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Corporate bonds – active or passive? Theory and empirical evidence

Dr Thorsten Neumann and Vincent Ehlers

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1 Introduction

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The range and volume of passively managed funds available in the market has increased significantly in recent years. As passive investments gain in popularity, active management is becoming a hotly debated topic. Besides the argument that active management is more costly than passive management, an accusation frequently levelled against active managers is that ultimately they are unable to beat their benchmarks. The validity of this claim is contentious. But regardless of individual views on the matter, a point worth noting is that the entire debate is focused almost exclusively on equity funds. A distinction between different asset classes is hardly ever made.

This study takes a closer look at the active versus passive debate with a specific focus on European corporate bonds, one of the asset classes that have seen an increase in the supply of passively managed funds. The objective of this study is to provide investors with resources that can help them make informed decisions. Which aspects need to be taken into consideration when choosing between actively and passively managed options? To answer this question, this paper sets out the advantages and disadvantages of active and passive investments in corporate bonds and examines the investment performance of actively and passively managed funds invested in European corporate bonds in depth.

In summary, this paper arrives at the following findings: The passively managed products available in the market underperform their benchmarks. The majority of active managers beat their benchmarks. Good managers achieve very good results. Ways of identifying successful managers ex ante play an extremely important role when choosing between active and passive investments, and factor models can be a great help. The risk of choosing an active manager who subsequently underperforms can be reduced, but not completely eliminated. Investors therefore face a choice between safe, but underperforming, passive investments and riskier active investments that, on average, achieve more attractive returns.

Chapter 2 of this document sets out the basic principles and challenges of active and passive investments. This introduction to the underlying theory concludes with an overview of the theoretical and empirical literature. Chapter 3 presents performance data for passive investments in corporate bonds and sets out the structural reasons for the underperformance of these products. Chapter 4 examines methods and strategies that actively managed funds can use to outperform the market. For this purpose, a large set of data is used to conduct an in-depth analysis of the investment performance of actively managed funds invested in European corporate bonds. Chapter 5 looks at ways of identifying successful active managers ex ante as reliably as possible. A risk factor model is developed that measures the proportion and stability of managers' alpha. Chapter 6 summarises the findings of the study.

2 Theory and literature on active and passive investments

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Active versus passive management is also a controversial topic in academic circles. Sharpe (1991) describes the 'arithmetic of active management' as follows: The sum of all investments makes up the market portfolio. If one investor has an overweight position, another investor has to give that position a lower weighting. If one group of investors has a positive alpha compared with the market (before deduction of all fees), this has to come at the expense of another group of investors.

This line of argument is often used to prove that, ultimately, active management of investment portfolios does not add value (cf. French 2008, for example), but the following facts can be logically and irrefutably derived from Sharpe's (1991) argumentation:

- The aggregate performance of all active managers cannot beat the market.
- However, this is not the case for the individual active managers, because there are both successful and unsuccessful active managers. It is only the aggregate performance of all managers that is equal to the market's performance.
- Passive and active investments will always coexist. After all, the higher the proportion of passive investments, the bigger the arbitrage opportunities for active managers.

Against this backdrop, the frequently cited empirical evidence that, at aggregate level and before management fees, actively managed funds do not outperform the market is hardly surprising. If the total performance of all actively managed funds outperformed the market, this would have to happen at the expense of all other active investors who are not invested in funds. This would theoretically be possible, but appears unlikely in reality.

Grossmann and Stiglitz (1980) illustrate the role of active investors with the following thought experiment. If all investors are passive investors, market prices no longer reflect all relevant information and the market is therefore inefficient. But if the market is inefficient, it offers opportunities for certain investors to outperform the market by taking an active management approach.

Pedersen (2018) expands on this argument and points out that Sharpe's arithmetic is correct from a static point of view, but not from a dynamic perspective. Active investors are indispensable because they ensure that new information is eventually priced into market prices and capital markets remain functional.

The debate that is of practical relevance to investors in the capital markets therefore focuses on the following questions:

- Can an individual manager always be relied upon to outperform the market because of his or her skill?
- Could there be individual managers who have been successful in the past but were simply lucky?

Various empirical studies have produced contradictory findings that have intensified the debate.

It is important to decide whether to analyse investment performance data before or after deduction of costs. For analytical purposes, it is advisable to look at performance before costs and then at the cost impact as a separate factor. Only an analysis of returns before costs can give a true reflection of a manager's performance. Appropriate ways of rewarding and pricing this performance need to be addressed in a second step.

Analysing an active manager's performance before costs reveals his or her track record. For institutional investors, it is of utmost importance to obtain this information before they enter into negotiations on fees and, eventually, a contract – especially when it comes to segregated fund mandates. This study therefore focuses primarily on the analysis of managers' performance before costs.

As background information on the active-versus-passive debate, chapter 2.1 provides a helpful overview of established academic research on active management, using mixed funds and equity funds as an example and illustrating the underlying methodologies of relevant studies. Chapter 2.2 summarises the limited amount of existing literature that refers specifically to fixed-income funds (government and corporate bonds).

Please note that the entire chapter 2 presents an analysis and summary of the literature and serves to provide an overview of the academic work in this area. Readers who are familiar with this content or who are interested only in those aspects that are specific to the asset class of corporate bonds can jump directly to the start of chapter 3.

2.1 Empirical evidence: active management

The main academic publications so far that compare and contrast active and passive investment strategies, e.g. Sharpe (1991) and Fama and French (2010), mostly refer to equity funds. It is therefore logical to present this reference work in a separate chapter. However, the hypotheses and findings of these studies are also highly relevant for the corporate bond market.

2.1.1 The sum of all funds

For the US market, Fama and French (2010) conducted a comprehensive comparison of the performance of actively managed US equity funds.[1] In their groundbreaking study, they aggregated a total of 3,156 funds in one portfolio. This enabled them to analyse how the actively managed funds as a whole performed relative to the market portfolio as a passive benchmark. The study showed that the average gross return (before costs) of the aggregated portfolio of actively managed funds was almost identical to that of the market portfolio.[2] The net return (after costs) was lower than that achieved by the market portfolio. From the investor's perspective, investments in actively managed funds therefore underperformed investments in the passively managed market portfolio by an average of 1.1 per cent after costs.[3] The aggregated performance shortfall of US equity funds was almost exactly equivalent to the management fees they charged.

It is worth noting that the risk of the aggregated portfolio of funds is equal to the market risk (beta of 1.0). In addition, the returns realised on the aggregated portfolio of funds do not differ materially from the realised returns on the market portfolio – the tracking error is close to zero (the coefficient of determination in the factor regression is 99 per cent).

Fama and French concluded that at aggregate level, US equity funds effectively hold the market portfolio. When management fees are not taken into account, equity funds thus perform neither better nor worse than the market portfolio. However, from the investor's point of view, performance has to be adjusted to reflect the management fees.

Fama and French argue that the group of actively managed funds is subject to a simple condition of equilibrium. For every fund that outperforms the market, there must be another fund that underperforms the market. Sharpe (1991) referred to this condition of equilibrium as the arithmetic of active management.

[1] The study covered a period from 1984 to 2006 and comprised 3,156 active and retired US equity funds (no survivorship bias) from the CRSP database, i.e. only funds launched in the US were taken into account.

[2] The exact definition of gross return used in this study is the return before deduction of the expense ratio. The expense ratio comprises all costs charged to the investor by the fund management company. In particular, this includes the management fees, but it may also extend to further costs such as marketing costs or service charges. Management fees typically make up the bulk of the expense ratio. For ease of reading, the term 'management fees' is therefore used below as a synonym for the expense ratio.

[3] Fama and French operated on the assumption that investments in the market portfolio can be made free of charge, although this is obviously not the case in reality.

2.1.2 Luck versus skill

Fama and French (2010) subsequently conducted a cross-sectional analysis of actively managed equity funds. Even though the gross returns (before costs) on the aggregate portfolio of all equity funds are equal to those on the market portfolio, individual funds may achieve a stronger (or weaker) performance. The goal of the analysis was to distinguish fund managers who are simply lucky from those who have true skill.

Proving the existence of skill is fairly complex and challenging in empirical terms. This is best illustrated by way of an example. Based on the assumption that, in reality, no fund manager has skill (known as the zero-skill hypothesis), all deviations of fund returns from the market portfolio returns are purely due to luck (or bad luck). Under the zero-skill hypothesis, it can be expected that in a performance analysis of 1,000 funds at a significance level of 5 per cent, precisely 50 funds (5 per cent) will materially outperform the market (unilateral test). Significantly more than 50 funds performing materially better than the market portfolio would thus indicate the existence of skill within the group of actively managed equity funds. For example, if 70 funds were found to have outperformed the market, this would suggest that 20 funds have skill.[4]

The significance level of 5 per cent is chosen arbitrarily in this example. A well-designed test would examine the entire distribution of average fund returns and would aim to deduce the point in the distribution from which more above-average returns are observed than can be expected under the zero-skill hypothesis.

First, Fama and French use a bootstrapping method to simulate the distribution of fund returns based on the assumption of zero skill. They compare the simulated distribution with the distribution of the actual realised fund returns and search for discrepancies in order to document any evidence of skill in actively managed equity funds. They conclude that based on returns before deduction of management fees, certain actively managed equity funds have true skill. Categorising the funds by size, they estimate that 40 per cent of small funds, 10 per cent of medium-sized funds and only 5 per cent of large funds have skill.

The findings show that above and beyond what can be statistically expected, only a relatively small number of funds have skill, but a large number of funds achieve good results purely based on luck.[5]

The findings enable Fama and French to draw conclusions about how true skill is distributed across the total sample of all equity funds. Assuming that skill is distributed normally across all funds, Fama and French conclude that 16 per cent of fund managers have true alpha (before

[4] In the group of small funds (AuM of US$ 5 million–US$ 250 million), around 40 per cent of funds perform better than expected under the zero-skill hypothesis. In the group of medium-sized funds (AuM of US$ 250 million–US$ 1 billion), the proportion is about 10 per cent; in the group of large funds (AuM of more than US$ 1 billion), it is only around 5 per cent of funds.

[5] Fama and French establish that after deduction of management fees, only the top 1–2 per cent (depending on size) of funds achieve above-average returns that cannot be attributed solely to luck. The results after the deduction of management fees suggest that investors rarely benefit from the skill that exists across all funds.

management fees) of 1.25 per cent or more and 2.3 per cent of fund managers have true alpha (before management fees) of 2.50 per cent or more.

The study conducted by Fama and French (2010) represents the state of the art for this type of empirical research, even though its strengths and weaknesses are a matter of considerable debate.[6] However, the approach used by Fama and French ultimately does not offer any way for investors to distinguish reliably between luck and skill at the level of individual funds. It compares only the total number of high-performing funds with statistical expectations.

2.1.3 Earlier findings

There are several studies on active and passive management that pre-date the work of Fama and French (2010), but the findings of these earlier works contradict each other.

Jensen (1968), Malkiel (1995) and Gruber (1996) had already established – based on different data sets and periods – that, after deduction of costs, US equity funds are not capable of outperforming the market portfolio by a margin that is sufficient to offset the cost of management fees.

Wermers (2000), on the other hand, argues that the aggregate performance of all US equity funds beats the performance of the market portfolio, at least before the deduction of management fees. Ippolito (1989) demonstrates that even net returns can be positive, at least when certain test specifications are applied. Chen, Jegadeesh and Wermers (2000) are not able to confirm this evidence. Their findings neither prove nor disprove the superior performance of US equity funds before costs. The same, but after deduction of costs, applies to the findings of Henrikson (1984) and of Chang and Lewellen (1984).

A study by Kosowski, Timmermann, Wermers and White (2006) was the first to use a bootstrapping method to differentiate between luck and skill in a cross-sectional analysis of funds. Their findings are noticeably more positive than those of Fama and French (2010). For example, the net returns of the top 5 per

[6] **Strengths of the study:** The CRSP database used for the study offers high data quality and comprises nearly all open-ended equity funds established in the US. The data set is deemed to be largely free of survivorship bias. The bootstrapping method used by the authors does not include assumptions about how the risk-adjusted returns of equity funds are distributed in the cross-section. The fact that the cross-sectional correlation and heteroscedasticity within the data set is taken into account represents a significant improvement compared with earlier studies.
Weaknesses of the study: The selected bootstrapping method is designed in a way that ignores any potential temporal dependency between fund returns, which could have an impact on statistical inference. The literature demonstrates that temporal dependency is of minor importance for blue-chip stocks, but it cannot simply be assumed that the same applies to smaller stocks and other asset classes such as bonds. Fama and French furthermore assume that funds always have a constant exposure to their benchmark. It is therefore not possible to derive any conclusions as to whether actively managed equity funds might, for example, show more skill in particularly challenging periods (e.g. a financial crisis) than they do under 'normal' conditions.

cent of funds are better than in 99 per cent of all simulations under the zero-skill hypothesis. By contrast, only the top 1 per cent of funds outperform the market in the study conducted by Fama and French (2010) and they do so in just 60 per cent of all simulations.[7]

Overall, the literature is strongly biased towards the US market. Very little empirical evidence has been gathered for markets other than the US.

Banegas, Gillen, Timmermann and Wermers (2013) demonstrate that European funds that focus on their 'home country' can deliver a superior performance in certain market conditions. Ferreira, Kewswani, Miguel and Ramos (2013) analyse equity funds in 27 countries. They find that the underperformance of all the funds together is similar to that in the study by Fama and French (2010).

Leippold and Ruegg (2018) analyse 61,269 equity and fixed-income funds from around the world. Their study is based on a bootstrapping method in the style of Fama and French (2010). However, they expand this method in a way that allows them to factor in temporal dependency of fund returns. For the equity segment, the study supports the findings of Fama and French (2010) for the US, but it finds the proportion of equity funds with skill to be significantly higher in Europe and Japan.

The study furthermore establishes that the retail funds group have a relatively high proportion of 'unskilled' funds (16 per cent), whereas the institutional funds group only have a relatively low proportion of 'unskilled' funds (8 per cent). Among both retail and institutional funds, 'skilled' funds account for only a small proportion of around 2 per cent.

Several other studies also focus on individual countries (e.g. equity funds from only one country such as Germany, Italy, Japan or the UK). The empirical set-up of the analysis and the period under review vary, in some cases significantly, but the findings typically coincide broadly with those of the studies described above.

[7] Fama and French (2010) address the reasons for the discrepancy between the findings of the two studies. Firstly, Kosowski et al. apply their bootstrapping method to each fund individually, whereas Fama and French bootstrap all funds (and explanatory factors) in aggregate. The study of Kosowski et al. thus does not fully reflect the actual cross-sectional correlation between fund alphas. This has an impact on the stated level of significance; a larger number of simulations do less well than the realised fund performance. In addition, Kosowski et al. only include funds that have been operating for at least 60 months. It can be assumed that this increases survivorship bias and results in a higher percentage of funds with a stronger performance than can be expected from the simulation.

2.1.4 Distortion of empirical data

Malkiel (1995) addresses the potential distortion of findings due to survivorship bias because the underlying data sets include only funds that are still operating in the market at the end of the period under review. He argues that the studies might thus deliver imprecise results.

But even a data set that includes active and retired funds can be subject to a less obvious form of survivorship bias under certain conditions. Evans (2010) points out the phenomenon of incubation bias. It is common practice for fund companies to test several investment strategies for a certain period of time and then to offer to their investors only those strategies that prove successful, because they will attract higher investment inflows. If the performance of these successful strategies is 'backfilled' in a database, this results in positive distortion of the performance documented in the database.

Linnainmaa (2013), on the other hand, demonstrates that there can also be reverse survivorship bias in fund analysis. Funds that perform poorly are often dissolved, even if the weak performance can be attributed to purely idiosyncratic factors and the fund as such has a true positive alpha. By contrast, funds that are successful by sheer luck are eliminated significantly less rapidly, although they have no true positive alpha. Overall, this leads to a picture of the funds' actual skill that is negatively distorted. Linnainmaa estimates that the effect on the aggregated portfolio of funds may be as much as 60 basis points per year.

The findings of active versus passive studies may therefore still be subject to measurement errors. The inclusion of retired funds in an analysis significantly reduces the obvious survivorship bias, but distortions as a result of incubation bias or reverse survivorship bias cannot be fully eliminated.

2.1.5 Additional return through factor investing

Studies conducted by Grinblatt and Titman (1989), Hendricks, Patel and Zeckhauser (1993) and Goetzmann and Ibbotson (1994) each attracted significant attention at the time of their publication. These studies show that a certain degree of persistence can be observed in the performance of some funds, which makes them predictable. Based on this theory, some managers have a 'hot hand' and are able to consistently select the right stocks. This is presented as proving the existence of skill.

Malkiel's (1995) findings, however, indicate that the hot hand phenomenon identified in earlier studies can largely be attributed to certain investment styles and/or factors. It is known, for example, that smaller companies systematically achieve higher risk-adjusted returns than the market portfolio, which predominantly represents large companies. If a fund manager systematically exploits this size premium, this manager's fund will systematically beat the market.

On this basis, Carhart (1997) takes a closer look at the correlations between the hot hand phenomenon and certain investment styles. To this end, Carhart adds size, value and momentum factors to the benchmark market portfolios (Fama and French (1993, 1995) and Jegadeesh and Titman (1993)). His analysis shows that the previously identified persistence in fund returns can be entirely explained by investment styles. All of the more recent studies, such as Fama and French (2010), therefore take investment styles into account in the benchmark.

Frazzini, Kabiller and Pedersen (2013) demonstrate that this type of factor model, expanded to include a defensive factor and a quality factor, can even explain much of the unparalleled performance of the equity portfolio managed by US investment legend Warren Buffet.

From this angle, the literature allows for the interpretation that actively managed equity funds systematically outperform the traditional market portfolio. However, most funds achieve this through the use of certain investment styles (e.g. size, value, quality, momentum).

2.2 Empirical evidence: government and corporate bonds

Most of the literature focuses on equities, but some studies take a closer look at the performance of fixed-income funds. Overall, the results are not only very similar to the findings of equity-focused studies, they are also highly contradictory.

The first study to analyse the performance of US fixed-income funds relative to a benchmark was conducted by Blake, Elton and Gruber (1993). Their study concludes that, after deduction of management fees, the performance of fixed-income funds is inferior to that of the relevant benchmark. The underperformance is roughly equivalent to the management fees and the authors of the study thus conclude that the funds' performance before costs is approximately equal to the benchmark performance. On the issue of whether performance shows a degree of persistence, they arrive at contrary conclusions depending on the underlying data set.[8]

Elton, Gruber and Blake (1995) confirm their earlier findings with an analysis based on a modified benchmark model and a larger sample of 126 fixed-income funds (split into three segments – corporate bonds (40 funds), government bonds (58 funds) and mortgages (40 funds)).

Ferson, Henry and Kisgen (2006) conduct a conditional performance evaluation for US fixed-income funds with an investment focus on government bonds. They establish that the performance of the analysed bond funds (after deduction of management fees) is approximately 80 basis points below that of their (dynamic) benchmark. This performance shortfall is slightly smaller than – but still relatively close to – the management fees commonly charged during the period of analysis (around 100–150 basis points).

A study carried out by Chen, Ferson and Peters (2010) arrives at similar conclusions overall, but is based on an investment universe that also includes corporate bond funds and high-yield funds. The authors conduct a more detailed cross-sectional analysis of the bond funds' returns and conclude that 75 per cent of analysed funds have a positive alpha (before deduction of management fees). But they also emphasise that most of the excess return is subsequently cancelled out by high management fees. The dynamic benchmark does not fully explain the superior performance, so the authors assume that the excess return achieved on the selection of bonds is more likely to be attributable to skill than a result of market timing ability.

[8] Blake, Elton and Gruber analyse two sets of data. The first comprises 46 fixed-income funds, covers a period from 1979 to 1989 and is free of survivorship bias. The second data set includes a larger number of fixed-income funds, but only funds that were still active in 1991. This data set is therefore clearly affected by survivorship bias. Blake, Elton and Gruber do not find any evidence of persistence in the cross-sectional analysis of the performance of funds in the data set that is smaller but free of survivorship bias. Funds that had beaten their benchmark in the previous five years were unable to do so again in the subsequent five years, which indicates that the superior performance observed is more likely to be attributable to luck than skill. For the bigger data set, the authors identify a stronger persistence in fund returns, but it is unclear whether this originates simply from the inherent survivorship bias of the data.

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These findings (based on returns before fees) are therefore consistent with the hypothesis that skilled fund managers in the fixed-income/credit segment have a higher chance of beating the market than those in the equity segment.

The work of Cici and Gibson (2012), on the other hand, draws the diametrically opposed conclusion that fixed-income fund managers can time the market but are not capable of identifying undervalued bonds. Their study focuses on 746 US corporate bond funds (including 209 high-yield bond funds) and examines the period from 1996 to 2006. The fund data used in the study is based on the Morningstar and CRSP Mutual Fund databases and is deemed to be practically free of survivorship bias. In line with the literature, Cici and Gibson find, on the face of it, that neither investment-grade funds nor high-yield funds are able to beat their respective benchmarks at aggregate level.

But whereas Chen, Ferson and Peters (2010) use a model to differentiate between returns on fixed-income funds attributable to market timing and to selectivity, Cici and Gibson (2012) analyse the performance of fixed-income funds based on the actual portfolio composition. They conclude that fixed-income funds do not have selectivity skill but do have market-timing skill. As their analysis is based on monthly returns, but any available information on portfolio weightings is (mostly) disclosed only on a half-yearly basis in accordance with US statutory requirements, it remains doubtful whether this study might simply have missed any potential evidence of selectivity skill because this skill manifests itself at a much higher frequency level. A further-reaching study would have to be conducted in order to find a conclusive explanation for the discrepancy between the results of Chen, Ferson and Peters (2010) and those of Cici and Gibson (2012).

For the fixed-income segment, Leippold and Ruegg (2018) conclude that about 20 per cent of institutional funds and 25 per cent of retail funds are 'unskilled'. However, the proportion of 'skilled' funds is significantly higher in the fixed-income segment than in the equity segment, at 9 per cent among institutional funds and 3 per cent among retail funds.

3 Passive investments in corporate bonds: availability, investment performance and background

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The debate about active versus passive management is predominantly focused on two topics: firstly the asset class of equities and secondly the question of whether active managers can beat their benchmark before and/or after costs. As a result, it is often forgotten that passive investments generally underperform their benchmarks even before factoring in costs, because they entail replication/market entry costs.

In a study focusing on corporate bonds, it is therefore worth dedicating a separate chapter to the passive investment choices available in the market. After all, passive investments are supposedly the safer choice for institutional investors, promising moderate fees and, potentially, moderate underperformance. The alternative to a passive investment is the allegedly less safe choice of investing in an actively managed product that offers the chance of a superior performance but also entails the risk of underperformance. The decision between an actively or a passively man- aged fund thus requires investors to weigh up the pros and cons.

Questions that should be asked in relation to the asset class of European corporate bonds include:

- What passively managed funds are available?
- How do these funds perform?
- What are the challenges for passive investments that explain this performance?

Chapter 3.1 provides an overview of the market of passively managed funds and their performance. Chapter 3.2 discusses why passively managed funds underperform their benchmark.

3.1 Investment performance of passively managed funds

The study covers major ETF products available in the market that invest in European corporate bonds, are denominated in euros and have a fund volume of at least €200 million[9]. Table 1 lists the five largest ETFs by volume out of a pool of 26 funds that were identified based on the aforementioned criteria. The gross returns before costs of these ETFs are compared with their stated benchmarks.

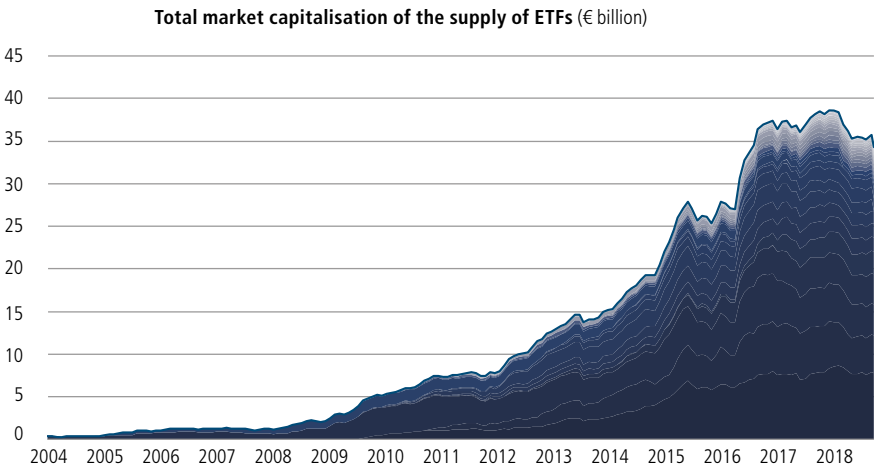
Table 1 **Top five ETFs for European corporate bonds**

ETF	Start date of data series	Volume in € million (as at 30 March 2018)	Benchmark	Active return 1yr	Active return 3yr (p.a.)	Active return 5yr (p.a.)	Fees (p.a.)
iShares Core EUR Corp Bond	9 Mar 2009	8,651	Bloomberg Barclays Corporate Bond Index	–0.21%	–0.13%	–0.18%	0.20%
iShares EUR High Yield Corp Bond	6 Sep 2010	5,057	Markit iBoxx EUR Liquid High Yield Index	–0.01%	–0.34%	–0.47%	0.50%
iShares EUR Corp Bond Large Cap	17 Mar 2003	4,457	Markit iBoxx EUR Liquid Corporates Large Cap Index / Markit iBoxx EUR Liquid Corporate Bond Index	–0.06%	–0.08%	–0.14%	0.20%
iShares EUR Corp Bond 1–5yr	30 Sep 2009	3,493	Bloomberg Barclays Corporate 1–5 Bond Index	–0.81%	–0.36%	–0.27%	0.20%
iShares EUR Ultra-short Bond	17 Oct 2013	2,577	Markit iBoxx EUR Liquid Investment Grade Ultrashort Index	–0.08%	–0.01%	–0.06%	0.09%

Source: Morningstar.

[9] As at 17 August 2018; source: Bloomberg, fund type: ETF, asset class: fixed income, strategies: corporate, aggregated. Selection of all funds fulfilling the criteria of assets under management of more than €200 million, European and denominated in euros.

Figure 1 **Market capitalisation of ETFs included in the study**



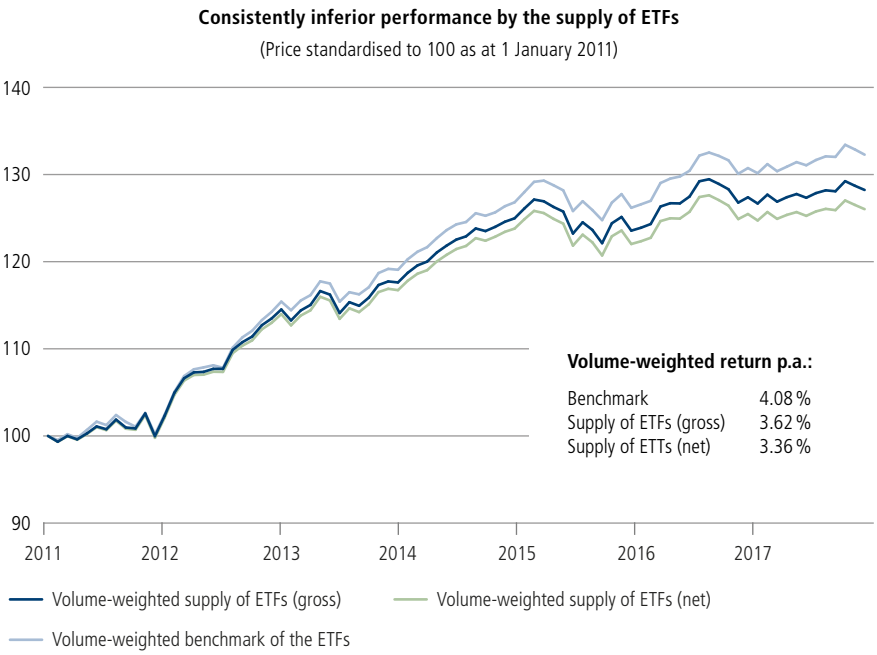
Source: Bloomberg.

Figure 1 clearly shows that ETFs for European corporate bonds only really started to gain traction in the market after the financial crisis. The supply is limited to a small number of funds (cf. table 1 – the five largest ETFs alone account for €24 billion of the total volume). These funds, as well as the global market for bond ETFs, are growing at a very fast rate (market growth of more than 20 per cent p.a.), but the share of this segment in the overall asset management market for corporate bonds remains very small and well below the market share of equity ETFs.

Against this backdrop, only perfor- mance data for the period since 1 January 2011 is used for this study to ensure that market supply in the entire period under review is sufficiently broad in terms of investment volume and number of funds.

The performance of the ETFs included in the study as presented in figure 2 is based on the period since 1 January 2011 and, for the reasons stated above, is deemed to be representative of the overall passive investment offering in this segment.

Figure 2 **Volume-weighted performance of ETFs**



Source: Bloomberg.

Figure 2 clearly shows that the volume-weighted performance of corporate bond ETFs (before costs) has been trailing the relevant benchmark by 46 basis points per year since 2011 and that investors face an additional cost impact of 26 basis points. This means that, after costs, these funds underperform their benchmark index by around 72 basis points per year.

There is also considerable volatility in the performance of these funds over time. In addition to performance that is, on average, weaker than that of the relevant benchmark both before and after costs, investors are exposed to a significant tracking error of 43 basis points.

Ultimately, investors simply have to accept these key figures if they opt for a passive management strategy and invest in an ETF.

3.2 Reasons for the underperformance of passively managed funds

The causes of the performance trend described above are of a structural nature and relate to the particular challenges of the corporate bond market and its benchmarks.

3.2.1 Low liquidity

The fact that corporate bonds are not very liquid is very significant for both active and passive investments. The lack of liquidity has a particularly strong – and detrimental – effect on passive investments.

A primary cause of the illiquidity of this asset class is that issue volumes are typically lower than in the government bond market, while demand is relatively strong. This mismatch of supply and investor demand is further exacerbated by activities of market players whose actions are not exclusively driven by economic considerations (e.g. the European Central Bank (ECB), insurance companies and other institutions that are subject to capital regulations).

Some of these players pursue objectives that are not purely commercial in nature. To achieve these goals, they make large-scale purchases in the corporate bond market. But these bonds are subsequently not resupplied to the market when prices move, because they have been bought by investors who are not sensitive to price levels and want to hold these bonds for structural reasons.

In addition, the amount of liquidity currently provided by investment banks in their role as market makers is quite limited compared with pre-crisis levels. This policy shift is due to the tightening of regulatory capital requirements in the wake of the financial crisis.

The low level of liquidity leads to wider bid-ask spreads that incentivise – or almost force – investors to buy and hold. In this illiquid environment, corporate bonds are sold only if unavoidable as sellers are likely to suffer substantial markdowns. At the same time, buyers interested in these types of bond face hefty purchase premiums.

Table 2

Average liquidity cost score of the ICE BofAML EuroCorporate index

Term to maturity < 1 year

	Age of bond (years)			
Issue size	< 1	1–5	5–7.5	>7.5
< 0.5 billion		0.21	0.3	0.22
0.5 – 1.0 billion		0.23	0.25	0.27
1.0 – 2.0 billion		0.15	0.19	0.15
>2.0 billion				0.11

Term to maturity 5 – 10 years

	Age of bond (years)			
Issue size	< 1	1–5	5–7.5	>7.5
< 0.5 billion	0.39	0.47	0.54	0.51
0.5 – 1.0 billion	0.38	0.45	0.51	0.50
1.0 – 2.0 billion	0.37	0.43	0.46	0.38
>2.0 billion	0.31	0.39		0.34

Term to maturity 1 – 5 years

	Age of bond (years)			
Issue size	< 1	1–5	5–7.5	>7.5
< 0.5 billion	0.30	0.31	0.33	0.34
0.5 – 1.0 billion	0.24	0.29	0.31	0.30
1.0 – 2.0 billion	0.23	0.27	0.28	0.25
>2.0 billion		0.23	0.27	0.18

Term to maturity > 10 years

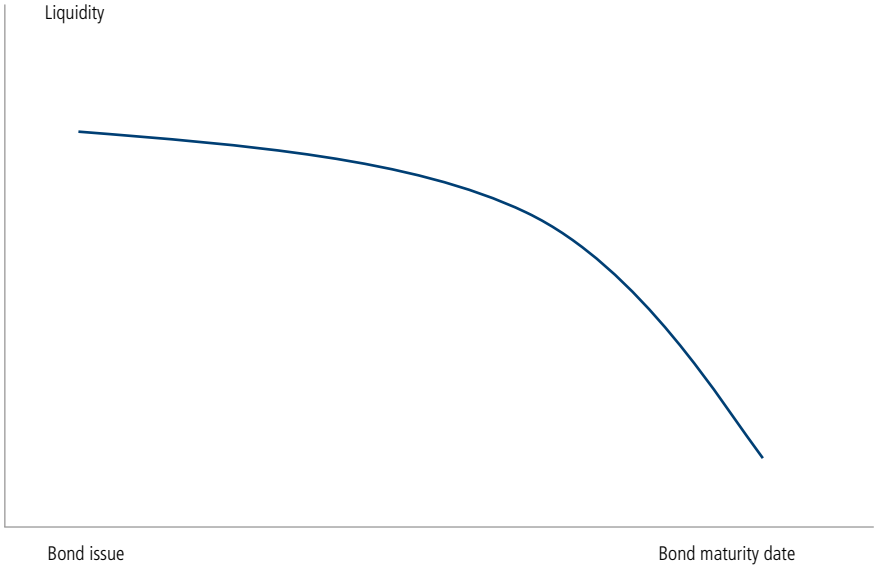
	Age of bond (years)			
Issue size	< 1	1–5	5–7.5	>7.5
< 0.5 billion	0.53	0.71	1.04	0.61
0.5 – 1.0 billion	0.59	0.65	0.87	0.73
1.0 – 2.0 billion	0.45	0.59	0.57	0.71
>2.0 billion	0.42	0.69		

Source: Bloomberg.

Liquidity patterns in the market are also of relevance in this context. The liquidity cost score (LCS) available on the Bloomberg system is a quantitative indicator for bond liquidity. Table 2 shows the LCS for all bonds in the ICE BofAML Euro Corporate index. The LCS tracks the cost of liquidating a bond, i.e. a higher score indicates a lower level of liquidity. When the data is aggregated based on term to maturity, age and issue size, it becomes apparent that liquidity reduces significantly with age. The phenomenon affects smaller issues and longer-dated bonds in particular.

The liquidity of a bond reduces particularly noticeably as the bond gets older, i.e. the shorter the remaining term to maturity, the more illiquid it becomes (cf. figure 3).

Figure 3 **Liquidity of bonds**



Source: Union Investment.

This fundamentally drives up market access costs for passive investments. The same is true for active investors, but for passive investors there are a couple of additional, critical factors that make the lack of liquidity even more challenging in two respects:

- The manner in which bond benchmarks are constructed makes it necessary either to carry out frequent and costly portfolio adjustments or to settle for a relatively rough approximation of the benchmark index.
- Tactical investors' short-term inflows and outflows necessitate substantial costs.

Both aspects merit a closer examination in separate sub-chapters.

3.2.2 Challenges of replicating the benchmark

The structure of the corporate bond market and the construction of appropriate benchmarks based on this structure make passive investing more difficult. For an index to be a suitable bellwether of a market segment, it must meet two key quality criteria. It must be representative of the market segment and it must be replicable. Bond indices always involve the regular replacement of a large number of securities due to the characteristics of the bond markets.

- Borrowers' issuance activity and the maturing of issued bonds lead to continual rotation of the paper in the market. Indices that track the market replicate these changes by making constant adjustments. In widely used bond indices, bonds due to mature within a year are removed from the index because they are much more indicative of what is happening in the money markets than in the bond markets.

- Bonds in an index have to maintain a certain minimum volume so as to ensure sufficient liquidity for market players. Debt tender offers may temporarily result in a significantly smaller issue size, causing the bond to be removed from the index prematurely. Paper may also be removed from an index prematurely due to credit rating changes or because of acquisitions.

Adequate tracking of the market necessitates not only rebalancing – i.e. adjustment of the index weightings to the latest market movements – but also relatively frequent replacement of the index bonds. New securities therefore make up a large proportion of the indices. In 2017, a total of 287 securities were removed from the ER00 index (ICE BofA Merrill Lynch Corporate index)[10] for European corporate bonds, which equates to 11.9 per cent. To put that into context, the proportion of index adjustments in the equity market is roughly 1.0 per cent.

The sheer number of securities in an index highlights the challenge for passive investments. Many bond indices typically contain a very large number of bonds. The broadly diversified ER00 index, for example, has almost 2,700.

Passive investors are thus faced with the challenge of deciding which of the many securities to select for their portfolios, as it is virtually impossible to include all of them. In particular, replicating the many index adjustments is not worthwhile because of the resulting transaction costs.

[10] The index contained 2,413 bonds at the start of 2017. Of this total, 287 bonds were removed and 555 new ones were added between January 2017 and January 2018. The ER00 thus contained 2,681 bonds at the beginning of 2018.

3.2.3 Cost of tactical inflows and outflows

Many investors use ETFs as a way of implementing tactical investment decisions. An investment in an ETF for tactical reasons is frequently short-lived. Corporate bond ETFs therefore have to deal with short-term inflows and outflows that are made for tactical reasons.

These inflows and outflows of capital require the portfolio to be regularly adjusted to reflect the changed fund volume. Inflows can be put to relatively good use as a way of bringing the portfolio closer into line with the index.

Outflows are problematic, however, because bonds have to be sold across the board. In certain situations, this may only be possible at very unattractive prices due to the many illiquid bonds. The price markdowns have to be seen as implicit trading costs. The challenge of low liquidity levels is particularly noticeable in this context. Consequently, the implicit costs of outflows are higher than those of inflows.

Tactical inflows and outflows therefore generate implicit trading costs. These impact on all investors, i.e. the costs generated by tactical investors' inflows and outflows in ETFs are socialised and borne by all investors, including long-term strategic investors. This is not seen as a drawback by tactical investors, as they only have to bear some of the costs generated by their actions. For long-term investors, however, this creates an unwanted disadvantage.

It also leads to a unique risk situation. The aforementioned effect would be compounded if panic were to break out in the market, resulting in large withdrawals of both tactical and long-term investors' money. A sell-off by investors in a corporate bond ETF entails a particularly high crash risk because individual investors assume that the ETF has a level of liquidity that, for all the investors together, does not actually exist. The selected securities in which the ETF is invested would be particularly hard hit by such a crash, which is why the ETF is likely to suffer more than the market as a whole. There is also a chance of trading below net asset value. For investors, therefore, a wave of inflows and outflows creates a further risk that may lead to underperformance.

That is why an assessment of an ETF's costs is based on the combined impact of explicit charges and implicit trading costs.

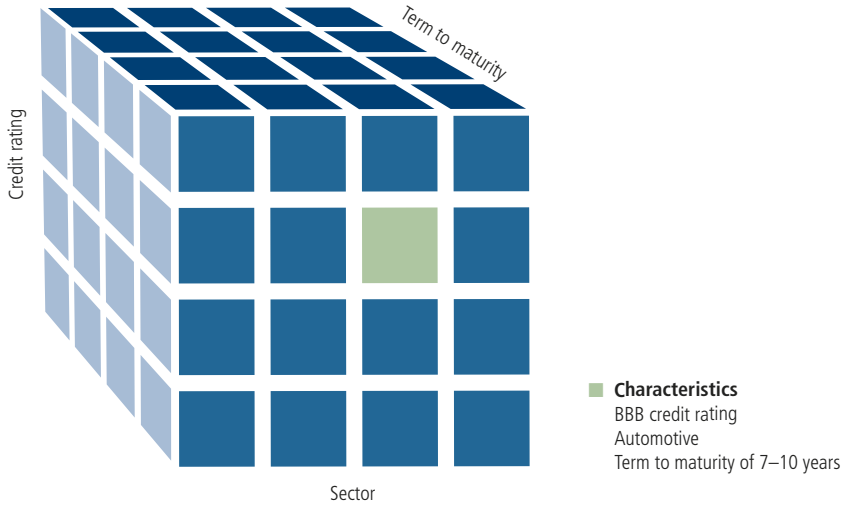
3.2.4 Index approximation

The challenges described above make it virtually impossible to fully replicate a corporate bond index, because it would undoubtedly be too expensive to put into practice.

For passive investments, therefore, approximation of the index is unavoidable. The aim is to approximate the benchmark as closely as possible while keeping the transaction costs as low as possible.

This is achieved in practice using stratified sampling, i.e. the index is split into subgroups, or strata, on the basis of risk factors. This involves classifying the bonds in the index according to term to maturity, credit rating, sector, currency of issue, seniority, country and issuer (cf. figure 4). Representative bonds are then chosen for each subgroup, although liquidity and transaction costs also play a crucial role.

Figure 4 **Principle of stratified sampling**



Source: Union Investment.

Variance from the index always means uncontrollable tracking risk that can quickly lead to an inferior performance compared with the index. However, containing the tracking risk requires expensive portfolio adjustments.

In the case of passive investments, index adjustments are used as opportunistically as possible. Cash resulting from maturing bonds, coupon payments and inflows/outflows are used to bring the fund closer to the benchmark. However, it is often difficult to service outflows and these can quickly lead to the sale of illiquid bonds with heavy markdowns. Forced adjustments are therefore always expensive overall.

Consequently, passive investments always represent a trade-off between higher transaction costs (i.e. the certainty of underperformance) and a greater tracking error (in other words the symmetrical risk of substantial underperformance or outperformance). Investors want to minimise the latter, because it goes against the principle of product authenticity, i.e. a product that replicates the index. As shown in chapter 3.1, the realistic results are a performance shortfall of roughly 46 basis points per year before costs and a tracking error of approximately 43 basis points.

3.3 Interim conclusion

Before the performance opportunities for active managers are discussed, the following facts for ETFs should be set out:

- Passive investments in corporate bonds entail substantial market access costs. Since 2011, the volume-weighted performance of the European corporate bond ETFs in the study has trailed that of the benchmark by 46 basis points before costs and by 72 basis points after costs.
- The low liquidity levels of corporate bonds and the characteristics of the typical benchmarks drive up the cost of passive investments. This makes perfect replication of the index impossible, which is why not only an inferior structural performance but also a relatively high tracking error of around 43 basispoints are unavoidable. The performance of an investment in ETFs that supposedly generates reliable returns is therefore relatively uncertain.
- Tactical investors' short-term inflows and outflows drive up costs and risks even further. The resulting implicit trading costs are socialised and borne by all investors. In the event of a sell-off, ETFs have a substantial crash risk.

Investing in an ETF is widely seen as a secure form of investment. In the corporate bond segment, ETFs have a relatively high tracking error, which means their performance is uncertain. For good reason, however, their underperformance is considered relatively certain – as can be seen from the data for past years.

4 Active investments in corporate bonds: performance opportunities and results

4 Active investments in corporate bonds: performance opportunities and results

The investment performance of passively managed funds is of only limited appeal to investors due to the challenges described above. But when it comes to investing in bonds, the relatively poor comparative performance of ETFs is not the only argument in favour of active management. Chapter 4.1 looks at why there are good performance opportunities for active investors in the corporate bond market. Chapter 4.2 investigates whether these opportunities can be successfully exploited.

4.1 Why actively managed funds offer good performance opportunities

Active management is always possible under the efficient-market hypothesis as well. This is because active investors are needed to take up any arbitrage opportunities and establish an efficient market. How easy or accessible successful active management is depends on how efficient the market is, however.

There are good reasons for the relatively low efficiency of the market for corporate bonds. For classic alpha opportunities, the market conditions are relatively conducive to successfully overweighting or underweighting particular market segments and selecting individual securities. Moreover, the low level of liquidity creates a significant relative advantage for active investors.

4.1.1 Low liquidity creates a relative advantage

The low level of liquidity, with the challenges that this entails for passive investments, was discussed in chapter 3.2.1. Actively managed funds are better at factoring the low level of market liquidity into their investment policy because, unlike passive investments, there are barely any situations in which they are forced to act. Active investors can take account of the wide bid-ask spreads in their investment policy ex ante. The portfolio is then only adjusted if the expected added value is suitably high. As a rule, investment decisions have a longer-term focus. This enables transaction costs to be kept at a low level.

Furthermore, bonds with a short term to maturity do not have to be sold – as is the case with passive investments – in order to minimise the tracking error. Instead, they can be deployed as part of an active strategy with a consciously selected and structured tracking error.

Unlike ETFs, the volume of inflows and outflows is relatively small. Actively managed mutual funds are typically used predominantly for retail clients or for institutional investors following a strategy.

Short-term tactical reallocations are not common and, as a rule, pose far less of a challenge for the investment policy.

In the case of institutional segregated funds, the problem of inflows and outflows of course does not apply at all, and the implied costs of additions and withdrawals are borne by the individual client.

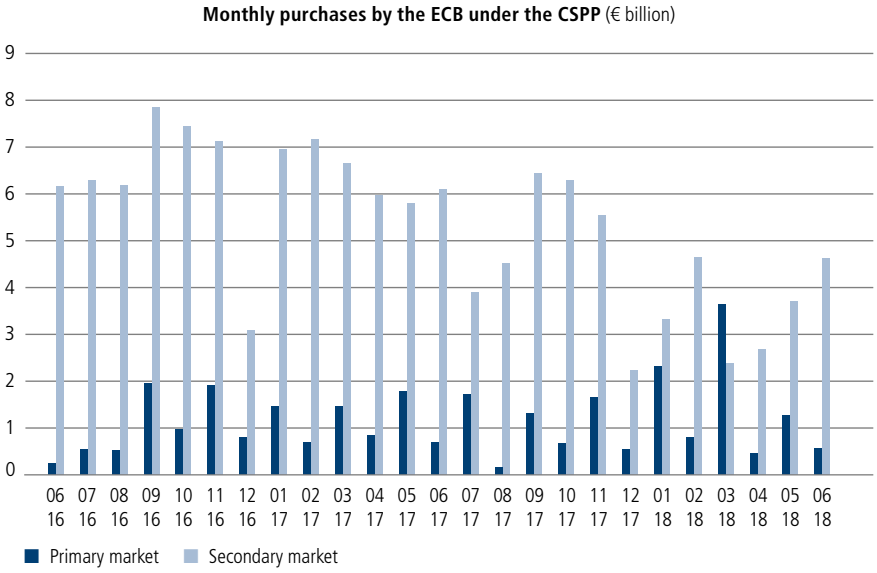
4.1.2 Distortion resulting from players pursuing objectives that are not purely commercial

Market players' reasons for purchasing corporate bonds can vary widely. Investors normally aim to maximise profits, thus creating an efficient market.

In the corporate bond market, however, major market participants – such as the ECB – have different objectives. The ECB's asset purchase programmes launched in the wake of the 2007 financial crisis were not intended to generate attractive returns. Rather, the ECB wanted to inject liquidity into the economy and thereby provide support for its inflation target. As is well known, the ECB even acquired paper with negative yields. From the central bank's perspective, this is a very good way of fulfilling its mandate. But it has nothing to do with aiming for profits and establishing an efficient market. In fact, it has had quite the opposite effect, as the non-profit-driven purchases are distorting pricing.

As a result of its purchase programme, the ECB has become a market participant with a significant influence. It now has a substantial portfolio of government bonds and holds as much as 30 per cent of some countries' government bonds, e.g. Portugal. Purchases of corporate bonds were stepped up in 2016, above all because the ECB had, in some cases, reached the upper limit that it had set itself for government bonds from a single issuer. The monthly purchase volume of roughly €7 billion is adversely affecting the market (cf. figure 5). By way of comparison, the total volume of ETFs studied in this period amounts to approximately €35–40 billion.

Figure 5 **Monthly purchases by the ECB under the CSPP corporate bond-buying programme**

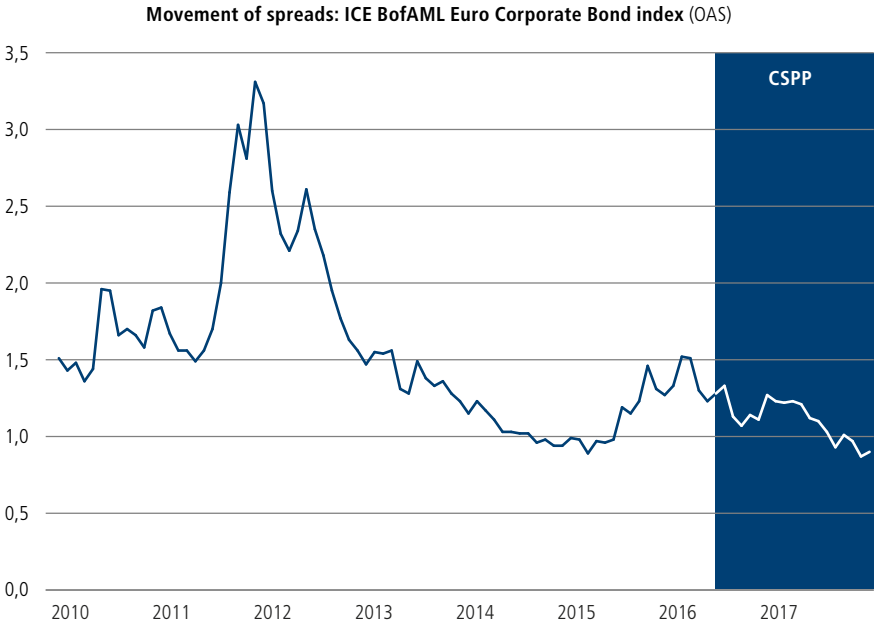


Sources: European Central Bank, Union Investment.

In this context, the regulatory capital requirements for insurance companies laid down by Solvency II, which many financial institutions are adhering to, are playing a major role. As a result of the Solvency II rules, there is a systemic favouring of bonds, because they do not have to be backed by as much capital as other investments, such as equities. These regulatory incentives mean that institutions are holding more bonds than they would if they were acting for purely commercial reasons in an unregulated market.

In the corporate bond market, which is shaped by supply and demand, these interests – which are not purely driven by profit – lead to distorted prices. The ECB's purchases and the effects of regulation are creating disproportionately strong demand. This pushes up prices, squeezes yields and reduces the spreads of the bonds. For example, spreads in the ER00 index have fallen below 1 per cent and, in November 2017, reached a historical low (cf. figure 6).

Figure 6 **Spreads in the ICE BofAML Euro Corporate index (ER00)**



Source: Bloomberg.

It is estimated that about half of all paper in the bond market is held by investors who are bound by certain restrictions.[11] For active managers, however, this opens up a disproportionately high number of arbitrage opportunities. Active investors can capitalise on the disruption that occurs in the market because market prices do not necessarily correspond to the rational economic theory on which the issuers' business models are based. On the one hand, these opportunities can be seized as the process of distortion occurs. If prices are rising because the ECB is purchasing bonds, active investors can benefit by overweighting the bonds. And they will be able to do the opposite when the ECB scales back its purchases in the years ahead.

[11] According to 'Bonds are different', published by Dr James Moore in February 2017.

4.1.3 Benchmark structures

The challenges described in chapter 3.2.4 for passive investments that replicate bond benchmarks do not arise for active investors because their investment strategy means they only ever hold selected bonds. Consequently, neither the large number of securities in a benchmark nor the frequent adjustments pose a problem for active investors.

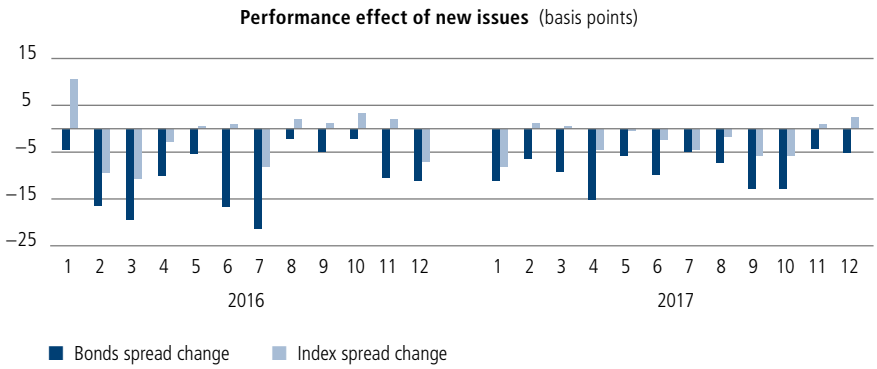
Moreover, the construction of bond benchmarks on the basis of issue volume creates advantages for active managers. This principle means that a benchmark's heavyweights are those with high levels of debt. Consequently, highly indebted companies with weak fundamentals are disproportionately strongly represented. Active investors are not tempted to invest in large-scale issuers. Instead, they focus on issuers with a healthy level of debt and can turn this to their advantage relative to the benchmark. On the one hand, the chance of narrowing spreads is much higher for well-structured companies. On the other hand, active investors can take prompt action if indications of payment problems emerge.

4.1.4 Collection of new issue premiums

New issues are also a good opportunity for achieving better returns. The issuance of new bonds is of equal interest to buyers and issuers. To be certain of a successful placement, issuers grant prospective investors in the new paper a discount in the form of a pick-up on existing bonds. According to Union Investment's estimates, this new issue premium adds an average of 10 basis points over the long term and is an important driver of performance for active investors.

Moreover, new bonds often perform particularly well in the first few days of trading after their issue date. To highlight this effect on performance, Union Investment analysed detailed trading data for the past two years. The dataset consisted of 342 new issues in 2016 and 321 in 2017 in which the managers of the UniEuroRenta Corporates fund participated. The average spread on the day of issue was compared with the average spread on the day on which the bond was included in the index. The findings in figure 7 are unambiguous. Spreads narrowed in each of the 24-month review periods, i.e. new securities saw their spreads narrow sharply in the first few days of trading and much more significantly than those of the ER00 index over the same period.

Figure 7 **Performance effect of new issues**



Source: Bloomberg.

Analysis of the new paper purchased by Union Investment's fund managers suggests that participating in new issues gives an overall advantage of 15–20 basis points per year. This results from the new issue premium and the performance effect immediately after issue. However, bond indices can only add new paper after it has been issued, putting them at a disadvantage.

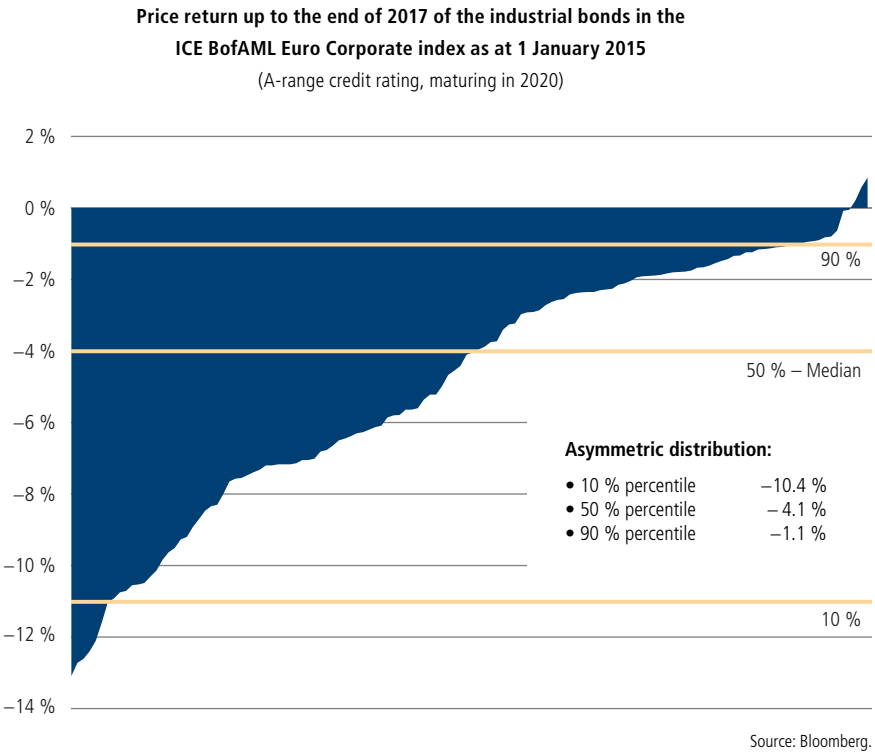
When it comes to issuance activity, an investor's reliability in its dealings with the issuer plays an important part. To ensure a sense of partnership, companies speak to potential investors at their roadshows in the run-up to the issuance of new bonds. This dialogue with issuers gives active managers key insights that they can use in their active investment decisions. Similarly, the issuer then works with the consortium providing support in order to determine the allocation quotas for the new issue. If demand for the new bonds to be issued is very high, a long-standing partnership will prove advantageous and the investor may end up with an above-average allocation, even if the order book is oversubscribed.

4.1.5 Security selection, credit rating changes and arbitrage on individual securities

Active investors also have conventional means of generating alpha. An important one is security selection. The information obtained by analysing individual bonds is used to select issuers for the portfolio whose bonds are expected to perform better than those in the peer group or better than the market as a whole.

A distinctive feature of corporate bonds is that the distribution of yields in this market segment is frequently asymmetrical, with a large number of fairly positive returns on the one hand and a few very negative returns on the other. This is illustrated by the distribution shown in figure 8 for the period 2015 to 2017. The yield spread from the median to the 90 per cent quantile, i.e. the 10 per cent of bonds with the best performance, is much narrower than the spread to the 10 per cent quantile, i.e. the bonds with the worst performance.

Figure 8 **Distribution of yields on paper in the ICE BofAML Euro Corporate index**



Source: Bloomberg.

For this reason, security selection focuses on avoiding poorly performing bonds because this approach provides greater potential for improved returns. It is easier to beat the index by not investing in bonds that are in default or have been downgraded than by selecting bonds that see a significant credit rating improvement and thus outperform the index.

Consequently, active investors' research is geared to promptly spotting the warning signs that a company's creditworthiness may be deteriorating. The aim is to identify these signals before the bond's spread widens or it is downgraded by a rating agency.

Rating downgrades, particularly in the high-yield segment, result in sharp price falls because of the prevailing market structure. If a bond's credit rating drops below BBB-, it will be removed from investment-grade indices. This is a critical threshold for many institutional investors, as it is often used as an investment restriction. In the event of a downgrade, risk-sensitive investors must sell the paper immediately. Given that passive investments also have to be sold in this environment, selling pressure quickly mounts. The spreads of the affected companies tend to shoot up very quickly.[12]

Both a deterioration in creditworthiness and an improvement in credit rating can be significant performance drivers, albeit only to a limited extent in aggregate. The upgrading of a bond boosts demand for it and leads to narrowing spreads.

Consequently, ex ante identification of imminent changes to creditworthiness and subsequent adjustments to credit ratings offer active investors good potential for generating an additional return.

Arbitrage opportunities are another source of return at individual security level.

In this case, the default premium of an issuer is traded separately using credit default swaps (CDSs). Arbitrage opportunities arise for active investors because CDS prices do not always move in step with the cash market. This can lead to mispricing, e.g. the cost of a CDS is cheaper than the spread of the underlying bonds, which active investors can use to obtain a profit from arbitrage (known as a CDS basis trade).

Floating-rate notes, which are placed by larger issuers in addition to fixed-rate paper, offer another opportunity for arbitrage. If, for example, the credit risk of a floating-rate bond is temporarily better priced than the comparable fixed-rate bond, there are again arbitrage opportunities.

[12] This is often a good buying opportunity for high-yield investors who specifically want to invest in this market segment. However, the high-yield bond market is considerably smaller. Consequently, demand from high-yield investors in this situation is typically lower than the supply of paper resulting from the sell-off by risk-sensitive investors in the investment-grade segment

4.1.6 Top-down allocation

Another very good way of achieving a better return is by adopting a position that varies from the benchmark by overweighting or underweighting the fundamental characteristics of the market benchmark.

The following characteristics can be utilised in this context:

- **Maturity period:** The overweighting of long-dated bonds will beat the index when yields on safe-haven paper fall. This source of return is key for government bond funds, but is also an option for corporate bond funds. For many institutional investors, however, deciding whether they want to also manage duration in the corporate bond segment or instead focus on investment-grade government bonds is a strategic consideration.
- **Sector:** The overweighting of financial bonds will beat the index if they perform exceptionally well. This source of return is very important and can be of paramount significance, as the financial crisis has shown. In the investment process, it needs to be decided whether sector allocation is seen as the outcome of bottom-up analysis or is determined by a top-down strategist.
- **Country:** Corporate bonds are also affected by the country from which they originate. During the financial and euro crisis, for example, corporate bonds from the countries on the eurozone's periphery fared much worse than those from core eurozone countries.
- **Credit rating:** The overweighting of low credit rating classes will beat the index if spreads narrow and the lower rating classes notch up larger price gains. Weighting based on credit rating is therefore vital.
- **Seniority:** Less senior debt instruments will have the upper hand if the general credit environment brightens. In this case, overweighting them will pay off.
- **Off-benchmark additions from other fixed-income segments:** A strategy popular among active managers is to add paper from other market segments, e.g. bonds from the high-yield segment or emerging markets, that are thought to have better expected returns. And this diversification has the added benefit of reducing risk.

Overall, substantial opportunities for outperforming the benchmark are opened up by ensuring the portfolio has the right fundamental focus. In many cases, the aforementioned strategies can also be implemented very easily, cost-effectively and efficiently by using derivatives.

4.2 Empirical findings

The aforementioned opportunities for active managers to add value need to be assessed in practice on the basis of the results. Is it possible to exploit these opportunities? To what extent? With what degree of reliability? And what is the risk that an active manager will underperform?

4.2.1 The database of actively managed funds

A robust analysis is only possible if it is based on a suitable data set that has been carefully selected.

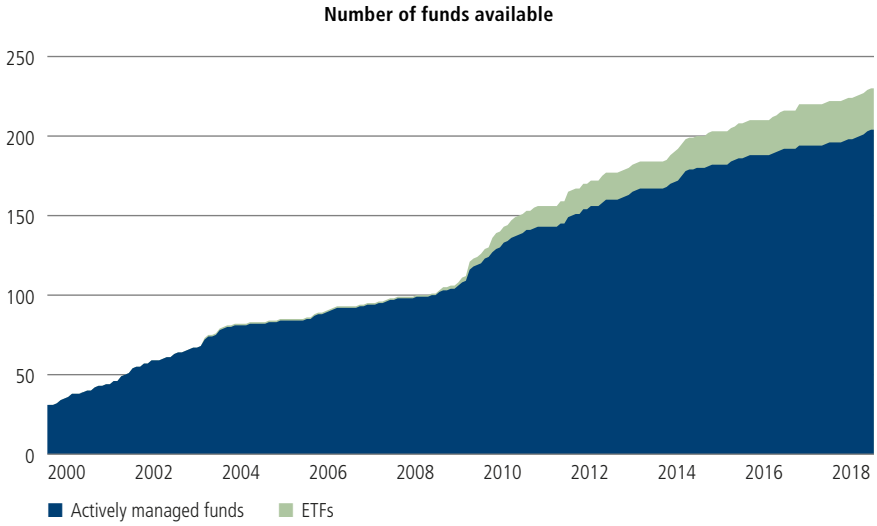
The following analysis is based on data from Morningstar relating to 200 corporate bond funds investing in euro-denominated corporate bonds. All funds in the categories EAA Fund EUR corporate bonds and EAA Fund EUR corporate bonds – short term are considered. The latter encompasses funds invested in paper with a short term to maturity. In the case of funds with multiple unit classes, only the oldest unit class is considered.

Some of the funds considered differ significantly in terms of their investment universe or benchmarks. To provide a meaningful analysis, it is therefore crucial to compare the funds with the individual benchmarks against which they are managed because this enables the active return to be determined properly. The funds were allocated to their benchmarks manually with a high degree of care in order to ensure the best possible quality of the data set.[13]

The performance data of the 178 funds included is available monthly. This is an appropriate frequency for analysing managers' performance because it avoids the data problems that would arise with daily data captured at different times for fund pricing and the fixing of the benchmark. Furthermore, there is no need to analyse daily data when assessing managers' medium-term performance.

[13] A total of 22 funds were excluded from the analysis because they pursue very specific strategies (e.g. subordinated financials, hybrid bonds, total return) and thus have no, or only an inadequate, benchmark.

Figure 9 **Number of funds in the analysis**



Source: Morningstar, Bloomberg.

Figure 9 shows how the aforementioned fund universe has evolved over time. The European corporate bond markets are still relatively new, which explains why the data only goes back a short way. Relatively few funds have a track record that began before 2000. At the time of the financial crisis, the number of funds was only about half what it is today. The supply of funds continues to grow steadily. In addition to the 178 actively managed funds (blue), the chart also shows the 26 ETFs (green) that were described in chapter 3.

Union Investment checked the publicly available documentation for all of the actively managed funds. The 68 funds whose documentation provided details of their benchmark were measured against those benchmarks.

To identify a fair benchmark for the other funds, the funds and the indices were split into the following groups:

- **Covered (ten funds, six indices):** Funds with a significant proportion (minimum of 60 per cent) of covered bonds in their portfolio
- **Sustainability (21 funds, two indices):** Funds that follow a sustainable investment approach
- **Financial (two funds, two indices):** Funds focused on financial bonds (minimum of 50 per cent)
- **Non-financial (seven funds, five indices):** Funds focused on non-financial bonds, primarily industrials and utilities
- **Short-dated (21 funds, 17 indices):** Funds that are restricted to investments with a short term to maturity

- **Investment-grade (28 funds, three indices):** Funds that are restricted to investments in bonds or companies with an investment-grade rating

- **Credit (44 funds, 15 indices):** Funds that do not invest in government or quasi-government bonds, but have no other general restrictions

- **Aggregated (45 funds, 17 indices):** All the funds that do not belong to any of the groups above were measured against broad benchmarks. Consequently, this group comprises funds that can invest in corporate bonds and, to a limited degree, government bonds.

All 67 benchmarks that could be assigned to at least one active fund or ETF on the basis of publicly available information were examined as potential benchmarks for the funds in the aforementioned groups and then allocated to the fund groups. The group assignment of the funds without a published benchmark was then used to determine the ex post tracking error in respect of the potential benchmarks for each group. This was done in the period 2011 to 2017. Each fund in a group was assigned to the benchmark for its group for which it had the lowest tracking error. This process should ensure the best possible assignment and, at the same time, prevent funds from being measured against benchmarks that pursue a different investment idea.

Next, all of the funds were excluded that had a very high tracking error of more than 2.5 per cent, even after the qualitative assignment. In such cases, the risk of an incorrect assignment due to a lack of data appears relatively high and, depending on the circumstances, could significantly influence the outcome of the analysis. Excluding these funds creates a data set that can be analysed without the results being affected by outliers.

A further restriction, aimed at counteracting the incubation bias, is the requirement of a minimum volume of assets under management (AuM) of €50 million as at 30 March 2018. After application of these criteria, the remaining basis for analysis consists of 94 actively managed funds in 2011, increasing to 135 by 2017.

The method of assignment and optimisation can be described as conservative for active managers, because the latitude available for achieving a superior performance is limited by the selected mechanisms.

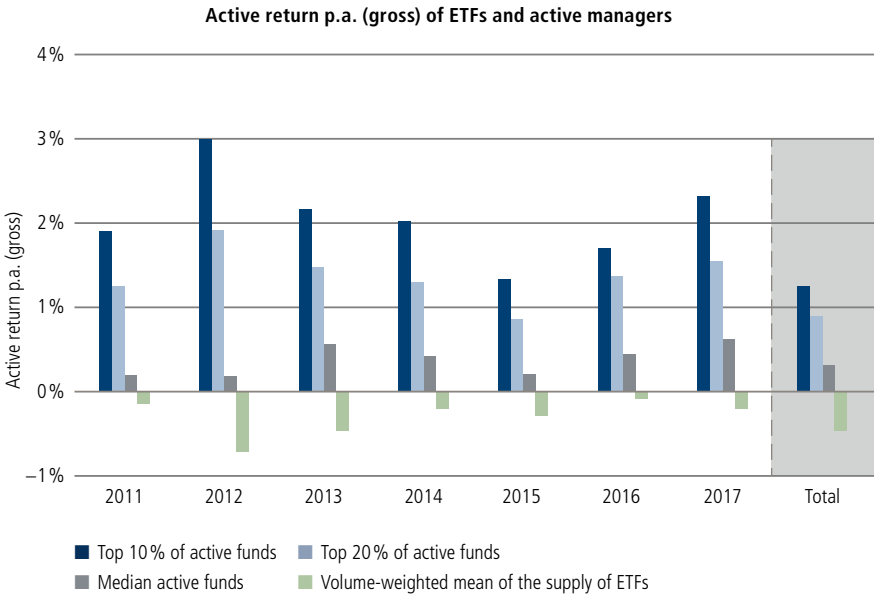
The Morningstar database used in the analysis does not factor in possible survivorship bias. Because the market for corporate bonds is still relatively new, the supply of funds continues to grow. The number of funds removed from the market should therefore be fairly small. Consequently, the survivorship bias in this total sample should be relatively moderate and should not cast doubt on the outcome of the analysis presented below.

The following empirical analysis looks only at gross performance before costs. This is to ensure that the study provides insights purely in relation to manager performance without the effect of fees, which are, after all, affected by the market situation.

4.2.2 Investment performance of active managers

Figure 10 shows investment performance since 2011. For each calendar year, all of the funds that existed in that year are shown. For the overall period, the 94 funds that existed in 2011 are used as the basis.

Figure 10 **Performance of the ETFs and active managers**



Source: Morningstar, Bloomberg, Union Investment.

In the overall period since 2011, the median of the active managers has beaten the benchmark by almost 0.32 per cent per year.[14] The volume-weighted average for the ETFs, however, falls short of the benchmark by 0.46 per cent per year.[15] Moreover, the actively managed funds offer a significant pick-up in each calendar year. The results before costs show that there has been an attractive performance spread between active and passive investments for institutional investors in recent years.

A look at the group of very good active managers backs up this interpretation. The top 10 per cent quantile shows an active return of over 1.25 per cent per year. In other words, the best 10 per cent of managers achieve an active return that is at least 0.93 per cent higher per year than the median of the active managers, which itself is over 0.78 per cent ahead of the ETFs per year.

Table 3 shows this as a robust pattern of results over recent years, because a very similar picture can be seen for periods starting after 2011 with fund universes that have been adjusted accordingly.

[14] In the large group of actively managed funds, the median, the top 10 per cent quantile and the top 20 per cent quantile are good measures for describing the dispersion of returns with the greatest possible reliability. Possible outliers or unsuitable assignments have less of a bearing when quantiles are used.

[15] For the ETFs, however, the volume-weighted average is a suitable measure because the supply of ETFs in the market is dominated by a small number of large products and the study only analyses twelve funds in 2011 and 26 funds in 2017.

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Table 3 **Investment performance of actively and passively managed funds**

Active return p.a. since	2017	2015	2013	2011
Number of funds (ETFs)	135 (26)	119 (21)	109 (17)	94 (12)
Supply of ETFs	– 0.20 %	– 0.20 %	– 0.34 %	– 0.46 %
Median active funds	0.62 %	0.42 %	0.42 %	0.32 %
Top 20 % of active funds	1.55 %	0.93 %	0.89 %	0.89 %
Top 10 % of active funds	2.32 %	1.30 %	1.29 %	1.25 %

Source: Morningstar, Bloomberg, Union Investment.

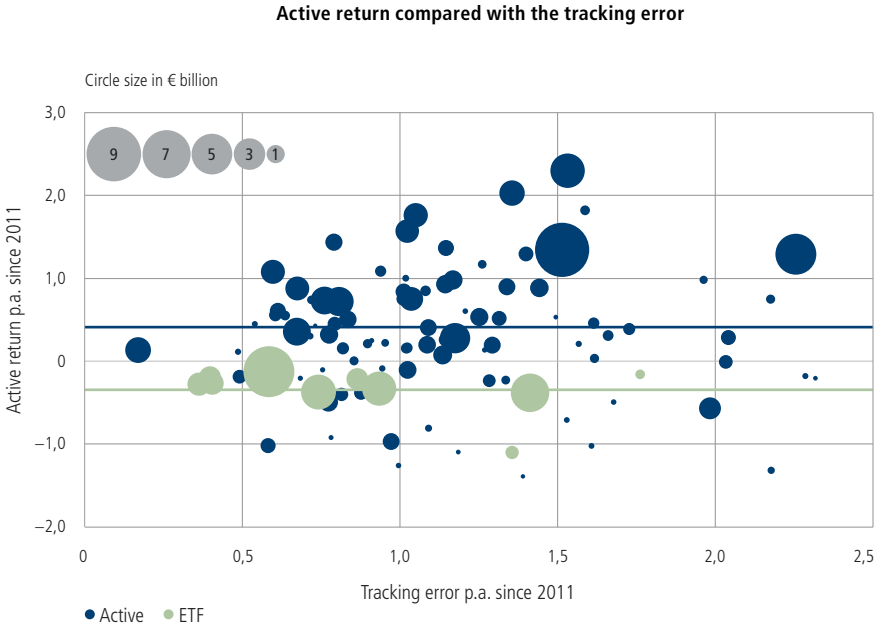
These empirical findings for recent years support the findings published in the literature:

- On average, active managers beat their benchmarks before costs.
- ETFs perform worse than their benchmarks.
- Good active managers add substantial value.

Analysis of the degree of activity by active managers and also of supposedly passively managed ETFs also highlights interesting aspects. The tracking error is used as the main metric in this context. For passive investments, the tracking error relates to the benchmark, i.e. it measures the risk of not hitting the target. In the case of active managers, however, the tracking error indicates their level of activity and risk appetite.

Figure 11 compares the tracking error of the analysed funds with their active returns since 2011.

Figure 11 **Tracking error and active returns**



Source: Morningstar, Bloomberg, Union Investment.

Among the active managers (blue circles, the size of which is proportionate to the size of the funds), there are some very good results for the tracking error in all areas. There is no evidence here for the widely held belief that active managers have to be extremely active in order to stand out from passive investments and add value through their active management. According to the results shown, a lot of activity does not, in itself, add value.

Figure 11 shows that the analysed ETFs all have a similar tracking error to the majority of the actively managed funds. ETFs are thus subject to a similar level of tracking error as active managers. Contrary to broad expectations, the ETFs (green circles) are thus not close to their benchmarks because, if they were, they would have a tracking error of around zero. Whereas active managers are driven by their ideas when it comes to exploiting their tracking error in order to generate added value, the job of passive managers is to minimise their tracking error. Their tracking error should therefore be regarded as an indication that they have fallen short of their target, something that is apparently accepted in the trade-off with the transaction costs that would result from a portfolio adjustment, which in turn would mean falling even further against the benchmark.

Unlike those of actively managed funds, however, the active returns on all of the ETFs analysed lag behind, or at best are on a par with, their benchmark. In other words, there have not been any ETF products in recent years that have proved to be an outlier with a relatively high tracking error yet a positive active return.

4.3 Interim conclusion

The characteristics of the market for corporate bonds offer active managers good opportunities for adding value. Active management has substantial advantages over passive investments for reasons that include low liquidity levels, benchmarks with frequent issues and changes, numerous new issues and an asymmetrical distribution of yields on corporate bonds.

Investment performance before costs since 2011 shows the following:

- The volume-weighted mean of the group of ETFs falls short of their benchmarks by almost 0.46 per cent per year. At the same time, many of the ETFs also accept a tracking error that is similar to that of actively managed funds.
- The median of the actively managed funds beats their benchmark by almost 0.32 per cent per year. The mean gap between the performance of the active and passive investments is more than 0.78 per cent.
- The very good actively managed funds beat their benchmark by 1.25 per cent per year (based on the top 10 per cent quantile). On average, the very good active managers outperformed the median value for active managers by roughly 0.93 per cent and the group of ETFs by around 1.71 per cent per year.

When it comes to deciding between active and passive management in practice, the key issue for investors is how reliably active managers beat their benchmarks. Although active managers as a group achieved good results, these results are without doubt widely dispersed both within the group and over time. In other words, not all managers deliver a superior performance and even successful managers may underperform in future. The next chapter is devoted to the question of whether it is possible to identify successful managers ex ante.

5 Options for selecting successful active managers

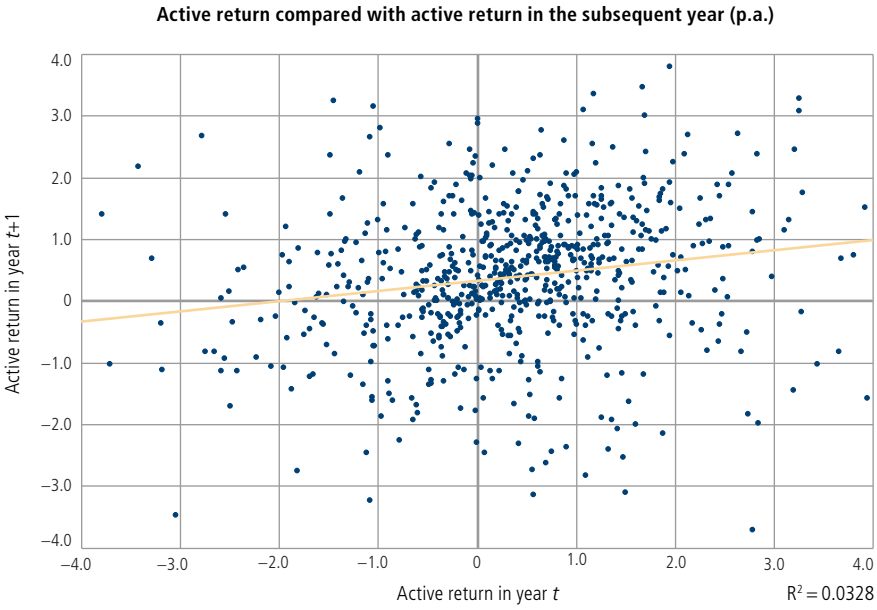
5 Options for selecting successful active managers

The investment performance of the active managers in chapter 4.2 is widely dispersed. This is the case within the group of active managers (there are both good and bad active managers) and over time (managers that did well in the past may underperform going forward). Investors therefore need to be able to understand the factors influencing how active managers will perform in future and to use this information ex ante to successfully select a manager. Only when this is possible does the performance pattern identified in chapter 4 provide investors with possible courses of action that add value. This chapter is devoted to the challenges of selecting a manager.

5.1 Autocorrelation of active returns

When good actively managed funds deliver attractive results, the question arises of whether the returns are stable. In other words, do the good ones remain good, or does the situation change every year? If good active returns show persistence, then the managers with good results in one calendar year should, on the whole, perform better in the subsequent calendar year as well.

Figure 12 **Autocorrelation of active returns**



Source: Morningstar, Bloomberg, Union Investment.

Figure 12 is a scatter plot of the active returns in consecutive calendar years and shows a regression line. For each calendar year from 2011 to 2017, all of the funds available in that year are presented in one chart.

The R^2 of this evidently positive correlation is 0.03. On the surface, this may not appear to be a high value. But it should be remembered that in an efficient market, or a world in which there is only luck and no skill, there is not supposed to be any correlation. The correlation established, however, is very statistically significant.

This finding provides clear evidence against both the zero-skill hypothesis and the efficient-market hypothesis. Nevertheless, the economic relevance is limited. It must be explicitly emphasised at this point that figure 12 includes many funds that outperform their benchmark one year but fall short the year after. The dispersion of the correlation is relatively large, despite the strong statistical significance.

As a result of this dispersion, investors are very interested in gaining a better understanding of active managers' future performance so that they have a better chance of making a good choice of manager.

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5.2 Separation of alpha from factor contributions

The two studies by Fama and French (1993, 1995) mentioned in the overview of the literature, and their application to manager returns by Malkiel (1995) and others, raised the question of whether active fund managers owe their superior performance to structural style investments or to genuine alpha.

The separation of alpha from factor contributions can be used to select a successful manager. An active manager with a high positive alpha should offer better prospects than one who has beaten the benchmark but largely owes this superior performance to factor contributions. The higher the alpha, the more confidence there is that a successful manager will continue to do well in future.

Regressions of active returns on the underlying risk factors in an asset class are a tried-and-tested instrument for separating alpha from factor contributions. The breaking down of active returns using a factor regression is based on the following model (1):

$$r_{i,t}^{active} = \alpha_i + \sum_{j=1}^{m}(\beta_{i,j} \cdot \mathrm{F}_{j,t}) + \epsilon_{i,t} \quad (1)$$

Under this approach, the active return $r_{i,t}^{active}$ of an active manager i=1,…,n over the period t=1,…,T is regressed to risk factors $\mathrm{F}_{j,t}$ with j=1,…,m which are also available as time series. As a result of the regression, coefficients α_i and $\beta_{i,j}$ are acquired for each active manager i. The factor loadings $\beta_{i,j}$ indicate the elasticity of the active return of the manager i to the factor j. The coefficient α_i shows the manager's alpha. This is the part of the active return $r_{i,t}^{active}$ that cannot be explained by market risk factors and should therefore be attributable to individual investment decisions, including decisions about security selection, performance effects resulting from participating in new issues and the timing of market risk factors.

Here is an example. If a manager takes an overweight position in high-yield bonds during phases of stable or narrowing spreads, but underweights them when spreads are widening, he or she always has a large but short-term exposure to the high-yield risk factor. However, the repeated switching of the positions results in a zero correlation over the longer term. Investment decisions that are successful in terms of timing (i.e. paper with poor credit quality is overweighted or underweighted at the right moment) are attributed to alpha by means of the selected regression approach. By contrast, permanently overweight and underweight positions in bonds with poor credit ratings are attributed to the factor contribution.

If a manager takes a permanently overweight position in bonds with below-average credit quality, his or her performance as an active manager will benefit in the long term if paper of below-average credit quality performs better over the long term. A manager's class is apparent, however, by whether he or she also succeeds in turning this overweighting into an underweight position when high-yield bonds perform worse than the market. After all, institutional investors do not want to pay for a structural exposure to high-yield bonds that is then compared with a broad market benchmark. Instead, they seek out managers who continually beat their benchmark by making the right decisions that are subject to ongoing review.

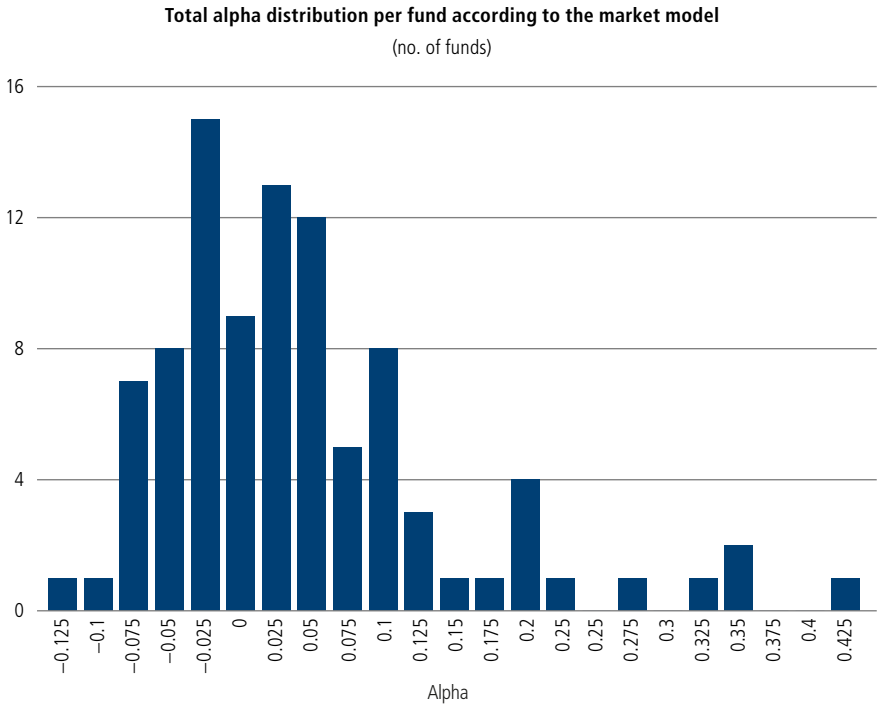
5.3 Separation with the market model and risk factor model

When putting the methodology presented in chapter 5.2 into practice, the choice of factors is crucial. The capital asset pricing model (CAPM) according to Sharpe (1964) – a classic single-factor model – regresses the return on an asset to the market as a whole. Applied to the separation of alpha, the standard process involves regressing the active return of a manager to the market in which this manager is investing. The following market model (2) is thus considered:

$$r_{i,t}^{active} = \alpha_i + \beta_i \cdot r_{i,t}^{BM} + \epsilon_{i,t} \quad (2)$$

The notation follows the presentation in chapter 5.2, with $r_{i,t}^{BM}$ referring to the absolute return of the benchmark of the fund i and $r_{i,t}^{active}$ referring to the active return of the fund. The market model (2) is estimated on the basis of monthly data for 94 actively managed funds that were issued before 1 January 2011 and were still in existence on 1 January 2018.

Figure 13 **Alpha distribution according to the market model**



Source: Morningstar, Bloomberg, Union Investment.

Figure 13 shows the empirical distribution of the estimated manager alphas α_i, that were obtained using the market model (2). Some of the alphas have a relatively asymmetrical distribution.[16] There are just a few funds with a very positive alpha. In any case, the group of funds has a positive median. However, it remains clear that, like active returns, manager alpha is highly dispersed. The simple market model (2) still generates an average AdjR² of 0.16. Nevertheless, the question remains whether there are models with greater explanatory power.

[16] It is worth remembering that the model is estimated using monthly data. Alpha is therefore also given as a monthly figure.

However, further and more detailed analysis that potentially has greater explanatory power should also look at risk factors that are specific to corporate bonds. In a second step, the following risk factor model (3) is therefore estimated:

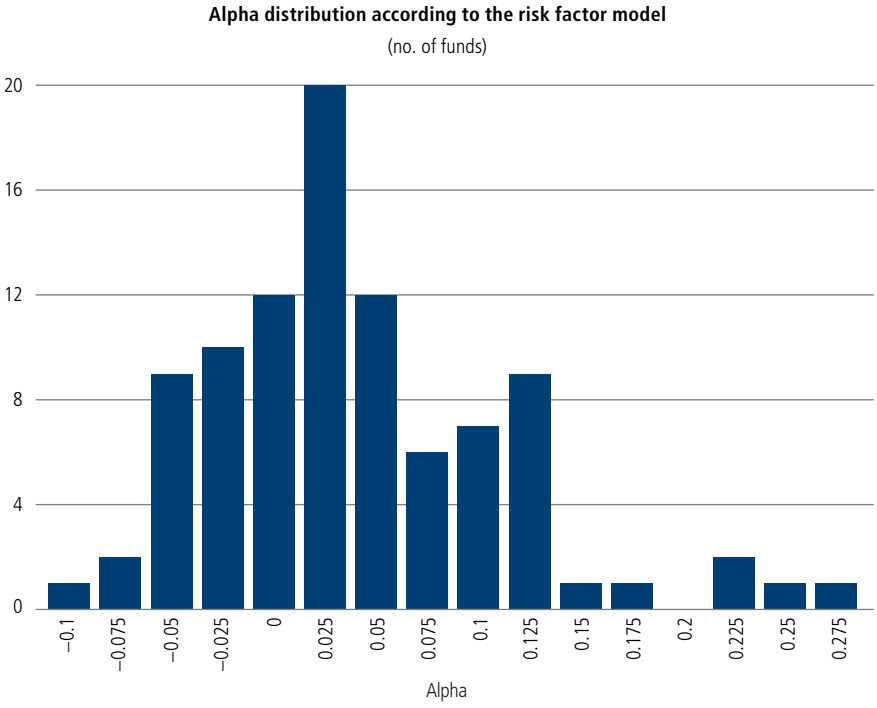
$$r_{i,t}^{active} = \alpha_i + \beta_i^{Spread} \cdot r_{i,t}^{Spread} + \beta_i^{Carry} \cdot r_t^{Carry} + \beta_i^{FinNonFin} \cdot r_t^{FinNonFin} + \epsilon_{i,t} \quad (3)$$

The variables $r_{i,t}^{Spread} = r_{i,t}^{ind.BM} - r_t^{Bund5-7}$ and $r_t^{Carry} = r_t^{Bund5-7}$ and $r_t^{FinNonFin} = r_t^{Fin(EB00)} - r_t^{NonFin(EN00)}$ are defined as risk factors that are formulated as the return in the period t i.e. the time series $r_{i,t}^{Spread}$ represents the additional return of the individual corporates benchmark of a fund $r_{i,t}^{ind.BM}$ against a benchmark that comprises German government bonds with a term to maturity of five to seven years.

The advantage of the risk factor model (3) over the market model (2) is that the influence of the following positions is separated if they are permanent in nature:

- Credit rating positions, i.e. overweighting and underweighting of bonds of better or worse credit quality
- Duration or carry positions, i.e. overweighting and underweighting of longer- or shorter-dated bonds
- Sector positions, i.e. the effect of structural overweighting and underweighting of financials versus non-financials.

Figure 14 **Alpha distribution according to the risk factor model**



Source: Morningstar, Bloomberg, Union Investment.

This enables the influences of the three biggest risk factors for the corporate bond market to be monitored in a more granular way than with the simple market model (2). As a result, the explanatory power of the separation of alpha from factor contributions should increase.

Figure 14 shows the distribution of manager alpha for model estimates with the risk factor model (3). Visually, the picture is very similar to that of the market model (2). However, the proportion of managers with particularly high alpha evidently shrinks significantly when strategic factor exposures are filtered out. This also impacts on explanatory power. The average AdjR² rises to 0.38 under the risk factor model (3), compared with 0.16 under the market model (2). Consequently, the risk factor model (3) explains active returns far better than the market model (2) does. For this reason, the further analysis concentrates on the results of separation under the risk factor model (3).

The interim conclusion is therefore that alpha can be identified using factor regressions and undoubtedly exists in a very large number of cases, irrespective of the model specification. A factor model that focuses specifically on the corporate bond market has much greater explanatory power than the simple market model (2).

5.4 Added value for predicting active returns

It is now time to analyse what value is added to the manager selection process by separating alpha from factor contributions. A benefit is provided if a manager's alpha – identified using factor regression from his or her active return in the past – has predictive power for his or her active return in the future.

The scatter plot and regression model for past and future active returns was examined in chapter 5.1. The regression model used corresponds to the following AR(1) forecasting model (4), using $r_{i,T}^{active}$ for the calendar-year return for year T.

$$r_{i,T}^{active} = \gamma_0 + \gamma_1 \cdot r_{i,T-1}^{active} + u_{i,T} \quad (4)$$

For each calendar year from 2011 to 2017, all of the active funds available in that year are included (i.e. the number of funds analysed increases over time) in order to estimate the regression lines from figure 12 and model (4). This gives the following estimated results[17]:

$$\hat{r}_{i,T}^{active} = 0.33^{***} + 0.17^{***} \cdot r_{i,T-1}^{active} \quad \text{Adj.R}^2 = 0.03$$

The active returns of the previous year explain the active returns of the subsequent year with a coefficient of 0.17 and high significance at the 99 per cent level. This finding provides clear evidence against both the zero-skill hypothesis and the efficient-market hypothesis.

[17] Significance of the coefficients according to *** for p<0.01, ** for p<0.05 and * for p<0.1.

After obtaining α_i and the factor exposures β_i^{Spread},β_i^{Carry} and $\beta_i^{FinNonFin}$ for each manager i under the risk factor model (3), the results can be used to predict future active returns.

To this end, a regression of the risk factor model (3) for each fund i for each calendar year T from 2010 to 2017 is estimated and the calendar-year return $r_{i,T}^{active}$ as well as the alpha $\alpha_{i,t}$, the factor exposures $\beta_{i,t}^{Spread}$, $\beta_{i,t}^{Carry}$ and $\beta_{i,t}^{FinNonFin}$ and calendar year T are determined.

Although the factor exposures from the risk factor model (3) represent a manager's management of the market, they do not provide any information about the proportion of the active return that is attributable to this overweighting and underweighting of the risk factors. This proportion is described by the factor contributions that can be calculated as follows for each fund from the results of the risk factor model (3) for each calendar year T from 2010 to 2017:

$$r_{i,T}^{Spread} := \beta_{i,T}^{Spread} \cdot \overline{r_{i,T}^{Spread}}$$

$$r_{i,T}^{Carry} := \beta_{i,T}^{Carry} \cdot \overline{r_T^{Carry}}$$

$$r_{i,T}^{FinNonFin} := \beta_{i,T}^{FinNonFin} \cdot \overline{r_T^{FinNonFin}}$$

$\overline{r_{i,T}^{Spread}}$, $\overline{r_T^{Carry}}$ and $\overline{r_T^{FinNonFin}}$ refer respectively to the monthly average return of the risk factors spread, carry and financials versus non-financials in the calendar year T.

Including manager alpha and factor contributions results in the following forecasting model (5):

$$r_{i,T}^{active} = \gamma_0 + \gamma_1 \cdot \alpha_{i,T-1} + \gamma_2 \cdot r_{i,T-1}^{Spread} + \gamma_3 \cdot r_{i,T-1}^{Carry} + \gamma_4 \cdot r_{i,T-1}^{FinNonFin} + u_{i,T} \quad (5)$$

The results of the model estimate are as follows:

$$\hat{r}_{i,T}^{active} = 0.31^{***} + 2.00^{***} \cdot \alpha_{i,T-1} + 17.53^{***} \cdot r_{i,T-1}^{Spread}$$
$$+ 0.18^{***} \cdot r_{i,T-1}^{Carry} + 0.10^{*} \cdot r_{i,T-1}^{FinNonFin} \quad \text{Adj.R}^2 = 0.03$$

Model (5) does not show greater explanatory power than model (4). But all variables in this model are statistically significant. This particularly applies to a manager's alpha, which has the highest t-value. However, a manager's positive factor contributions from his or her spread, duration and sector positioning in one year demonstrably have significant predictive power in respect of his or active return in the subsequent year.

These results relate to the relatively short period since 2010, during which yields on safe German government bonds and credit spreads have both fallen. Major risk factors have therefore shown clear performance patterns. This circumstance may be a reason why factor contributions in this period have predictive power for future active returns. Whether this will change if the performance of the risk factors changes direction more frequently going forward is difficult to gauge ex ante. It is right to be doubtful. The results for manager alpha are probably more reliable than those for the factor contributions.

5.5 Economic relevance of separating alpha

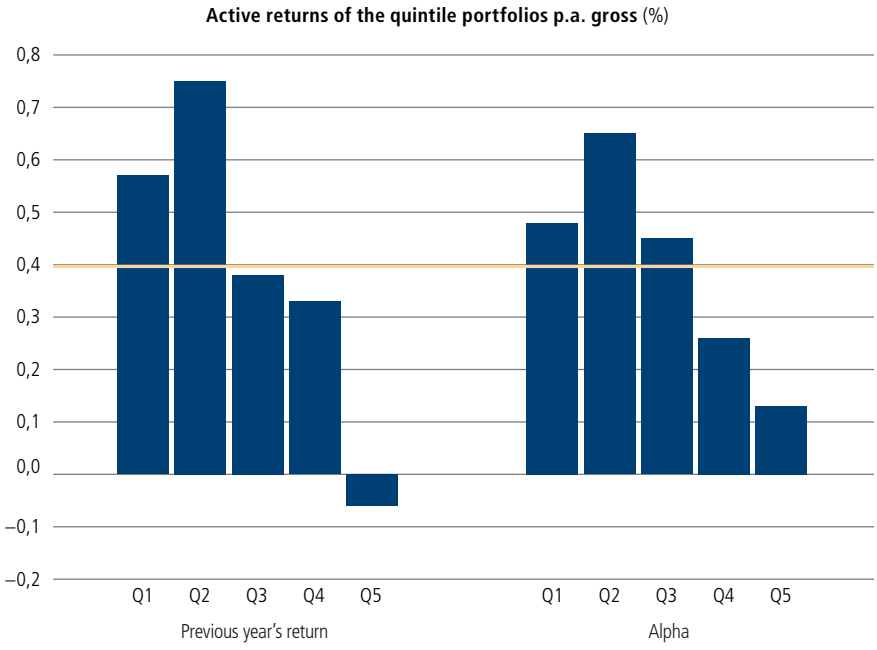
According to the findings in the previous chapter, the separation of alpha from factor contributions does, statistically speaking, add significant value for predicting future active returns and selecting successful managers ex ante. This added value can also be quantified in economic terms. To this end, the performance characteristics of simple manager selection strategies are evaluated.

The first step examines what added value is provided by using the previous year's return as a selection criterion.

This involves the following investment strategy. At the start of each year, all funds are sorted according to their performance in the previous year and assigned to quintile portfolios. Each quintile portfolio is held for a year and its performance is monitored. At the end of each calendar year, the quintile portfolios are rebuilt according to the funds' performance in that year. Afterwards, it is possible to evaluate the performance of this investment strategy over the entire period (2010 to 2017) for each of the five quintile portfolios.[18]

The left-hand side of figure 15 shows the performance of the quintile portfolios that were built in accordance with the investment strategy described above on the basis of the previous year's return.[19] If the investor selects the best 20 per cent of the managers in the previous year in both

Figure 15 **Quintile portfolios based on the previous year's return and alpha**



Source: Morningstar, Bloomberg, Union Investment.

[18] A common method of measuring the selection ability of a sorting criterion is the formation of long/short portfolios. The top 20 per cent are purchased. The bottom 20 per cent are sold. However, as short investments in funds are not possible and the analysis is based on active returns, it is appropriate to analyse long-only portfolios in this case.

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2011 and 2017, the resulting active return is approximately 57 basis points per year. To put that into context, the average active return per year across all funds and all calendar years is 39 basis points (pale yellow line). The selection strategy thus provides attractive added value of 18 basis points that can be explained by quintile selection based on the previous year's return.

Furthermore, the lower the selected quintile, the more the returns decrease. The previous year's return thus proves to be a distinguishing criterion with a certain degree of discriminant power for the ex ante selection of active managers.

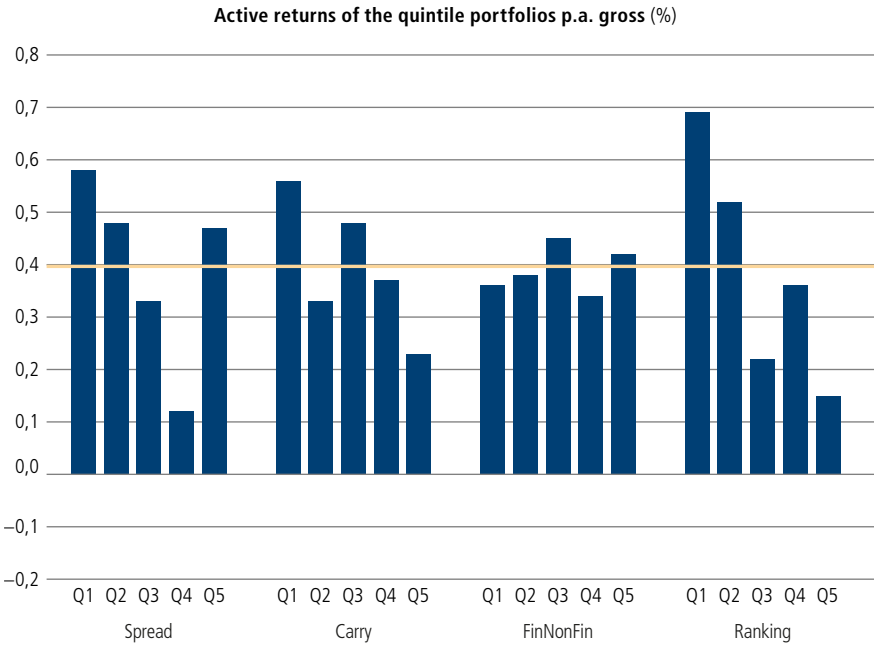
To avoid any misinterpretation, it should be pointed out that not every manager in a quintile will perform at the level of the average for the quintile. A closer look at the top quintile shows that manager performance is widely dispersed. But overall, the formation of quintile portfolios does diversify this selection risk, as the total portfolio of the best 20 per cent does show a positive active return.

The same investment strategy can now be examined in respect of a manager's alpha in the previous year. The right-hand side of figure 15 shows the corresponding results of the strategy in which quintile portfolios are built on the basis of the previous year's alpha. This approach is derived from the following idea: An analysis of alpha, i.e. purely the manager's performance, from which factor influences have been eliminated, may enable even more reliable selection in certain situations.

The first and second quintiles show 48 basis points and 65 basis points respectively per year, which is again well above the average for all managers. Furthermore, the returns also decline in the lower quintiles. Selection on the basis of alpha in the previous year therefore has similar discriminant power to selection based on the previous year's return.

Applying the same principle, the portfolios can be built according to the risk factors spread, carry and sector. The results are shown in figure 16.

Figure 16 **Quintile portfolios based on risk factors**



Source: Morningstar, Bloomberg, Union Investment.

[19] With this approach, the number of funds analysed increases over time because, each year, all of the available funds are analysed, including those that were only issued after 2010.

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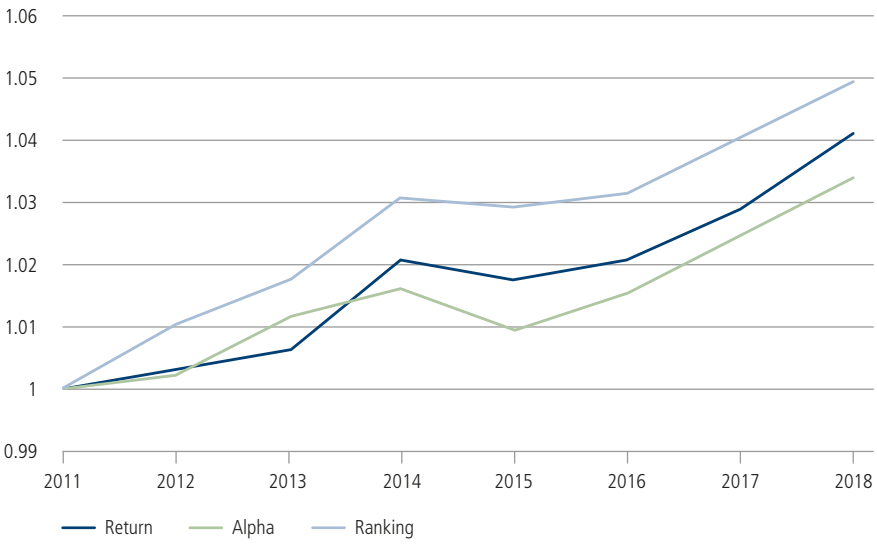
The results show barely any discriminant power for the risk factors, which means they are less suitable selection criteria.

The right-hand chart in figure 16 (ranking) relates to the equally weighted aggregation of alpha and factor contributions from spread, carry and sector. This makes it clear that the combination of alpha and risk factors now shows a similar pattern to that of selection on the basis of alpha.

Overall, these findings show that the predictive power of the previous year's return is particularly attributable to alpha and that the other factors more or less cancel each other out.

Figure 17 **Performance of manager selection strategies**

Movement of returns of the top quintile based on the previous year's return, the previous year's alpha and ranking p.a. (Standardised to 1 as at 1 January 2011)



Source: Morningstar, Bloomberg, Union Investment.

Figure 17 shows that, in each case, the top quintile delivers a relatively stable performance for the three selection strategies based on the previous year's return, the previous year's alpha and ranking.

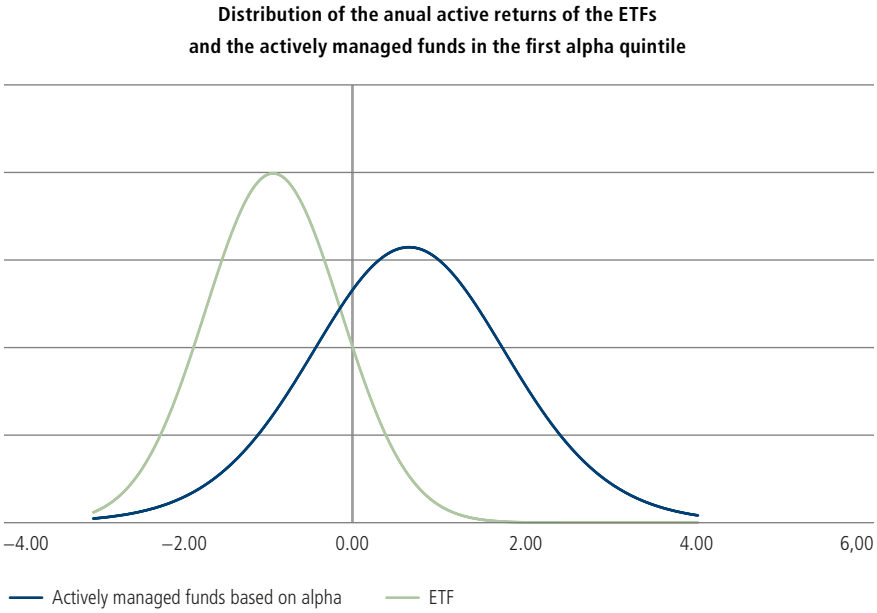
During the analysis period, it was thus possible to identify successful active managers on the basis of alpha relatively reliably. This was also the case using the previous year's performance. However, there should be more confidence in the results of alpha-based selection, because the risk factors in the analysis period made a relatively large contribution to the returns of many active managers and this situation will not necessarily be repeated in the same way in future.

[20] In each calendar year, each risk factor contribution is transferred to a ranking in which 1 is the biggest contribution and 0 is the smallest contribution. For each fund, the average of its four rankings (according to alpha, spread, carry and sector) is determined. As before, the quintile portfolios are then defined on the basis of this average.

To finish, a comparison with the investment opportunities offered by ETFs should be made on the basis of the distribution of returns. What is the risk/reward ratio if the investor selects a manager at random from the top quintile based on manager alpha? And what is the risk/reward ratio if an investment is made in an ETF selected at random?

Figure 18 shows a comparison of the distributions of returns with which investors are presented. For the active managers, the distribution of returns is derived from 143 calendar-year returns (seven years, each with an average of around 20 funds in the top quintile). For the ETFs, it is derived from 79 calendar-year returns (26 funds in 2017, but not all

Figure 18 **Distribution of active returns of ETFs and actively managed funds**



Source: Morningstar, Bloomberg, Union Investment.

of them were in existence throughout the entire period).[21] The ETF distribution is concentrated in negative territory. By contrast, the distribution of the group of the 20 per cent of actively managed funds with the highest alpha in the previous year is clearly concentrated in positive territory.

In other words, there can be actively managed funds that perform worse than an ETF selected at random, but not many. The probability of an ETF selected at random underperforming its benchmark during the analysis period was 85 per cent. For the comparison group of actively managed funds (first quintile based on the previous year's alpha), the probability of their underperforming was only around 30 per cent, with 70 per cent delivering a superior performance. Consequently, underperformance is three times more probable for ETFs than for actively managed funds with high manager alpha.

[21] By way of illustration, the parameters of a t-distribution were estimated for the two groups and these population densities were compared in figure 18.

6 Conclusion

6 Conclusion

This study presents empirical results for active and passive investments in European corporate bonds.

- The volume-weighted mean of the group of ETFs has fallen short of their benchmarks by almost 0.46 per cent per year since 2011.

- By contrast, the median of the actively managed funds beats their benchmarks by almost 0.32 per cent per year. The mean gap between the performance of the active and passive investments is more than 0.78 per cent.

- The best 20 per cent of the actively managed funds beat their benchmarks by an impressive 0.89 per cent per year. On average, these very good active managers outperformed the median value for active managers by roughly 0.57 per cent and the group of ETFs by around 1.35 per cent per year.

There are good reasons for the investment performance seen in recent years. Passive investments in the corporate bond market entail high costs. This is primarily due to the structure of the benchmarks for corporate bonds – which have a large number of securities and a high rate of replacement – and due to low liquidity levels, which make adjusting the portfolio very expensive. By contrast, active managers have relatively good opportunities for adding value. They can use their investment strategy to adjust more easily to the low level of liquidity and benefit from their investment ideas regarding security selection and the overweighting and underweighting of rating categories, countries, duration and sectors. Moreover, market prices are being distorted by the ECB's asset purchase programmes, passive investments and regulatory capital requirements imposed on many financial institutions. These influences also reduce market efficiency. In recent years, the majority of active managers have been able to capitalise on these conditions.

Nonetheless, the challenge that remains for institutional investors is to identify successful active managers ex ante. Although active managers as a group achieved good results, these results are without doubt widely dispersed both within the group and over time. In other words, not all managers deliver a superior performance and even successful managers may underperform in future.

That is why the study examines how reliable and successful active managers can be identified ex ante. Breaking down the returns of active managers into alpha and factor contributions reveals the following:

- Active managers who have generated alpha in the recent past are significantly more likely to deliver additional returns in future as well.
- The probability that the group of the top 20 per cent of managers with the highest alpha in one year will achieve a superior performance in the subsequent year is roughly 70 per cent; the probability for the group of ETFs is only around 15 per cent.
- Manager alpha that is identified using a risk factor model is thus a strong predictor for future superior performance that may prove useful irrespective of market movements.
- Other risk factors, such as spread, carry and sector, may also help to identify true alpha. However, the factor contributions of these risk factors do not provide any added value when it comes to selecting a manager.

For institutional investors, the choice between active and passive management is, in any case, an individual decision that needs to be based primarily on their risk preferences. The relatively certain underperformance of passively managed products needs to be weighed up against the relatively good chance of a superior performance from active managers.

Unlike passive investments, active managers have achieved very attractive results in recent years. According to the findings of this study, there will continue to be a good chance of finding successful active managers in future if selection is focused on alpha.

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