then get is the best available current price. That price may have changed, for better or worse, in the moments after your stop price triggered your market order. When you place a stop order, your priority is trying to limit a loss or protect a profit.
Limit order	You set a price and execute your trade only if units are available at that price or better. Limit orders protect you from executing a trade at an undesirable price. When you place a limit order, your priority is securing a certain price, not speed of execution.
Stop-limit order	Similar to a stop order, but in addition to setting the stop price, you also set a limit price. When the market hits the stop price your stop order becomes a limit order, at the limit price you specified. When you place a stop-limit order, your priority is trying to limit a loss or protect a profit without the unpredictability of a market order.

Heed the clock and the calendar

Spreads can widen at certain times each day or on certain days of the year.

At the market's open. Some of an ETF's underlying securities may not begin trading at the open, perhaps because of material news about a security. In such situations, the market maker can't price the ETF with certainty.

When the bond market is closed but the stock market is open. ETFs trade like stocks, even when they seek to track bond indexes. So fixed income ETFs trade whenever the stock market is open—even if the bond market is closed and, as a result, the market maker doesn't have a pricing source. (For example, the bond market is closed and the stock market is open on Remembrance Day, which is typically November 11; and from 1 to 4 p.m., Eastern time, the day before other bond market holidays.)

When U.S. markets are closed. Some ETFs in Canada invest primarily in U.S. ETFs. Spreads can widen when the stock market is open in Canada but closed in the United States. These days are Martin Luther King Day (the third Monday in January), Memorial Day (the last Monday in May), Independence Day (July 4) and Thanksgiving Day (the fourth Thursday in November).

At the market's close. Fewer firms may make markets in an ETF at the market's close, so fewer units may be listed for purchase and sale than at other times of the day.

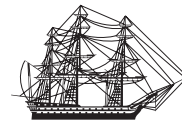
Use a block desk

A block desk, if one is available to you, can use its trading tools and network of relationships to help you when you place a large order. Your block desk may be able to:

- Review the depth of interest in an ETF before placing a trade. You may be able to determine from your trading screen only how many units are available at best-bid and best-ask prices. Your block desk can evaluate additional availability of units.
- Trade in increments to manage any effect that large trades could have on prices.
- Create and redeem ETF units directly with the ETF issuer.
- Obtain a quote to execute the entire trade.

Vanguard's ETF Capital Markets Team can help

If you'd like to learn more about ETF liquidity or ETF trading best practices, contact your sales executive, who can work with you and Vanguard's ETF Capital Markets Team.



Vanguard[®]

Vanguard Investments Canada Inc.

Bay Adelaide Centre
22 Adelaide Street West
Suite #2500
Toronto, ON M5H 4E3

Connect with Vanguard[™]

vanguardcanada.ca

Investors will usually pay brokerage fees to their dealer if they purchase or sell units of ETFs on Toronto Stock Exchange (TSX). If the units are purchased or sold on TSX, investors may pay more than the current net asset value when buying units of the ETF and may receive less than the current NAV when selling them. ETFs are priced continuously and bought and sold throughout the day in the secondary market, which entails paying additional costs such as bid/ask spreads. There are ongoing fees and expenses associated with owning units of an ETF. An ETF must prepare disclosure documents that contain key information about the fund. You can find more detailed information about the Vanguard ETFs[™] in these documents at www.vanguardcanada.ca. ETFs are not guaranteed, their values change frequently and past performance may not be repeated. Vanguard ETFs are managed by Vanguard Investments Canada Inc. a wholly-owned indirect subsidiary of The Vanguard Group, Inc.

Vanguard ETFs are managed by Vanguard Investments Canada Inc., an indirect wholly-owned subsidiary of The Vanguard Group, Inc. Vanguard ETFs are available across Canada. Vanguard ETFs are traded on TSX and investors must buy or sell Vanguard ETFs in the secondary market with the assistance of a registered investment dealer. ETFs are priced continuously and bought and sold throughout the day in the secondary market (at a premium or discount to NAV) which entails paying additional costs, such as commissions and bid/ask spreads.

The first date of publication by Vanguard Investments Canada Inc. is June 2014.

This communication is solely for informational purposes and is not an offer to buy or sell or a solicitation of an offer to buy or sell any security, including any security of any exchange-traded fund. The information is neither investment and/or tax advice, nor is it tailored to the needs or circumstances of any individual investor.

All investments, including those that seek to track indexes, are subject to risk, including the possible loss of principal. The performance of an index is not an exact representation of any particular investment as you cannot invest directly in an index. Investing in Vanguard ETFs involves risk, including the risk of error in tracking the underlying index. Investments in exchange-traded bond funds are subject to interest rate, credit, and inflation risk. Foreign investing involves additional risks including currency fluctuations and political uncertainty. Investments in emerging markets are generally more risky than investments in developed countries. Exchange-traded funds are subject to risks similar to those of stocks.

All rights in the FTSE Canada Index (the Index) vest in FTSE International Limited ("FTSE"). "FTSE[®]" is a trademark of London Stock Exchange Group companies and is used by FTSE under license. Vanguard FTSE Canada Index (the Product) has been developed solely by Vanguard. The Index is calculated by FTSE or its agent. FTSE and its licensors are not connected to and do not sponsor, advise, recommend, endorse or promote the Product and do not accept any liability whatsoever to any person arising out of (a) the use of, reliance on or any error in the Index or (b) investment in or operation of the Product. FTSE makes no claim, prediction, warranty or representation either as to the results to be obtained from the Product or the suitability of the Index for the purpose to which they are being put by Vanguard.