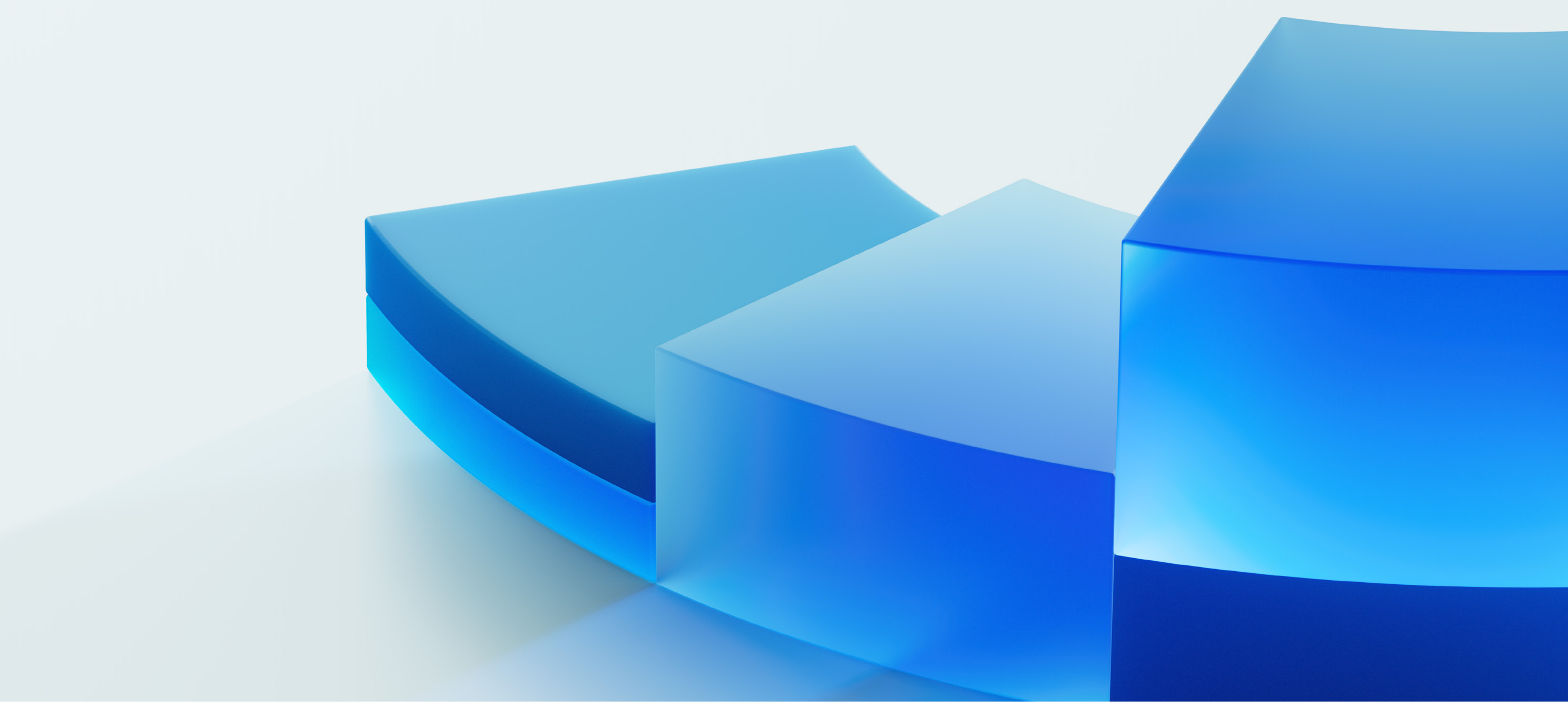


JPMorgan ETF Foundations

Building a stronger understanding of exchange-traded funds

J.P.Morgan
ASSET MANAGEMENT

Welcome to the fast-growing world of ETFs

Dramatic changes are happening in the investing world, thanks to the explosive growth of exchange-traded funds (ETFs).

Each day, more and more investors are discovering how ETFs enable them to conveniently make trades, flexibly access markets, broadly diversify portfolios and efficiently manage fees and taxes.

What are ETFs? How do they work? Could they be right for you?
Together with your financial professional, this guide explores those questions to help you make more informed decisions and the most of your investments.

What's inside

Learn the basics of ETFs

Explore advanced ETF topics

Summary

Learn the basics of ETFs

What are ETFs?

Bringing all-day trading to mutual fund investing

ETFs and mutual funds both bundle securities into diversified pools. But ETFs are bought and sold on an exchange, like a stock, giving investors access to markets and their money throughout the trading day.

ETFs are mutual funds that trade like stocks[1]

Investing was once reserved for a select few with the wealth and expertise to build their own portfolios. That all changed in 1924 with the debut of the mutual fund. For the first time, ordinary people with little to invest could pool their money into broadly diversified, professionally managed "baskets" of stocks and bonds.

Over the decades, mutual funds grew in size and popularity. Then along came "Black Monday" in 1987, when a perfect storm of events caused market liquidity to dry up — there were too many sellers and not enough buyers. As a result, U.S. stocks plunged more than 20% in a single day.

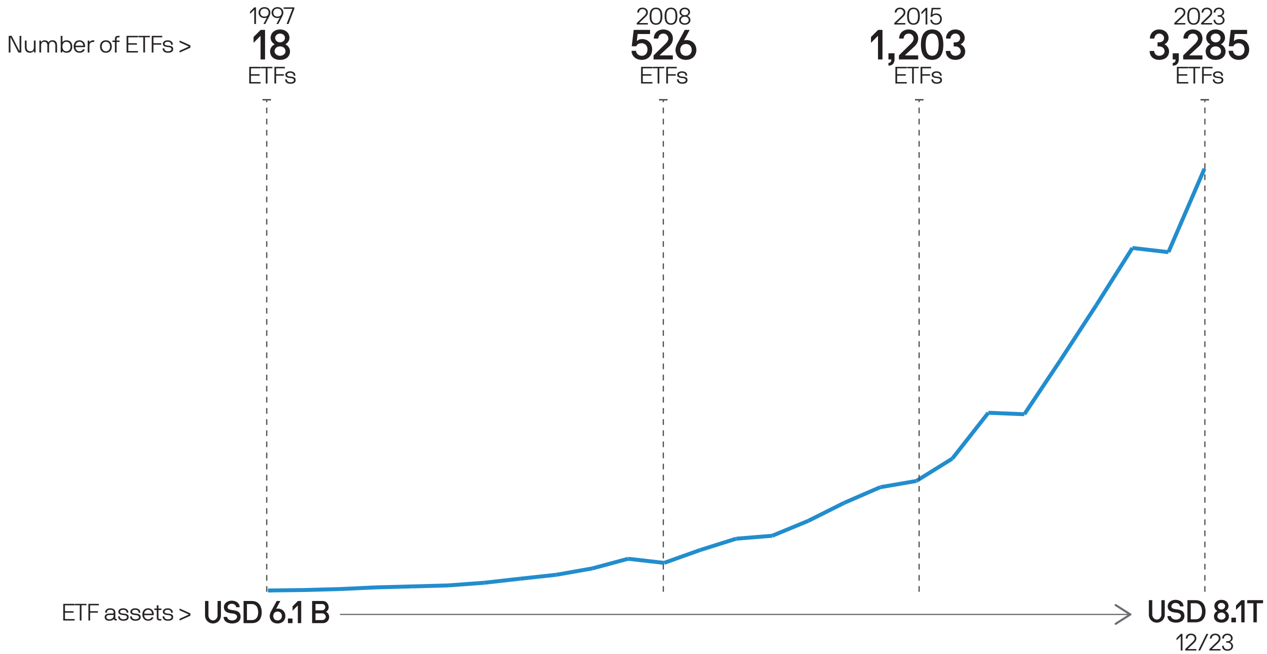
In reviewing what went wrong, government regulators made an observation that would change the investing world. They suggested that if a mutual fund-like vehicle had been available for trading throughout the day, it may have eased or even prevented the crash. Six years later, the first ETF was born. Today, ETFs continue to provide easy trading along with other valuable benefits.

[1] ETFs and Mutual Funds are different investment vehicles. ETFs are funds that trade like other publicly traded securities. Similar to shares of an index mutual fund, each ETF share represents an ownership interest in an underlying portfolio of securities and other instruments typically intended to track a market index. Unlike shares of a mutual fund, shares of an ETF may bought and sold intra-day.

ETFs are growing rapidly

ETF assets have grown by an average of **34%** each year over the past two decades.

Number of ETFs and total ETF assets



Source: ETF Assets, SimFund, Data from 12/31/97 to 12/31/23. Shown for Illustrative purposes only.

Why are ETFs growing so fast?

How fast are ETFs growing?

If you saved USD 1 million every hour of every day, it would take you nearly 700 years to reach USD 6.1 trillion. ETFs got there in just 25 years.

ETFs offer three unique advantages

With USD 8.1 trillion in investor assets, ETFs have established themselves as a low cost, tax efficient alternative to mutual funds.[2] They offer the same all-in-one diversification and professional management of funds, along with unique features and capabilities. The result is an investment providing three key benefits:

E

Efficient:

ETFs are cost-effective and tax-friendly, allowing investors to keep more of what they earn.

T

Tradable:

ETFs can be easily traded throughout the day and turned into cash as needed.

F

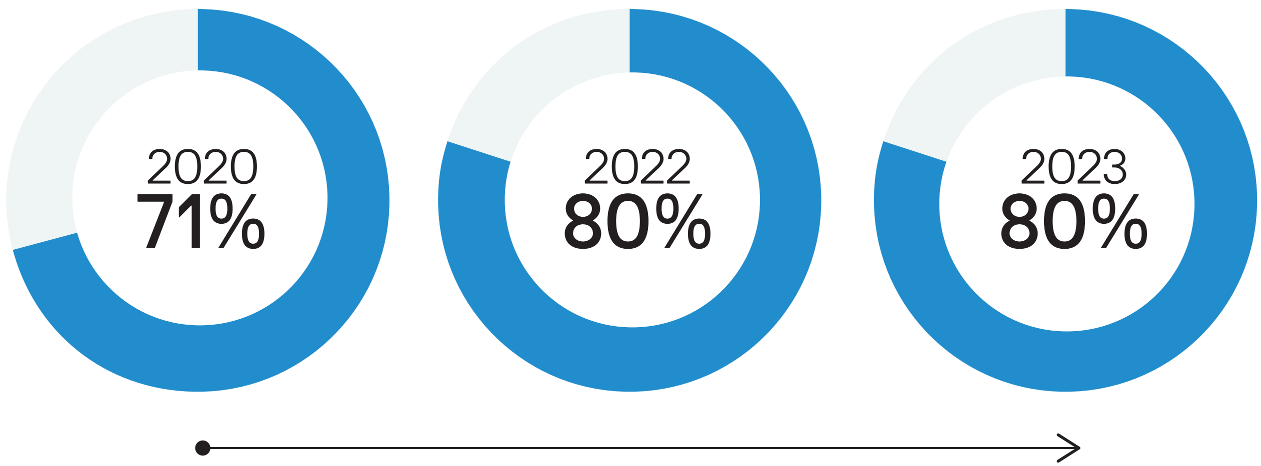
Flexible:

ETFs offer access to virtually every market worldwide — with the flexibility to quickly move in and out of them as conditions change.

[2] Source: Morningstar. Data as of 12/31/23.
Diversification does not guarantee investment returns and does not eliminate the risk of loss. Diversification among investment options and asset classes may help to reduce overall volatility.

ETFs are making up a bigger part of investors' portfolios

Percentage of portfolios invested in ETFs[3]



[3] Source: Charles Schwab, 2023 ETF Investor Study. Shown for illustrative purposes only.

PART 1

How does an ETF work?

Why does liquidity matter?

When ETFs are liquid, it's less likely investors will have to pay more to buy shares or accept less to sell — both of which can reduce returns.

ETFs are easy to buy and sell

"Liquidity" describes how quickly and easily an investment can be traded without significantly affecting its price. Low liquidity can be a risk because investors may be forced to accept less favorable prices if there aren't enough interested buyers or sellers.

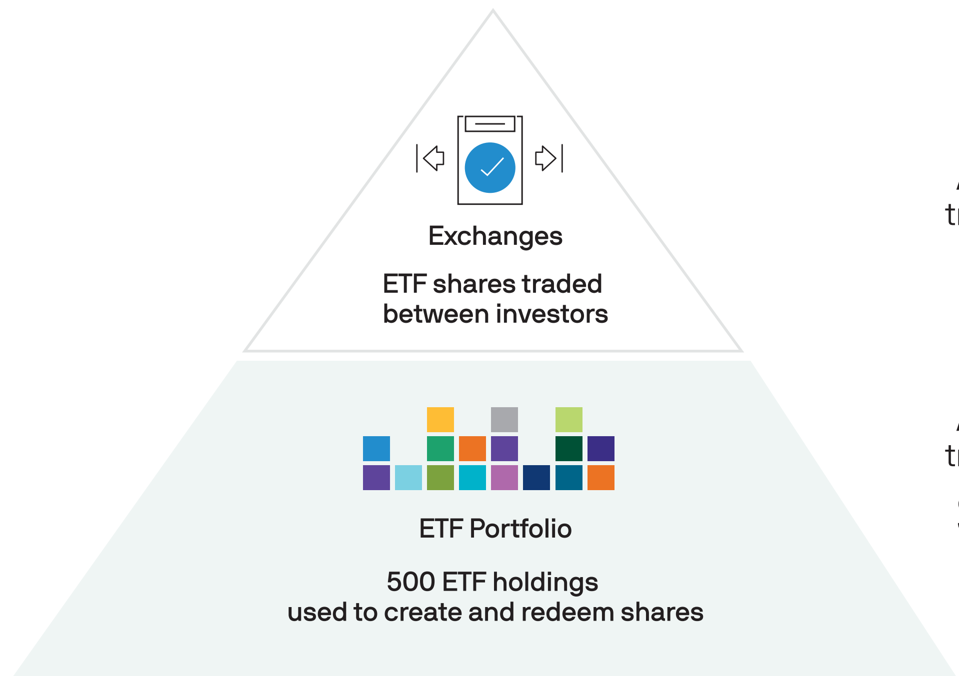
Those concerns don't usually apply to ETFs, even if they have very little trading activity.

Like stocks, ETFs are traded on exchanges, at negotiated prices that change throughout the day. Unlike stocks, the supply of ETF shares isn't fixed and can change at any time to meet investor demands. When sellers outnumber buyers, for example, ETF shares can be removed from the market to help correct the imbalance and minimize any disruptions to their price.

ETFs do this by tapping into the trading power of their portfolio holdings. Remember, ETFs are "baskets" usually made up of hundreds of different securities. Even if the ETF itself is lightly traded, it would still be liquid if its underlying basket of securities were actively bought and sold.

ETFs offer more liquidity than meets the eye

Average ETF tracking the S&P 500 Index



Average daily trading volume

$2.1Mn

+

Average daily trading volume

$182Bn

Sources: 1. Morningstar (54 ETFs), 1/3/24. 2. Russell 1000 Value Index, 1/3/24. Shown for illustrative purposes only.

PART 2

How does an ETF work?

ETF shares can be created and redeemed as needed

The supply of an ETF's shares can be increased or decreased to help keep its price in line with the value of its underlying portfolio holdings. For example, if many investors want to sell an ETF, its share price might fall below its basket's value. Here's how the process would work to reduce shares in those instances (green lines in chart):

1. **Market maker buys ETF shares,** usually at a discount to basket value.
2. **Shares are redeemed** by sending them through an Authorized Participant (AP) to the ETF issuer, in exchange for the underlying securities.
3. **Market maker sells those securities,** usually for more than they paid for ETF shares.

As ETF shares are bought and removed from the market, it helps drive prices back toward the basket's value. The process happens in reverse when more shares are needed to meet buyers' demands (blue lines). Market makers buy securities and transfer them through an AP to the ETF issuer in exchange for newly created shares, which are then sold to investors.

Know your terms

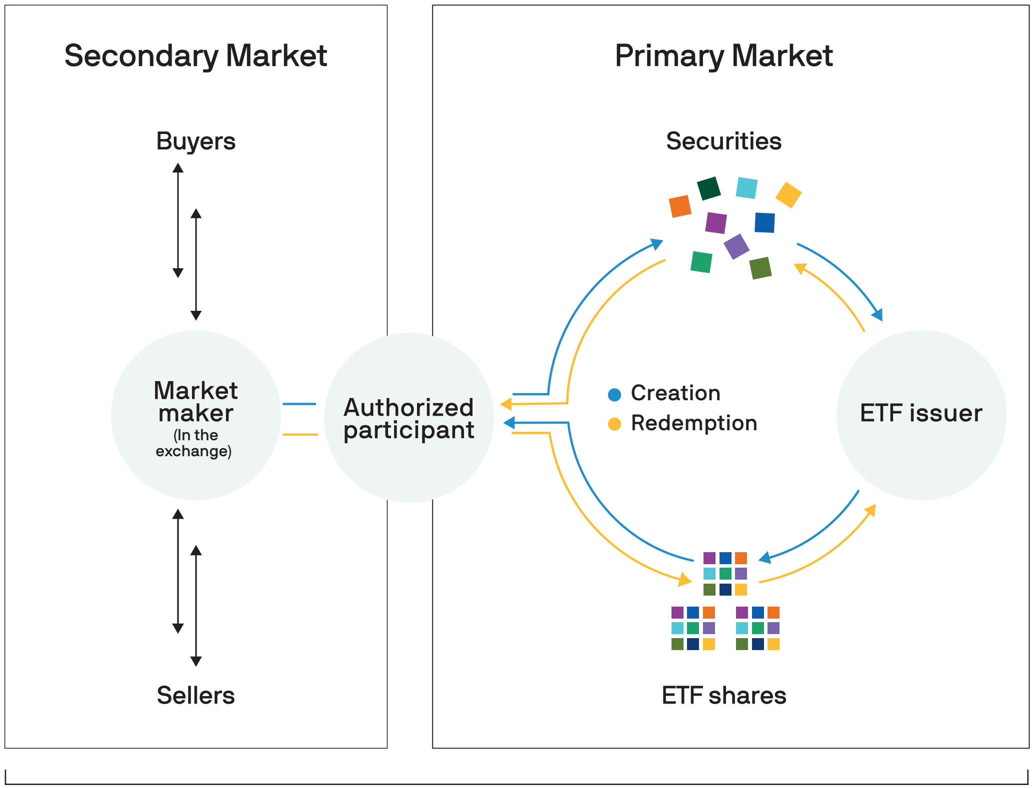
Market maker: A dealer that buys or sells at specified prices at all times; also known as liquidity providers.

Primary market: Market where ETF shares are created and redeemed.

Secondary market: An exchange where ETFs are traded (ie., New York Stock Exchange).

Authorized Participant: A broker-dealer that is contracted with the ETF issuer to create or redeem shares on behalf of market makers and institutional investors.

How ETF shares are created and redeemed



Creating and redeeming shares helps ETFs trade at prices close to the market value of their portfolio holdings.

Source: J.P. Morgan Asset Management. Shown for illustrative purposes only.

PART 3

How does an ETF work?

Did you know...

only 1.3% of ETFs are expected to distribute capital gains to investors in 2023[4]

Know your terms

Cost basis: Original purchase price used to determine capital gains and losses.

Unrealized gain: Profit, if any, on a security that has not been sold (current price minus cost basis).

ETFs can reduce taxes

When mutual funds sell securities at a profit, they must pass along those "capital gains" — and their taxes — to shareholders. But an ETF often allows investors to avoid those taxes and keep more of what they earn:

- **When investors sell ETFs on an exchange,** shares are usually transferred directly to a buyer. No money comes out of the ETF, which means no capital gains taxes because managers aren't forced to sell securities to raise cash.
- **When redemptions occur,** purchases of securities with the lowest cost basis are moved out of the portfolio without being taxed. What's left in the ETF are higher-priced securities that may trigger little or no gains when sold.

Together, these two processes can significantly reduce or completely avoid taxable gains that would otherwise have to be distributed to shareholders. While portfolio gains may not be distributed, it is important to note that taxable gains may not entirely be avoided — but rather deferred to when the ETF is sold.

[4] Source: Morningstar, 12/1/23.

ETFs remove purchases with the lowest cost basis when redemptions occur — without taxes

Purchases of a single security before redemption

	Purchase date	Cost basis	Current price	Unrealized gain
1	10/20/16	USD 24.90	27.50 USD	Redeem USD 2.60
2	2/18/16	USD 25.15		USD 2.35
3	3/15/18	USD 27.75		USD -0.25
4	8/24/17	USD 28.45		USD -0.95
5	7/10/17	USD 28.75		USD -1.25

= Total unrealized gain **USD 2.50**

Purchases of a single security after redemption

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3	3/15/18	USD 27.75		USD -0.25
4	8/24/17	USD 28.45		USD -0.95
5	7/10/17	USD 28.75		USD -1.25

= Total unrealized gain **USD -0.10**

Source: J.P. Morgan Asset Management. Shown for illustrative purposes only.

What types of ETFs are available?

Passive? Active? What's the difference?

Passive investing, or "indexing," seeks to match the portfolio holdings and performance of a market benchmark, such as the S&P 500 Index.

Active investing seeks to achieve a specific outcome by picking only those securities considered most attractive.

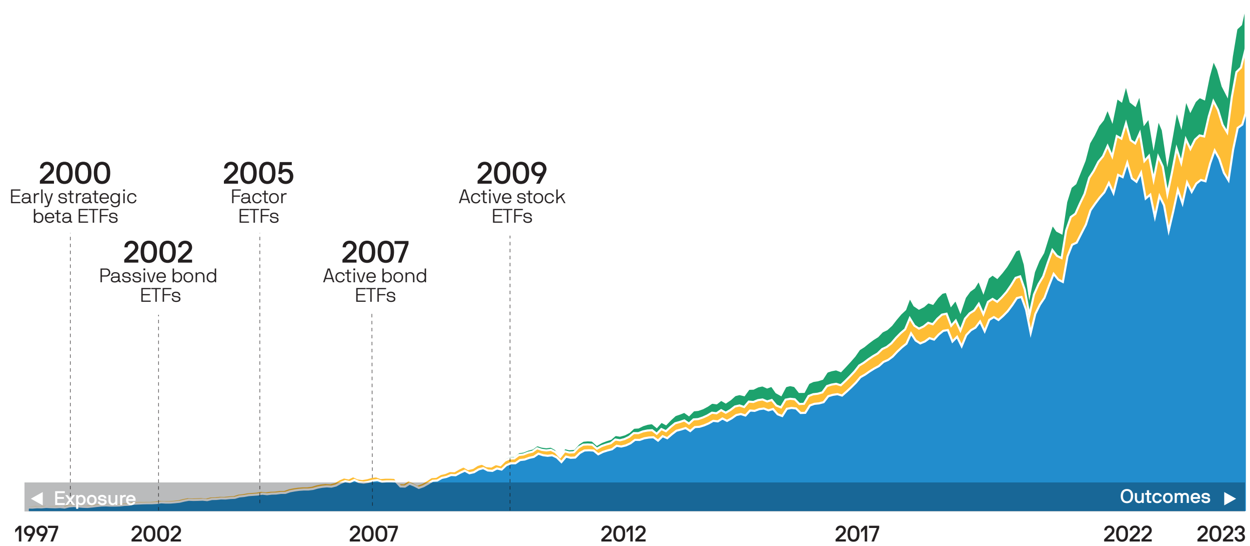
ETFs continue to expand and evolve

As market conditions and investor needs change over time, ETF providers are responding with more choices and innovative new approaches. In fact, investors can now get similar strategies long available through mutual funds, plus others unique to the ETF world.

On one end of the spectrum are purely passive ETFs tracking broad market indexes. On the other end are active ETFs in which managers decide what securities to buy and sell. In the middle are "strategic beta" ETFs that combine elements of both passive and active investing.

The ETF evolution: from market cap, to strategic beta, to active

Total assets by ETF type



- **Market cap weighting:** First ETFs offering mainly low-cost products for institutional use.
- **Active:** Active managers coming to market, bringing institutional-quality products and continued innovation.
- **Strategic beta:** Market cap-weighted products begin to gain traction with retail investors; introduction of strategic beta ETFs.

Source: Morningstar. U.S. data from 12/31/97 to 12/31/23. Shown for illustrative purposes only.

PART 2

What types of ETFs are available?

The early years: Market cap-weighted indexing

The earliest ETFs tracked traditional market cap-weighted indexes and are still among the most commonly used today. At first, they invested mainly in large U.S. stocks but have since expanded to also cover international stocks, bonds and other asset classes.

What are they?

Market cap weighting is simply the process of building a portfolio based on company size. Bigger companies make up more of the portfolio, smaller companies make up less. The S&P 500 is a good example of a market cap-weighted index. ETFs tracking that index seek to earn very similar returns by investing in the same companies, in the same proportions.

Why do investors own them?

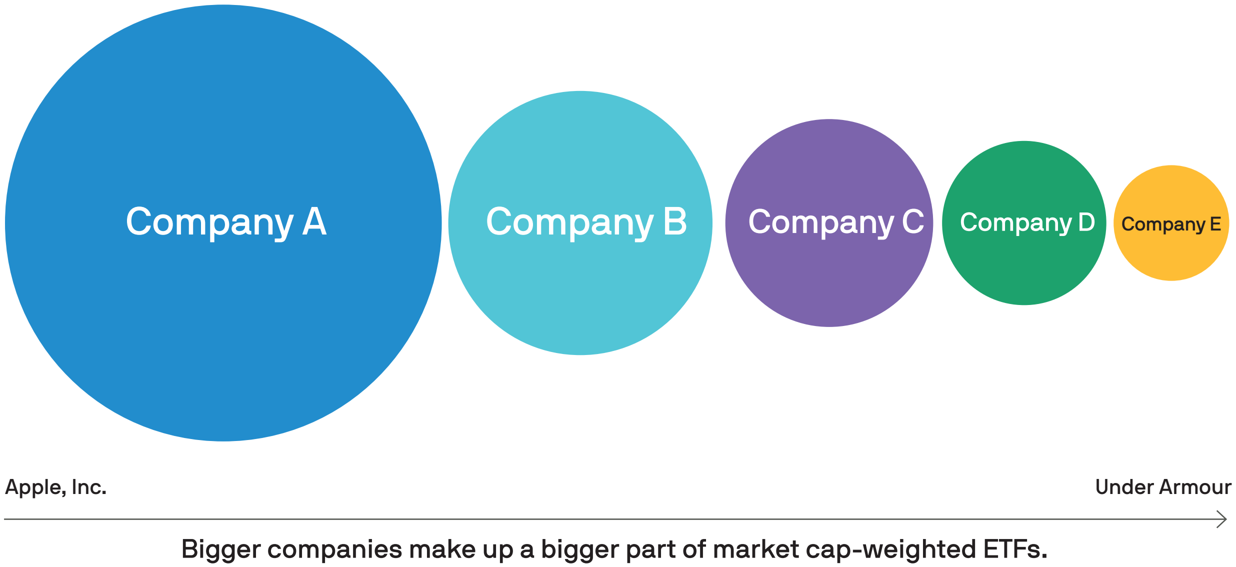
They offer an easy, low-cost way to "buy the entire market," without deviating in any way from an index.

What is market cap?

It measures a company's size by the total value of all its outstanding stock. Based on market cap, Apple is one of the world's largest companies — and the biggest part of many ETFs.

Market cap weighting: building ETF portfolios based on company size

Market caps of companies in the S&P 500 Index



Source: J.P. Morgan Asset Management. Shown for illustrative purposes only.

PART 3

What types of ETFs are available?

What are factors?

Factors are characteristics that help explain a stock's return and risk over time. For example, undervalued stocks tend to outperform expensive ones. Single-factor ETFs focus on one of those characteristics when screening stocks while multi-factor ETFs combine several together.

The first evolution: strategic beta ETFs

Like the first ETFs, strategic beta also tracks an index, but the index isn't market cap-weighted and often represents a subset of a larger investment universe. These strategies often seek higher returns and/or lower risks than traditional indexing.

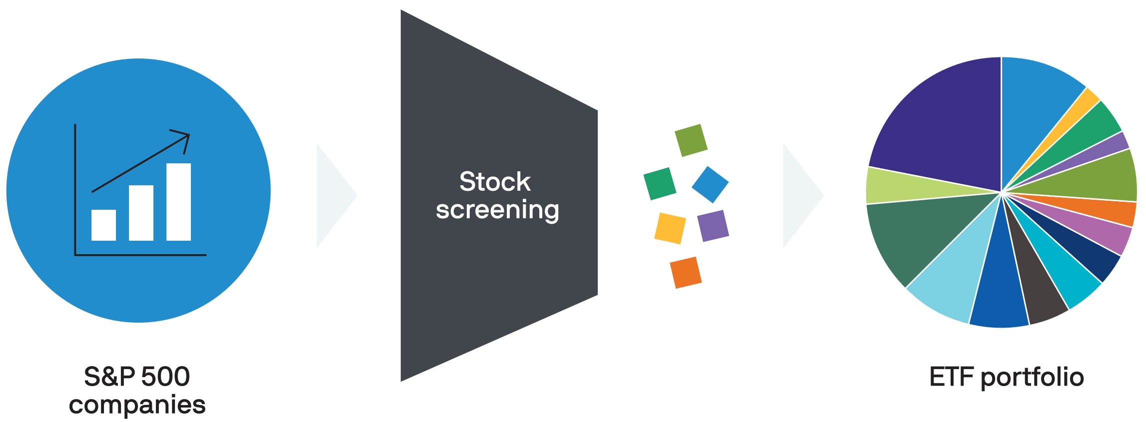
What are they?

Strategic beta ETFs use criteria other than company size to determine portfolio holdings. Some weigh stocks equally. Some screen for stocks with specific characteristics, or "factors," such as low valuations, strong earnings or price momentum. And some do both.

Why do investors own them?

Strategic beta ETFs can combine the efficiencies of index investing with enhanced portfolio or security selection. Investors might choose them to pursue a specific goal, fill portfolio gaps or capture short-term opportunities as they arise.

Strategic beta: screening for stocks with desired characteristics



Source: J.P. Morgan Asset Management. Shown for illustrative purposes only.

PART 4

What types of ETFs are available?

Active ETFs expand investor choices

Not all markets can be easily duplicated with a passive index. Active ETFs offer investors access to opportunities that might be missing from their portfolios.

The latest evolution: Actively managed ETFs

Active ETFs rely on investment professionals to pursue a specific outcome — for example, generating income, outperforming a passive index or reducing risk.

What are they?

Portfolio managers oversee active ETFs, usually with support from a team of research analysts. Together, they study potential investments and choose only those considered most attractive.

Why do investors own them?

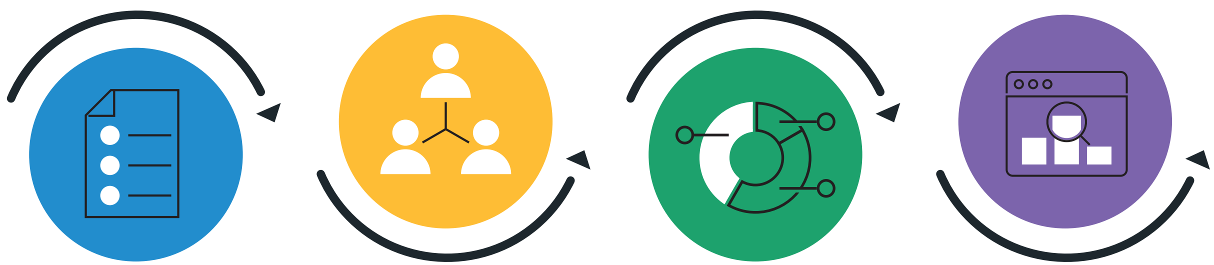
For some, active ETFs offer the best of both worlds — the easy trading and potential tax efficiencies of an ETF, plus the experience and expertise of fund managers. This human element gives active ETFs more flexibility in pursuing returns and managing risks. During volatile times, for example, managers can take defensive measures aimed at limiting losses versus an index.

Active ETFs: capturing research insights and manager expertise

Managed by people, focused on outcomes

Research
Analysts study securities and share findings

Portfolio construction
Managers weigh securities to ensure diversification and control risk



Security selection
Managers make buy/sell decisions

Daily Monitoring
Managers make adjustments as markets and outlooks change

Source: J.P. Morgan Asset Management. Shown for illustrative purposes only. Diversification does not guarantee investment returns and does not eliminate the risk of loss.

How are investors using ETFs?

Consult your Financial Professional

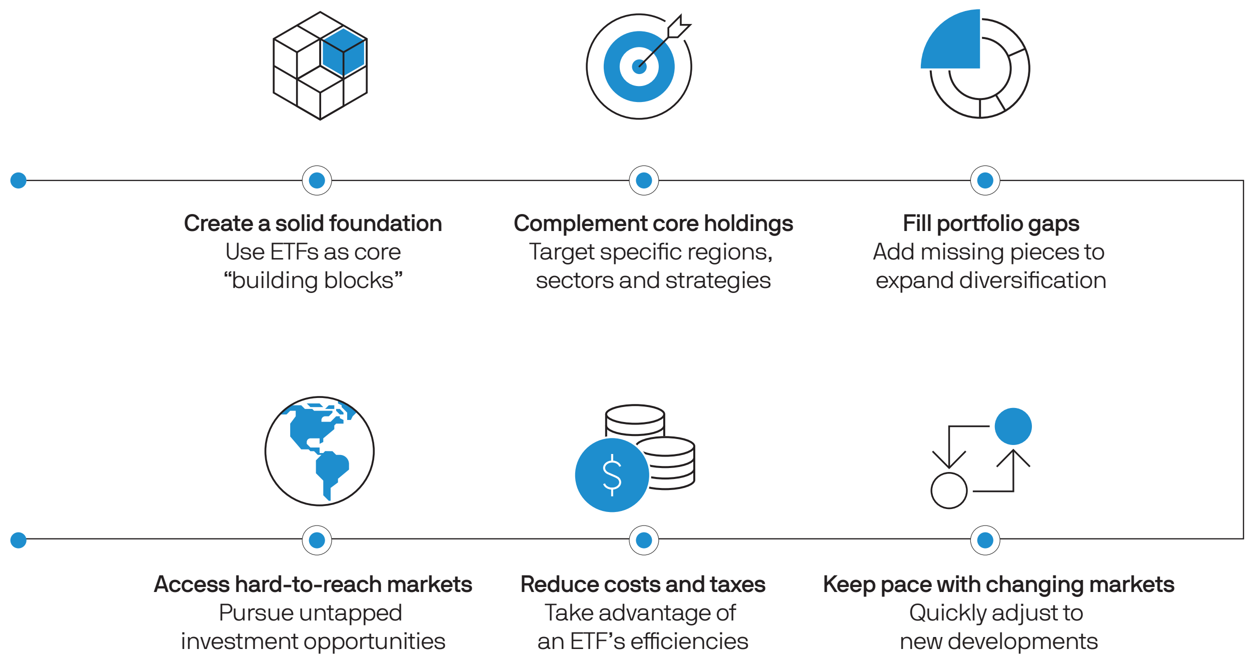
A financial professional can help you decide whether to invest in ETFs, which ones to consider and where they best fit in your portfolio.

Nearly everyone can find a use for ETFs

The wide variety and versatility of ETFs allow them to play a number of different roles in an investor's portfolio:

- **Their ability to mirror broad stock and bond indexes** make them good "building blocks" for a core portfolio.
- **ETFs targeting specific regions, sectors and strategies** can be used in several ways to enhance diversification. For example, they can complement core holdings, fill gaps, realign an unbalanced portfolio or provide access to otherwise hard-to-reach markets.
- **Investors are also using ETFs to reduce costs and taxes.** And because ETFs can be traded quickly and easily throughout the day, they're effective vehicles for moving in and out of markets as new opportunities and risks arise.

Building stronger portfolios with ETFs



Shown for illustrative purposes only. Diversification does not guarantee investment returns and does not eliminate the risk of loss.

Explore advanced ETFs topics

Why do ETFs trade at premiums and discounts?

Know your terms

Net asset value (nav): Value of all underlying ETF holdings; calculated once per day after markets close.

Intraday net asset value (iNAV): Value of all underlying ETF holdings; calculated every 15 seconds during the trading day.

Market price: Price at which ETF shares are bought and sold throughout the trading day.

Premium: Occurs when an ETF trades above its NAV.

Discount: Occurs when an ETF trades below its NAV.

Price discrepancies are not usually cause for concern

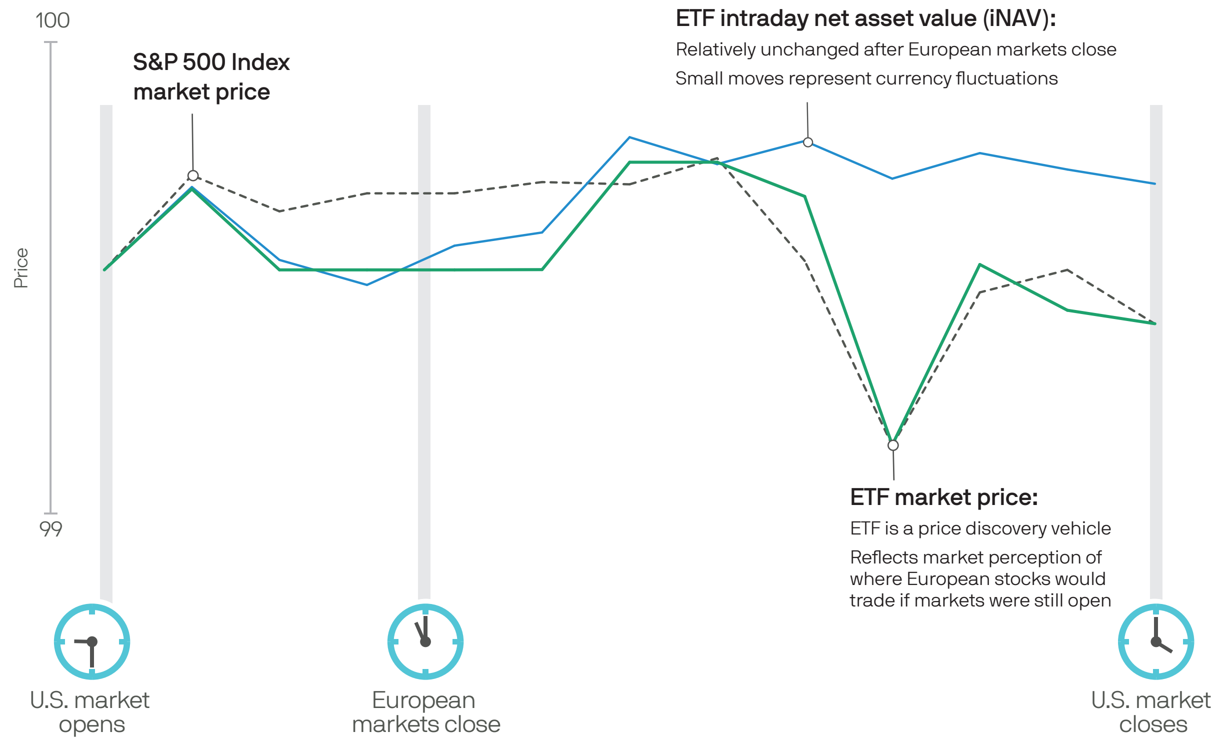
Many investors worry when an ETF trades above or below the value of its underlying securities. In most cases, however, these "premiums" and "discounts" result from factors that have little or nothing to do with an ETF's investment strategy, such as:

- Differences in time zones between foreign and U.S. markets (see chart)
- Different methods for pricing underlying securities in bond ETFs
- Light trading volume for the ETF

No matter what the cause, the process of creating and redeeming shares helps move ETF prices closer to basket value. As a result, premiums and discounts don't typically get too big or last too long.

Premiums and discounts are common with international ETFs

Hypothetical ETF investing in European stocks



Source: J.P. Morgan Asset Management. Times shown in Eastern time zone. Shown for illustrative purposes only.

Can ETFs handle large trades?

What is “bid/ask spread” and why does it matter?

Bid is the highest price a buyer is willing to pay for an ETF.

Ask is the lowest price a seller is willing to accept.

Spread is the difference between the two. Narrow spreads are usually a sign that ETFs are heavily traded.

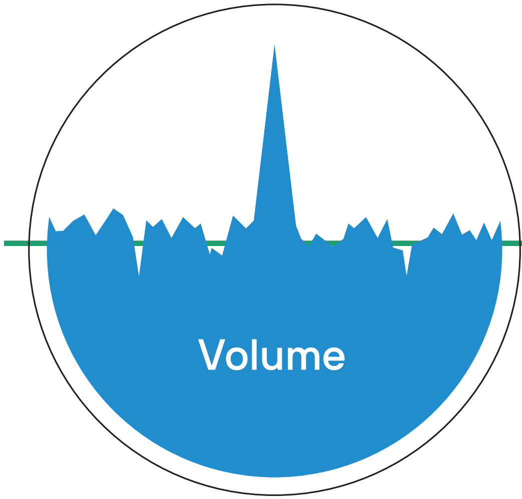
Big trades usually have little impact on ETF prices

One of the risks of stock investing is that large trades could “move the market.” For example, if someone wants to sell a lot of shares quickly, they may cause the stock price to fall by accepting a lower price to complete the trade.

Does the same thing happen with ETFs? Usually not, thanks to the unique process for creating and redeeming shares as needed.

If a large buy order comes in, new shares can be created to meet the demand. If a large sell order comes in, shares can simply be removed from the market to reduce supply. In both cases, the dozens or hundreds of different securities inside an ETF’s basket provide the trading power needed to handle large transactions.

ETFs can move large dollar amounts without moving markets



Bid/Ask Spread

Regardless of the volume, the bid/ask spread remains virtually unchanged and the ETF remains liquid.

Source: J.P. Morgan Asset Management. Shown for illustrative purposes only.

Are bond markets liquid enough for ETFs?

How liquid are bonds?

More than USD 700 billion of bonds are traded each day, on average.[6]

Bond markets and ETFs are both liquid

Contrary to popular belief, bond market liquidity hasn't dried up since new regulations were put in place after the 2008 financial crisis. Even better, bond ETFs may not need this liquidity to be actively traded themselves.

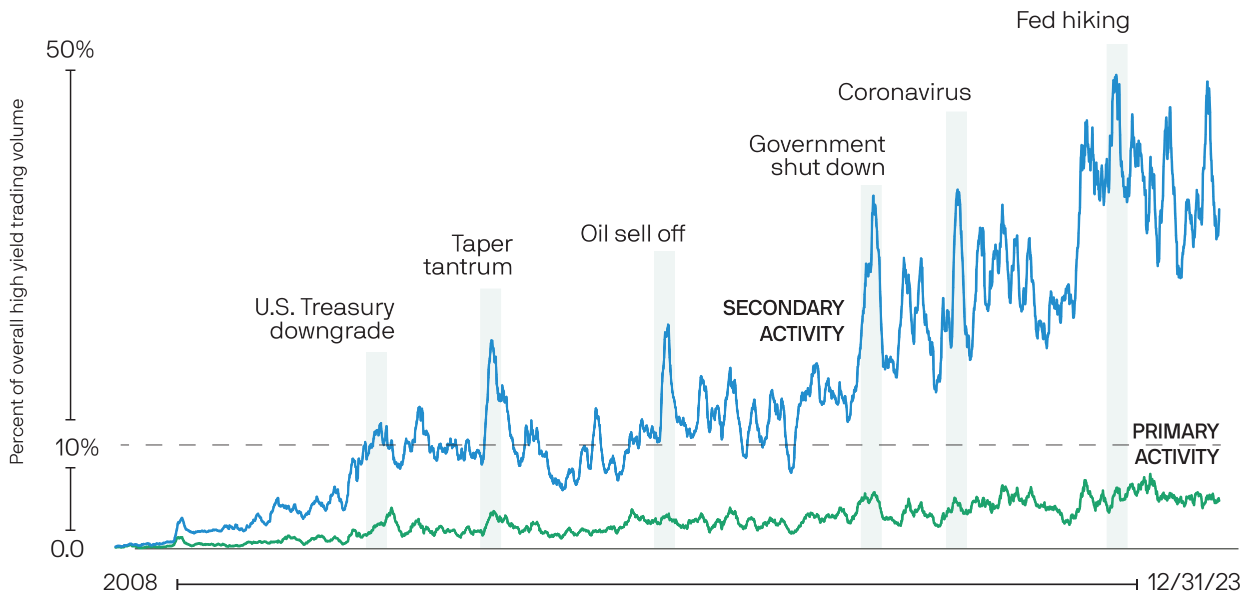
This chart shows two types of trading activity for high yield bond ETFs over the past 10 years:

- **Secondary activity** reflects the trading volume of existing ETF shares on exchanges. Note that this blue line has been consistently higher, meaning most trading occurred between investors on exchanges.
- **Primary activity** reflects the trading volume of ETFs' underlying bonds when more liquidity was needed. Although high yield can be less liquid than other bonds, note that this green line never equaled more than 10% of the overall high yield market — even during periods of stress.

[6] Source: SIFMA and Bloomberg. Data as of 12/31/17.

High yield ETFs haven't needed bond market liquidity

High yield ETF volume spikes during times of market stress



Source: Bloomberg, J.P. Morgan Asset Management. High yield ETF market is represented by HYG, JNK, PHB, HYLB, SJNK, SHGY, USHY, HYLS, ANGL, HYS, BSJL, BSJM, BSJK, and JPHY. High yield bond market is represented by FINRA TRACE Market Breadth High Yield Bond Dollar Volume (NTMBHV) and FINRA TRACE 144a HY $ Vol (NTMB4HYV). Data are as of 12/31/23.

Summary: ETFs at a glance

Summary: ETFs at a glance

ETFs are mutual funds that trade like stocks

Like mutual funds, ETFs bundle securities into diversified "baskets." Unlike funds, ETFs are bought and sold on an exchange, like a stock.

What makes ETFs unique?

E

Efficient:
Potential to reduce costs and taxes to keep more of what you earn.

T

Tradable:
Trade ETFs throughout the day and turn into cash as needed.

F

Flexible:
Quickly move in and out of virtually any market worldwide.

The supply of ETF shares can be increased or decreased at any time

- **Creates liquidity** to meet investor trading requests
- **Helps an ETF's share price** stay in line with the value of its holdings
- **Allows ETFs to remove appreciated securities** without capital gains taxes

Three types of ETFs

1. Market cap-weighted
Seeks to match an index in which bigger companies make up more of the portfolio and smaller companies make up less.

2. Strategic beta
Seeks to match an index in which portfolio weights are based on some criteria other than company size.

3. Actively managed
Relies on people and research to select securities and pursue specific outcomes.

How investors like you are using ETFs

- **Core building blocks** to create a portfolio foundation
- **Complementary pieces** to fill gaps, rebalance portfolios, target specific investments or access hard-to-reach markets
- **Tactical tools** to quickly adjust to changing conditions
- **Money savers** to help reduce fees and taxes

Want to learn more about ETFs?

- Consult your financial professional
- Visit www.jpmorganetfs.com
- Call 1-844-4JPM-ETF (1-844-457-6383)

How to buy and sell ETFs

Standard order types

Market Order	Limit Order	Not-Held Order
A request to trade immediately at the best available price	Allows you to set the maximum and minimum price for buying or selling shares	A request that gives trading authority to a broker or trading desk
PRO	**PRO**	**PRO**
Ensures immediate execution	Guaranteed to achieve desired price or better	Access to trading experts
CON	**CON**	**CON**
Seeks liquidity at any price	Not guaranteed to execute	Communication with the trading desk is often necessary, which could delay execution

SA-ETF-FOUNDATIONS

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