Principles of ETF Trading

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What is an ETF?

An exchange-traded fund (ETF) is a type of pooled investment vehicle that is listed and traded on a traditional stock exchange. Like stocks, ETFs can be bought and sold throughout the trading day. Unlike stocks, ETFs typically aim to track the performance of a basket of stocks and/or bonds – such as the constituents of an index. Here we explore some of the practical implications of ETFs as traded vehicles.

ETFs are often compared with mutual funds. There are various similarities but also some important differences. One key difference is *when* investors can invest in the products. With a mutual fund, investors often access the fund at a single price, the net asset value (NAV), which is determined once per day. With an ETF, investors have the benefit of intraday liquidity during market open hours, meaning they have more visibility and control around the price at which they buy and sell, and continuous trading offers the flexibility to invest at a specific time of day.

In certain markets, ETFs may also allow investors to invest in an exposure for which the underlying market may be closed – for example, on Thanksgiving in the US, European investors may be able to purchase shares in a US exposure on their local exchange where the underlying US stock market is closed.

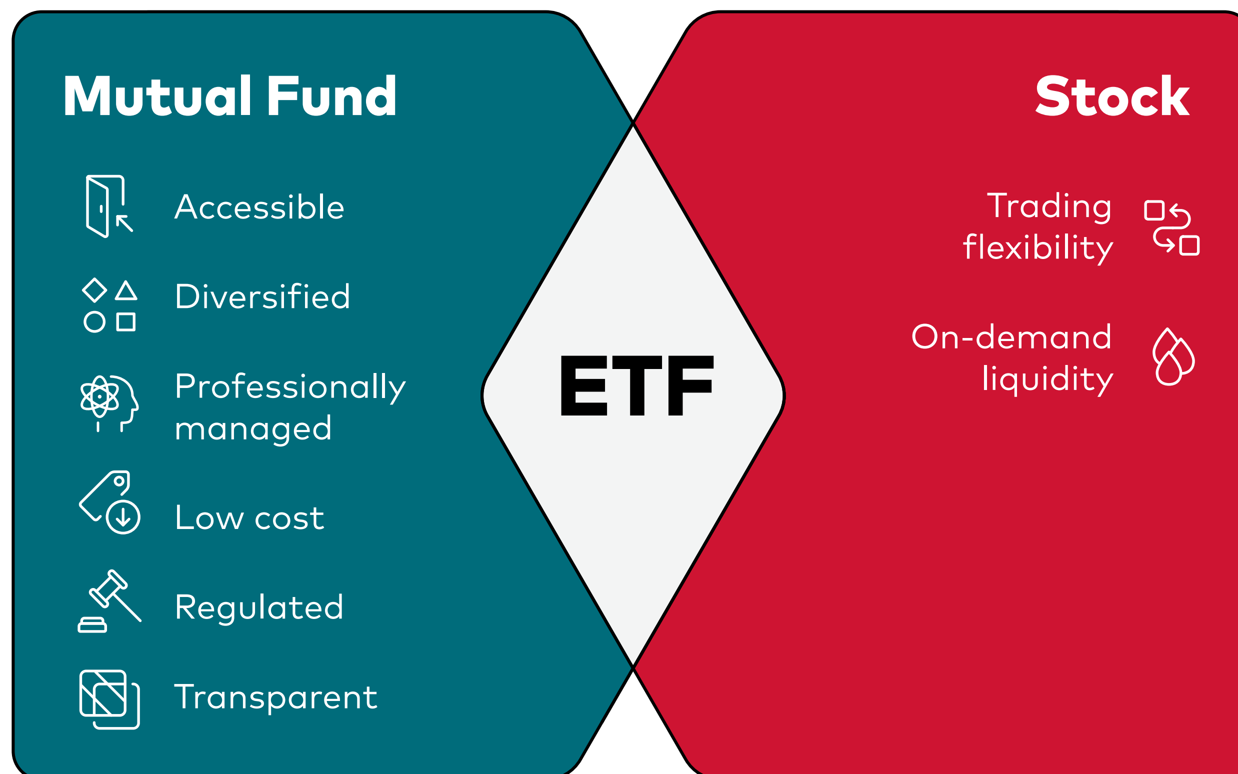
Trading flexibility

ETFs offer options for *how* investors can express their investment views. Direct investment through market orders is the most popular approach. However, ETFs also provide the flexibility to trade at a specific price using limit and stop orders, or to implement strategies such as weighting traded volume according to when an ETF typically trades (known as the volume-weighted average price, or VWAP). Furthermore, ETF investors have the added flexibility of expressing their views by entering short positions or by buying or selling options on a given ETF.

Investors face additional considerations on *where* to trade the ETF. They may elect to trade on-exchange, over-the-counter (OTC) with a counterparty or on one of the many platforms available. The options are more limited for a mutual fund, where investors can typically only invest directly with the fund provider, or a broker.

Although ETFs trade like stocks, their performance is much more akin to a traditional mutual fund. The creation/redemption mechanism is the key to keeping the price of an ETF in a tight range around the value of the underlying basket of securities it holds. Authorised participants (APs), which are large broker/dealers, can work with the ETF issuer directly to create or redeem ETF shares. APs take advantage of arbitrage opportunities when an ETF's value and that of its underlying securities diverge to ensure the ETF trades close to the value of its underlying holdings.

ETFs: Access, diversification and flexibility



Source: Vanguard. The diagram is for illustrative purposes only.

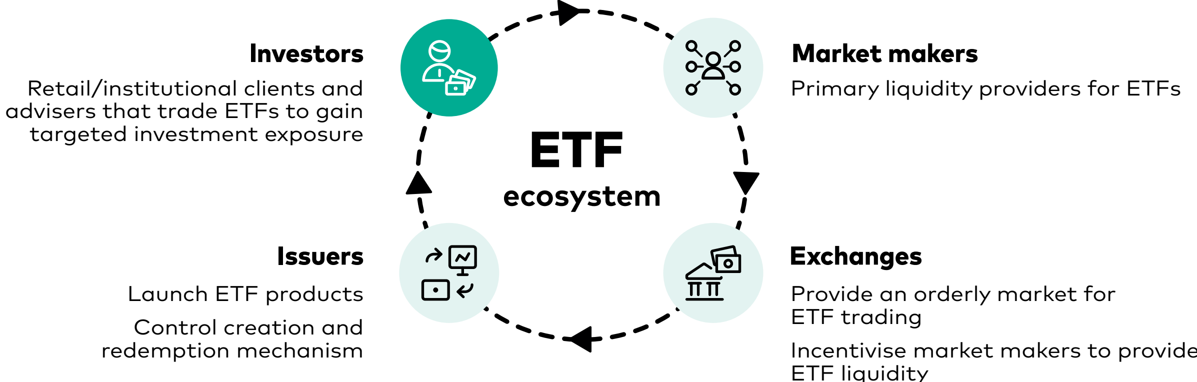
"ETFs offer options for how investors can express their investment views."

The ETF ecosystem

To understand how an ETF trades, it's necessary to explore how a variety of market participants interact to meet investor demand.

ETFs offer multiple layers of liquidity, which benefit both investors and markets. In the primary market, ETF shares are created or redeemed directly with the issuer. The primary market is what helps keep ETF prices in line with their fair value and directly influences the ETF liquidity profile that clients experience when trading ETFs in the secondary market. The secondary market is where the trading of ETF shares occurs between two market participants on ETF exchanges or other trading venues.

A closer look at the key ETF participants



Source: Vanguard. The diagram is for illustrative purposes only.

Investors place orders to buy and sell ETFs on-exchange or over-the-counter (OTC). Demand from investors helps shape the ETF products that come to market.

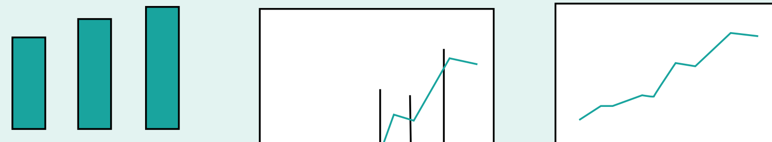
ETF issuers are asset management firms, such as Vanguard, that develop, register, manage and distribute ETFs. Issuer responsibilities include:

- **Structuring the ETF product.** This undertaking spans determining the investment approach for each ETF, benchmark selection, setting fees, gaining regulatory approvals before launching and marketing the product post launch. The way the ETF is structured will directly affect the transaction costs that investors pay when trading the ETF in the secondary market.
- **Controlling ETF creation and redemption activity.** Issuers are responsible for the process that allows new ETF shares to enter and be removed from the market. This creation/redemption process is referred to as the 'primary market' and it allows ETFs to trade efficiently, ensuring significant liquidity for ETF investors trading in the secondary market.

Execution venues create orderly markets by helping buyers to find sellers. Exchanges allow market participants to highlight the price at which they are willing to buy ETF shares, and the price at which they would sell. Off-exchange venues directly connect ETF buyers and sellers; one such example is a request for quote (RFQ) platform, where investors can directly request quotes from pre-selected market participants.

ETF market makers are firms that provide two-sided (buy and sell) quotes in ETFs and execute investor transactions. By constantly posting orders to buy and sell ETF shares to meet investor demand, they are the primary providers of liquidity for ETFs.

Authorised participants (APs) are a type of market maker. They are financial institutions that have contracts in place with ETF issuers that enable them to create and redeem ETF shares in the primary market.



Establishing an ETF trading setup

For investors who are new to trading ETFs, there are some practical steps to take in order to explore the suitability of various trading setups based on investor types.

When establishing an ETF trading setup, there are different considerations for a professional versus a self-directed, retail investor. The decision-making process is relatively straightforward for a retail investor: choosing between an investment platform, which enables self-directed trades, or partnering with a traditional investment adviser who can offer education and guidance through the ETF selection and dealing process.

Across all investor types, it's necessary to carefully consider what's most important when selecting a path to ETF execution.

For a professional investor, the decision is between resourcing an internal trading desk or outsourcing execution needs. One of the key considerations when comparing ETF trading setups is control, which can vary greatly depending on the approach. On the one hand, an investor may delegate their trading to an outsourced provider that may decide when, where and how to manage the ETF trade. An alternative approach is for an investor to prioritise full control over the execution and completely own this decision-making process internally with individual(s) who execute the trade themselves.

Outsourcing control may lead to less transparency in the ETF execution, though the trade-off could be less operational complexity. Having greater control may lead to a more tailored approach to ETF execution, with full insight into the decisions made when trading the ETF.

Finding the appropriate ETF trading setup

In practice, ETF trading setups can look very different from one investor to the next. For investors who trade ETFs less frequently, in smaller sizes or who have investment strategies that do not require immediate execution, stockbrokers and investment platforms can offer a scalable solution for the full end-to-end trade lifecycle from execution to settlement. Larger firms will often enlist the services of a custodian when they begin trading ETFs. Custodians hold assets on behalf of the investor, and also manage the money going in and out of ETFs (among other responsibilities).

For investment strategies that require greater timeliness of execution or control—such as those with the need to reduce the trading impact due to larger size and frequency of ETF orders—the investor may elect to use platforms, trade directly on exchange or engage with eligible counterparties themselves. Investors can also establish close relationships with brokers or banks for support with their ETF execution needs. Investors who trade ETFs in much greater size and frequency may elect to resource internally with specialised traders who focus on ETF execution.

When exploring an ETF trading set up, investors may want to consider:

- ETF trading frequency
- Execution strategy
- Size of ETF trades
- Internal ETF trading knowledge
- Regulatory / best-execution requirements

Evaluating ETF liquidity

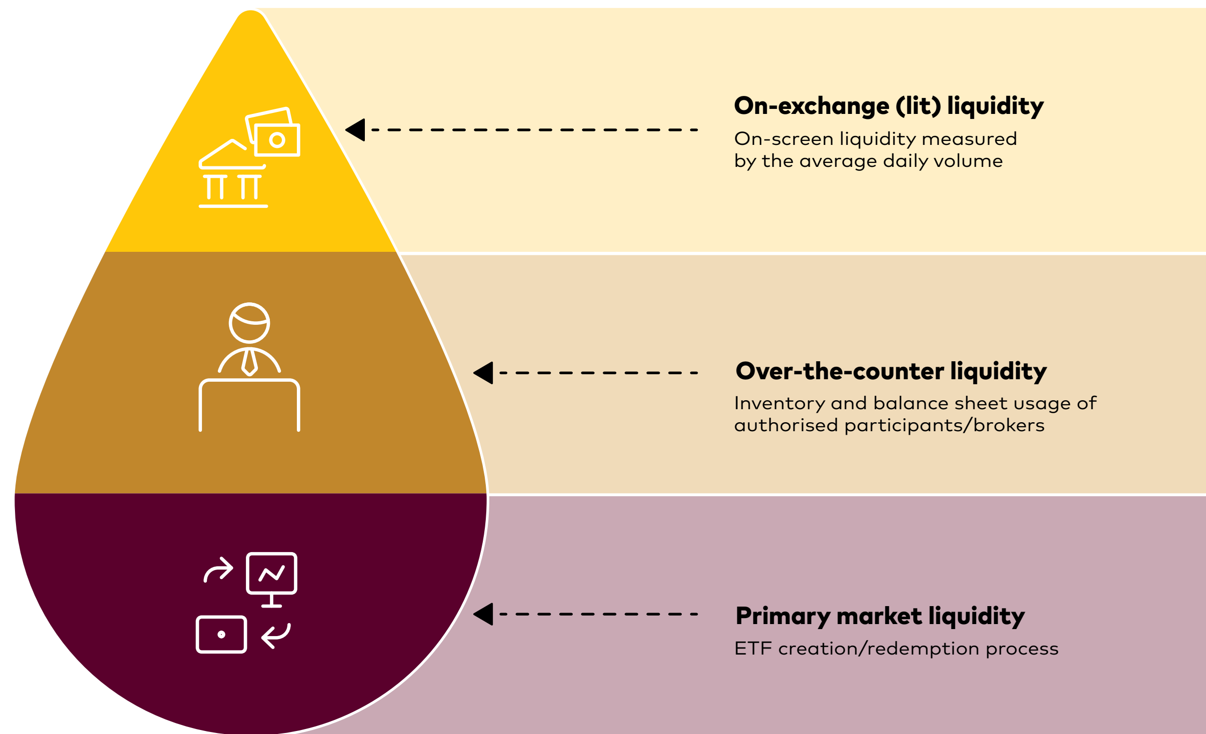
There are best practices when evaluating liquidity in the ETF selection process. In this context, 'liquidity' refers to the degree to which an asset can be bought or sold in the market at a price reflecting its true value. Liquidity is a particularly important measure for larger investors who wish to trade an ETF in greater volumes.

A common misconception is that ETFs with low average daily volumes (ADV) or with low assets under management (AUM) can be difficult or expensive to trade. This is often not the case, due to the unique structure of ETFs.

ETFs offer multiple layers of liquidity. 'Lit' activity is easily visible where trading occurs directly on-exchange. In Europe, this trading activity is fragmented across several regional exchange venues. Over-the-counter (off-exchange) trading is less easily visible, though EU regulation requires all trades on EU venues to be reported. Each ETF will trade differently across secondary market venues and it is important for investors to consider all venues where an ETF trades.

ETFs have a further layer of liquidity, accessed through the primary market. When looking at a common stock, secondary market trading represents the liquidity of the security. An ETF is different, however, given it has an open-ended fund structure. In the primary market, ETF issuers can create new or redeem existing ETF shares as required.

Sources of ETF liquidity



Source: Vanguard. The diagram is for illustrative purposes only.

Comparing liquidity across ETFs

Secondary market: Investors should review the aggregated ETF volumes across all venues, both on- and off-exchange. With the absence of a consolidated tape[1], it can be difficult for European investors to effectively review aggregate traded activity. The 'aggregated turnover data' field in Bloomberg can be helpful to assess total traded volume. For investors without access to Bloomberg, ETF providers will be able to provide aggregated trading information.

Primary market: The ability to create/redeem new units of an ETF is only limited by the ETF provider's ability to buy or sell the fund's underlying securities. If trading in large amounts, it can be helpful to compare and contrast indices to assess underlying liquidity of the ETF's holdings.

1 "Consolidated tape" refers to a system that provides real-time data on security prices and volume across exchanges. It consolidates the information from different trading venues into a single, continuous stream, allowing investors and traders to see a comprehensive view of market activities.

ETF trading strategies

When developing an ETF trading strategy, there are many different approaches to consider. Investors should be aware of some of the major considerations and tools available to them when deciding how to execute their trading strategies.

The first considerations are the execution benchmark and the size of their order. These factors will help the investor to decide how quickly they put their trade into action – in other words, the immediacy of their execution. Below are the most common exchange order types and the execution strategy they support.

Order types

Market order: Investors buy or sell immediately at the best available current price. When placing a market order, the priority is the speed of execution rather than securing a particular price.

Stop order: Investors set a price at which they automatically buy or sell. When the market hits that stop price, the stop order becomes a market order (the price received is the best available current price). When placing a stop order, the priority is trying to limit a loss or protect a profit.

Limit order: Investors set a price and execute their trade only if shares are available at that price or better. Limit orders protect the investor from executing a trade at an undesirable price. When you place a limit order, the priority is securing a certain price, not speed of execution.

Away from on-exchange trading, investors have further strategies available.

Risk trade: A trade at a negotiated price for a block of ETF shares, in which the market maker commits capital to facilitate the investor's order immediately

NAV trade: Investors can again trade the full order size with a single counterparty, though in this approach the exposure is received at the time the NAV of the ETF is struck.

Agency: This approach is typically reserved for larger trades, where market impact can be a consideration. Agency trading allows the counterparty to warehouse risk and manage the order over time to limit market impact.

Volatility

To ensure the best trading outcomes possible, investors should be aware of market volatility and its potential impact. During volatile periods, or when there are major events unfolding that could affect markets, investors need to practise extra diligence. Volatility can cause the price of an ETF's underlying securities to move sharply, which can in turn cause the ETF's shares to have wider bid-ask spreads or larger premiums (when the price of an ETF is higher than the NAV) or discounts (where the price of the ETF are below the NAV). Limit orders can be useful in such situations.

Timing

The timing of trades must also be taken into consideration. Spreads can widen at certain times of the trading day or on certain days of the year. At the local, or underlying, market's open, some of an ETF's underlying securities may not have begun trading, which means a market maker cannot price the ETF with as much certainty. Similarly, when overseas markets are closed, spreads can widen for European-listed ETFs that invest primarily in international markets – for example, a Japanese equity ETF that trades on the London Stock Exchange. If an investor is trading an ETF with international underlying securities, it's helpful to know the market holidays of the relevant overseas exchanges.

ETF execution and trade evaluation

Once investors have begun trading ETFs using some of the strategies outlined above, a further step is to assess the success of the implementation. On an ongoing basis, investors would be well served to consider the desired outcomes of their trading strategy and develop a process to review the extent to which those outcomes have been achieved.

Investors who routinely execute ETF orders may wish to develop a systematic transaction cost analysis (TCA) process to review execution. For investors who wish to analyse a single trade, a post-trade review offers the opportunity to explore what worked, and what didn't, in their ETF execution. This process can provide valuable insights that may lead investors to modify their execution placement on future orders to achieve better investment outcomes.

Analysing a trade

A helpful starting point is to review the filled price relative to where the ETF was trading on the lit order book and versus the fund's intraday net asset value (iNAV). Additionally, it can be useful to explore movements between when the price was sent (arrival price), when the order was filled (execution price) and any movements immediately after execution on the lit order book. For NAV orders, the investor may wish to compare the execution level with the end-of-day NAV. This data helps inform investors of the impact of their ETF trading.

While investors should devise their own decision-making framework, some useful questions that can help inform that framework might include:

- **When** was the trade placed?
- How **quickly** was the trade put to work?
- How do the **counterparties/brokers** perform over time?
- What is the experience like on a given **trading venue**?

Investors can also engage with the capital markets desk of ETF issuers. The desk can help support investors by providing analytics and insights to evaluate implementation and advise on best-execution practices. For more information, please contact your local Vanguard sales representative or get in touch with the Vanguard ETF capital markets team: capitalmarkets@vanguard.co.uk.Investment risk information

The value of investments, and the income from them, may fall or rise and investors may get back less than they invested.

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