



Exchange traded funds

Further sophistication fuels investor demand

June 2, 2008

Exchange traded funds are listed index funds that combine the diversification benefits of investment funds with the tradability of listed securities in one product.

The ETF market is growing fast. In 2007, assets under management (AuM) rose worldwide by 40.8% to USD 796.6 bn and in Europe by 27.5% to EUR 89.2 bn (USD 128.4 bn). The biggest single market is the USA with AuM of USD 580.7 bn (73% market share), followed by Europe with AuM of USD 128.4 bn (16%).

We expect the growth trend to continue in the medium term. In our forecast we estimate that AuM in the European ETF market will grow to around EUR 150 bn by the end of 2010, driven by structural changes on the supply and investor side.

1. **Institutional investors will make greater use of ETFs** as mainly an increasing number of pension funds will invest in ETFs. Notably in Europe, pension funds will acquire greater importance in the long term.
2. **Active fund managers will increasingly make use of ETFs** to reduce the costs of active portfolio management strategies.
3. **The fast-growing use of swaps for index replication** will lead to further product innovations, especially in the fixed-income area.
4. **Swaps will further reduce the tracking error of ETFs** and allow an outperformance of innovative ETFs over traditional ones in the long run.
5. **Retail investors will assume a greater role.** The German definite tax on all investment income, to be introduced 2009, and the greater transparency of fees under the MiFID regime will attract further inflows into either swap-based ETFs or funds of funds that use ETFs.
6. **Investment advisors** will acquire greater importance in Europe, like in the US, in the medium term and, hence, raise the demand for ETFs further.

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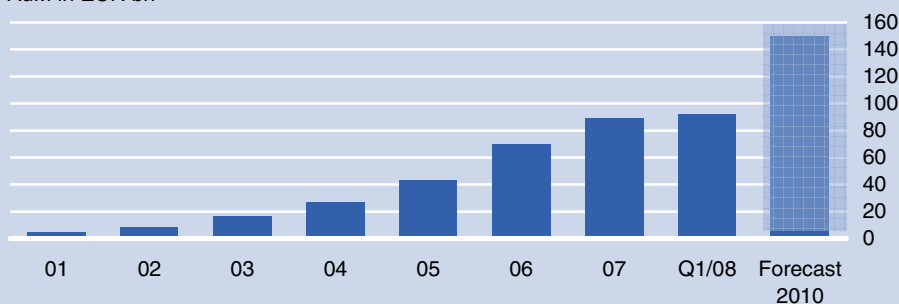
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Forecast European ETF market

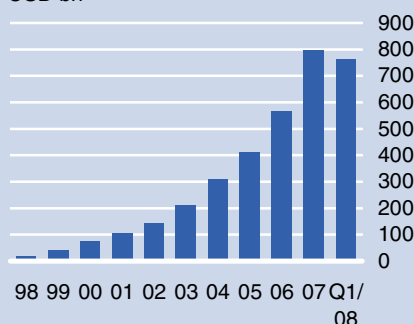
AuM in EUR bn



Source: Deutsche Bank

ETFs: Global AuM

USD bn

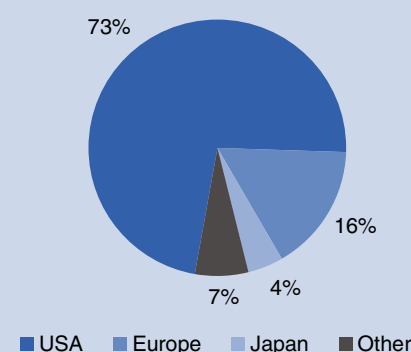


Source: Morgan Stanley

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Global ETF market

2007, USD, as % AuM

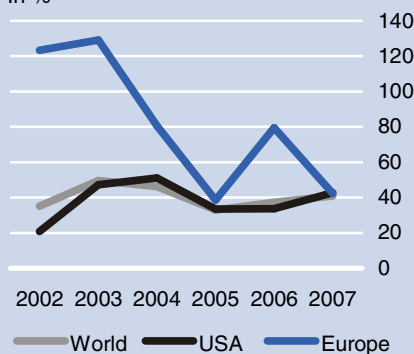


Source: Morgan Stanley

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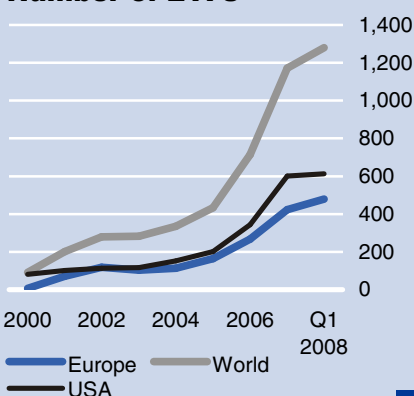
AuM growth

In %



Sources: Morgan Stanley, DB Research

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Number of ETFs

Sources: Morgan Stanley, Deutsche Bank

4

1. Introduction

Interest in exchange traded funds (ETFs), among institutional and private investors, has grown enormously in recent years. Since the breakthrough of ETFs in 1993 in the USA the global market for exchange traded funds has witnessed average annual rates of growth in assets under management (AuM) in the high double digits.¹ Meanwhile, exchange traded funds account for around 57.6% of net inflows into equity funds in the USA.² Investors value ETFs especially for their high product transparency, flexibility as a portfolio management instrument, and low total expense ratio. While exchange traded funds have been an established, widely used investment instrument for many years in the USA, they have only acquired greater importance in Europe more recently. The German market for ETFs especially has seen dynamic growth in recent years.

This study examines the market and product trends in the European and German ETF market. What level have assets under management already attained? What product features of ETFs do investors value? What investment strategies can be realised with ETFs? What have been the drivers behind the strong growth in recent years? How will assets under management develop in the medium term? What medium-term market trends are in evidence and how important a role will private investors play in future?

2. The market for exchange traded funds

ETFs are exchange traded index funds that track the performance of an underlying index (almost) one-to-one. They were developed with the aim of combining the tradability of shares with the diversification benefits of investment funds into one product. They can be purchased on the stock market just like shares, and they can be traded continuously during trading hours. Investors therefore benefit from quick access to the capital market and can even place limit or stop-loss orders for ETFs.

1. The global market

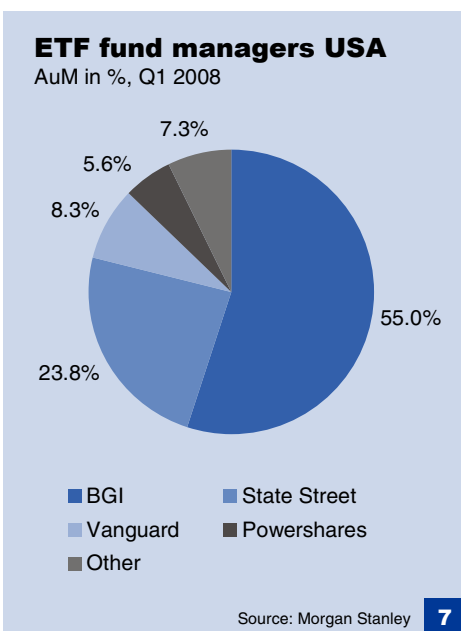
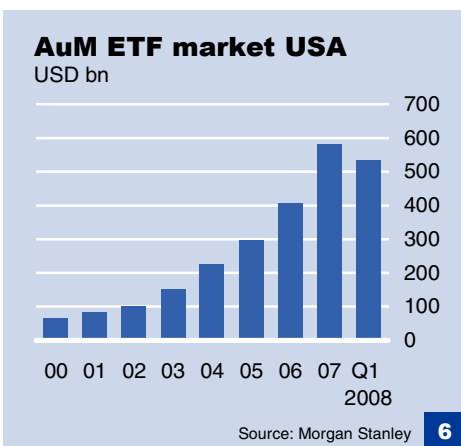
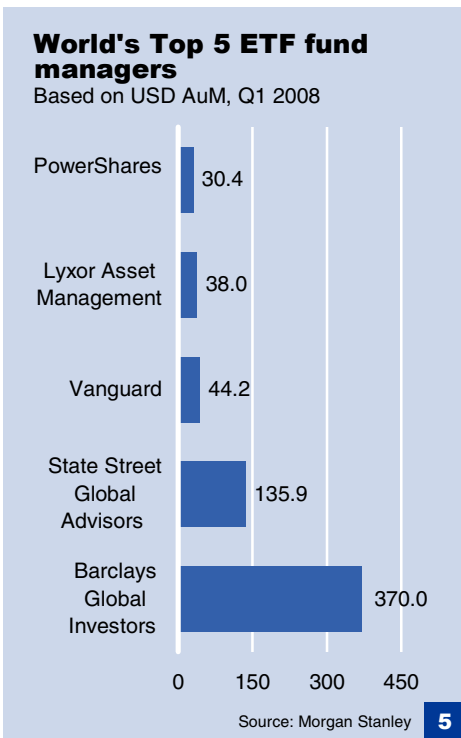
Global ETF assets under management grew by 40.8% to USD 796.6 bn in 2007 (USD 565.6 bn in 2006); for comparison: the MSCI World Index gained only 7.1% (in USD terms). The USA is the biggest market for ETFs with assets under management of USD 580.7 bn (73% of the global ETF market), followed by Europe with AuM of USD 128.4 bn (16% of the total market). Owing to the weakness of the capital markets at the beginning of 2008 global ETF assets under management declined this year for the first time. Global AuM fell by USD 35.3 bn, or -4.4%, to USD 760.8 bn in Q1 2008 mainly due to negative price effects from stock index performance.³

This temporary decline in AuM apart, it is remarkable that in the past years even established ETF markets such as the US market have witnessed still high annual rates of AuM growth (2007: +42.7%). A comparison with other investment products shows that the global ETF market is growing much faster than, for instance, the European

¹ The rates of growth far exceed the performance of the MSCI World Index over the past years of 7.1% in 2007, 18% in 2006, 7.6% in 2005 and 12.8% in 2004.

² Morgan Stanley (2008).

³ Morgan Stanley (2008).



investment fund sector (+4.9% in 2007), the global investment fund industry (+7.9% in 2007)⁴ and even the hedge fund industry (+30.9% in 2007).⁵ Experts predict that the ETF market will sustain this high growth dynamic in the medium term.

The number of ETFs worldwide rose by 64% to 1,171 ETFs at the end of 2007, which are offered by 75 fund managers. There are 1,909 listings on 41 exchanges around the world. Barclays Global Investors (BGI) is the biggest fund manager with AuM of USD 370.0 bn (48.6% of the global market), followed by State Street Global Investors with AuM of USD 135.9 bn (17.9% market share). Deutsche Bank staged the biggest market entry last year with AuM of USD 18.2 bn and 77 ETFs. This year the number of ETFs has continued to rise, reaching 1,280 worldwide in Q1 2008.⁶

2. The US market for ETFs

In the USA ETF assets under management grew by 42.7% to USD 580.7 bn in 2007 (USD 406.8 bn in 2006); for comparison: the MSCI US Index gained only 4.1%. At the end of 2007 there were a total of 601 ETFs; 258 new products were launched in the past year alone. At the beginning of this year assets under management in the USA fell by 8.0% to USD 534.4 bn in Q1 2008 due to the weakness of the capital markets. The biggest fund managers in Q1 2008 were Barclays Global Investors with AuM of USD 293.8 bn (55.0% market share) and State Street Global Advisors with AuM of USD 127.3 bn (23.8% market share).⁷

Compared to the European market, the US ETF market displays structural differences. While multiple index licensing is customary practice in Europe, i.e. several fund managers launch an ETF based on the same index (e.g. 13 licences have been granted for the Euro Stoxx 50), it is not (yet) customary for more than one licence to be granted on indices in the USA. The only exception at present is the S&P 500, on which both State Street and Barclays have launched an ETF. Nonetheless, experts believe that in future multiple index licensing on European lines will also acquire greater importance in the USA in the medium term. The upshot of this structural difference is, firstly, that in Europe investors can choose between ETF managers that track the same index. This creates competition among fund managers, which results in lower charges for investors. Secondly, this situation leads to a higher fragmentation of demand, which means that the assets under management of European ETFs are low on average. In the USA a total of 601 ETFs had combined assets under management of USD 580.7 bn in 2007, while in Europe 423 ETFs had aggregate AuM of only USD 128.4 bn in 2007. This gives average AuM per ETF in 2007 of USD 304 m in Europe versus AuM of USD 966 m in the USA.

3. The ETF market in Europe

Since ETFs were introduced in Europe in the year 2000 assets under management have witnessed very dynamic growth. In 2007 AuM in Europe grew by 27.5% to EUR 89.2 bn (2006: EUR 70 bn), while the MSCI Europe Index gained only 10.6%. Assets under management rose further in Q1 2008, despite the weakness of the capital markets, by 3.8% to EUR 92.6 bn. At the end of the first quarter of 2008 there were 479 ETFs of 29 fund managers with

⁴ EFAMA / Investment Company Institute (2008).

⁵ Hedge Fund Research.

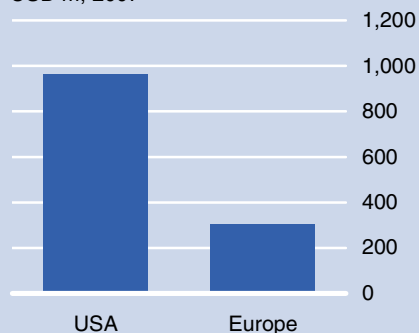
⁶ Morgan Stanley (2008).

⁷ Morgan Stanley (2008).



Average AuM per ETF; USA vs. Europe

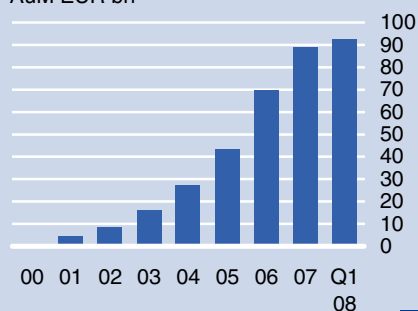
USD m, 2007



Source: Morgan Stanley **8**

AuM European ETF market

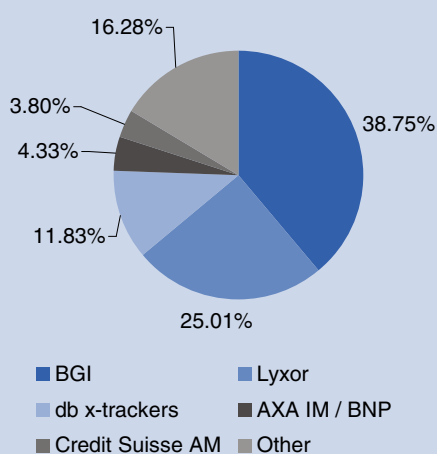
AuM EUR bn



Source: Deutsche Bank **9**

ETF fund managers Europe

AuM in %, Q1 2008



Source: Deutsche Bank **10**

1,552 listings available on 14 exchanges in Europe. Of the 1,552 listings, Deutsche Börse accounts for 362, the London Stock Exchange for 332, Borsa Italiana for 282 and Euronext for 278.⁸

The biggest European ETF fund managers in Q1 2008 were BGI with AuM of EUR 37 bn (38.8% market share), followed by Lyxor with AuM of EUR 23.9 bn (25%) and db x-trackers with AuM of EUR 11.3 bn (11.8%).⁹ The majority of the funds are launched in Luxembourg or Ireland. By concentrating on a few production locations fund managers seek to keep costs down; the availability of qualified personnel is also a factor in location policy. The time it takes to obtain regulatory approval for new products also plays an important role.

As far as exchange trading is concerned, Deutsche Börse has the highest turnover in ETFs, accounting for 36.7% of the total (March 2008), ahead of NYSE Euronext Paris (30.6%) and Borsa Italiana (16.3%). The London Stock Exchange follows in fourth place (6.2%).¹⁰ However, it needs to be borne in mind that much of the turnover in ETFs takes place off the exchange. Experts estimate that off-exchange trading accounts for up to three-fourths of turnover. Another point to bear in mind is that the level of liquidity at different exchanges is not the only factor that is relevant for the tradability of an ETF; far more important is the underlying liquidity of the index stocks that can be exchanged into ETF units in the creation/redemption process (see section 3.2). For instance, the assets under management of an ETF based on the MSCI EM World Index grew since it was launched in July 2007 from USD 18 m to over USD 2.3 bn in February 2008, while the cumulative exchange turnover only amounted to USD 81 m. This example points to the key role played by an efficient creation/redemption process.

4. The ETF market in Germany

The German ETF market has developed very dynamically since its launch in 2000.¹¹ However, there are no reliable figures for assets under management in Germany, as the majority of the ETFs are listed on several European exchanges. ETF markets are therefore not purely national but rather pan-European markets. In 2007 Deutsche Börse's average monthly turnover in the "XTF" market segment was over EUR 9bn, with an annual turnover of EUR 109bn.¹²

5. Investor groups: who invests in ETFs?

The number of institutional investors around the world who invest in ETFs is constantly rising. At the end of 2006, 2,214 institutional investors had invested in ETFs. That included 460 institutional investors in Europe (versus 430 in 2005) and 1,559 institutional investors in the USA (versus 1,333 in 2005). There are no reliable figures about the role of private investors, but they are indirectly invested in ETFs on a significant scale through investment advisers, banks and insurers. Roughly 70% of all global institutional ETF investors in 2006 were investment advisers, for instance.¹³ For the German ETF market, experts estimate that direct investments by private investors account for about 10-15% of the turnover in ETFs

⁸ Deutsche Bank (2008).

⁹ Deutsche Bank (2008).

¹⁰ Deutsche Börse (2008).

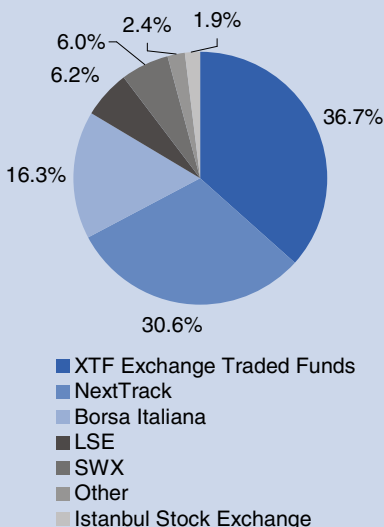
¹¹ ETFs were first traded in Germany (Deutsche Börse) in April 2000.

¹² Deutsche Börse (2008).

¹³ Morgan Stanley (2007).

Share of exchange-traded turnover in ETFs in Europe

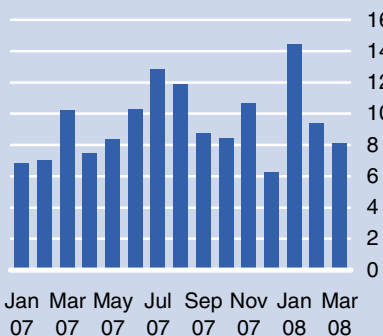
Q1 2008



Source: Deutsche Börse **11**

Xetra turnover in ETFs

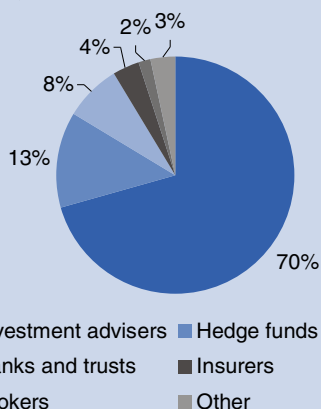
EUR bn



Source: Deutsche Börse **13**

Institutional investors in ETFs

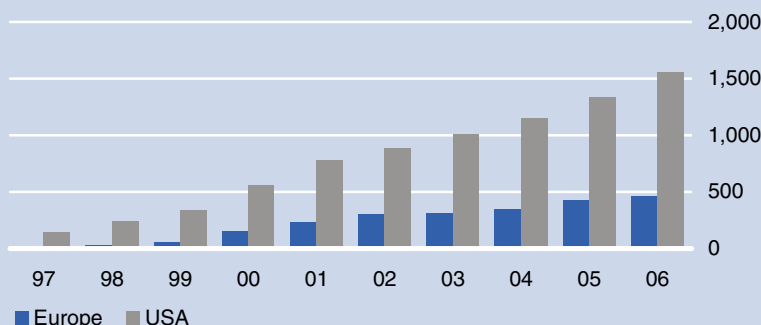
2006, worldwide



Sources: Thomson Financial, Morgan Stanley **14**

and that another 35% is conducted indirectly on behalf of private individuals by institutional investors (asset managers, banks and pension funds). Almost 80% of the trades on the Borsa Italiana are from private investors, but together they account for only about 9% of turnover.¹⁴

Institutional ETF investors



Source: Morgan Stanley **12**

3. Product features and investment strategies

1. Product features

Investors value the flexibility and convenience of ETFs. Buying ETF units is an efficient way of diversifying and gaining quick exposure to a broad market with the purchase of just one security. The S&P 500 for instance covers about 75% of the US equity market's capitalisation.¹⁵ The spectrum of available indices has steadily increased over the past years and now spans a wide range of equity, fixed-income and strategy indices. There are also indices based on commodities or credit markets. ETFs can therefore serve as a low-cost and flexible module for diverse investment strategies, such as core-satellite strategies or trading strategies (see chapter 3.4). As passive investment instruments ETFs can also achieve almost exactly the same return as an index, i.e. the tracking error (deviation from the benchmark) is usually very small (see chapter 5).

Another important motive for buying ETFs is the cost advantages when buying units and in the case of management fees. As investors buy ETFs directly through the exchange, there is no upfront issue premium which is usually in the region of 3% to 5% for conventional investment fund units. However, ETFs are not only cheaper to buy than traditional actively managed investment funds but are also more favourable in terms of management fees, e.g. they averaged only 0.34% for European ETFs in 2007.¹⁶ By contrast, management fees for actively managed investment funds are in the region of 1-2% p.a. of the fund's assets. The investor only pays the order charges when buying and selling the units that are not incurred when buying traditional investment fund units.

Investors also value exchange traded funds for their pricing transparency. This is due firstly to the fact that they are traded on the exchange as market makers continuously publish bid and offer

¹⁴ Borsa Italiana (2008).

¹⁵ Standard & Poor's.

¹⁶ Deutsche Bank (2007).

Benefits of ETFs

- High transparency
- Low costs
- Indices can be played with a single product
- High liquidity
- High risk diversification
- Low bid/offer spreads

Impact of fees on investment performance

With long-term investments the fee structure has a significant influence on the investment's performance. Take for instance a one-off investment of EUR 20,000 with an annual return of 8% p.a. for a term of 20 years. Assuming a management fee of 0.5% p.a. this would yield a final sum of EUR 84,957.02, while with a management fee of 1.5% p.a. the final sum would be EUR 70,472.90.

Indicative net asset value (iNAV)

iNAV is calculated continuously and represents an ETF's fair value at the present time. It is calculated from the market prices of all the ETF's securities, other assets and cash less all liabilities. This sum is divided by the number of the ETF's units in circulation. iNAV basically fulfils three functions: it serves as a benchmark for market makers' bid and offer prices, as an indication of the fairness of market prices for the investor, and to uncover possible arbitrage potential.

History and forerunners of ETFs:

1971	The "Samsonite Pension Fund", the first index fund for institutional investors
1975	First index-based retail fund, the "Vanguard 500", for private investors
1980	With program trading and futures institutional investors can invest in large baskets of stocks
1987	Index Participation Shares traded on the American Stock Exchange
1988	The "CB German Index Fund", the first index fund for German institutional investors
1989	Toronto Index Participation Shares (TIPS) based on the TSE-35-Index first traded in Canada
1993	Standard & Poor's Depository Receipt (SPDR), called "Spider", is the first commercially successful ETF
2000	ETF trading starts in Germany, the UK, Israel, Switzerland and Sweden
2004	Launch of ETFs based on gold, real estate and emerging market assets
2008	First active ETF issued

prices. Investors can also follow the price of an ETF very easily as the price of an exchange traded fund basically corresponds to the development of the underlying index.¹⁷ Secondly, an ETF's indicative net asset value (iNAV, see box on the left) is usually published continuously at the ETF trading platforms. This procedure makes for greater transparency and increases investor confidence. Fund managers also publish details of an ETF's composition on each trading day and additionally inform investors in the form of a statement of the fund's assets in annual and six-monthly reports and in the sales prospectus published when an ETF is launched.

2. Comparison with other investment products

Basically, investors can realise their investment targets with a wide range of investment instruments at their disposal. For index-oriented investment strategies there are, in addition to ETFs, also index certificates or actively managed investment funds. These differ in significant respects from exchange traded funds. In particular, it needs to be borne in mind that capital invested in index certificates is 100% exposed to a counterparty risk, which is not the case with ETFs or, in the case of new-style swap-based ETFs, only to a very small extent (see the next section). Further, in the case of certificates dividends do not necessarily accrue to the investor, while with ETFs they do – regardless of whether the underlying index is a performance or price index. In the case of performance indices the dividends are reinvested, while with price indices they are paid out to the investor. Another important criterion for investment decisions is the spread, which can be higher in the case of index certificates. Additionally, ETFs offer the investor a high level of security since the assets are invested in a special fund that is administered by a custodian bank. Many ETFs in Europe are also governed by the European regulatory framework for funds, UCITS III, which contains extensive rules on eligible assets, the custodian bank, distribution and investor protection (see section 5.3).

There are a number of structural differences between ETFs and actively managed traditional retail funds. Central to actively managed investment funds is portfolio management by a fund manager usually aimed at achieving an alpha, or excess return, versus a benchmark index. To achieve this target the fund manager usually deviates from the composition of the benchmark index for instance by investing selectively in promising individual stocks, sectors or geographical regions. By contrast, ETFs focus on tracking the performance of a benchmark, typically an index.¹⁸ For cost reasons the total expense rate of ETFs is usually lower and there is no upfront issue premium as charged by traditional investment funds. The continuous quotation of bid and offer prices in exchange trading also makes ETFs more transparent than traditional retail funds.¹⁹ The asset structure of ETFs and actively managed investment funds can also differ. Many European ETFs for instance use swaps to track the performance of an index.²⁰ Investors should bear in mind that a swap contract embodies a counterparty risk. However, the use of swaps is restricted by law (see chapter 5). In addition,

¹⁷ Possibly adjusted for subscription ratios.

¹⁸ Active ETFs are a borderline case. They pursue an active investment strategy and partly aim to outperform the benchmark index.

¹⁹ Some traditional investment funds are also traded on the stock exchange but usually with much wider spreads.

²⁰ Swaps are also used by actively managed investment funds, e.g. guarantee funds cover capital guarantees partly through swap constructions.

Comparison of ETFs with other investment products

Risk profile	ETFs	Index certificates	Direct investment in equities	Direct investment in bonds	Conventional investment funds	Futures
Risk diversification	high*	high*	no	no	yes	yes
Tracking error	low	low	high	high	yes, ideally outperformance	low to medium according to index
Dividend sharing	yes	usually no/depends on index	yes	usually yearly interested	yes	priced in
Buying/selling costs	order charges	order charges	order charges, exchange fee	order charges, exchange fee	issue premium	initial margin
Management fee	yes	yes/no	no	no	yes	no
Pricing	continuous	continuous	continuous	continuous	daily	continuous
Liquidity	very high	very high	depends on stock	depends on bond	daily redemption	high
Counterparty risk	no as special fund/partly with swap-based ETFs	yes as debt instrument	yes	yes	no as special fund but: partly exposure to swaps	performance risk in relation to exchange
Reinvestment risk	no	for products with limited life	no	yes	no	yes
Trading platform	exchange trading/OTC/via investment company	exchange trading/OTC	exchange trading/OTC	exchange trading/OTC	issued and redeemed via investment company	exchange trading

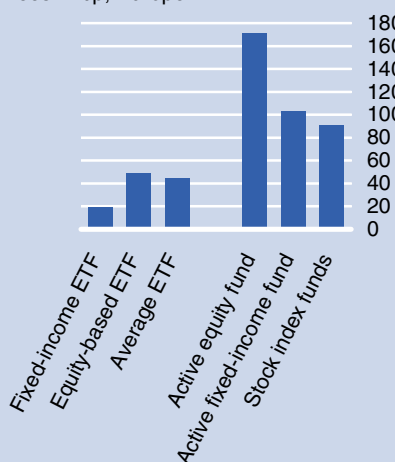
*Assuming that an index is sufficiently diversified.

Sources: DB Research, Deutsche Börse, Lyxor

15

Comparison of total expense rates

Fees in bp, Europe



Sources: Lipper, Morgan Stanley

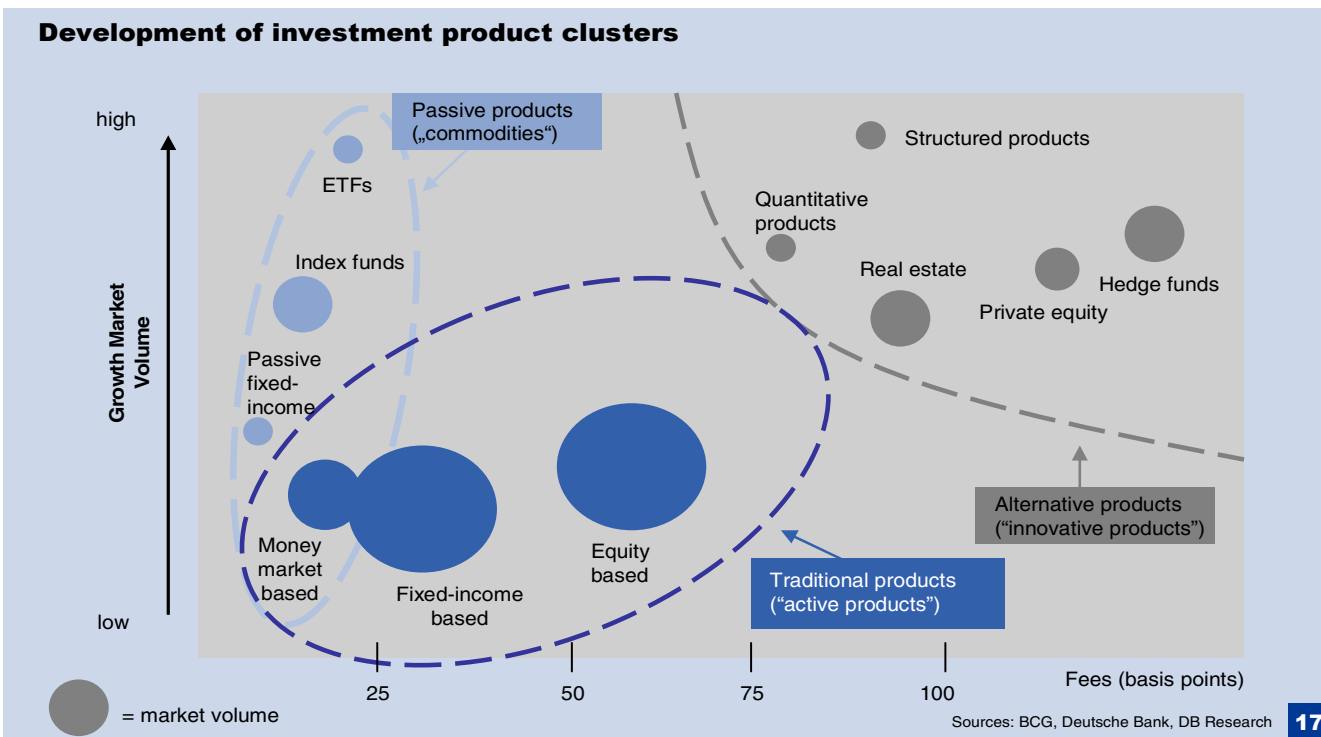
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there are marked differences between conventional investment funds and ETFs with regard to the issuing and redemption process. While active funds are usually issued and redeemed off the exchange through an investment company, ETFs are either traded directly on the exchange or are issued and redeemed via the so-called creation/redemption process.

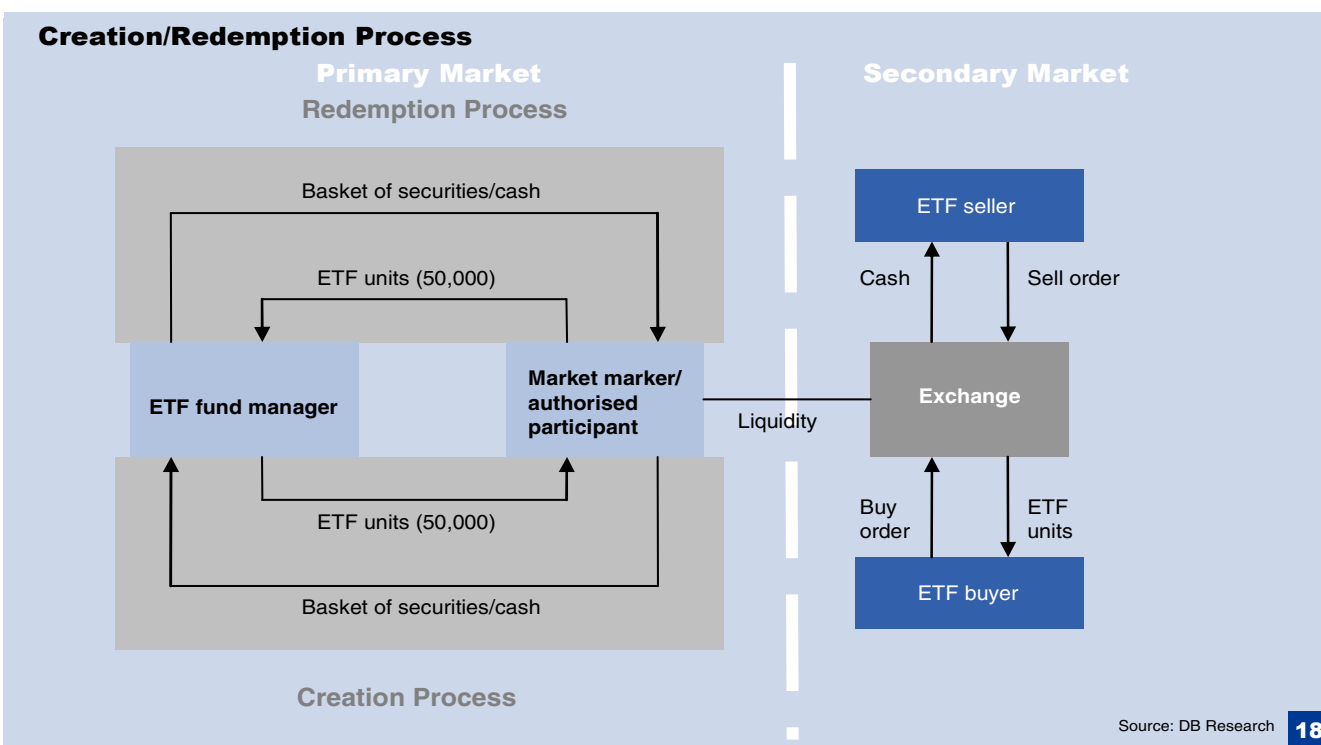
3. Further specialisation expected in the asset management industry

We expect the global asset management sector as a whole to grow further in the long run. There will be new players emerging on the demand side such as sovereign-wealth funds or new pension funds in institutional business, while at the same time private individuals will make greater use of asset management services for instance for private retirement planning (e.g. Riester-type pension plans in Germany).

Parallel with the growth in the total market we expect a specialisation on the supply side in the medium term, oriented to three broad clusters. Firstly, ETFs, as “passive products”, will sustain their high growth dynamic within the passive investment products cluster (“commodities”) (see Fig. 17), as this cluster will benefit more than proportionally from the growing demand from (new) institutional investors and will also win further market share from the clusters “active products” (especially from products based on leading indices) and “innovative products” (especially index certificates). The competitive pressure on providers of active products, which currently manage roughly three-fourths of global assets, will continue to intensify in the medium term. Consequently,



active fund managers will probably tend, on the one hand, to focus even more strongly on alpha generation and tailored products for specific clients and, on the other, to offer more and more services from the “innovative products” cluster. Nonetheless, experts estimate that their market share will decline in the medium term to around 65%.²¹ Furthermore, active fund managers will also make greater use of passive products from the “commodities” cluster in active management, e.g. within the framework of core-satellite strategies.



²¹ BCG (2007).

The creation/redemption process

The procedure for the issuance and return of ETF units in the primary market is known as the creation/redemption process. This process entails the exchange of cash or baskets of securities for ETF units, or vice versa. "Authorised participants" or market makers play an important role in this process.

In the **primary market** the authorised participant delivers a basket of securities with the same weighting of securities as the ETF or cash to the ETF fund manager. In return, the authorised participant receives ETF units (usually created in blocks of 50,000 units) in the same value as the basket of securities or the cash that it has delivered. This exchange of a basket of securities for ETF units is called the creation process (issuance).

In the **secondary market** the market maker can then offer its ETF units for sale on the exchange. Alternatively, it can hold them in its own portfolio. Conversely, the authorised participant can return ETF units to the ETF fund manager and in exchange receives the equivalent basket of securities or cash. This process is called the redemption process.

Investors seek to **maximise the return for a given level of risk** through optimal diversification of their portfolio. The non-systemic risk of individual stocks can thereby be eliminated as a portfolio's diversification increases. What remains is the systemic risk that cannot be eliminated through diversification and to which all the securities in a given market are exposed. This market risk is referred to as beta. By their almost exact replication of an index ETFs usually have a beta of almost 1 (assuming that an index fully replicates a total market).

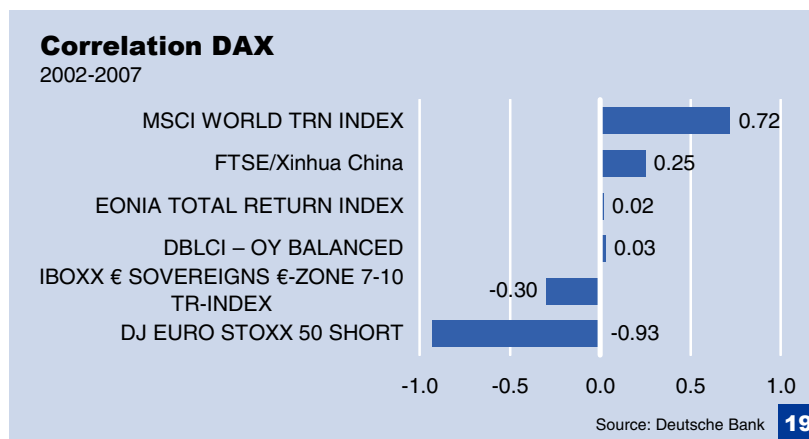
Efficient portfolio diversification

This concept originates from the research conducted by Nobel Prize winner Harry Markowitz. By investigating the correlations between different securities Markowitz discovered that by mixing securities it is possible to reduce the risks and lower the volatility of the income. A portfolio is efficiently diversified when a maximum return is achieved for a given level of risk. In chart form all optimum or efficient portfolios lie along the so-called efficiency curve.

4. Investment strategies with ETFs

Investors can realise a wide range of investment strategies with ETFs, ranging from short-term intraday trading through to long-term capital building. The principal investment strategies are outlined below by way of example:

- **Liquidity management:** surplus cash can be invested short term in ETFs. In this way it is possible for instance for investors to make sure they do not miss out on price rises or forego income until a long-term investment decision is taken. For institutional investors it can be important to "park" surplus non-invested cash to avoid underperforming the respective benchmark (and thus increasing the tracking error of their portfolio) or to narrow the underperformance.²² Obviously, cash can also be parked in other investment instruments such as short term savings products.
- **Asset allocation:** Strategic asset allocation spreads the portfolio's assets long term over various (i) asset classes such as equities, fixed-income securities and money market instruments²³, (ii) countries, and (iii) currencies. The given weighting of the asset classes, countries and currencies produces the respective benchmark portfolio, against which the success of the tactical asset allocation (short to medium-term investment strategy including any possible temporary deviations from the benchmark portfolio) is measured. Essential to this process is the correlation of the individual asset classes which indicates how the return profiles of the individual asset classes behave in relation to each other. If the correlation is 1, the returns of two asset classes move in parallel while, if the correlation is -1, they are diametrically opposed. If the correlation is 0, there is no systematic correlation between the returns of two asset classes.



- **Core-satellite strategies:** the central idea of this investment approach is to divide the portfolio's assets into two groups. The bulk of the portfolio (core) is invested on a broadly diversified basis in an instrument that tracks an index. The smaller portion of the capital (so-called satellites) is actively managed with the aim of outperforming the benchmark index (alpha generation). This portion is intended to develop separately from the core part of the portfolio, e.g. by stock picking or through investments in emerging markets or commodities. Core-satellite strategies can

²² This circumstance is also referred to as cash drag.

²³ Besides these traditional asset classes, other asset classes such as real estate, private equity, hedge funds, commodities or small caps are acquiring growing importance.

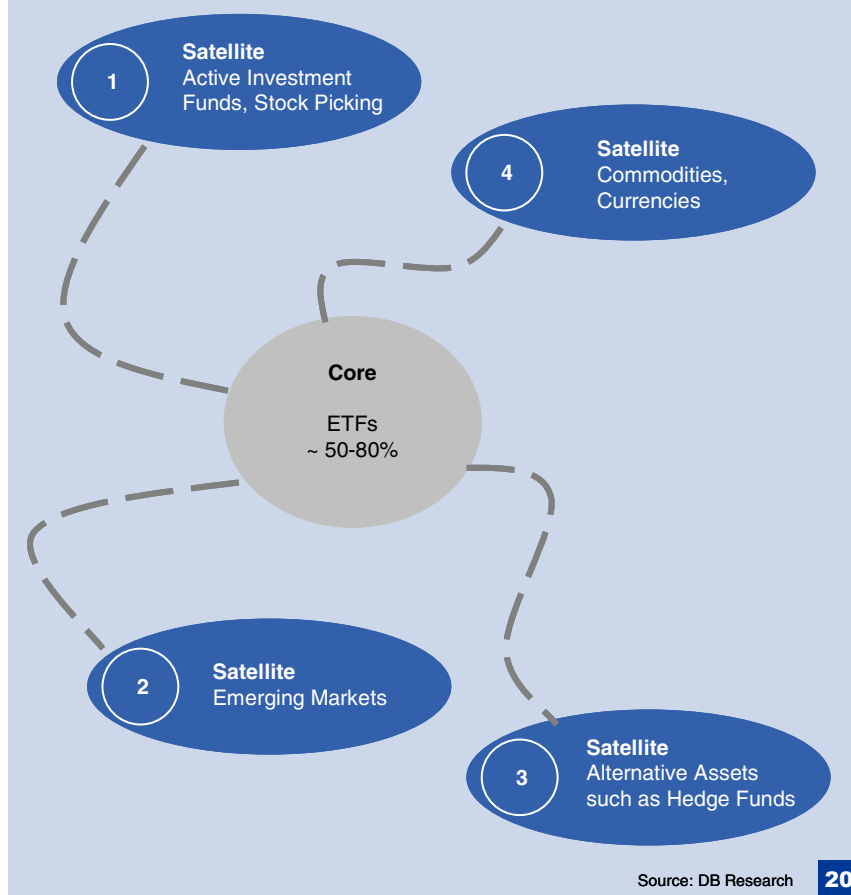
Active vs. passive management

Active investment strategies aim to achieve a higher return versus a given market index (out-performance). An active manager seeks to exploit market inefficiencies and in this way not only to beat the market but also to generate a risk-adjusted excess return. To achieve this goal fund managers select stocks individually (so-called stock picking) and thus deliberately deviate from the market index.

Passive investment strategies assume information-efficient capital markets in which there is no sense in searching for overvalued or undervalued stocks or asset classes. The prevailing market prices are considered to be objective. As a result, the passive manager invests in the market, e.g. with exchange traded funds or index certificates.

Some active managers successfully beat a benchmark in the short term. However, few active managers can permanently beat a benchmark over the long term and after fees because the equity markets in established, liquid markets are very largely efficient. Long-term investors especially should therefore compare the net returns of various investment instruments when making their investment decisions.

be realised efficiently using ETFs; obviously, they can also be realised with the aid of other securities. Another point is that the core portion is often invested in traditional markets; but in practice this does not always have to be the case.

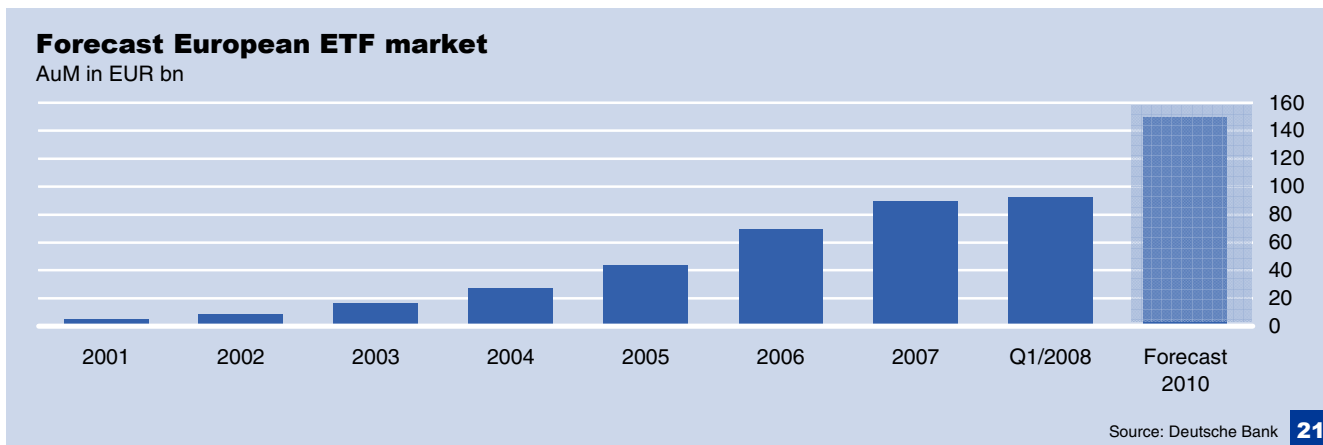
Core-satellite strategies**Hedging equity positions****Alternative to derivatives**

- Trading strategies: continuous ETF pricing enables investors to react swiftly and flexibly to market fluctuations, e.g. they can bet on a falling (short) or rising (long) market.
- Hedging equity positions: ETFs can also be used to hedge equity positions if they are based on a short index. A short index replicates the inverse price development of a long index: for instance, if the DAX index falls five percent, the short DAX gains about five percent in value. The advantage of hedging with short ETFs is the low administrative attention required for this short position (see next section).
- Alternative to derivatives: Although ETFs are not derivatives they share many of the characteristics of these financial instruments. The advantage of using ETFs is the low administrative attention they require and their cost efficiency; no margins or security are required for ETFs, neither are there the rollover effects incurred with futures contracts. For some institutional investors ETFs can be attractive if investment restrictions do not allow the use of futures in the portfolio.

4. Forecast for the European ETF market 2010: AuM EUR 150 bn

1. Forecast

We expect the growth in assets under management in the European ETF market to continue. In our forecast we estimate that AuM of exchange traded funds in Europe will grow at an average annual rate of about 20% to EUR 150 bn by the end of 2010.²⁴ This forecast is based on the following growth drivers that will lead to structural changes on the supply as well as the demand side.



Broadening the investment spectrum

- Dividend weighted
- Strategy indices: short indices or leveraged indices
- Sector / industry indices
- Emerging market indices
- Fixed-income indices
- Currencies
- Credit markets
- Sectors, commodities
- Strategic indexing (long/short)
- Other exchange traded products (ETCs)
- Fundamentals weighted
- Private equity
- Sharia compliant
- Infrastructure
- Real estate
- Product markets
- Traditional ETF indices
- International stock indices
- National stock indices

Active ETFs

Active ETFs do more than just track a benchmark index. These products are characterised by an active investment strategy and usually aim to outperform the benchmark index.

2. Trends on the supply side

1. Product innovation broadens the investment spectrum

The number of ETFs listed in Germany has increased rapidly since 2000. While the initial focus of fund managers was on tracking the prime standards, the German ETF market is currently witnessing an explosion in the range of available indices, investment styles and asset classes. Investors have a choice of ETFs based not only on strategy and sector indices but also on the bond, money or credit markets (see box on the left). In the medium term we expect further growth in the range of available indices, e.g. further strategy indices such as short indices or active indices. On the one hand, the possibilities offered especially by new-style swap-based ETFs (see chapter 5) will be an important driving force behind the launch of further innovative products. On the other, we expect a stronger focus on fixed-income, credit and money markets because, firstly, pension funds will invest more strongly in ETFs based on fixed-income indices and, secondly, many pension funds will buy into money market ETFs as these do not usually have any exposure to risks from ABS securities. On the other hand, we believe the market potential for active ETFs will be much smaller as these products often need to be explained, which means that clients have to be advised. As there are no sales commissions (no upfront issue premium) investment advisors are unlikely to be all that interested in selling these ETFs.

²⁴ Assuming a normal development of the capital markets, i.e. the MSCI Europe Index moves within a range of -8% to +15% p.a. over the forecast period.

2. Reduction of the tracking error and outperformance versus traditional ETFs

The increasing use of swap constructions to replicate an index will generally further lower the tracking error of ETFs and create innovative ETF structures that generate higher returns than traditional ETF structures (see chapter 5). On the one hand, investors therefore stand to profit from a more certain expected return thanks to better index tracking. On the other, ETFs will become still more attractive for many investors when viewed in terms of returns after fees because, though not beating the benchmark, they track it more exactly.

3. Trends on the investor side

1. Private investors discover ETFs

While in the USA private investors, or their asset managers, already use ETFs on a large scale as investment instruments, private investors in Europe are only gradually discovering the ETF market. The market potential for the ETF market presented by private investors appears very attractive especially as there is already a thriving market for index certificates in Europe which is in strong demand among private investors.

We expect the interest in ETFs among private investors to pick up strongly for four reasons. Firstly, many private investors in Germany will be reconsidering their asset allocation in 2008 in view of the new definite tax (tax rate of 25%) on all investment income ("Abgeltungssteuer") due to be introduced next year. Investors will switch funds into swap-based accumulating ETFs as these will not be subject to the new tax if they are acquired in 2008 and are held for at least one year. At the same time, private investors will show a stronger interest in funds of funds, also for tax reasons.

Secondly, the price structure of investment products has become much more transparent since the MiFID²⁵ came into force, and private investors are becoming increasingly price conscious. Thirdly, asset managers that manage assets on a fee basis are continuously gaining in importance. While in the past this type of asset management was mainly reserved for high-net-worth clients, more and more asset managers are now offering this service for clients with portfolios below EUR 100,000. More asset managers will perceive ETFs, whose production cost is low, as an important asset management instrument. In the USA, fee-based consulting already accounts for about 37.3% of income for the asset managers affiliated to the Securities Industry Association. Fourthly, ETFs will also become established as a savings instrument in the medium term. A number of direct banks and brokers already offer savings plans based on ETFs.

2. Simple handling and settlement attracts more institutional investors

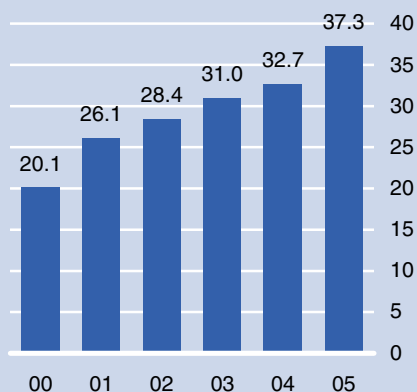
In contrast to derivatives and OTC instruments, ETFs are easy to manage and trade. For the investor they involve no margin payments or subsequent margin calls, and they harbour no rollover effects as futures contracts do. In addition, institutional investors may be subject to investor restrictions that exclude investing in derivative instruments. They will turn increasingly to short ETFs for portfolio hedging.

MiFID

The aim of the Market in Financial Instruments Directive (MiFID) is to place the European securities markets and the investment firms operating in them under more uniform – and in part stricter – rules and strengthen cross-border competition. The MiFID replaces the Investment Services Directive which was introduced in 1993. Among other things, the MiFID harmonises Europe-wide the requirements banks have to comply with in relation to investors when conducting securities transactions.

US: Share of fee-based income of investment advisors

As % of their total income



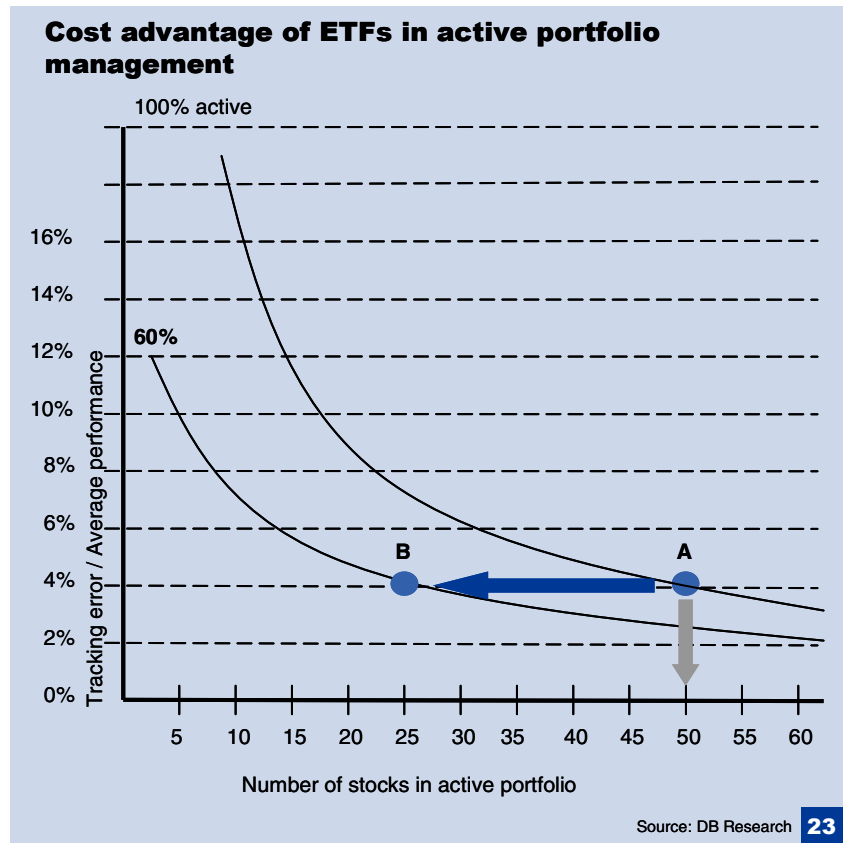
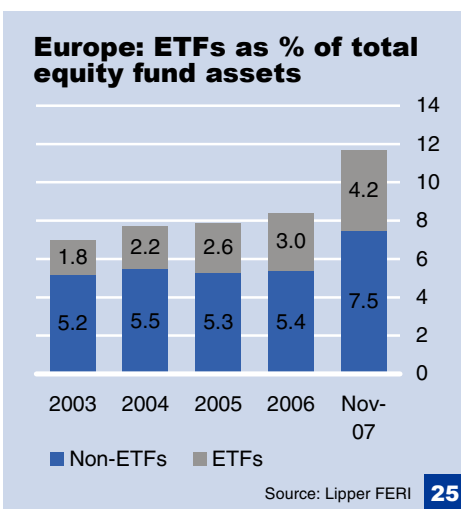
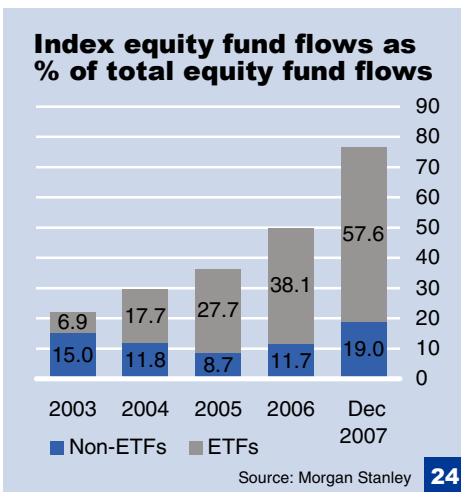
Sources: Financial Research Corporation, Registered Representatives

22

²⁵ Market in Financial Instruments Directive.

3. *Active fund managers exploit the cost advantages of ETFs as an element of active portfolio management*

Active fund managers are also making increasing use of ETFs as a portfolio management instrument. For instance, thanks to ETFs fund managers can enter quickly into a broad, diversified investment, can effectively manage cash surpluses, and can gain fast exposure to markets or asset classes to which they would not otherwise have ready access. First empirical studies by Deutsche Bank have revealed that by controlling a part of their equity position with passive instruments, active fund managers can reduce their costs by about 25% in the ideal case without affecting performance.²⁶

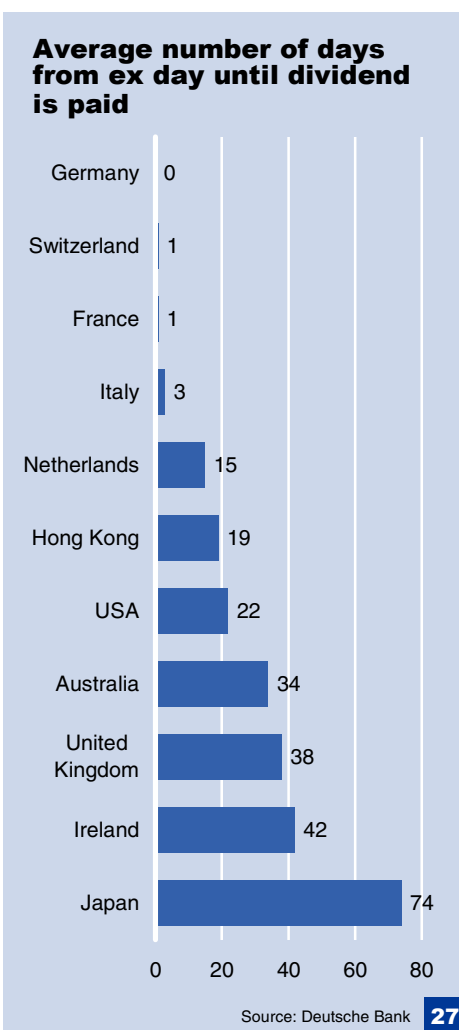
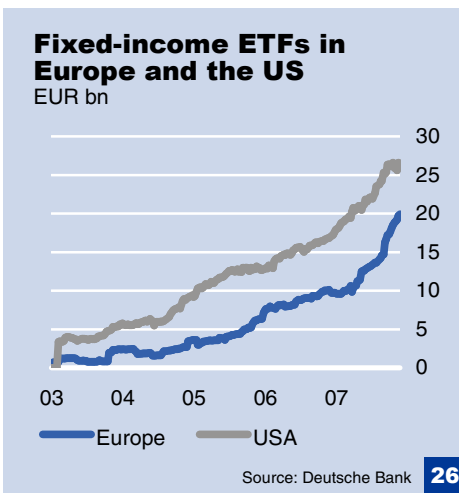


4. *Flow of funds: US investors prefer passive investment instruments*

Since ETFs staged their breakthrough in the USA in 1993 the global market for exchange traded funds has witnessed high annual rates of growth in net new funds. In the equities segment US investors generally prefer passive index-based investments to an investment in active equity funds. A total of 76.7% of every US dollar invested in the investment fund industry in the USA in 2007 flowed into passive index-based investments. Exchange traded funds meanwhile account for around 57.6% of total net new funds invested in the US equity fund sector. Equity-based ETFs already represent 10.3% of total equity assets in the USA. If other equity-based index products are included, the figure is as much as 18.8%. In Europe, the share of equity-based ETFs in total equity fund assets was lower at 4.2% in 2007. The share of all equity-based index products in total equity fund assets is 11.7%.²⁷

²⁶ Deutsche Bank (2007).

²⁷ Figures for 2007 up to December 2007. Morgan Stanley (2008).



5. Growing importance of pension funds

At the end of the year 2006 pension funds around the world managed assets worth close to USD 23 trillion.²⁸ 85% of that is in the hands of US, Japanese and British pension funds. These investors are turning more and more to ETFs. At the same time, continental Europe will see a surge in new pension funds in the coming years as company pension schemes are acquiring importance for a growing number of firms, and they will also want to manage part of their assets with passive instruments. Fixed-income ETFs, which have already seen strong inflows of funds in the USA as well as in Europe in recent years, will profit from this on a large scale. Global fixed-income ETF assets under management have doubled in the last two years and now already total over EUR 42 bn.²⁹

5. ETF 2.0: Index replication with swaps

How an ETF is structured has an important influence on its performance and the quality of the index tracking. Basically, an index can be replicated in two ways. While traditional ETFs buy/sell all the stocks in the index, new-style ETFs replicate the benchmark index additionally via a swap. Although the use of swaps might look complicated at first sight, they offer investors and issuers many advantages.

1. Factors affecting the tracking error

An ETF's primary aim is to track a benchmark index exactly. The deviation from the benchmark index (tracking error) is to be as small as possible. The following factors influence the extent of the tracking error:

- Payment of dividends: Index providers like MSCI for instance assume when calculating indices that dividends are paid on the ex day and that corresponding funds are available for reinvestment on that day. In practice, dividends become available much later, e.g. up to 74 days later in Japan. The funds can therefore not be reinvested on the ex day. This results in a deviation in the ETF's performance versus the benchmark. The deviation versus an MSCI index for instance is estimated at around 8 bps p.a.³⁰
- The tax treatment of dividends has a significant influence on the performance of ETFs that track a performance index. Owing to the different national tax systems funds can reclaim a part of the taxes on dividends in many countries but the net dividend is usually much lower than the gross dividend. In 2006, for instance, the difference between gross and net dividend averaged around 59 bps worldwide and around 64 bps in Europe.³¹
- Adjustments in index weightings and the addition of new stocks generally mean transaction costs for an ETF, especially traditional ETFs, as they have to make corresponding purchases and sales.
- Other sources of tracking errors are corporate capital measures and mergers & acquisitions conducted for instance through an exchange of stock.

²⁸ IFSL estimate.

²⁹ Deutsche Bank (2008).

³⁰ Deutsche Bank (2008).

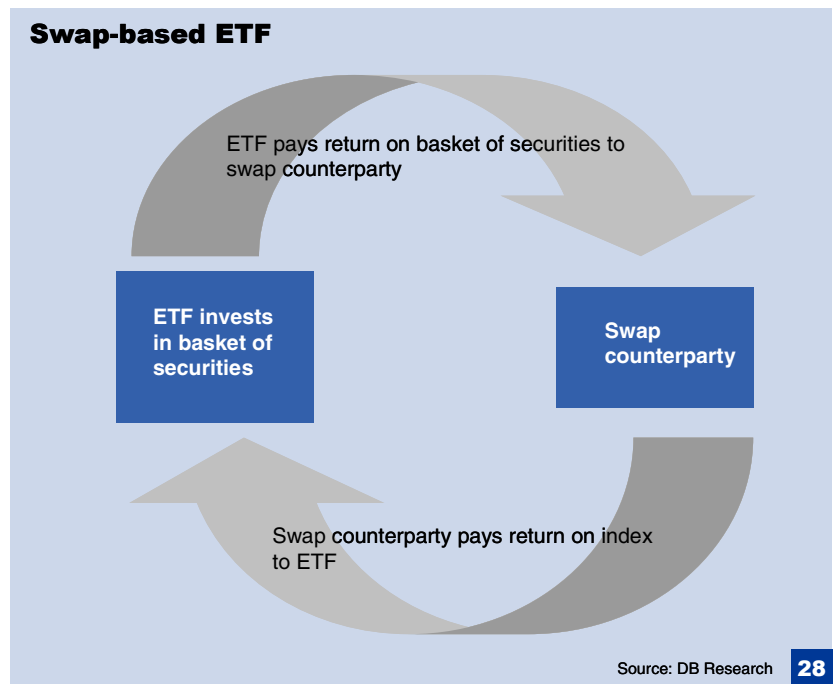
³¹ Deutsche Bank (2008).

How swaps work

- A fund’s total expense ratio reduces its performance versus the benchmark.
- The reference date for the fund company and a possibly different reference date for the index level.

2. Tracking error significantly lowered with swap-based ETFs

A total return swap (simply referred to as “swap” in the following) is a contract in which the return on an underlying financial instrument is exchanged for another return. For instance, the swap counterparty offers the ETF a one-to-one index performance. The swap counterparty therefore assumes the risks from the index’s performance. The ETF, on the other hand, invests in assets usually comprised of a basket of stocks to track a share index (if a fixed-income index is tracked, the ETF usually acquires a basket of bonds and money-market instruments). This means that the assets of a swap-based ETF can deviate from the benchmark index and include derivatives that deliver the benchmark return. The swap contract is often settled daily so as to minimise the exposure to the counterparty. The swap counterparty is usually the bank whose subsidiary has launched an ETF. The swap counterparty’s credit rating plays an important role.



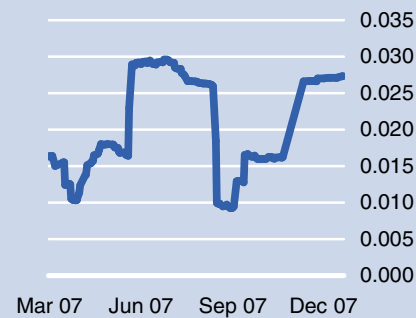
The use of swaps very largely eliminates the sources of tracking errors discussed in section 5.1. This leaves just the management fees as the main factor that can lead to a deviation from the index. Swap-based ETFs therefore display a lower tracking error which in the case of an ETF on the MSCI World Index for instance is only about 3 bps.³² If investors were to replicate this index for instance with futures baskets the tracking error would be around 150 bps.³³ In the case of an investment in emerging markets based, say, on the MSCI Emerging Market World Index, the deviation would be even higher. While a swap-based ETF would show a tracking error of

³² The tracking error of db x-trackers MSCI World ETFs is 1 to 3 bps.

³³ Based on the use of a basket of ten local futures. A futures basket comprising only four local indices for instance would lead to a much higher tracking error of around 234 bps.

Tracking error of swap-based ETF MSCI World

In %



Source: Deutsche Bank

29

UCITS III

UCITS stands for "Undertakings for Collective Investment in Transferable Securities" and its aim is to create a single market for investment funds in the EU. The UCITS Directive contains minimum rules for the admission, supervision, structure, business activities and disclosure requirements of investment funds. UCITS III compliant funds can be offered throughout the EU. The last amended version (2007/16/EG) regulates the conditions on which funds may invest in certain assets. The directive defines for instance the conditions on which financial indices can be used as underlyings for derivatives.

about 4 bps, replication of the same index with futures baskets would result in a tracking error of 541 bps.³⁴

In addition, the effect of management fees can be significantly reduced in some cases through two other sources of income. Firstly, additional income can be achieved by securities lending in the stocks contained in the index. Secondly, it is possible in some cases to reduce the tax burden on dividends. In the ideal case, an ETF can even outperform the benchmark index. The db x-trackers Euro STOXX 50 for instance outperformed the benchmark index by 0.47% in the period from January 2007 to March 2008.

3. Use of swaps: possibilities and constraints under UCITS III

The legislative framework stipulates that the use of swaps may not exceed 10% of the fund's assets. In practice, ETFs normally invest only 1 to 3% of their assets in a swap. Experts estimate that at present about 35% of all ETFs (based on AuM) are structured on a swap basis. While swaps were originally used to track share indices, many ETFs are now being launched on fixed-income and money market indices. In contrast to the ETF market in the USA, asset managers in Europe can make greater use of derivative financial instruments thanks to the UCITS III Directive.³⁵ Providers of index-based products are profiting more than others from this new regulatory framework as it enables them to track indices by using total return swaps.

6. Conclusion and outlook

The ETF market in Europe enjoys a structural advantage over the US market. The UCITS III Directive for instance allows ETF fund managers to replicate indices with the use of total return swaps. The use of swaps not only enables the tracking error to be significantly lowered but also results in swap-based ETFs usually outperforming traditional ETFs.

The European ETF market is witnessing high rates of growth. We expect the growth trend to continue in the medium term. In our forecast we project that assets under management in the European ETF market will grow to around EUR 150 bn by the end of 2010. This will be driven by structural changes on both the supply and the investor side.

On the supply side the strong growth in the use of swaps for index replication will lead to further product innovations especially in the fixed-income segment and thus further broaden the present spectrum of investment products. At the same time, as a second driver, we expect the use of swaps to significantly lower the tracking error of ETFs which, as a third driver, will lead to new-style ETFs achieving higher returns than traditional ETFs (over the long term).

On the investor side private investors will play a more important role in future. In light of the new flat-rate definite tax on all investment income due to be introduced in Germany in 2009 ("Abgeltungssteuer") and the greater transparency of fees and charges in the wake of the MiFID they will be reconsidering their asset allocation and will switch some of their assets either directly into swap-based

³⁴ Deutsche Bank (2008).

³⁵ Directive 85/611/EEG of 20 December 1985 ("UCITS I Directive"), revised inter alia by Directive 2001/107/EG ("Management Company Directive") of 21 January 2002 and Directive 2001/108/EG ("Product Directive") of 21 January 2002.

ETFs or indirectly into ETFs through funds of funds. Secondly, the importance of US-style fee-based asset management will also acquire greater importance in Germany in the medium term. Many of these asset managers will use ETFs as an important asset management instrument. Thirdly, institutional investors have not yet tapped the potential of ETFs by a long way. More institutional investors will turn to ETFs as they are easy to trade and manage, especially compared to derivatives. Fourthly, active fund managers will make stronger use of ETFs as an investment instrument in order to reduce the cost of active portfolio management. Fifthly, pension funds, which represent global assets under management of around USD 23 trillion, will invest more in ETFs. Finally, US-style pension funds will also acquire growing importance in Europe over the long term and will invest part of their assets in ETFs.

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The author wishes to thank Sophie Ahlswede for her contribution to this study.

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