

Xetra. The market.

XETRA

XETRA: EUROPE'S LARGEST TRADING VENUE FOR ETFS

ETF. One transaction is all you need.



Deutsche Börse Group is the leading global service provider to the securities industry. Its cutting-edge technology provides access for companies and investors to the world's securities markets. Deutsche Börse's XTF segment makes it the European market leader in ETF trading. Investors have access to more than 1,500 ETFs via Xetra® and find the most diverse product portfolio and the highest turnover of all stock exchanges in Europe. The average monthly trading volume of this segment is about €11 billion.

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Fully electronic and liquid: ETF trading on Xetra

ETFs (exchange-traded funds) are traded all over Europe via the trading venue Xetra®. Xetra's trader screens give investors access to more than 1,500 ETFs as well as an extensive range of domestic and foreign equities. Buy and sell orders from traders at diverse locations across the globe are

matched in the Xetra order book and executed immediately. On peak days, the trading system executes more than 2.6 million transactions per day. Xetra sets standards for liquidity, transparency, speed and flexibility in securities trading. What is more, it is location-independent and extremely price competitive.



**The XTF segment:
Wide selection, high volumes**

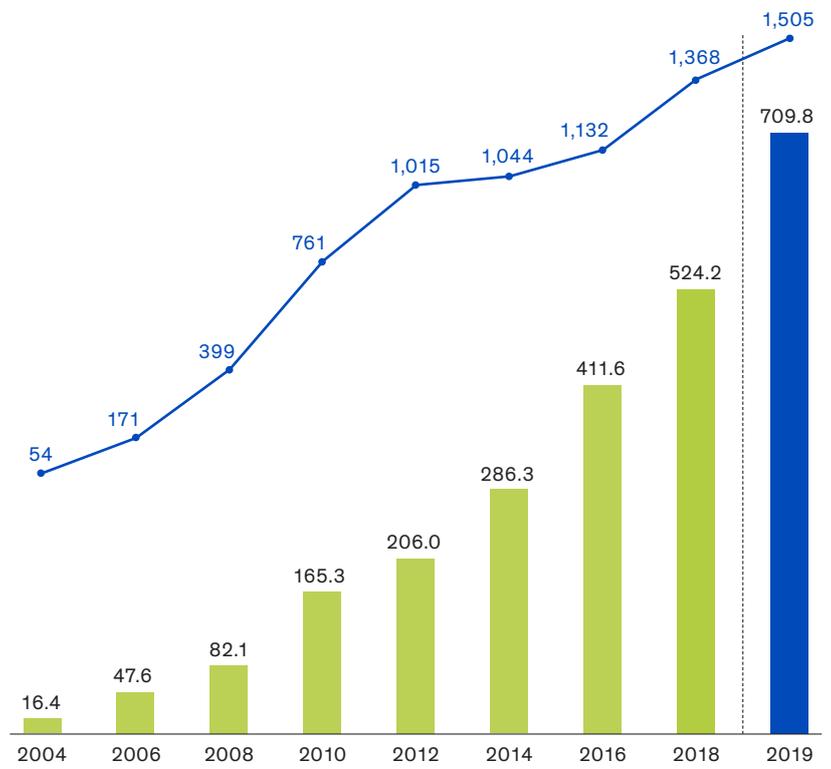
Deutsche Börse was the first European stock exchange to commence trading in listed index funds with its XTF segment, which was launched in April 2000. Since then, the segment has grown continuously, enabling Deutsche Börse to maintain its position as market leader in Europe for exchange-traded funds. Since trading began, the number of listings has risen to 1,505 by December 2019, while fund assets have jumped from an initial €400 million to a record high of €709.8 billion. The annual growth rate of the fund assets over the past ten years is 20 percent.

In the early years, the segment mainly handled funds on major European indices such as the DAX®, the EURO STOXX 50®, or the STOXX Europe 50®. Since then, the selection of ETF products has grown substantially. Besides large standard equity indices, the range now also comprises numerous other country and regional indices, “exotic” markets such as Brazil, Taiwan and Korea as well as a host of sector indices. The fixed-income segment has a wide range of high-volume government bond as well as money market ETFs.

The issue of new ETFs provides access for investors to new asset classes and numerous portfolio strategies. Deutsche Börse’s XTF segment now also includes ETFs on German and international real estate shares, on volatility as well as on commodity indices and strategy indices. The ETF offering has developed strongly with a focus on sustainability, which can be identified by the abbreviations ESG and SRI.

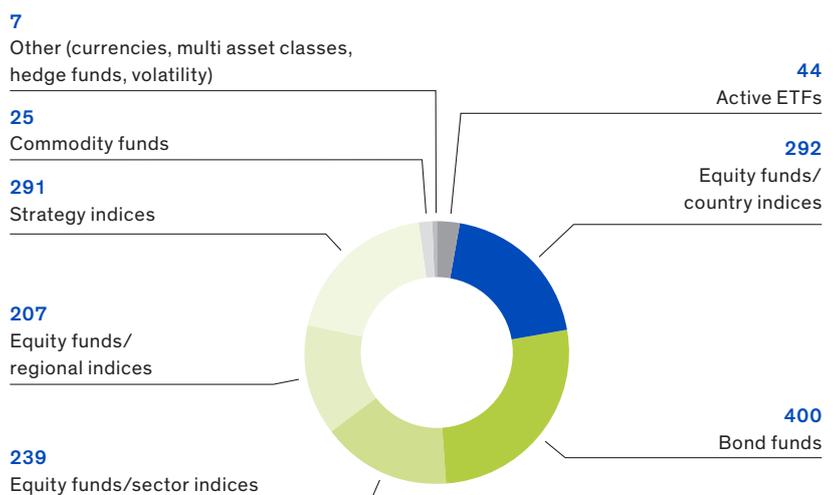
You can find an up-to-date overview of all tradable ETFs on Xetra at boerse-frankfurt.de.

**Development of the ETF segment
in the years 2004 – 2019**



◆ Number of ETFs ■ Assets under management in €billion
Source: Deutsche Börse AG, Status: December 2019

ETFs tradable on Xetra



Status: December 2019

ETFS TRACK THE PERFORMANCE OF INDICES AND MARKETS

Unlike actively managed funds, where the investment objective of the fund manager is to outperform a reference index, ETFs pursue a passive investment strategy, the aim of which is to replicate the performance of an underlying index as accurately as possible. Underlying indices may be national or international equity indices, bond and real estate indices, or even commodity or strategy indices. Indices and whole markets can be traded as easily as single shares. The investor acquires an entire basket of securities in a single stock exchange transaction. This means that investment strategies can be implemented more simply and more efficiently than with other financial instruments.

The price for a single share generally corresponds to a fraction of the index value defined by the issuer. The fair price can be verified at all times using the indicative net asset value (iNAV[®]) which is calculated continuously.

In contrast to certificates, ETFs, like traditional investment funds, consist of a separate pool of fund assets. Consequently, ETFs are a very safe investment and investors are protected against total loss if the issuer goes bankrupt. According to the swap agreement, Swap-based ETFs may show

a counterparty risk of the swap contract partner, which is legally limited to no more than 10 percent of the fund assets. However, issuers are able to reduce or eliminate this risk by depositing appropriate collateral.

The main objective of ETFs is to replicate the performance of specific indices as accurately as possible. In the process, the ETF manager must keep the tracking error as small as possible. The tracking error is the difference between the price performance of the ETF and the performance of the index it is linked to. In practice, the performance of the index fund may differ from that of the index it is replicating.

This is due to the following factors:

- Fund management costs: these are deducted from the performance.
- The point in time at which the ETF is valued: this may differ from the time of the last index valuation.
- The use of profits: dividends, income from rights issues and special payments may be distributed or accumulated.
- The date of the index change: the composition of the selection index DAX[®] is reviewed every three months, for example, with individual securities being reweighted as necessary.

BENEFITS OF ETFs FOR INVESTORS AND TRADING PARTICIPANTS

Broad diversification with a single investment

Buying an ETF gives investors access to entire markets with just a single transaction. Exchange-traded funds allow various investment strategies to be implemented. ETFs combine the tradability of an equity with the risk diversification of a portfolio. Investors spread their risk by investing in the entire basket of securities underlying an index. Institutional investors also save themselves the hassle of having to do their own research and can avoid the sometimes complex currency and settlement procedures involved in investing in individual markets.

Continuous trading with top liquidity

ETFs are continuously traded with top liquidity on the trading venue Xetra. Xetra accounts for about 90 percent of the total turnover in exchange-traded funds in Germany. With a market share of 28 percent Deutsche Börse's Xetra is the leading trading venue in Europe.

The higher the liquidity, the lower the implicit transaction costs, i.e. the costs incurring the investor by the bid/ask spread when buying or selling products. By now, ETFs on the most popular standard indices have evolved into the most liquid instrument

group on Xetra; they show a higher liquidity than even the most heavily traded DAX® equities. On average, the implicit transaction costs for the 20 most liquid equity ETFs are less than 5 basis points for an order size of €100,000.

Trading on Xetra enables the investor to utilize the key functions of fully electronic equity trading for ETFs as well. In addition to Designated Sponsors and continuous trading, these include various forms of auctions, different order types and a minimum trading size of one fund share.

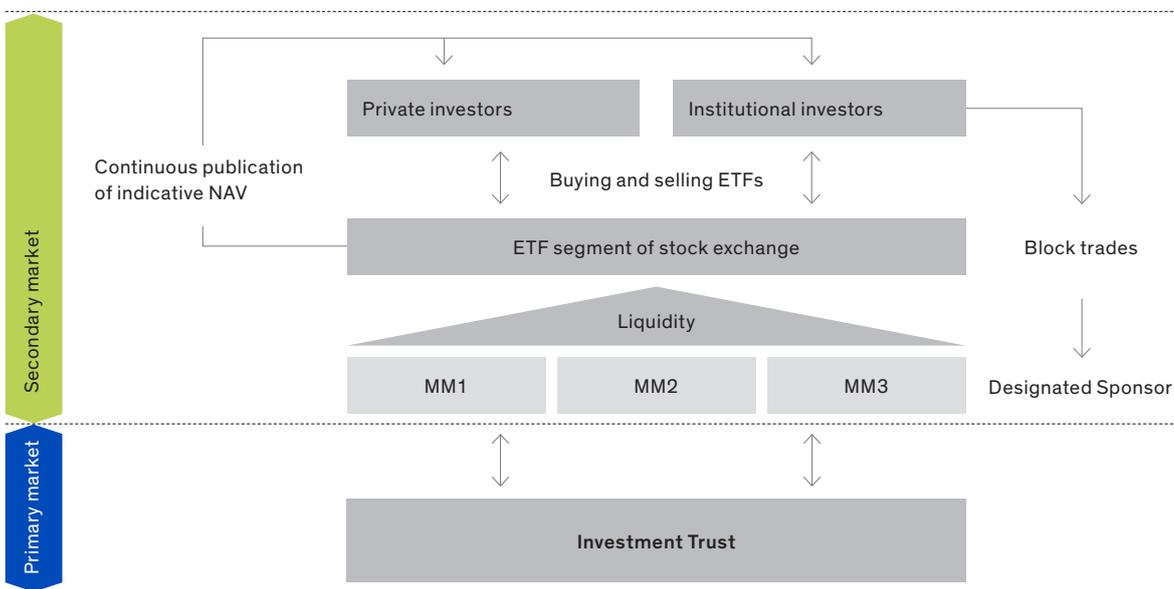
The creation/redemption process has a positive effect on ETFs' liquidity and performance. In this process, the Designated Sponsor and the ETF provider exchange baskets of securities for ETF shares and vice versa. The Designated Sponsor can buy or sell baskets of shares on the market without the ETF provider incurring transaction fees. All participants profit from the creation/redemption process: the issuer can efficiently replicate the index, the Designated Sponsor benefits from additional trading opportunities and the investor receives a fair price with low trading fees at all times.

ETFs on Xetra:

The advantages at a glance

- High degree of flexibility and possible applications through pan-European electronic trading
- Indicative net asset value (iNAV®) provides transparent price information
- Low purchase and management cost without any front load fee
- Narrow bid/ask spreads
- High liquidity during continuous trading
- High degree of risk diversification with just one investment
- Implementation of a large number of investment and trading strategies possible
- Protection from issuer risk due to separate pool of fund assets

Creation/Redemption-Process



MM=Market Maker (also known as Designated Sponsor)

iXLM: New key indicator provides information on trading costs over the course of the trading day

Deutsche Börse is providing ETF investors with a new key indicator: The iXLM (intraday Xetra liquidity measure) provides information on how trading costs of an ETF have developed over the course of a trading day. This allows investors to deduce the period in which the trading costs of an ETF were particularly low and to take this information into account for future decisions. The indi-

vidual key indicator is available for all ETFs traded on Xetra. To calculate the iXLM, Deutsche Börse divides the trading day from 9:00 a.m. to 5:30 p.m. into half-hour intervals and calculates the iXLM retroactively for each half hour. The values are published once a month. A current evaluation of all ETFs has shown that the implicit transaction costs at the best time are up to 30 percent lower than at the worst time during the day. The monthly evaluation is published in the ETF statistics on xetra.com.

Transparency assured by the indicative net asset value

For exchange-traded funds in the XTF segment an indicative net asset value is calculated at least once per minute during trading hours by the issuer or a third party commissioned by the issuer. Deutsche Börse AG, for example, performs this function for many issuers under its iNAV brand.

Lower purchase and management costs

As ETFs are traded like equities they have no front load or redemption fees – unlike traditional funds. Only the usual transaction costs are incurred for the purchase or sale via the stock exchange. What is more, thanks to the passive management strategy, the annual management fees for ETFs are generally far lower than those of actively managed funds. The management fee is calculated pro rata for each day and deducted automatically from the fund assets.

For most ETFs the spread is very narrow, which allows their purchase and sale on a low cost basis. Highly liquid ETFs demonstrate bid/ask spreads of less than 5 basis points on the stock exchanges. By and large, the spreads for major liquid indices range between 5 and 10 basis points, though they may top 50 basis points for more specialized products.

No issuer and reinvestment risk

Legally, an index certificate is a bearer bond. By contrast, an exchange-traded fund comprises a pool of fund assets that is separate from the assets of the ETF management company. While a certificate harbours the risk of total loss if the issuer goes bankrupt, ETFs are not exposed to this issuer risk.

ETFs generally have an unlimited duration and no maturity date; they are open-ended products. Investors have no reinvestment risk; they do not have to dissolve the ETF at the end of the term and reinvest the money at less favourable conditions. As a result, no reinvestment costs are incurred, which is an advantage over fixed-income securities, for example.

Indicative net asset values (iNAVs) state the current value of the fund assets, thus ensuring maximum transparency. Indicative net asset values are usually calculated on the basis of the portfolio, meaning they are based on the current prices of the individual items contained in the fund. The composition of the fund portfolio, which is published daily, is factored into the calculation. The cash in the fund is also added to the individual items in the fund portfolio. The fund assets calculated in this way divided by the number of fund shares gives the current indicative net asset value.

This value has many possible applications: Designated Sponsors use it to monitor their calculations during trading, institutional investors use it to assist in risk management and investors can easily find out about the current value of the ETF.





INVESTMENT AND TRADING STRATEGIES

ETFs can be used to implement a number of different trading and investment strategies. As trading on Xetra® provides high liquidity, ETFs are also a suitable tool for algorithmic traders.

Productive investment

Due to their attractive cost structure, ETFs are ideal for both short- and long-term investments. A growing number of institutional investors have already invested in ETFs, leveraging the cost benefits and the opportunity these provide to implement their strategy more effectively. For example, using ETFs, investors can exploit short-term market trends as part of a short-term investment strategy without having to analyse individual stocks. ETFs on broad indices lend themselves to longer-term investment strategies. They can be specifically enhanced with individual securities, depending on the investor's individual risk appetite.

Core-satellite approach

In this strategy, portfolio managers use one broadly diversified core investment plus other, smaller individual investments called satellites. The core investment generates a basic return in line with the benchmark or a broad index while the satellites allow for a higher risk/return profile. The satellites chosen have a low correlation with the core investment. Due to their attractive cost structure and extreme flexibility, ETFs are ideally suited for use in such strategies, both as a core investment and as satellites.

Cash equitization

ETFs lend themselves extremely well to the short-term management of cash assets because of their high liquidity and flexible trading. Fund managers and institutional investors can manage existing cash and inflows of funds flexibly, rapidly and accurately using ETFs. By temporarily parking income from dividend, bonus, or interest payments in ETFs, they can benefit from the performance of the benchmark. Subsequently, it is possible to reinvest the funds in individual shares in accordance with the investment objective.

Arbitrage strategies

Different trading strategies can also be implemented with ETFs. One of the main strategies here is based on temporary price imbalances between markets. Any time a price imbalance of this nature arises for a specific underlying instrument, a potential arbitrage opportunity arises for market participants. Taking advantage of this arbitrage opportunity not only eliminates the temporary price imbalance; it also ensures high price quality on the relevant markets.

Short-selling and an alternative to derivatives

Investors can use short selling to hedge existing portfolios quickly and at low cost or, alternatively, to bet directly that the market will fall. To do this, ETFs are borrowed from the lender against payment of a securities lending fee and then sold on the market. If the underlying index falls the investor can

buy back the loaned ETFs at a lower unit price and return them to the lender.

A short-selling strategy using ETFs is especially useful for markets in which individual equities cannot be sold short for regulatory reasons or for which a corresponding futures contract is not available. Moreover, ETFs provide an alternative to the use of futures for groups of investors that are not allowed to trade derivatives on account of their legal form, or when the aim is to avoid roll risk and managing margin accounts.

DIFFERENT FORMS OF ETFS

Performance or price index as reference

ETFs can replicate both performance indices and price indices. The main difference lies in the way the interest and dividend payments for the instruments quoted on the index are handled. Price indices, for example, measure the actual price performance and are merely adjusted for the income from rights issues and special payments. In performance indices, all income from dividend, bonus, or interest payments is also reinvested in the index portfolio.

Independent of the calculation method for the underlying reference index, investors benefit in both variants from the dividend and interest payments that the ETF generates.

If the ETF replicates a performance index, the dividends or interest income accruing to the ETF will be reinvested in keeping with the calculation method of the reference index i.e. this income will accrue to the investor through the price performance of the ETF. If, on the other hand, the ETF replicates a price index, the income accruing to the ETF will be paid out to investors at regular intervals. In this way, both variants of the ETF develop in line with the index.

Minor differences in the degree of index tracking may occur depending on the calculation method. For example, when performance indices are replicated the management fee for the ETF will be deducted from the fund assets on a daily basis; on the other hand, the fund must pay taxes on dividends and interest received that are not included in the index calculation. When price indices are replicated, dividends and

interest received increase the fund's cash assets i.e. they result in a positive difference between the performance of the ETF and the underlying index until the date they are distributed to shareholders. Over and above this, in both index variants fund managers can generate additional income e.g. through securities lending transactions that may boost the performance of the fund and thus compensate for negative variance from the performance index to a certain extent or even in full.

Swap ETFs

Swap ETFs use derivatives to track the performance of indices as accurately as possible. This enables non-index-related costs such as trading expenses and trading taxes (e.g. stamp duty in the UK) to be largely avoided. The index is not tracked directly by acquiring the securities it contains but rather indirectly via one or more swap agreements. The company acquires securities for the fund that initially do not generate any index-related income for the fund. Under the swap agreement, however, the entire performance of the securities held by the fund is swapped for the performance of the underlying index so that the shareholder of the swap ETF participates fully in the performance of the underlying index. By avoiding or reducing non-index-related costs, swap-based ETFs allow even more precise tracking of the performance of the underlying index.

Active ETFs

Active ETFs are exchange-traded funds that pursue an active investment strategy. This may, for example, aim at outperforming an underlying benchmark index or combining

the performance of a reference index with a structured component to achieve leverage, provide a capital guarantee or generate a reverse exposure to the reference index. Like traditional ETFs, active ETFs are continuously tradable on Xetra®, offering investors a comparatively high degree of flexibility and a wide range of applications. Active ETFs must meet the same requirements in terms of transparency as passive ETFs.

[You can find a current overview of all tradable ETFs and active ETFs, including information about their distribution policies and structure at boerse-frankfurt.de.](https://www.boerse-frankfurt.de)



THE ADMISSION PROCESS FOR ETFS

ETFs that are to be traded in Deutsche Börse's XTF segment must have been admitted to trading in the Regulated Market of FWB® Frankfurt Stock Exchange.

Applications can only be considered for securities whose public distribution is permitted in the Federal Republic of Germany. Other preconditions include the appointment of at least one Designated Sponsor and the calculation of an indicative net asset value. Further requirements for the participation in the ETF segment can be found in the conditions of participation at xetra.com/etf_e.

Applying for admission to trading on the stock exchange is a quick and easy process. Issuers seeking admission to the XTF segment should observe the following:

- We recommend starting off by arranging an informal meeting with Deutsche Börse's Cash Market Products & Regulation department, which will answer questions on the market segment and admission to trading. This department will also put the issuer in contact with Designated Sponsors.
- Application for admission to trading on the Regulated Market is filed jointly by the issuer and a co-applying lead manager who must be admitted to trading on the FWB Frankfurt Stock Exchange. Contact partner is the department Listing Services.
- The Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin – Federal Financial Supervisory Authority) reviews the prospectus and grants permission for the public distribution of domestic shares. For shares which are permitted for public distribution outside of Germany and which are liable to the UCIT directive the issuers confirmation is sufficient.
- Funds approved for distribution can be admitted to trading in the Regulated Market of the FWB Frankfurt Stock Exchange within five trading days.
- Deutsche Börse admits Designated Sponsors to trading within one day. Please find the application form for Designated Sponsors at xetra.com/ds_e.
- Deutsche Börse's Market Data & Services department will answer any questions on arranging and calculating indicative net asset values (iNAV®).

For questions please contact:

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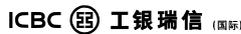
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