
An EDHEC-Risk Institute Publication

The EDHEC European ETF, Smart Beta and Factor Investing Survey 2019

September 2019

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We thank Amundi ETF, Indexing & Smart Beta for its support for our research.

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Foreword

The latest edition of the EDHEC European ETF, Smart Beta and Factor Investing Survey was conducted as part of the "ETF, Indexing and Smart Beta Investment Strategies" research chair at EDHEC-Risk Institute, in partnership with Amundi.

With this survey, we aim to provide insights into investor perceptions of exchange-traded funds (ETFs) and of smart beta and factor investing strategies, building on the analysis of this year's responses and relating them to past results of our annual survey. In 2019, the survey results show growing demand for SRI/Ethical ETFs and significant interest in fixed-income Smart Beta solutions.

The data shows that ETF usage is becoming increasingly mainstream. In 2006 45% of respondents used ETFs to invest in equities, compared with 91% in 2019. As for governments and corporate bonds, the figures rose from 13% and 6% in 2006 to 66% and 68% respectively in 2019. Moreover, ETF usage is becoming more tactical. For the first time, the use of ETFs for tactical allocation was higher (53%) than for long-term buy and hold (51%). This more balanced usage suggests that the ETF market is maturing and users are becoming more proactive. Cost and quality of replication still remain the two main drivers for selecting ETF providers.

The survey reveals that improving performance is the main motivation for using Smart Beta and Factor Investing strategies. Managing risk is also considered an important criterion. 68% of respondents feel that smart beta and factor investing bond solutions are especially useful in performance-seeking portfolios, primarily to harvest risk premia. About three-fifths of respondents believe that the three typical factors of the credit risk market, namely carry/level of the yield curve, credit and slope of the yield curve, are the most relevant in fixed-income markets (63%, 60% and 58% respectively).

The survey further reveals that 31% of respondents want to see more SRI-based ETFs, while similar proportions are interested in ETFs related to multi-factor and smart beta indices (30% and 28% respectively). When asked about the smart beta solutions they think require further development by providers, respondents cited fixed income, ESG, and alternative asset classes. They would also like more customised solutions to be developed. Respondents show a significant interest in Fixed-Income Smart Beta solutions and plan to increase their investment in this area. However, they explain that their usage is limited because the current offer does not correspond to their needs in term of risk factor, and due to a lack of research in the area. The development of new products corresponding to these demands may lead to an even wider adoption of Smart Beta solutions.

We would like to express our warmest thanks to our partners at Amundi for their ongoing support of our research. Special thanks also to Véronique Le Sourd for her leadership in this research project and Laurent Ringelstein for his contribution in producing the final publication.

We wish you a useful and informative read.



Lionel Martellini
Professor of Finance,
Director of EDHEC-Risk Institute

ABOUT THE AUTHORS



Véronique Le Sourd has a Master's Degree in applied mathematics from the Pierre and Marie Curie University in Paris. From 1992 to 1996, she worked as a research assistant in the finance and economics department of the French business school HEC and then joined the research department of Misys Asset Management Systems in Sophia Antipolis. She is currently a senior research engineer at EDHEC-Risk Institute.



Lionel Martellini is Professor of Finance at EDHEC Business School and Director of EDHEC-Risk Institute. He has graduate degrees in economics, statistics, and mathematics, as well as a PhD in finance from the University of California at Berkeley. Lionel is a member of the editorial board of the *Journal of Portfolio Management* and the *Journal of Alternative Investments*. An expert in quantitative asset management and derivatives valuation, his work has been widely published in academic and practitioner journals and he has co-authored textbooks on alternative investment strategies and fixed-income securities.

Executive Summary

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The present survey aims to provide insights into investor perceptions of exchange-traded funds (ETFs) and of smart beta and factor investing strategies, building on the analysis of this year's responses and relating them to past results of our annual survey.

Our 2019 survey gathered information from 182 European investment professionals concerning their practices, perceptions and future plans. Our respondents are high-ranking professionals within their organisations (34% belong to executive management and 42% are portfolio managers),¹ with large assets under management (42% of respondents represent firms with assets under management exceeding €10bn).² Respondents are distributed across different European countries, with 12% from the United Kingdom, 70% from other European Union member states, 14% from Switzerland and 4% from other countries outside the European Union.³ Below, we provide a summary of our results, emphasising the key conclusions of our survey.

1. How do Investors Select and Use ETFs?

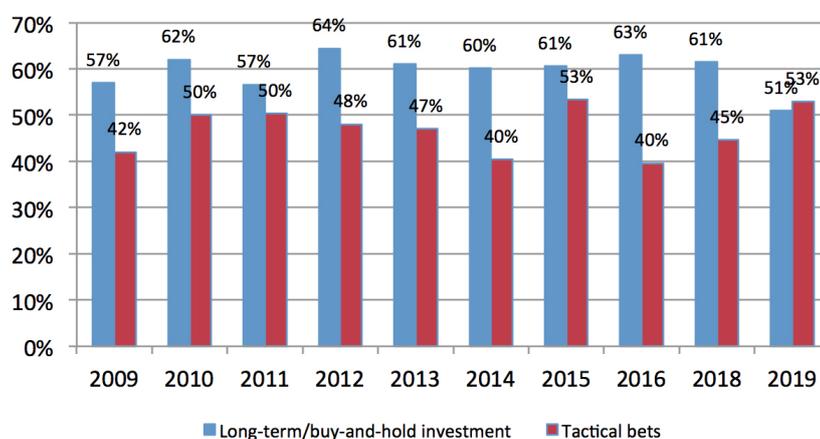
1.1. The Dominant Purpose of ETF Usage

Tactical allocations are gaining importance

Over the years, our survey results have consistently indicated that ETFs were used as part of a truly passive investment approach, mainly for long-term buy-and-hold investment, rather than tactical allocation. However, over the past three years the two approaches have gradually become more balanced, and for the first time this year, the use of ETFs for tactical allocation is actually greater than their role for long term positions (53% and 51% respectively) (see Exhibit 1).

Exhibit 1: Use of ETFs for long-term investment vs. tactical allocation

This exhibit indicates the frequency of respondents using ETFs for each of the purposes mentioned. Respondents were asked to rate their usage frequency from 1 to 6. The "frequent" category displayed here includes ratings from 4 to 6. The percentages are based on the results of the EDHEC ETF, Smart Beta and Factor Investing surveys from 2009 to 2019.



1 - See Exhibit 3.3 in Section 3 (Methodology and Data).

2 - See Exhibit 3.5 in Section 3 (Methodology and Data).

3 - See Exhibit 3.1 in Section 3 (Methodology and Data).

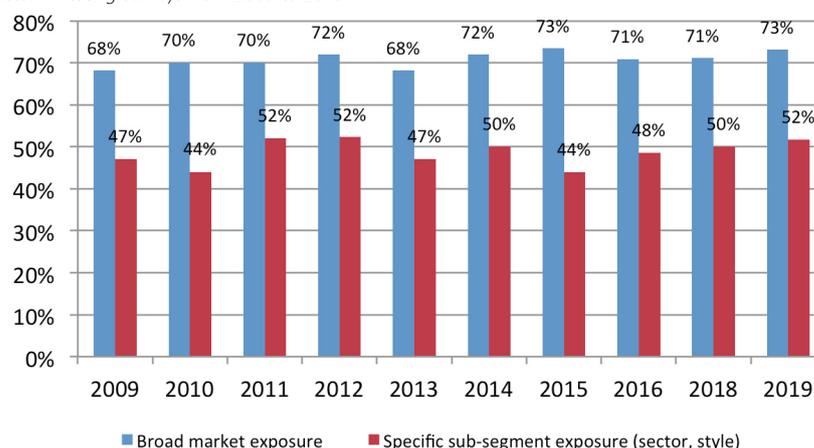
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Still room for increasing the use for specific sub-segment exposure

Moreover, gaining broad market exposure remains the main focus of ETF for 73% of users, to be compared with 52% of respondents using ETFs to obtain specific sub-segment exposure (see Exhibit 2). This last result is also linked to intense product development, which has led to the introduction of new products for a multitude of sub-segments of the markets (sectors, styles etc.). It also correlates with the growing use of ETFs for tactical allocations, which tend to favour a more granular investment approach over broad exposures.

Exhibit 2: Use of ETFs for broad market exposure vs. specific sub-segments

This exhibit indicates the frequency of respondents using ETFs for each of the purposes mentioned. Respondents were asked to rate their usage frequency from 1 to 6. The "frequent" category displayed here includes ratings from 4 to 6. The percentages are based on the results of the EDHEC ETF, Smart Beta and Factor Investing surveys from 2009 to 2019.



Consistent with this desire to use ETFs for passive exposure to broad market indices, only 19% of respondents show any interest in future development of actively managed equity ETFs.⁴

An increasing propagation of ETF adoption over the years, especially for traditional asset classes

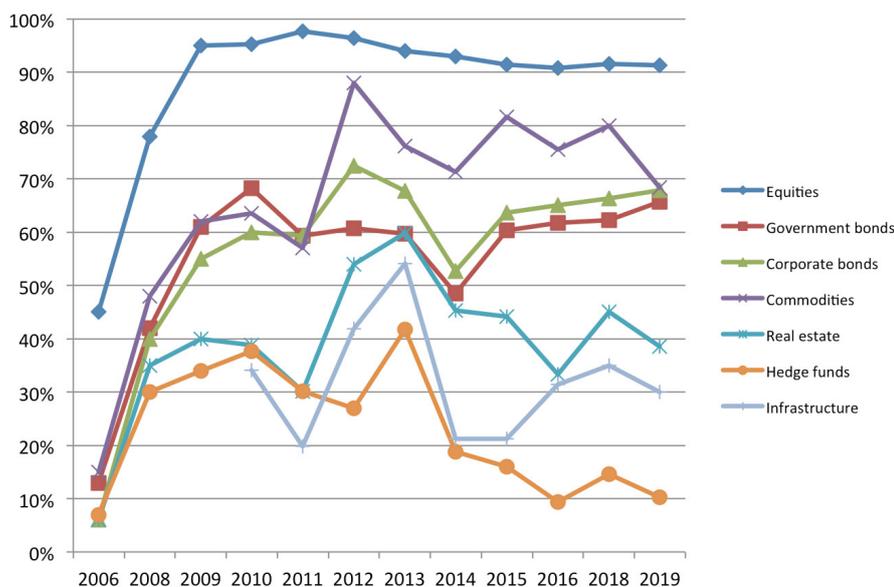
In 2019 91% of respondents used ETFs to invest in equities, compared with 45% in 2006. As for governments and corporate bonds, the result went from 13% and 6% in 2006, to 66% and 68%, respectively, in 2019 (see Exhibit 3).

⁴ - See Exhibit 4.10 in Section 4 (Results).

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Exhibit 3: Use of ETFs over the years

This exhibit indicates the use of ETFs or ETF-like products for different asset classes over time. The percentages have been normalised by excluding non-responses. The percentages are based on the results of the EDHEC ETF, Smart Beta and Factor Investing surveys from 2006 to 2019.

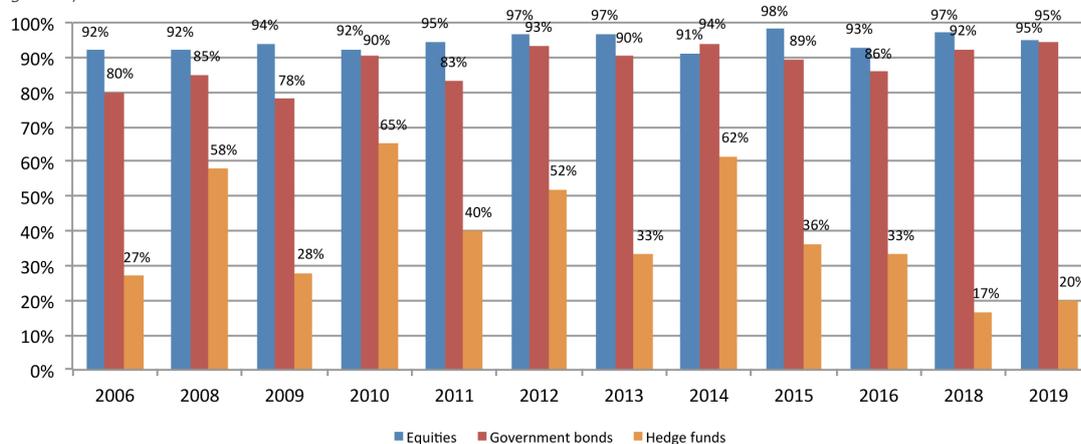


Investors prefer ETFs for traditional asset classes over alternative asset classes

In line with this expression of conservatism in their use of ETFs, which is mainly focused on gaining access to broad market exposure, it should also be noted that investors are largely satisfied with ETFs in traditional asset classes (95% satisfaction for both equities and government bond asset classes in 2019), but more reserved about ETFs for alternative asset classes (20% satisfaction for the hedge fund asset class) (see Exhibit 4).⁵

Exhibit 4: Satisfaction with ETFs: traditional asset classes vs. alternative asset classes

This exhibit indicates the percentage of respondents who are satisfied with ETFs or ETF-like products they have used for each asset class. The percentages have been normalised by excluding non-responses. The percentages are based on the results of the EDHEC ETF, Smart Beta and Factor Investing surveys from 2006 to 2019.



⁵ - Detailed satisfaction rates for all asset classes can be found in Section 4 (Results).

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1.2. Future ETF Growth Drivers

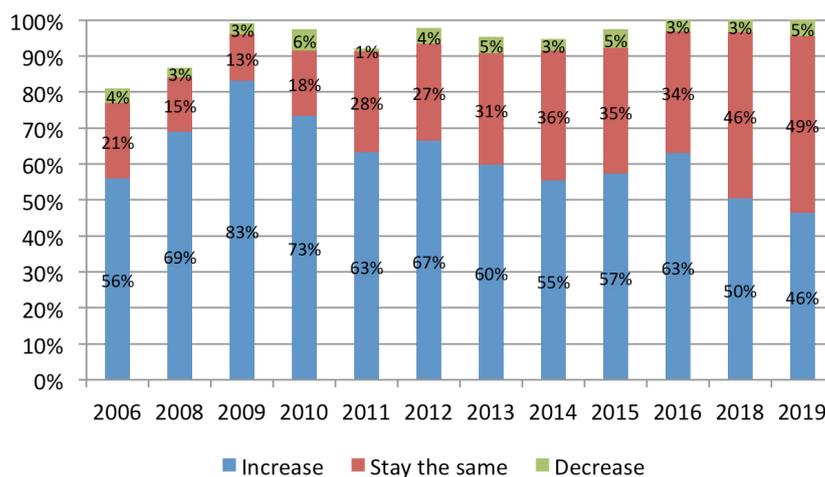
The European ETF market has seen tremendous growth in recent years. At the end of December 2018, the assets under management (AUM) within the 1,704 ETFs constituting the European industry stood at \$726bn, compared with 273 ETFs amounting to \$94bn at the end of December 2006 (ETFGI, 2018b). Our survey allows us to assess the drivers of such growth and respondents' intentions to adopt ETFs in the future.

Further increases in ETF usage in the future

From our survey, it appears that a high percentage of investors (46%) still plan to increase their use of ETFs in the future, despite the already high maturity of this market and high current adoption rates (see Exhibit 5).

Exhibit 5: Future Evolution of the Use of ETFs

This exhibit indicates the potential of changes in ETF usage by investors over time. The percentages are based on the results of the EDHEC ETF, Smart Beta and Factor Investing surveys from 2006 to 2019.



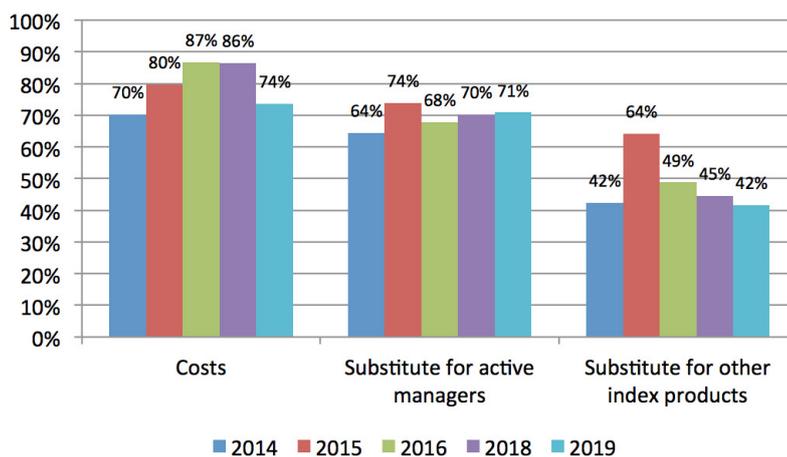
Lowering costs is the main motivation for increasing the use of ETFs

Lowering investment cost is the primary driver behind investors' future adoption of ETFs (74% of respondents in 2019). In addition, investors are not only planning to increase their ETF allocation to replace active managers (71% of respondents in 2019), but are also seeking to replace other passive investing products through ETFs (42% of respondents in 2019) (see Exhibit 6).

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Exhibit 6: Motivations for Increasing the Use of ETFs

This exhibit indicates the reasons given by respondents for planning to increase their use of ETFs. More than one response could be given. The percentages are based on the results of the EDHEC ETF, Smart Beta and Factor Investing surveys from 2014 to 2019.

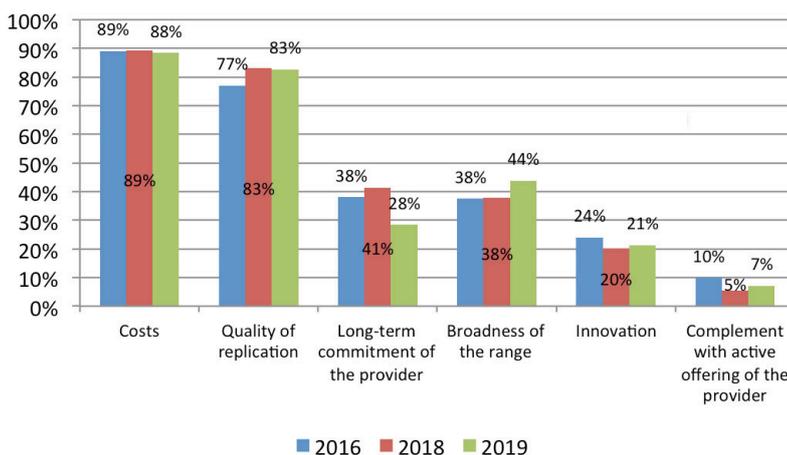


1.3. Cost and Quality of Replication are the Two Main Drivers for Selecting ETF Providers

Two criteria dominate investors' preoccupations. The first is costs, cited by the vast majority of respondents (88%). The second is the quality of replication, with more than four-fifths of respondents (83%) considering this criterion when selecting an ETF provider (see Exhibit 7).

Exhibit 7: What Criteria do you Consider when Selecting an ETF Provider?

This exhibit indicates the criteria respondents consider when selecting an ETF provider. More than one response could be given. The percentages are based on the results of the EDHEC ETF, Smart Beta and Factor Investing surveys from 2016 to 2019.



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2. What are the Key Objectives Driving the Use of Smart Beta and Factor Investing Strategies?

2.1. Motivations and Growth Prospects for Smart Beta and Factor Investing Strategies?

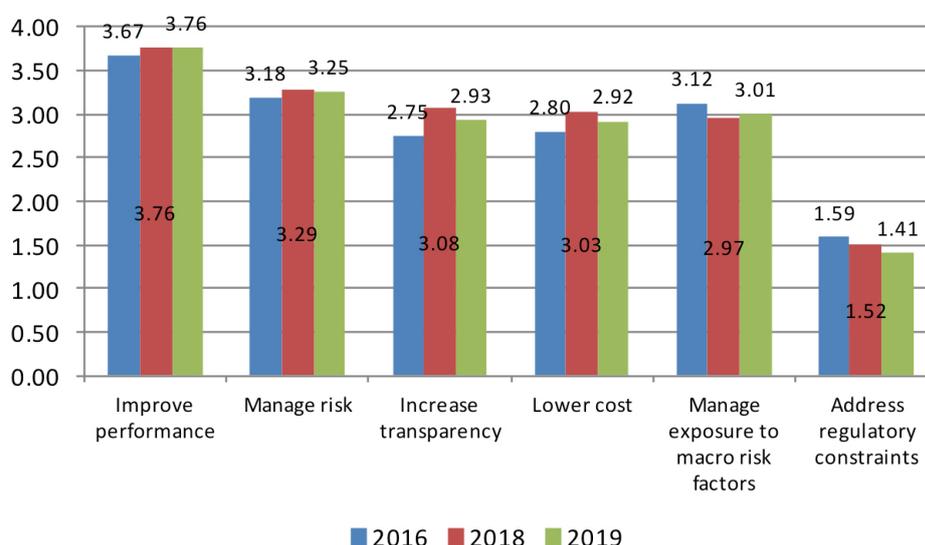
Smart beta and factor investing strategies have continuously been in the spotlight in recent years and the increasing investor interest is obvious. Our survey allows some light to be shed on the drivers behind this interest and the actual usage of smart beta and factor investing strategies among investors.

Improving performance is the main motivation for using smart beta and factor investing strategies

The most important motivation behind the adoption of smart beta and factor investing strategies is to improve performance. On a scale from 0 (no motivation) to 5 (strong motivation), respondents gave an average score of 3.76 to 'Improve performance'. 'Manage risk', which is in second position among key motivations (score of 3.25), is also an important element of choice when it comes to smart beta and factor investing strategies (see Exhibit 8).

Exhibit 8: Motivations to use Smart Beta and Factor Investing Strategies in the Portfolio

This exhibit indicates the key motivations to use smart beta and factor investing strategies in the portfolio on a scale from 0 (no motivation) to 5 (strong motivation). More than one response could be given. Non-responses are excluded. The scores are based on the results of the EDHEC ETF, Smart Beta and Factor Investing surveys from 2016 to 2019.



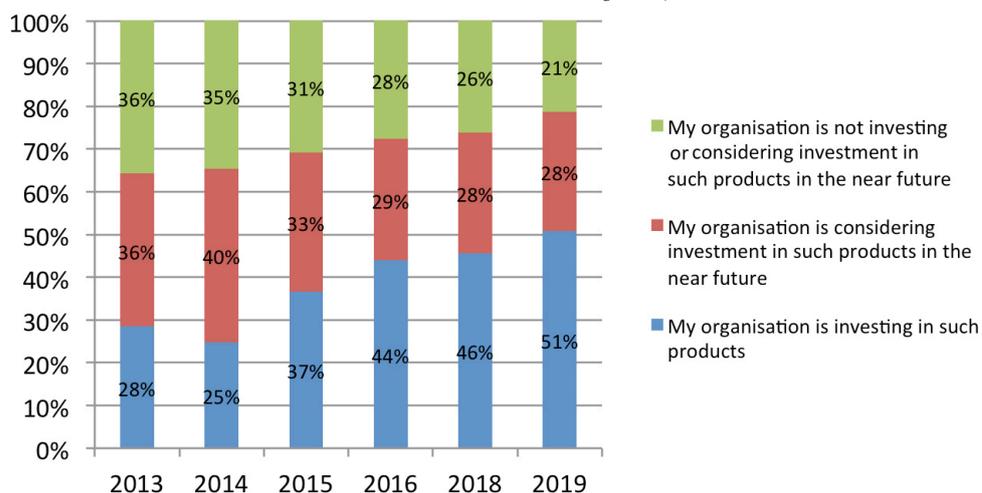
More than half of participants currently invest in smart beta and factor investing strategies, but for a restricted share

51% of respondents currently invest in smart beta and factor investing strategies, while another 28% do not but are considering adopting such strategies in the future (see Exhibit 9).

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Exhibit 9: Use of Smart Beta and Factor Investing Solutions

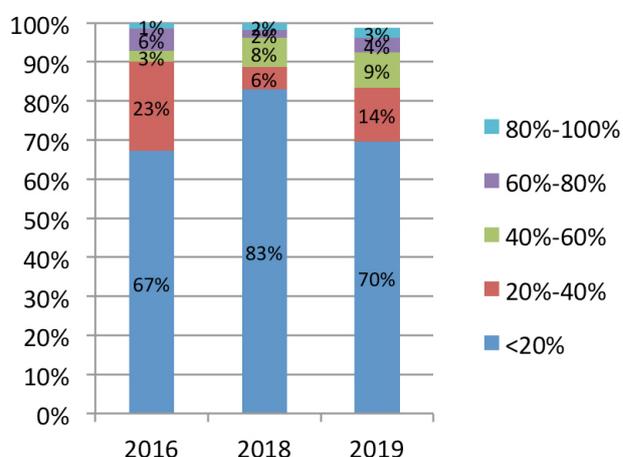
This exhibit indicates the percentage of respondents that reported using smart beta and factor investing solutions. Non-responses are excluded. The percentages are based on the results of the EDHEC ETF, Smart Beta and Factor Investing surveys from 2013 to 2019.



However, despite a high rate of adoption, these investments typically make up only a small fraction of portfolio holdings among those respondents who have made investments in these strategies. More than two-thirds of respondents (70%) invest less than 20% of their total investments in smart beta and factor investing strategies and only 16% of respondents invest more than 40% of their total investments in smart beta and factor investing strategies (see Exhibit 10).

Exhibit 10: Percentage of Total Investment Already Invested in Smart Beta and Factor Investing Solutions

This exhibit indicates the average percentage of total investment already invested in smart beta and factor investing solutions. We only consider respondents that already use smart beta and factor investing strategies. Non-responses are excluded. The percentages are based on the results of the EDHEC ETF, Smart Beta and Factor Investing surveys from 2016 to 2019.



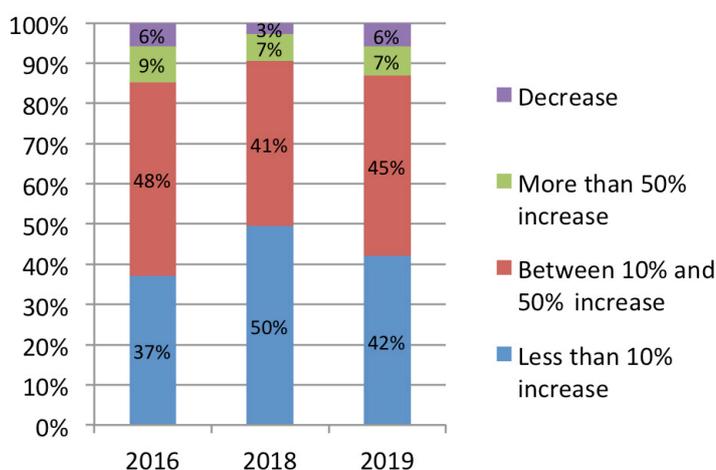
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Significant growth prospects planned for smart beta and factor investing strategies

The growth trend is well established for smart beta and factor-based investment products, with 52% of respondents indicating an increase of more than 10% in their use in terms of assets in the near future, while only 6% indicate a decrease (see Exhibit 11).

Exhibit 11: Planned Evolution for the Use of Smart Beta/Factor-based Investment Products in Terms of Assets in the Near Future

This exhibit indicates whether respondents plan to increase or decrease their use of smart beta/factor-based investment products (in terms of assets) over the next 3 years. Non-responses are excluded. The percentages are based on the results of the EDHEC ETF, Smart Beta and Factor Investing surveys from 2016 to 2019.



2.2. Implementation of Smart Beta and Factor Investing Strategies

Our survey generates several insights into how investors implement their smart beta and factor investing strategies.

Discretionary strategies are preferred over replication strategies

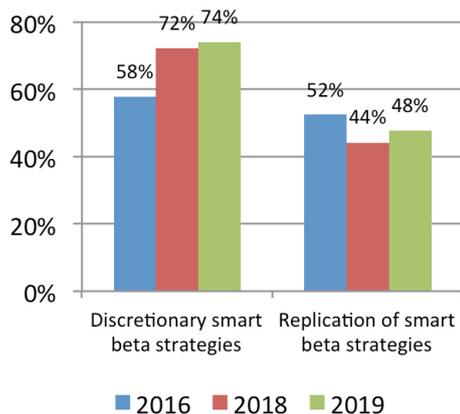
Considerably more respondents are using discretionary smart beta and factor investing strategies (74% in 2019), rather than replicating these strategies (48% in 2019), with a gap that has widened between the two over time (see Exhibit 12).⁶

⁶ - A detailed comparison of the advantages of each strategy is presented in Section 4 (Results, Exhibit 4.25 to 4.27).

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Exhibit 12: Strategies Used to Invest in Smart Beta and Factor Investing Solutions

This exhibit indicates the categories of smart beta and factor investing strategies in which respondents invest. The percentages are based only on respondents that already use smart beta and factor investing strategies. More than one response could be given. The percentages are based on the results of the EDHEC ETF, Smart Beta and Factor Investing surveys from 2016 to 2019.

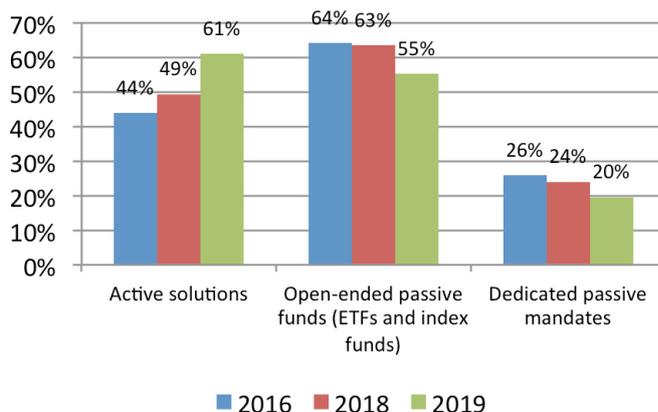


In terms of wrappers, active solutions are slightly preferred over passive funds

In terms of the actual product wrapper used for smart beta and factor investing exposure, respondents currently favour active solutions, i.e. approaches including a significant amount of discretion (61% of respondents), not far ahead of passive funds that replicate smart beta and factor investing indices (55% of respondents) (see Exhibit 13).

Exhibit 13: Wrappers Used to Invest in Smart Beta and Factor Investing Solutions

This exhibit indicates the categories of wrapper respondents use to invest in smart beta and factor investing strategies. The percentages are based only on respondents that already use smart beta and factor investing strategies. More than one response could be given. The percentages are based on the results of the EDHEC ETF, Smart Beta and Factor Investing surveys from 2016 to 2019.



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2.3. Position of Investors in Smart Beta and Factor Investing Strategies for Fixed-Income

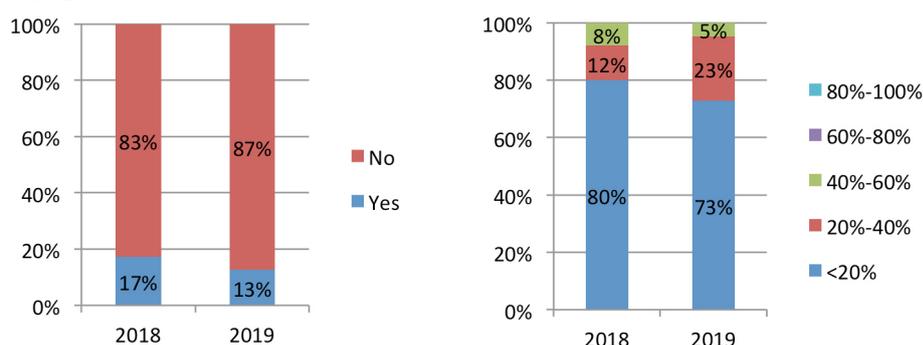
Last year, we introduced a special focus on smart beta and factor investing for fixed-income.

Use of Smart Beta and Factor Investing strategies for Fixed Income Still Limited ...

The results of our survey show that 13% of the whole sample of respondents currently uses smart beta and factor investing for fixed income (see Exhibit 14, left). However, about three-quarters (73%) of this sub-sample of respondents invest less than 20% of their total investment in smart beta and factor investing for fixed income (see Exhibit 14, right).

Exhibit 14: Investment in Smart Beta and Factor Investing Strategies for Fixed Income

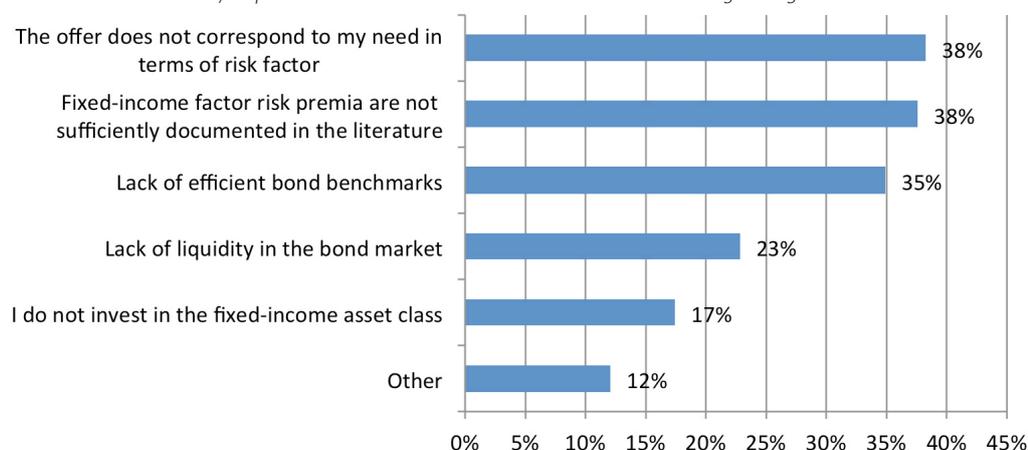
The exhibit on the left indicates the percentage of respondents that reported investing in smart beta and factor investing strategies for fixed income, while the exhibit on the right indicates the percentage of total investment already invested in smart beta and factor investing solutions for fixed income. For this latter result, non-responses are excluded. The percentages are based on the results of the EDHEC ETF, Smart Beta and Factor Investing surveys from 2018 and 2019.



The reasons given by the additional 87% of respondents for not investing in smart beta and factor investing products for fixed income are detailed in Exhibit 15.

Exhibit 15: Main Reasons for not Using Fixed-Income Smart Beta and Factor Investing Products

This exhibit indicates the reasons why respondents do not invest in smart beta and factor investing strategies for fixed-income.



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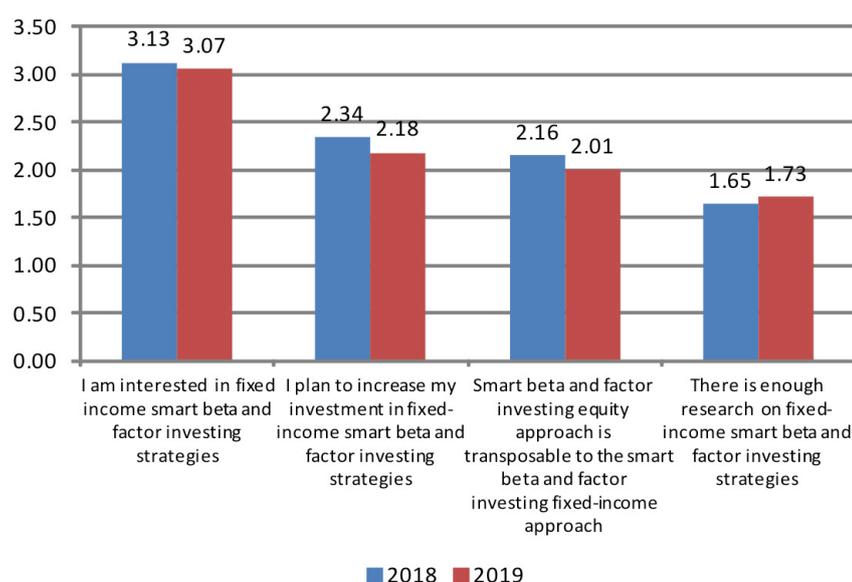
... Though There is Significant Interest and Quite Favourable Opinions about them

Those respondents that already invested in smart beta and factor investing for fixed income are quite satisfied, with a score of 3.04 on a scale from 0 (not satisfied at all) to 5 (highly satisfied).

Furthermore, it appears that all respondents, including those who already invest in smart beta and factor investing for fixed income, and those who do not yet invest, show significant interest in smart beta and factor investing for fixed income, with an average score of 3.13 on a scale from 0 (strongly disagree) to 5 (strongly agree). However, the average score for plans to increase investment in smart beta and factor investing for fixed income is only 2.34, indicating a significant gap between levels of interest in this investment and expectations of an increase in it (see Exhibit 16).

Exhibit 16: Opinion of Respondents about Statements Concerning Smart Beta and Factor Investing for Fixed income

This exhibit indicates the extent to which respondents agree with each statement on a scale from 0 (strongly disagree) to 5 (strongly agree). More than one response could be given. Non-responses are excluded. The scores are based on the results of the EDHEC ETF, Smart Beta and Factor Investing surveys from 2018 and 2019.



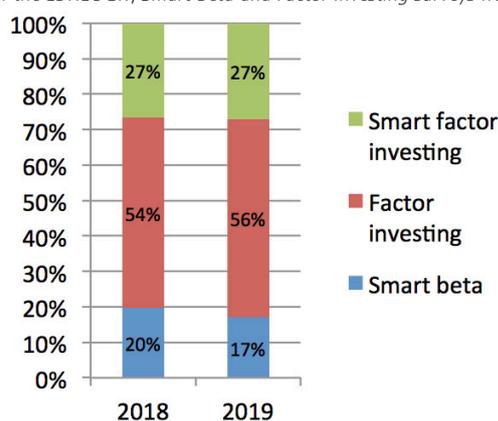
Implementing fixed-Income strategies: a preference for factor investing

68% of respondents indicate that smart beta and factor investing bond solutions are useful in performance-seeking portfolios for harvesting additional risk premia (see Exhibit 4.33 in Section 4, Results). To achieve efficient harvesting, more than half of respondents (56%) think that the best solution is to use factor investing, i.e. selecting bonds according to rewarded attributes (value, momentum, credit, liquidity) (see Exhibit 17).

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Exhibit 17: How Should Investors Achieve Efficient Harvesting of Risk Premia in Bond Markets?

This exhibit indicates what respondents feel is the best way to achieve efficient harvesting of risk premia in bond markets. Non-responses are excluded. The percentages are based on the results of the EDHEC ETF, Smart Beta and Factor Investing surveys from 2018 and 2019.



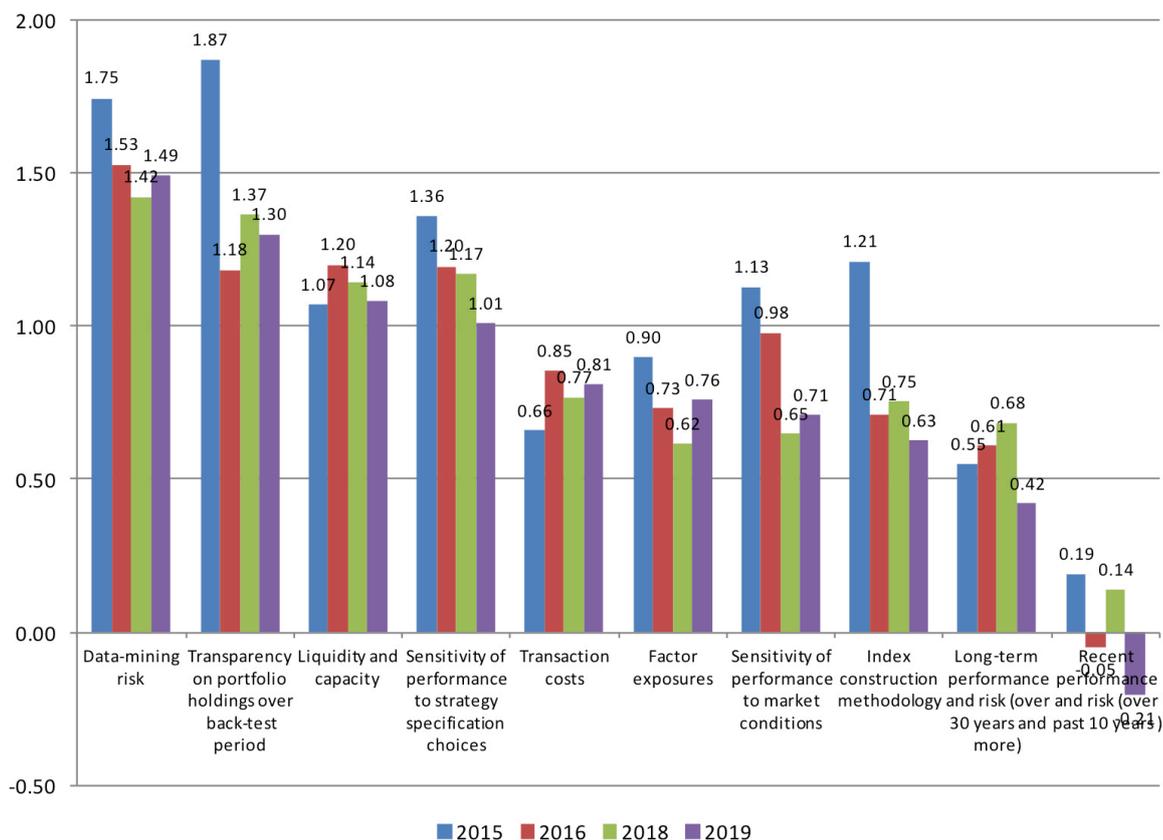
2.4. Investors Find it Difficult to Obtain all the Necessary Information to Evaluate Smart Beta and Factor Investing Strategies

Respondents were asked about the information they consider important when assessing smart beta and factor investing and, at the same time, whether they considered this information to be easily available. The spread between the importance and accessibility of this information is displayed in Exhibit 18. The highest spread is observed for information respondents considered as crucial, such as data-mining risk and information about transparency on portfolio holdings over a back-test period. However, for most types of information, we observe a decrease in the gap over time, though there is still room for further improvements.

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Exhibit 18: Gap between Importance and Accessibility of Information about Smart Beta and Factor Investing Products

This exhibit indicates the gap between the importance and accessibility of information according to investors. This gap was determined based on the difference between a score on a scale from 0 (not important) to 5 (crucial) for importance of information and one on a scale from 0 (difficult to obtain) to 5 (easy to obtain) for its accessibility. The scores are based on the results of the EDHEC ETF, Smart Beta and Factor Investing surveys from 2015 to 2019.



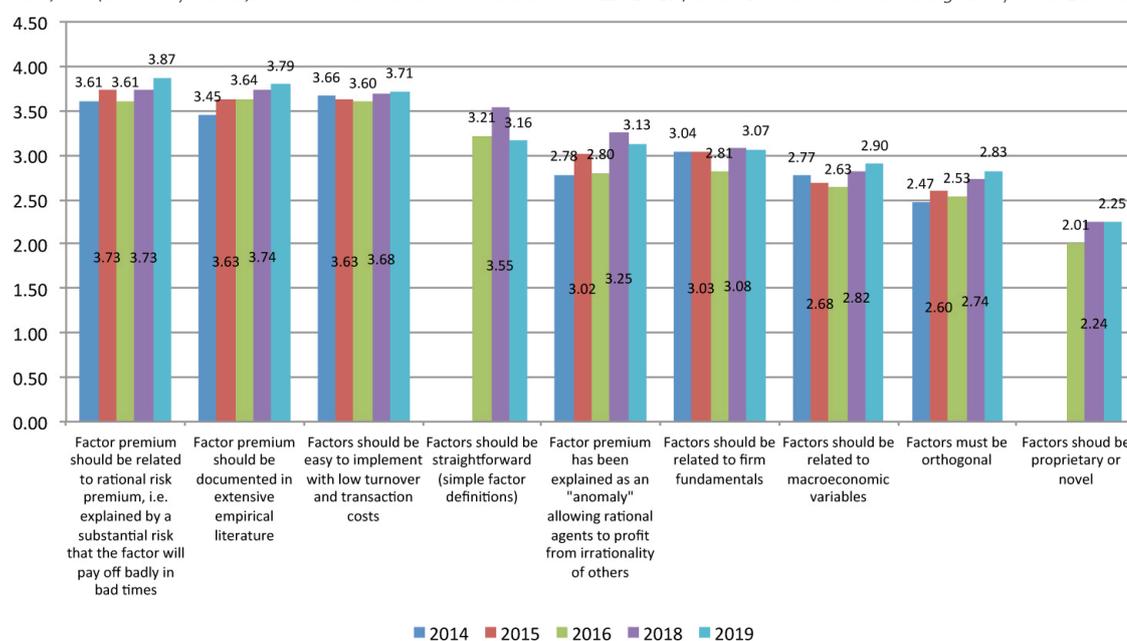
2.5. Existence of factor risk premium and academic evidence are the primary concerns for smart beta and factor investing strategy factors

From the results of our survey, it appears that respondents are primarily concerned with the existence of a rational risk premium, with a score of 3.87 on a scale from 0 (not important) to 5 (absolutely crucial), closely followed by the documentation of the factor premium in extensive empirical literature (score of 3.79), and by ease of implementation and low turnover and transaction costs (score of 3.71) (see Exhibit 19).

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Exhibit 19: Requirements for Factors

This exhibit indicates respondents' requirements in order to consider a given set of factors in their investment approach on a scale from 0 (not important) to 5 (absolutely crucial). The scores are based on the results of the EDHEC ETF, Smart Beta and Factor Investing surveys from 2014 to 2019.



3. Future Developments

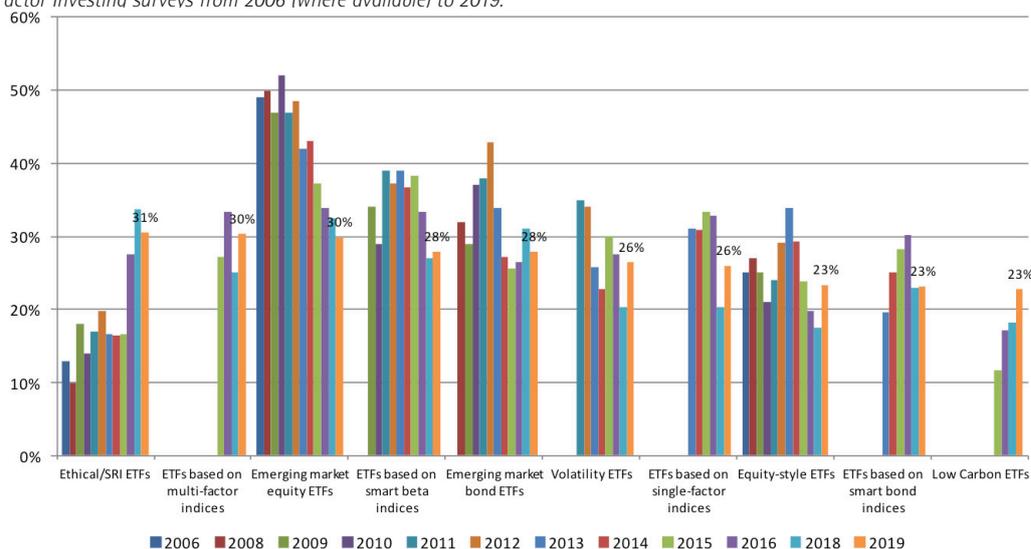
3.1. Ethical/SRI and smart beta equity / factor indices are the main expectations for further development of ETF products

Our survey allows us to define the type of market segments where investors would like to see further ETF product development. As shown in Exhibit 20, the top concern for 31% of respondents is currently the further development of Ethical/Socially Responsible Investing (SRI) ETFs. Additionally, for ETFs related to advanced forms of equity indices – namely those based on multi-factor and smart beta indices – 30% and 28% of respondents, respectively, called for further developments in these two areas. Further, if we aggregate the responses concerning smart beta indices, single-factor indices and multi-factor indices, we see that 45% of respondents would like to see further developments in at least one category related to smart beta equity or factor indices.

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Exhibit 20: What Type of ETF Products Would You Like to See Developed Further in the Future?

This exhibit indicates the percentage of respondents who would like to see different ETF products further developed in the future. Respondents were able to choose more than one product. We only display the top half of the list. The percentages are based on the results of the EDHEC ETF, Smart Beta and Factor Investing surveys from 2006 (where available) to 2019.

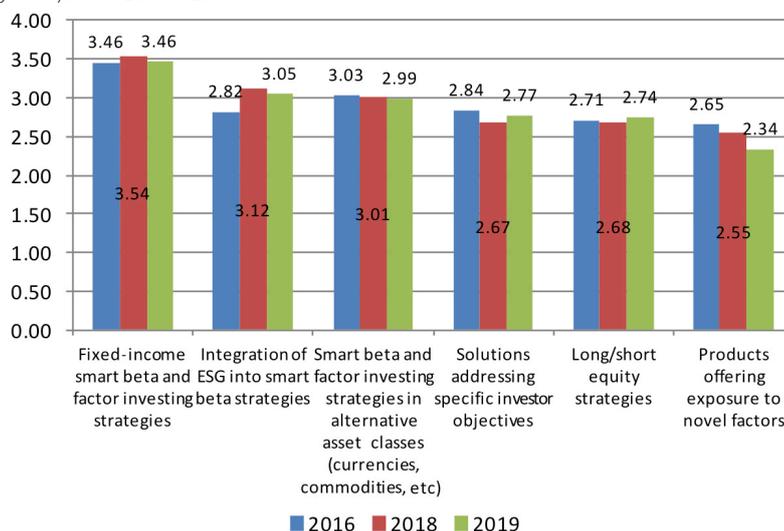


3.2. Fixed-income, ESG and alternative asset classes are the main expectations for future development of smart beta and factor investing products

Our survey results also show that respondents would like to see further development of smart beta and factor investing products in the area of fixed income, with a score of 3.46 on a scale from 0 (not required) to 5 (strong priority). The integration of ESG into smart beta and factor investing, and strategies in alternative asset classes (currencies, commodities, etc.), closely follow with respective scores of 3.05 and 2.99 (see Exhibit 21). It is likely that the development of new products corresponding to these demands may lead to an even higher take-up of smart beta and factor investing solutions.

Exhibit 21: Which Type of Solutions Do You Think Require Further Product Development by Providers?

This exhibit indicates the types of solutions that respondents would like to see providers develop further, on a scale from 0 (not required) to 5 (strong priority). More than one response could be given. Non-responses are excluded. The percentages are based on the results of the EDHEC ETF, Smart Beta and Factor Investing surveys from 2016 to 2019.

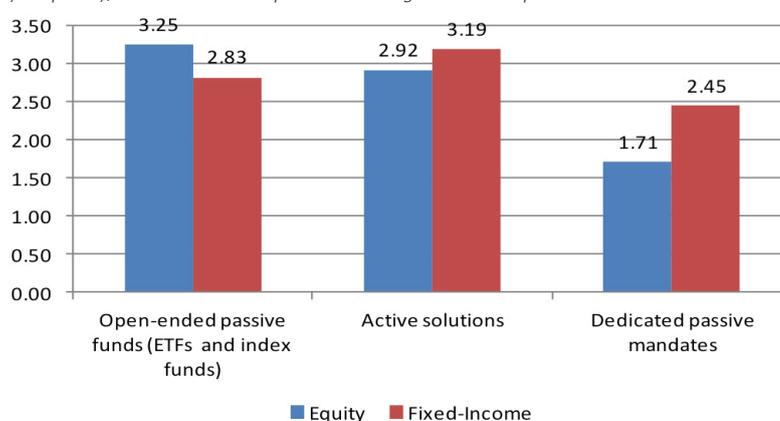


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Preference for passive vehicles for equity and active solutions for fixed income

Finally, we compare the different vehicles respondents plan to use in the future for smart beta and factor investing for equity and fixed income. It appears that respondents plan to make more frequent use of open-ended passive funds to invest in equity products, and active solutions to invest in fixed-income products (see Exhibit 22).

Exhibit 22: Comparisons of the Vehicles Planned to be Used in the Future for Equity and Fixed-Income Smart Beta and Factor Investing
This exhibit compares the vehicles respondents plan to use in the future for equity and fixed-income smart beta and factor investing on a scale from 0 (never use) to 5 (use very frequently). More than one response could be given. Non-responses are excluded.



Analysis of the responses to our survey sheds light on several important questions regarding investor perceptions of ETFs. It also provides insights into the perceived benefits and challenges of smart beta and factor investing strategies. We find that take-up remains partial despite more than a decade of discussion in the industry, with the vast majority of adopters investing less than 20 per cent of their portfolio in such approaches. It is therefore important to better understand the challenges investors face when analysing these strategies. Our survey points to the significant shortcomings of current smart beta offerings, which may explain why industry participants are slow to adopt them. For example, investors perceive a lack of transparency and difficulty in accessing information about such strategies, in particular risk categories such as data-mining risks. In the case of fixed-income strategies, investors express doubts over the maturity of research results at this stage. They also see a need for further development of long/short equity strategies based on factors, strategies that address client-specific risk objectives, and strategies that integrate environmental, social and governance (ESG) considerations. Smart beta researchers and product providers doubtless must work to improve their solutions for smart beta and factor investing strategies if they are to make it into the mainstream.

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1. Introduction

1. Introduction

Almost every year since 2006, EDHEC has conducted a survey on European investors' views and uses of ETFs. In 2013, in view of the considerable development of smart beta and factor investing strategies over recent years, we began to introduce additional questions to ask survey participants to share their opinions on products that track smart beta and factor investing indices. From 2016, a section of the survey was fully dedicated to smart beta and factor investing strategies, including a large group of questions dealing not only with smart beta and factor investing ETFs, but also investors' general use of and opinions on smart beta and factor investing strategies. In 2018, we introduced a special group of questions dedicated to smart beta and factor investing for the fixed-income asset class, and in the present edition of the survey, we emphasize this latest group of questions. This survey brings together the main vehicles of passive investment, namely ETFs – which are standard and very liquid products that track indices – and strategies based on the new forms of indices.

The first European ETF came on the market in 2000, and the ETF market has developed significantly since. Assets under management (AUM) of ETFs and other exchange-traded index products amounted to \$726bn as at the end of December 2018 (ETFGI, 2018b). In 18 years, ETFs have become a serious alternative to other financial products such as futures or index funds, which allow participation in broad market movements. The ETF market is still growing. While the first ETFs attempted to replicate the performance of broad equity markets, ETFs now exist for a wide range of asset classes including fixed income, currencies and commodities, and within each

asset class, ETFs are venturing into covering more precise sub-segments (such as segments by yield or liquidity/size of securities) or employing innovative index construction methodologies (such as alternative weighting schemes or factor tilts). Another focus of innovation has been to offer more varieties of equity ETFs with similar economic exposure and to provide detailed choices of how to gain this exposure, such as equity ETFs with different distributing share classes⁷ and ETFs on currency-hedged indices. Multi-asset ETFs have also emerged, including those that replicate portfolios containing both equities and bonds.

The development of readily-accessible index investment products may have positive effects for investors. In fact, one study (Cremers et al., 2013) suggests that the prevalence of index replication products improves the levels of competition and efficiency in the fund management industry. At the same time, the rapid growth and innovation within the ETF market has led investors to closely examine the potential risks of ETFs. For some years, the standard practice of using a capitalisation-weighting scheme for the construction of indices has been the target of harsh criticism. The growing demand for indices as investment vehicles has led to innovations including new weighting schemes and alternative definitions of sub-segments. There are also many initiatives for non-cap-weighted ETFs. These have been coined "Smart Beta ETFs" as they seek to generate superior risk-adjusted returns compared to standard market-capitalisation-based indices.

Conducting a survey allows us to analyse current practices and perceptions among ETF users in Europe, as well as among users of smart beta

7 - For instance, Amundi ETF Euro Stoxx 50 has two distributing share classes: capitalising and dividend distributing. The UBS ETF MSCI Emerging Markets TRN Index has institutional and retail share classes.

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and factor investing strategies. By comparing our results with those of our regular surveys, we aim to shed light on trends within the ETF market and within the smart beta and factor investing strategy offer.

The EDHEC European ETF and Smart Beta and Factor Investing Survey 2019 took the form of an online questionnaire addressed to European professionals in the asset management industry. It targeted institutional investors as well as asset management firms and private wealth managers. The questionnaire has one section covering the role played by ETFs in respondents' asset allocation decisions, as well as their views on future developments in the ETF market. In the second section, respondents were asked to give their opinions about products that track smart beta and factor investing indices, and more generally on alternative equity beta strategies, as well as on smart beta and factor investing for fixed income, in relation to the recent considerable development of these types of indices.

This survey proceeds as follows. Section 2 presents the Background to the survey and is made up of two parts. In the first, we review the main figures concerning the European ETF market, while the second is dedicated to smart beta and factor investing strategies. The methodology used to conduct the survey and some information about survey respondents is described in Section 3. Results of the survey are detailed in Section 4, which, like the Background section, is divided into two parts. The first is dedicated to ETFs, including European investors' views on and present uses of ETFs and the future developments they wish to see, while the second is entirely dedicated to

investors' views on smart beta and factor investing strategies and the areas in which they would like to see further improvement.

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2.1. Overview of ETFs

ETFs are open-ended investment funds traded on a stock exchange. The first ETFs appeared in the United States in 1989 and they started trading in Europe in 2000. As at the end of December 2018 there were 6,483 ETFs worldwide managing \$4,685bn in assets (ETFGI, 2018b). The AUM within the 1,704 exchange-traded funds constituting the European industry stood at \$726bn from 59 providers on 27 exchanges (ETFGI, 2018b). According to Morningstar (2019a), the amount invested in ETFs in Europe has doubled over the last five years, and currently accounts for 8.6% of the total AUM in European investment funds, compared with 5.5% five years ago. While the large number of ETFs means that a large variety of indices are tracked – including indices on niche markets and innovative index methodologies in traditional asset universes – there is also a large choice of different ETFs that track the same or very similar indices. For example in Europe, there are currently 18 ETFs that track the Euro Stoxx 50 index⁸. ETFs and other exchange-traded products (ETPs) are still heavily oriented towards equity. At the end of December 2018, equity products accounted for about 66% of AUM in European ETFs and ETPs, fixed-income products accounted for about 25% of assets and commodity products for about 8%, while ETFs and ETPs providing other types of exposure including multi-asset class exposures, currencies and alternative asset classes, accounted for about 1% (BlackRock, 2018).

In 2018, ESG ETFs enjoyed growth of 50%, reaching €9.95bn, with the launch of 36 new products, against just 15 in 2017 (Morningstar, 2019a). There has been a shift over the years in favour of physical rather than synthetic replication. While

the respective shares of physical and synthetic replication were 60% and 40% ten years ago, that of physical replication currently stands at 80% for equity ETFs and 90% for fixed-income ETFs (Morningstar, 2019a).

The European ETF market is mostly institutional. Although there are no exact figures, industry estimates in terms of the percentage of retail AUM are around 20% according to Morningstar (2019a). The European Securities and Markets Authority (ESMA) Securities and Markets Stakeholder Group⁹ notes that while ETFs are a “very low-cost alternative” to other Undertakings for Collective Investment in Transferable Securities (UCITS) funds, they are “very rarely, if at all, marketed for European individual investors” due to “differences in remuneration of the distribution channels”.

In continental Europe, retail distribution has traditionally been controlled by banks, and to a lesser extent insurance companies, who have used their sales to market almost exclusively their in-house products. In 2015, 56% of the AUM in the European fund industry was controlled by third-party allocation and 44% by captive distribution channels (Giannotti and Maciver, 2016). However, the split is different from one country to another, with a dominance of captive distribution in Austria, France, Italy and Spain, while Sweden, UK and Netherlands use more third-party funds. In the United Kingdom, independent financial advisers (IFAs), dominate the retail market. Until the end of 2017, these institutions and intermediaries have no direct incentive to promote ETFs, which by nature do not pay them commissions, unlike comparable unlisted vehicles, UCITS included. However, the introduction of the second Markets

8 - <https://www.justetf.com/en/how-to/euro-stoxx-50-etfs.html>.

9 - ESMA Policy Orientations on Guidelines for UCITS exchange-traded funds and structured UCITS (2011).

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in Financial Instruments Directive (MiFID II) in January 2018 has considerably restricted this distribution commission policy for independent advisers, which benefits ETFs. MiFID II provides more transparency around ETF trading, which is helpful as many investors still have a relatively poor understanding of the trading and liquidity of ETFs (Morningstar, 2019a). Historically, about 70% of the trades in ETFs in Europe were done on an over-the-counter (OTC) basis (Morningstar, 2019a). Since the introduction of MiFID II in January 2018, investors are required to report more information about their trades. This resulted in the European ETF industry launching an aggregate trading data service incorporating both over-the-counter (OTC) trades and those listed on exchanges such as the London Stock Exchange.¹⁰

Indeed, the management fees charged by ETFs show that they come at low cost to investors. According to IPE (2018), the asset-weighted average total expense ratio (TER) of European ETFs was 27 basis points. It should be noted that in spite of low average TERs, there are considerable differences across ETFs. There are 80 ETFs with an expense ratio below 10bps, while there are 34 with an expense ratio greater than 80bps. A notable feature of the ETP industry is that it is highly concentrated. On the European market, the top three players control almost two-thirds (65%) of the AUM, and the top ten players over 92% (Morningstar, 2019a).

In the context of the large growth of ETFs, a collection of recent papers question the influence of the increase in ETF ownership on the liquidity of ETF component securities. They investigate the US market in particular, where the market share dedicated to ETFs is even higher than in

Europe. An interesting and comprehensive review is provided by Ben-David, Franzoni and Moussawi (2017). It should be noted that there is a debate in this literature, as authors have provided evidence of both positive and negative effects of ETF trading on market liquidity and efficiency, and further research may be needed to explain the sometimes divergent views. Israeli, Lee and Sridharan (2016) note that ETFs constitute about 30% of the daily value traded on US exchanges. They evidence an increase in trading costs for these securities, associated with a decrease in liquidity. Similarly, Hamm (2014) reports an increase in illiquidity for securities that are part of ETFs subject to increases of ownership. In contrast, Glosten, Nallareddy and Zou (2016) document an increase in information efficiency for securities that are part of ETFs experiencing higher trading, resulting from increased ownership. Israeli, Lee and Sridharan (2016) justify this difference by the fact that different approaches were used: Glosten, Nallareddy and Zou (2016) consider the current effect of increasing ownership on liquidity, while they test its effect in the future. Hamm (2014) explains this phenomenon by the fact that uninformed investors tend to depart from investment in individual stocks when they have the opportunity to invest in diversified ETFs or index funds – a result evidenced by greater illiquidity for stocks that are part of the more diversified ETFs. This economic consequence of the large development of index trading was already evoked by Wurgler (2011) and Broman (2016).

Ben-David, Franzoni and Moussawi (2015) argue that securities with higher ETF ownership exhibit higher volatility and are more likely to depart from the random walk. They notice that during

¹⁰ - <http://www.funds-europe.com/news/european-etf-industry-launches-aggregate-trading-data-service>.

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turbulent market periods, arbitrage activity, which is necessary to reduce price discrepancy between ETFs and underlying securities, is limited. Consequently, ETF prices tend to diverge from those of the underlying securities.

However, Madhavan (2016) and Madhavan and Sobczyk (2016) have another point of view and detail how ETFs improve financial market information. According to them, ETFs will reflect new information before underlying securities, as long as arbitrage is frictionless. This is in line with Glosten, Nallareddy, and Zou (2016), who argue that stocks incorporate information more quickly as soon as they are part of ETFs, and also with Da and Shive (2016), who observe increasing co-movements in returns of stocks that are included in an index, and finally Wermers and Xue (2015), who report that ETFs enhance price discovery. Agarwal et al. (2016) document a correlation between the liquidity of ETFs and the liquidity of the security components of ETFs.

The growth of ETFs is explained by the fact that investors choose to replace investment in traditional index funds by investment in ETFs. Israeli, Lee and Sridharan (2016) point out that ETFs are increasingly replacing traditional passive investment vehicles, such as index funds, closed-end-funds and index futures, as detailed in recent studies. For example, Madhavan et al. (2014) argue that ETFs are a superior alternative to index futures, because of the mispricing that often occurs around the futures' rolling dates.

As ETFs combine the diversification of index funds and the trading ease and flexibility of stocks listed on exchanges, they should be analysed from both standpoints. Like traditional index funds, ETFs usually attempt to track or replicate a particular index of equities, debts or other securities. Like mutual funds, they are registered as open-ended funds, continuously offering new fund shares to the public and required to buy back outstanding shares on request and at a price close to their net asset value (NAV). Shares in ETFs can be traded on the market throughout the trading day, using the whole gamut of order types. Although the designs of ETFs and mutual funds are similar, investors can treat ETFs as normal stocks, buying or selling ETF shares through a broker or in a brokerage account, just as they would the shares of any publicly traded company.¹¹ ETFs give investors access to a wide array of asset classes and investment strategies. Hence they are a type of investment vehicle and not an asset class in themselves.¹²

2.2. Smart Beta and Factor Investing Strategies

For a few years, the standard practice of using a capitalisation-weighting scheme for the construction of indices has been the target of harsh criticism. The growing demand for indices as benchmarks for passive investment vehicles has led to innovations including new weighting schemes and alternative definitions of sub-segments. There are also many recent initiatives for non-cap-weighted ETFs. Since the first fundamental factor-weighted ETF launched in May 2000 (Fuhr and Kelly, 2011), there have been quite a number of ETFs introduced to track

11 - Sometimes ETFs are wrongly classified as closed-end funds, since both exhibit similar features, such as holding multiple securities and asset classes. Furthermore, both can be traded on exchanges. The most important difference is that ETFs always trade very closely to their NAV, since any deviation can be exploited by arbitrageurs redeeming and then buying new units. Closed-end funds, by contrast, rarely trade at their NAV.

12 - For more detailed information on ETFs, the reader can refer to previous editions of the survey. In the present document, which devotes more attention to smart beta and factor investing, we have chosen to restrict the ETF background section content mainly to industry figures.

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non-market-cap-weighted indices,¹³ including equal-weighted ETFs, minimum variance ETFs, characteristics-weighted ETFs, etc.¹⁴ These have been coined "Smart Beta ETFs" as they seek to generate superior risk-adjusted returns compared to standard market-capitalisation-based indices. According to ETFGI, at the end of December 2018, there were 1,298 smart beta ETFs and ETPs globally and 159 providers of such funds, listed on 40 exchanges in 32 countries, amounting to US\$617.65bn. According to Lyxor (2018), the AUM of European smart beta ETFs reached €36.4bn at the end of June 2018, representing an increase of 3.3% compared to the end of 2017, and accounting for 3.2% of total asset increases. In 2018, 20 new smart beta ETFs were launched in Europe, compared to 83 in 2017, a sign that this market is reaching a certain level of maturity, and the share of smart beta ETPs represents 7.5%

of the total European ETP market, according to Morningstar (2019a).

In the area of smart beta and factor investing for fixed-income, the market share is currently small with only 3.7% of ETF assets at the end of December 2018 (Morningstar, 2019b). However, Kahn and Lemmon (2015), considering duration and credit factors for fixed income, and market, size, value and momentum factors for equity, evidenced that an even higher proportion of active risk could be explained by smart beta factors for the fixed-income asset class compared to the equity asset class (67% for fixed income versus 35% for equity). Further, for 38% of the fixed-income sample funds, 90% or more of the active risk can be explained by smart beta factors. This is an illustration of the benefits of smart beta strategies for the fixed-income asset class.

New frontiers in smart beta investing: Benefits and limits of traditional and alternative bond benchmarks

- A number of index providers have launched new forms of alternative indices to try to address some of the challenges with traditional weighting schemes based on the market value of debt.
- A number of ad hoc alternative weighting schemes have been proposed but these initiatives have no academic grounding, and it is unclear whether the portfolios thus constructed would be optimal benchmarks under any reasonable assumptions.
- These initiatives can be broadly classified into two different categories – fundamental approaches and diversification approaches.
- None of these approaches successfully addresses all the key concerns and challenges involved in designing a truly investor-friendly bond benchmark, which suggests that further work is needed in the area of improved bond benchmarks.

Existing bond benchmarks as ill-diversified bundles of unstable factor exposures

Over recent years, a number of concerns have been expressed about the (ir)relevance of existing forms of corporate and sovereign bond indices offered by index providers.¹⁵

13 - For instance, PowerShares adopted a fundamental index methodology and launched PowerShares FTSE RAFI ETFs that have covered both the US and global markets since 2005. Wisdom Tree introduced a series of ETFs weighted by different fundamental factors, such as dividends and earnings since 2006. RevenueShares launched revenue-weighted ETFs in 2008.

14 - Rydex introduced the first equal-weighted ETF in 2003. It tracks the S&P Equal Weight Index. iShares and Ossiam also launched equal-weighted ETFs in 2011. In May 2011, PowerShares launched the first beta and first volatility-weighted ETFs.

15 - See also Reilly, Kao and Wright (1992) for an early analysis of bond indices.

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One of the major problems with bond indices which simply weight debt issues by their market value is the so-called "bums problem"¹⁶ (Siegel, 2003). Given the substantial share of the total debt market accounted for by issuers with large amounts of outstanding debt, market-value-weighted corporate bond indices will have a tendency to overweight bonds with large amounts of outstanding debt. It is often argued that such indices therefore give too much weight to riskier assets. While it is debatable whether debt-weighting really leads to the most risky securities being overweighted¹⁷, it is clear that market-value debt-weighted indices lead to concentrated portfolios that are in opposition with investors' needs for efficient risk premia harvesting, which involves holding well-diversified portfolios. In short, a strong case can be made that existing bond indices tend to be poorly diversified portfolios, regardless of whether or not the overweighting applies to the wrong constituents. A similar problem has been documented for equity indices – see for example Amenc, Goltz and Le Sourd (2006).

In addition to the problem of concentration, fluctuations in risk exposure (such as duration or credit risk in existing indices) are another source of concern – see Campani and Goltz (2011) for more detail. Such uncontrolled time variation in risk exposures is incompatible with the requirements of investors for relatively stable exposures so that allocation decisions are not compromised by implicit choices made by an unstable index. For example, an asset-liability mismatch would be generated by changes in the duration of the bond index if it were used as a benchmark for a pension fund bond portfolio.

More generally, it appears that existing bond indices can be regarded as more "issuer-friendly" than "investor-friendly", in the sense that they passively reflect the collective decisions of issuers regarding the maturity and size of bond issues, with no control over the risk factor exposure associated with such choices or the reward that investors should receive from holding a well-diversified portfolio of such factor exposures.

Alternative bond benchmarks as partial and ad hoc answers to otherwise well-identified questions

Recently, a number of index providers have launched new forms of alternative indices to try to address some of the challenges with traditional weighting schemes based on the market value of debt. A number of ad hoc alternative weighting schemes have been proposed but these initiatives have no academic grounding, and it is unclear whether the portfolios thus constructed would be optimal benchmarks under any reasonable assumptions.

In what follows, we provide an overview of these initiatives, which can be broadly divided into two different categories – fundamental approaches (Arnott et al., 2010a) and diversification approaches (Deguest et al., 2013).¹⁸ Our main conclusion is that none of these approaches

¹⁶ - Siegel (2003) refers to the issuers who have the highest level of debt as the "biggest bums".

¹⁷ - A higher weight for an issuer with a high market value of debt does not necessarily mean that the index is over-weighting issuers with a high face value of debt. An issuer with a high amount of par value debt outstanding will only get a high weight if the market value is relatively close to par value, which implies that the issuer is not perceived to be very risky. It is therefore not clear why the market-value-weighted index should become riskier. In addition, loading onto riskier issuers should not be a problem if this risk is rewarded by higher expected returns.

¹⁸ - We do not discuss liability-driven approaches such as the Markit iBoxx US Pension Liability Indices, the Barclays US Treasury Targeted Exposure Index series, or the Ryan Strips Index Family, which have a different objective, namely hedging/replicating risk factor exposures in investors' liabilities, as opposed to efficient (also known as smart) harvesting of risk premia.

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successfully addresses all key concerns and challenges involved in designing a truly investor-friendly bond benchmark, which suggests that further work is needed in the area of bond benchmarks.

Fundamental approaches to bond indices address neither concentration risks nor factor exposure risks

Fundamental indexing in the bond market is a direct transfer of methodologies originally developed for equities.

For example, in Arnott et al. (2010a), the authors use the following five factors to assign a score to each corporate bond (investment grade and high yield): book value of assets, total dividends, total cash flow, sales and face value of the debt issue. First, weights are computed for each corporation, and with respect to each factor, by using the trailing five-year average of each of the above metrics over the aggregate five-year average across all corporations. While it might seem unclear why it would be desirable to use a 5-year trailing value as opposed to the current value for the fundamentals, the main practical motivation for this ad hoc procedure is that the implied smoothing will lead to a reduction in turnover. The composite measure is then obtained by equally weighting four of the measures: assets, dividends, cash flow and sales. For emerging market sovereign bonds, the approach developed in Arnott et al. (2010a) is based on the following factors: total population, square root of land area (as a crude approximation for resources), total gross domestic product, energy consumption and face value of the debt issue. As in the case of corporate bonds, weights are first computed for each country, and with respect to each factor, by using smoothed five-year averages of the above metrics over the aggregate metric across all countries. Then, a country's aggregate weight is the equally weighted average of its score for the individual factors.

The fundamental approach for constructing a bond index raises several concerns. First of all, the methodology used does not address the concerns over stability of factor exposure. Moreover, the problem of concentration is approached with a purely ad hoc methodology, and better diversified portfolios could be constructed on the basis of standard risk models being used. More importantly, it is unclear why some backward-looking trailing average of some arbitrarily selected variables (e.g. square root of land area) should contain more useful information than, say, bond ratings, which for all their flaws are based on a much richer information set.

In the same vein, a number of institutions (investment banks, index providers or asset managers) have launched sovereign bond indices exclusively using GDP measures to adjust the weights allocated to various regions, with methodological details varying across different providers. All these indices based on the GDP metric (and sometimes adjusted with other macroeconomic

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factors) give a relatively lower weight to countries that are heavily indebted. Therefore, using GDP-based indices deals with only one drawback of cap-weighted indices – concentration. Additionally, relying exclusively on GDP statistics may introduce a significant backward-looking bias since such data are updated on a quarterly basis. Moreover, the sensitivity to interest rate risk is not controlled for, and the diversification of the issuers is not properly taken into consideration through suitable risk models, which may lead to such portfolios being heavily loaded on the same risk.

Ad hoc diversification approaches to bond indices address concentration risk, albeit in an ad hoc manner, but do not address factor exposure risks

The first ad hoc approach to cope with the problem of concentration risk involves imposing maximum limits on the weights assigned to any particular constituent or issuer. Extending the concept, equally-weighted indices assign the same weight to each bond. On the one hand, these indices offer the advantage of dealing with the bums/concentration problem, since the amount of debt issued does not impact the weighting scheme (even though the number of issues may have an impact). On the other hand, it does not address the lack of duration control, and may exhibit higher turnover levels than cap-weighted indices since maintaining the precise sector and maturity breakdowns of the index leads to more frequent rebalancing than in the case of buy-and-hold market-cap weighted indices, which require trading only when the index constituency changes over time.

As opposed to imposing an identical dollar contribution from various constituents of the bond index universe, one may seek to impose an identical risk contribution from all constituents – such is the focus of inverse duration-weighted bond indices for which the weight assigned to each bond is equal to the inverse of the (modified) duration of the bond taken as a proxy for its risk level. Duration weighting implies that the overall duration of the index is equal to the number of constituents; this index achieves both stability of factor exposure and some form of portfolio diversification. Nothing guarantees, however, that this ad hoc portfolio construction methodology will lead to a benchmark with attractive risk-adjusted characteristics.

Risk-based diversification approaches to bond indices may satisfactorily address concentration risk but fail to address factor exposure risks

Given that ad hoc methodologies are not likely to offer satisfactory responses to investors' needs, the question arises as to whether one could use risk models to construct improved bond benchmarks with a focus on enhancing diversification, controlling risk exposure, and subject to implementable levels of turnover and liquidity constraints.

The abundance of theoretical and empirical research on factor investing in the equity universe (see for example Amenc and Goltz (2016) for an overview) stands in sharp contrast to the

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relative scarcity of research about how to efficiently harvest risk premia in bond markets. That relatively little is known about the out-of-sample performance of factor-based bond portfolio optimisation models is perhaps surprising given the importance of fixed-income investments in institutional and private investors' portfolios. From an investment practice standpoint, there is a similar contrast between factor investing in the equity space, which is a relatively mature domain, and factor investing in bond markets, which is still in its infancy.

A factor investing approach is required in fixed-income markets but more research is needed to confirm that this approach can lead to robust forms of improved investable bond benchmarks.

The modern approach to factor investing (see for example Martellini and Milhau (2015) for an application to the equity space) suggests that we should first identify robust and economically motivated sources of risk in fixed-income markets before applying a weighting scheme.

An economic motivation is not just an academic nice-to-have. Understanding the source and origin of the cross-sectional differential returns matters a lot when it comes to creating a robust benchmark:

- If the origin of the excess returns can be traced to a source of systematic risk, then the attending compensation (the corresponding "market price of risk") will not disappear by discovering it, but may decrease or increase in size over time with variations in the stochastic discount factor (investors' risk aversion);¹⁹
- If the excess returns are due to a behavioural finance "irrationality", it could in principle be arbitrated away by rational investors, and revealing the behavioural anomaly could therefore be the first step towards its disappearance. However, its persistence or otherwise may be linked to the availability or scarcity of "arbitrage capital";²⁰
- If the excess returns are due to institutional frictions, they can be an easy source of profitability for investors who are not affected by regulatory or institutional constraints. However, they can disappear at the stroke of a regulatory pen;
- If, finally, the excess returns are truly due to an anomaly, then it is likely to disappear after its discovery as it becomes exploited (for instance, one of the explanations for the disappearance of the equity size factor is that it was really an anomaly which was readily arbitrated away once identified).

In this context, it appears that more analysis is required before we are able to see the emergence of improved bond benchmarks that will provide adequate responses to investors' needs.

19 - Cochrane (2011) stresses the recent shift in emphasis in asset pricing research from variations in expectations to variations in discount rates.

20 - This clear distinction between 'irrationality'-based and institutional-based sources of differential cross-sectional returns can easily become blurred: the availability of the speculative capital that should arbitrage irrationalities away may, for instance, have become greatly reduced because of regulatory initiatives such as the Volker rule in the US, or the Likanen proposal in the EUR area.

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Maeso, Martellini and Rebonato (2019a) provide the first systematic analysis of the theoretical, empirical and practical challenges related to factor investing in *sovereign* bond markets. It should be noted that this paper addresses the question of factor investing from the perspective of a single credit-risk-free issuer, which is a priori the purest and most difficult problem since neither time-series nor cross-sectional differences in risk and performance can be explained by differences in creditworthiness, as in the case of a multi-issuer universe. In other words, the question is to explore whether it is possible to identify economically justifiable strategies which, after accounting for transaction costs and other forms of trading frictions, generate excess returns when investing in a relatively homogenous set of highly correlated securities.

Maeso et al. (2019a) provide a positive answer to this question with respect to time-series factors such as the level of interest rates and, albeit to a lesser extent, the slope of the yield curve. More precisely, the authors first confirm (using both yield curve and CUSIP-level data in the US) the well-established finding that long-term bonds do appear to offer a higher unconditional excess return over short-term rates, an excess return which is also known as the bond risk premium. They also confirm that the magnitude of the excess return generated by such an unconditional carry strategy is relatively small (much smaller than the equity risk premium) and has been negative for extended periods. As a matter of fact, the risk premium associated with unconditional exposure to the slope factor (via flattener or steepener strategies) is even smaller, if not zero (see Section 2.3.2, or Rebonato (2018) for more details). On the other hand, this paper shows that one can efficiently exploit the presence of state-dependencies in excess returns from the level factor to implement a conditional version of a carry strategy based upon a variety of return-predicting factors. Interestingly, this strategy shows much better resilience to environments with increasing interest rates with respect to the benchmark or to an unconditional version of the carry strategy. It also has the highest outperformance potential in bear equity markets, thus suggesting very attractive diversification benefits. Using yield curve data, Maeso et al. (2019a) further find that the performance of a conditional version of the flattener strategy based upon time-varying exposure to the slope factor also generates economically significant additional performance, but such performance is limited by the presence of leverage constraints, and the authors therefore remain cautious with respect to its implementability in the case of individual bonds.

In addition to the level and slope of the yield curve, new patterns that focus on bond returns rather than interest rates have also been exposed recently. They notably include the credit risk and default risk factors (Bai et al. (2018), Huang and Huang (2012), Ilmanen (2011)), as well as the liquidity factor (Chen et al. (2007), Rebonato and Hong (2017)). They also include factors that have been adapted from the research on equity markets, starting with the momentum factor (Asness et al. (2013), Gebhardt et al. (2005a), Jostova et al. (2013), Maeso et al. (2019b), Pospisil

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and Zhang (2010), Rebonato et al. (2018)), and the value factor (Asness et al. (2013), Correia et al. (2012), Houweling and van Zundert (2017), L'Hoir and Boulhabel (2010), Maeso et al. (2019c)). This effort to translate equity factors to fixed income also applies to the carry factor (Gebhardt et al. (2005b), Koijen et al. (2017)), the low risk factor (de Carvalho et al. (2014), Houweling and van Zundert (2017), Israel et al. (2018)), the size factor (Bektic et al. (2017), Houweling and van Zundert (2017)), etc.

The recent discovery that generalised factors that used to "work well" for equities seem to be effective also in the fixed-income area does, however, leave an outstanding problem that needs explaining. As Asness et al. (2013) put it, "the strong correlation structure among value and momentum strategies across such diverse asset classes is difficult to reconcile under existing behavioral theories, while the high Sharpe ratio of a global across-asset-class diversified value and momentum portfolio presents an even more daunting hurdle for rational risk-based models."

In other words, we seem to be finding more and more factors and observing that the 'old' factors appear to work even where they were not expected (or even supposed) to, but we are farther and farther away from a unified understanding of why they do. As argued above, this imperfect understanding matters when it comes to building robust and stable investable portfolios.

Modern "generalised factor discovery" in the fixed-income area is unfortunately made more difficult by the problem of proxies. Very often a candidate factor (such as liquidity or value) is difficult to measure, or even to define, precisely. Furthermore, as recognised as early as 1993 by Fama and French (1993), the transposition to the fixed-income arena of the most popular factors in the equity space (such as value, momentum or low volatility) is not straightforward. This has led to the proliferation of proxies, and sometimes to the creation of proxies of proxies. For instance, Asness et al. (2013) investigate value and momentum in fixed income, and circumvent the problem of defining value for bonds (a concept that, according to Fama and French (1993) "has no obvious meaning for [...] bonds" – see footnote 5) by arguing that "individual stock portfolios formed from the negative of past 5-year returns are highly correlated with those formed on BE/ME ratios in our sample. [...] Hence, using past 5-year returns to measure value seems reasonable." The logic here is to use a proxy (the 5-year returns) to stand in for another proxy (value) for an unspecified latent factor. This choice may well be reasonable, but the link to the desired proxy (value), let alone to the latent factor, is neither transparent nor unique: indeed, in the literature a number of additional measures of value for bonds have been proposed, such as the 5-year yield change in nominal yields, the difference in the 10-year yield to 5-year inflation forecast (for real bonds), and the 10-year yield spread to the short rate, not to mention a composite average of all three measures.

2. Background

Also this concern is of relevance for the construction of robust benchmarks. As we have seen, despite the suggestive labels attached to factors, what has actually been studied in the recent literature are often proxies more or less loosely associated with the more fundamental quantities they "stand in for". This can create not only ambiguity, but also ample scope for data snooping and overfitting. Needless to say, the cost of overfitting in-sample is poor performance out-of-sample. Apart from the dangers of overfitting and data mining, discovering more and more factor proxies (in the equity space alone, Fama recently counted more than 350!) is not necessarily desirable when it comes to constructing a truly diversified portfolio. Indeed, as Cochrane (2010: 20) reports, "in 2007 and 2008, hedge funds found to their dismay that portfolios they had constructed to exploit multiple signals all fell at the same time. This is exactly suggestive of a single source of risk corresponding to multiple signals of return". A multitude of putative proxies can therefore create a false sense of high portfolio diversifiability, and obscure the fact that a very small number of underlying latent economic factors may manifest themselves through a variety of highly correlated measurable proxies. After all, if a factor proxy is associated with a true risk premium, the attending 'excess' return is simply a compensation for receiving good or bad payoffs in periods of high or low consumption respectively. High or low consumption, in turn, can be parsed in terms of a relatively small number of (often highly correlated) economic configurations, such as low growth or high unemployment.

A principled and parsimonious approach to proxy analysis is therefore essential, especially in the nascent field of fixed-income 'smart beta', but has arguably not received sufficient attention.

We proceed now to the presentation of the survey methodology and data (see Section 3). The main results of the survey – European investors' views and use of ETFs and smart beta and factor investing strategies – are presented in Section 4.

3. Methodology and Data

3. Methodology and Data

3.1. Methodology

The EDHEC European ETF and Smart Beta Factor Investing Survey 2019 was completed using an online questionnaire distributed to professionals within the European asset management industry, and subsequent e-mail communication. It targeted professional asset managers who have experience with ETF instruments and smart beta and factor investing strategies, including institutional investors, asset management companies and private wealth managers.

The questionnaire consisted of two main parts. In the first, participants are asked about the role ETFs play in their asset allocation decisions, as well as their level of satisfaction with different ETF products. We also invited them to tell us how they imagine their use of ETFs changing over the coming years, and to indicate the type of ETF products they would like to see further developed. The second part of the questionnaire is dedicated to smart beta and factor investing strategies. Respondents were asked to provide their opinions on products that track smart beta indices. They were also asked about their current use of smart beta solutions in their portfolio allocation, the difficulties they face and their needs in terms of further development of alternative beta strategies. This year, we extended questions dedicated to smart beta for fixed income.

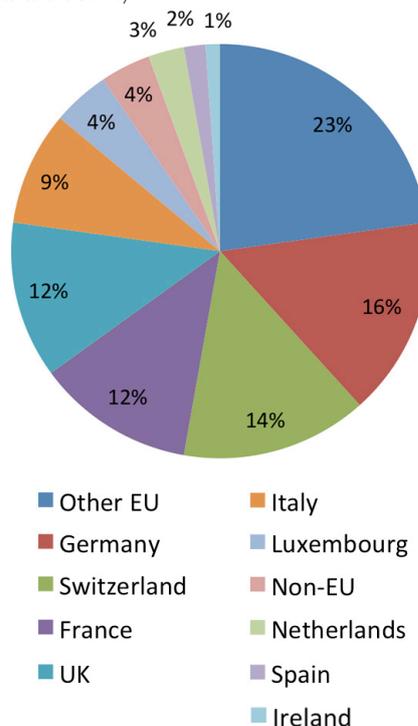
3.2. Data

The e-mail containing a link to the questionnaire was sent out in January 2019. The first response was received on 10 January and the last on 22 March. In total, we received replies from 182 participants, of whom 15% (27) declared that

they had never invested in ETFs. However, as a large part of the survey was dedicated to smart beta strategies, these participants were invited to skip the ETF part of the survey and directed to the second part, since our aim is to include only experienced ETF investors in the ETF section.

Our survey is aimed at European investment professionals. Thus, the 182 survey respondents are based in Europe, many of whom (54%) are from Germany, Switzerland, France, and the UK. The exact breakdown of the respondents' countries is presented in Exhibit 3.1. We can see from these numbers that our sample gives a fair representation of the European investment market by geography.

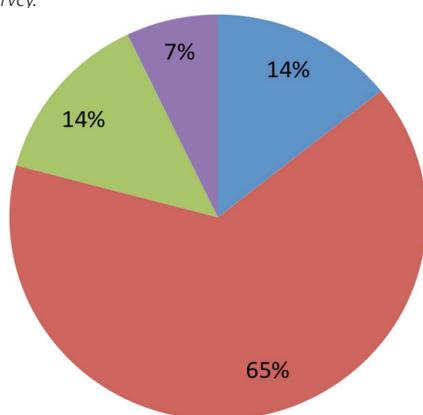
Exhibit 3.1: Country Distribution of Respondents
This exhibit indicates the percentage of respondents that have their activity in each of the listed countries. Percentages are based on the 182 replies to the survey.



3. Methodology and Data

We also asked participants about their institution's principal activity, allowing us to distinguish between professionals in institutional investment management and those in private wealth management. At 79% of the survey participants, institutional managers are the largest professional group represented in this study (the total of Asset Owners and Other Institutional Investors as shown in Exhibit 3.2). About 14% belong to the private wealth management industry. Finally, the remaining 7% is made up of other professionals within the financial services industry, such as investment bankers or industry representatives.

Exhibit 3.2: Main Activity of Respondents' Institution
 This exhibit indicates the distribution of respondents according to their institution's principal activity. Percentages are based on the 182 replies to the survey.

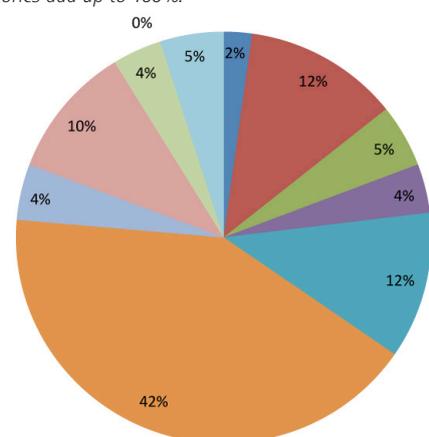


- Asset owners (i.e. pension fund, insurance company)
- Other institutional investment managers
- Private Wealth Management
- Other

It is important to qualify respondents by their job function. We expected that given the importance

for investment organisations of choosing investment instruments such as ETFs or competing index products, those most suitable to respond to our questionnaire would be fairly high-ranked executives or portfolio management specialists. Many of the respondents do indeed occupy senior positions: 14% are board members and CEOs, and 20% are directly responsible for the overall investments of their company (such as CIOs, CROs, or Heads of Portfolio Management). About two-fifths (42%) of participants are portfolio or fund managers (see Exhibit 3.3).

Exhibit 3.3: Function of Survey Respondents
 This exhibit indicates the distribution of respondents based on their positions held in the company. Percentages are based on the 182 replies to the survey. Non-responses are reported so that the percentages for all categories add up to 100%.

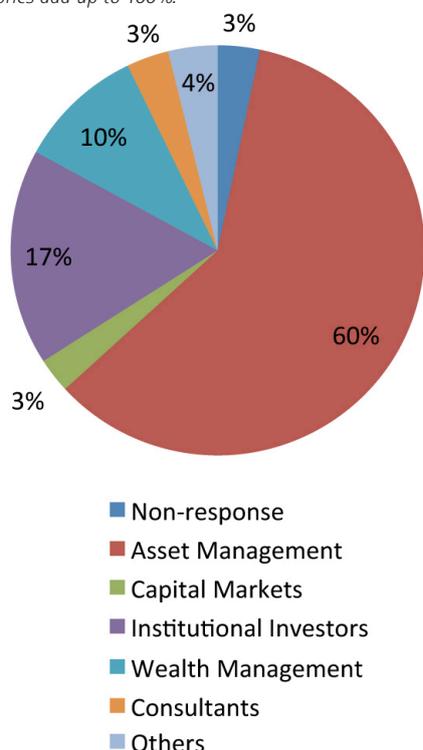


- Supervisory Board Member
- CEO/Managing Director/President
- CIO/CFO/Treasurer
- CRO/Head of Risk Management
- Head of Asset Allocation/Head of Portfolio Management
- Portfolio Manager/Fund Manager
- Vice President
- Associate/Analyst
- Marketing Position
- Independent/Private Client
- Non-response

3. Methodology and Data

We also asked respondents about the nature of their activity. From Exhibit 3.4, we can see that three-fifths of them (60%) are asset managers.

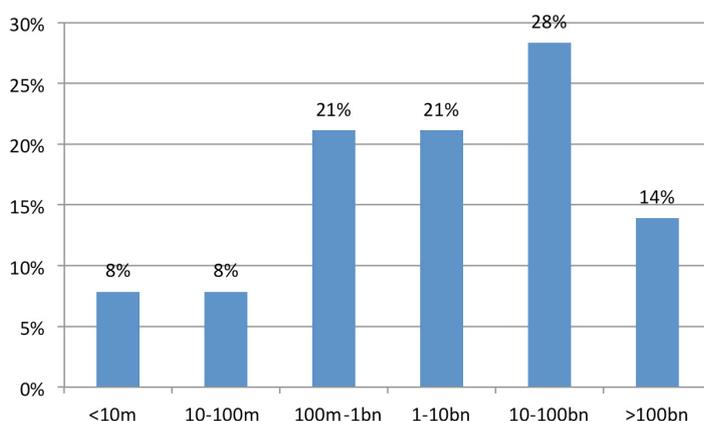
Exhibit 3.4: Nature of Survey Respondent Activity
 This exhibit indicates the distribution of respondents based on the nature of their activity in the company. Percentages are based on the 182 replies to the survey. Non-responses are reported so that the percentages for all categories add up to 100%.



Finally, Exhibit 3.5 shows the AUM of the companies that employ the survey respondents. More than two-fifths (42%) are large firms with over €10bn in AUM. Another two-fifths (42%) are medium-sized companies, with AUM of between €100m and €10bn. We also received responses from small firms: 16% of respondents have AUM of less than €100mn. This size breakdown tells us that the European ETF and Smart Beta and Factor Investing Survey 2019 mainly reflects the views of medium-sized to large companies, which account for 84% of respondents.

Taken together, we believe that this regional diversity and balance of different asset management professionals make the survey largely representative of European ETF and smart beta and factor investing strategy investors. Having described the survey sample, we now turn to the analysis of the responses obtained from participants.

Exhibit 3.5: Assets Under Management (in EUR)
 This exhibit indicates the distribution of respondents based on their reported AUM. Percentages are based on the 182 replies to the survey, excluding non-responses.



4. Results

4. Results²¹

In this section, we present the main survey results and discuss possible explanations for the respondents' answers. Like the background, the results section is divided into two main parts. The first, dedicated to ETFs, takes a close look at the use of and satisfaction with ETFs in practice. Survey participants were also invited to express their views on future developments in the ETF market. Furthermore, we investigate the role ETFs play in asset allocation decisions, including the reasons for investing in ETFs. Finally, we compare the results of the ETF section of this year's survey to previous ETF surveys from 2006 to 2018 in order to get further insight into trends over time.

The second part is dedicated to smart beta strategies and factor investing. Respondents were asked to give their opinions about products that track smart beta indices, in relation to the recent considerable development of these types of indices. They were also asked about their current use of smart beta solutions in their portfolio allocation, the difficulties they face and their needs in terms of further development of alternative equity beta and factor investing strategies. This year, respondents were questioned in more detail about fixed-income smart beta. We also compare the results of this smart beta and factor investing section to previous results drawn from our surveys since 2013, which is when questions relating to smart beta and factor investing were first introduced.

4.1. ETFs

In this sub-section, we begin by analysing the use of ETFs in different asset classes, both in terms of the number of investors and the amount of investment; we then look at satisfaction with ETFs as reported by investors. We also look at the investment strategies used in the industry, as well as the criteria considered when selecting an ETF provider, including tracking error and cost. Additionally, survey participants were invited to express their views on future developments in the ETF markets. Finally, we display the trends in the use of ETFs observed over the past 13 years.

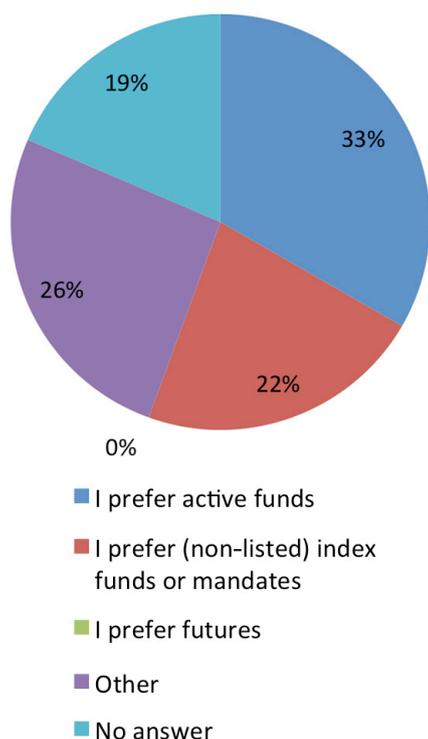
This first sub-section is based on the answers given by 155 respondents who invest in ETFs from within our overall sample of 182. Before turning to ETFs, we did, however, ask the additional 27 respondents the reason(s) why they do not invest in ETFs. Six of them (22%) indicated that they use instruments other than ETFs for the purposes of passive management, namely non-listed index funds and mandates (none of them said they preferred futures), seven of them (26%) gave various reasons for not using ETFs, mainly relating to organisational constraints. Finally, nine (33%) said they did not use ETFs because they did not invest in passive management products and were exclusively active managers (see Exhibit 4.1).

Compared to 2018, we have the same proportion of active managers among those respondents that do not use ETFs, and a slightly higher proportion who use other instruments for passive management (see Exhibit 4.2).

²¹ - Throughout this section, text in italics provides more detail about the results, but these paragraphs can be skipped for a more cursory reading of the study.

4. Results

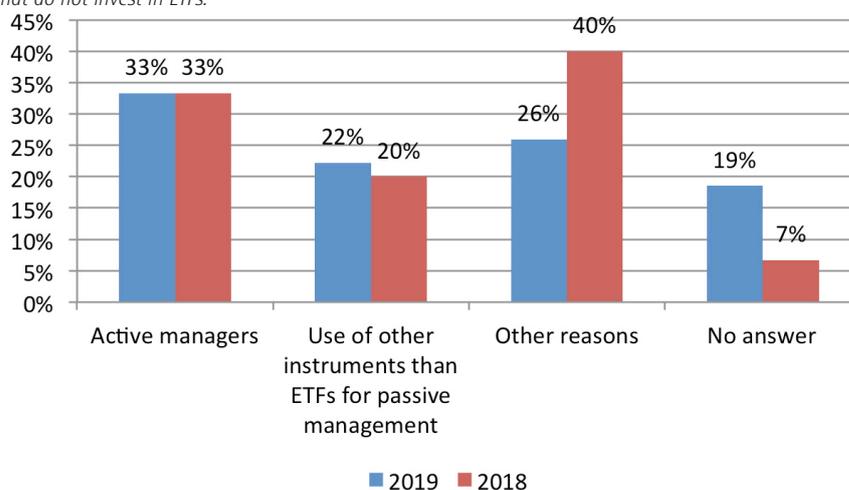
Exhibit 4.1: Motivations for not Investing in ETFs
 This exhibit indicates the reasons given by respondents for not investing in ETFs. Percentages are based on the 27 survey respondents that do not invest in ETFs.



4.1.1. Use of ETFs in Different Asset Classes

First, we look into the relative importance attached to ETFs and other investment instruments in each asset class. Exhibit 4.3 summarises the use of ETFs or ETF-like products among investors who invest in the relevant asset classes. In traditional asset classes, including equities, sectors, smart beta and factor investing, government bonds, corporate bonds, currencies, and SRI, the change – up or down – in the percentages of respondents using ETFs, compared to 2018, is quite moderate. However, again compared to 2018, we observe higher variations in the percentage of respondents using ETFs for alternative asset classes, such as commodities, volatilities, money market funds, real estate, hedge funds or infrastructure.

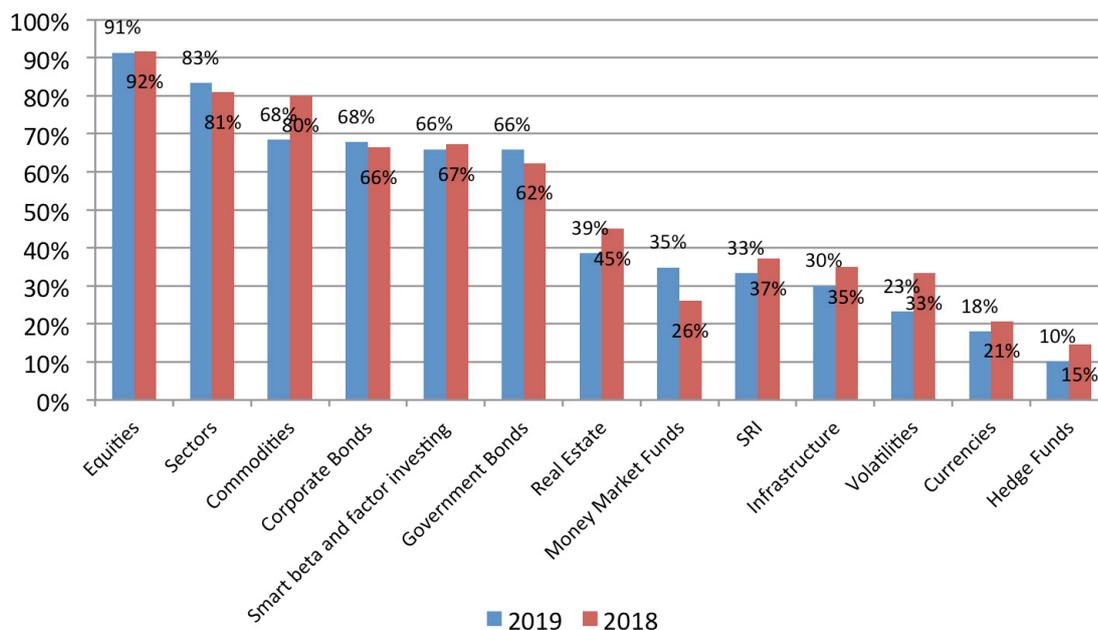
Exhibit 4.2: Comparison of motivations for not Investing in ETFs
 This exhibit compares the reasons given by this year's respondents for not investing in ETFs to those given in 2018. Percentages are based on the 27 survey respondents that do not invest in ETFs.



4. Results

Exhibit 4.3: Use of ETFs and ETF-like Products

This exhibit indicates the percentage of respondents that reported using ETFs or ETF-like products for asset classes/investment styles that they have already invested in/used. We also display the 2018 results to show the year-on-year changes. The percentages have been normalised by excluding non-responses.



In more detail, 91% and 83% of respondents have used ETFs or ETF-like products for their equity or sector investments, respectively. Meanwhile, 66% use ETFs to invest in smart beta and factor investing, which is about the same range as in 2018. 68% and 66% of respondents use ETFs to invest in corporate and government bonds, respectively. Compared to the high use of ETFs in the equity class, the use of ETFs to invest in bonds appears quite weak. Within alternative asset classes, about two-thirds (68%) of investors who invest in commodities employ ETFs. Real estate ETFs are used by 39% of investors, while money market funds and SRI ETFs are used by about a third (35% and 33%, respectively) of investors who hold such assets. Infrastructure ETFs are used by 30% of investors, and volatility ETFs by less than a quarter (23%). Currencies (18%)

and hedge funds (10%) are the asset classes in which the fewest investors have employed ETFs for their portfolios.

We can see that, although ETFs are used across a wide spectrum of asset classes, they are mainly used in equities and sectors. This is likely to be linked to the popularity of indexing in these asset classes as well as the fact that equity and sector indices are based on highly liquid instruments, which makes it straightforward to create ETFs on such underlying securities. In addition, given that liquidity is one of the major benefits of an ETF, and that this is dependent on the liquidity of the underlying securities, it makes sense that ETFs based on the most liquid underlying securities are the most popular.

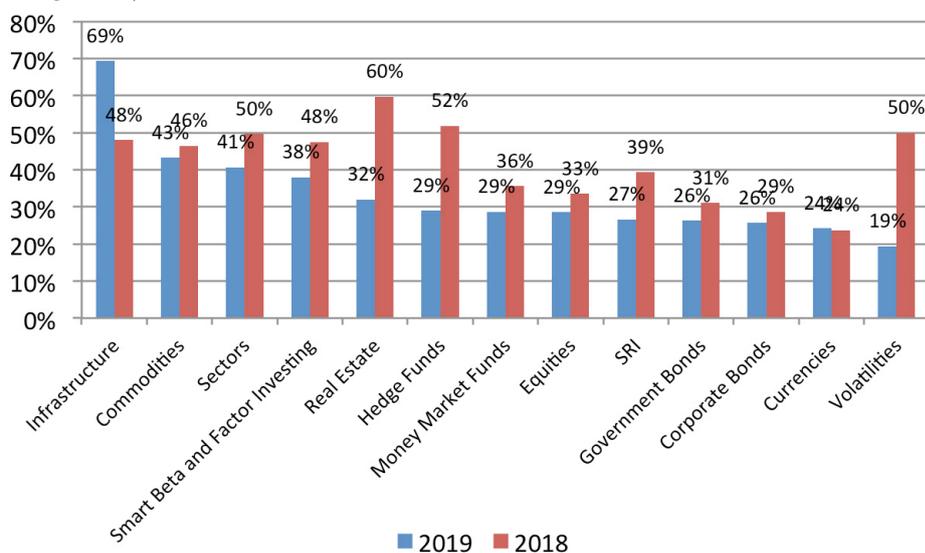
4. Results

To complement the results displayed in Exhibit 4.3, Exhibit 4.4 shows, for each asset class, the percentages of the amounts invested that are accounted for by ETFs or ETF-like products. It differs from the questions asked in Exhibit 4.3, which shows the rate of ETF usage for those respondents who invest in the respective asset class/investment category. Here, Exhibit 4.4 reflects the intensity of usage for those investors who do use ETFs. With the exception of infrastructure and currency asset classes, we observe a decrease in the share invested in ETFs, compared to 2018. In a nutshell, the 2019 figures are not so different from those obtained in 2016, except for the infrastructure asset class. It should be noted that there is great volatility, with year-on-year variations in both directions, as shown in Exhibit 4.14, which displays trends since 2008. However, it appears that ETFs account for a sizeable share of overall assets across different asset classes.

In more detail, for the average respondent to this question, ETFs account for 69% of infrastructure investment, 43% of commodity investment, 41% of sector investment, 38% of smart beta and factor investment, 29% of hedge fund, money market fund and equity investment, 27% of SRI investment, 26% of both government bond and corporate bond investment, and 24% of currency investment. The lowest share of investment in ETFs is for volatilities, with 19% invested via ETFs in their universe. Hence the responses to these two questions show that not only are ETFs widely used across most asset classes, but they also make up a significant proportion of investors' portfolios. This proportion is lower on average than that declared last year for almost all asset classes. However, in the analysis of these results, we have to separate the asset classes for which we have a significant number of respondents using ETFs, namely equities, corporate bonds, government bonds, commodities, sectors, and smart beta and factor

Exhibit 4.4: Percentages of Total Investment Accounted for by ETFs or ETF-like Products

This exhibit indicates the average percentage of total investment accounted for by ETFs or ETF-like products for each asset class. We only consider respondents that do use ETFs for the given asset class. Thus the percentage indicates the volume invested in ETFs compared to all investments in the asset class, for those respondents who do use ETFs. We also display the 2018 results to show the year-on-year changes. The percentages have been normalised by excluding non-responses.



4. Results

investing, where the number of respondents range from 52 to 136, from the asset classes for which respondents using ETFs are less numerous, namely real estate, SRI, money market fund, currencies, volatilities, infrastructure and hedge funds, where the number of respondents range from 5 to 23. It should be noted that the highest decreases are to be found in the latter group, in which the answer of one respondent may have a more significant impact on the average results than in groups with more numerous respondents. For the asset classes where the number of respondents is more numerous, there is more stability in the results from one year to the other.

4.1.2. Satisfaction with ETFs

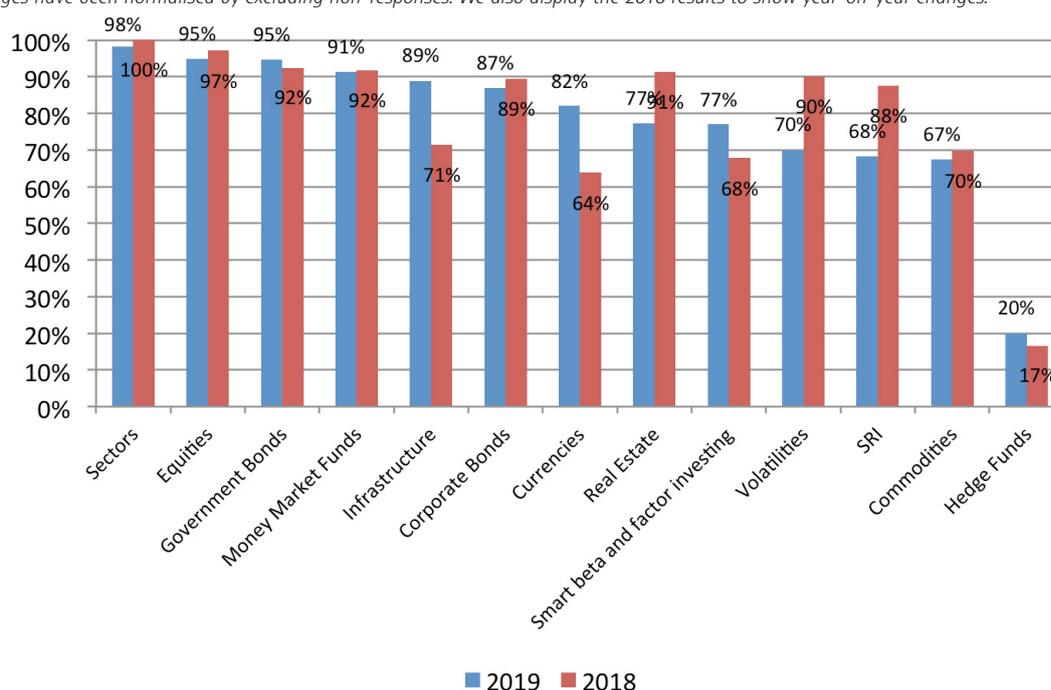
We continue our analysis with a general assessment of satisfaction levels when it comes to ETF products by asset class. Only those respondents who use ETFs in the respective asset class were asked to report their degree of satisfaction. This

means that our results can be interpreted as the satisfaction rates of investors who actually have experience in using ETFs. Exhibit 4.5 shows that, across all asset classes, a large majority of users are satisfied with their ETFs. Compared to 2018, we observe an increase in the satisfaction levels for five asset classes out of 13, including government bonds, infrastructure, currencies, smart beta and factor investing, and hedge funds. For five other asset classes, including sectors, equities, money market funds, corporate bonds and commodities, the satisfaction levels are a little lower compared to 2018. The largest increase in satisfaction is observed for infrastructure – after an already high increase between 2016 and 2018 – and currencies, while the largest decrease is observed for volatilities, following a large increase in satisfaction between 2016 and 2018.

In more detail, satisfaction is remarkably high (more than 80%) for seven out of 13 asset classes,

Exhibit 4.5: Satisfaction with ETFs or ETF-like Products

This exhibit indicates the percentage of investors who are satisfied with the ETFs or ETF-like products they have used for each asset class. The percentages have been normalised by excluding non-responses. We also display the 2018 results to show year-on-year changes.



4. Results

including sectors, equities, government bonds, money market funds, infrastructure, corporate bonds and currencies. This is particularly true of sectors, equities, government bonds and money market funds, with a satisfaction rate in excess of 90%. Real estate, smart beta and factor investing, and volatilities have quite good satisfaction levels (70–80%). SRI and commodities have lower satisfaction levels, although these are still in the 65% to 70% bracket. The lowest level of satisfaction is for the hedge fund classes, with only 20% of users satisfied.

For asset classes with a narrow sample of respondents using ETFs to invest, such as hedge funds, infrastructure, volatilities and currencies (5, 9, 10 and 11 respondents, respectively in the 2019 survey), it is not surprising to observe quite volatile levels of satisfaction from one year to the other. For example, like 2018, ten respondents use ETFs to invest in the volatilities asset class in 2019. One of them said they were not satisfied with ETFs in 2018, compared to three in 2019. Similarly, 11 respondents use ETFs to invest in the

currencies asset class in both 2018 and 2019. Four of them said they were not satisfied with ETFs in 2018, compared to two in 2019. The opinion of just two respondents is responsible for the significant variation in the satisfaction rates, up for the currency asset class and down for the volatilities asset class.

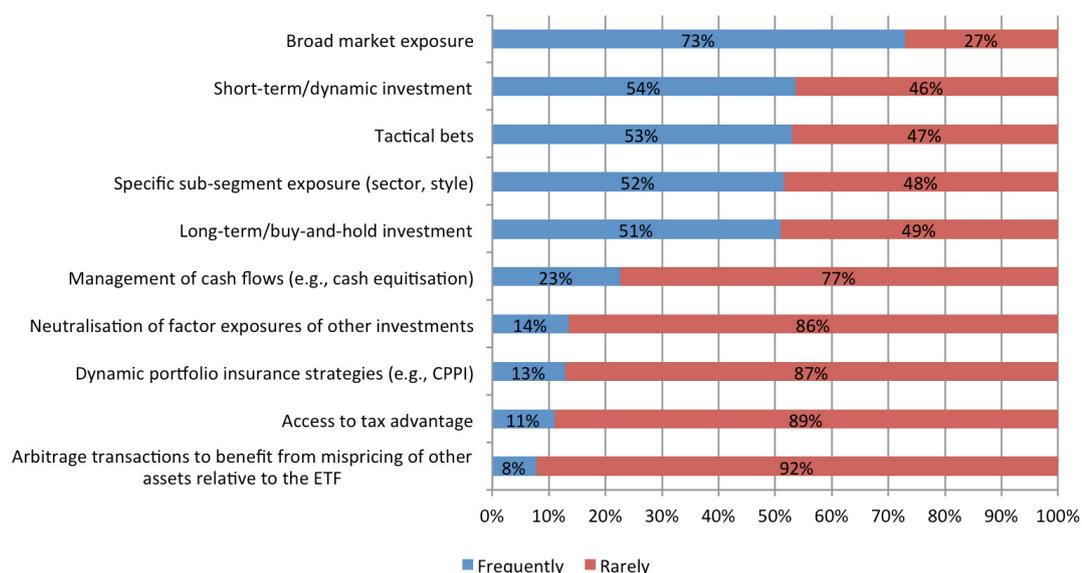
We note that the ETFs with the highest and most consistent satisfaction rates over the period covered by our surveys are those based on the most liquid asset classes. We discuss this finding along with other time trends in Section 4.1.5.

4.1.3. The Role of ETFs in the Asset Allocation Process

ETFs offer investors attractive benefits like liquidity, cost efficiency and product variety that make them useful in asset allocation. In order to understand the rationales behind investors' use of ETF products, we asked survey participants how often they employ ETFs for different investment purposes on a scale from never (score 0) to always (score 6). Exhibit 4.6 shows the answers

Exhibit 4.6: How Often Do You Use ETFs for the Following Purposes?

This exhibit indicates the frequency of respondents' use of ETFs for each of the purposes listed. Respondents were asked to rate their usage frequency from 1 to 6. The "Frequently" category includes ratings from 4 to 6, while "Rarely" includes ratings from 1 to 3 and non-responses.



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by classifying all respondents into two groups: if respondents rated their usage to be 3 or less, we categorise them as rare users, and as frequent users otherwise.

The results show that investment in ETFs is mainly associated with exposure to broad market indices, although frequent use for short-term exposure, tactical bets, market sub-segment exposure and long-term exposure in this year's findings indicates that other investment purposes are important as well. This is not a surprising result given that the liquidity, low cost and product variety benefits of ETFs should make them viable tools for such purposes.

In more detail, achieving broad market exposure tops the list, well ahead of other uses, with 73% of respondents frequently using ETFs for this purpose. More than half of respondents use ETFs for short-term (dynamic) investments, tactical bets, to obtain specific sub-segment exposure, or for buy-and-hold investments (54%, 53%, 52%, and 51%, respectively). ETFs are less frequently

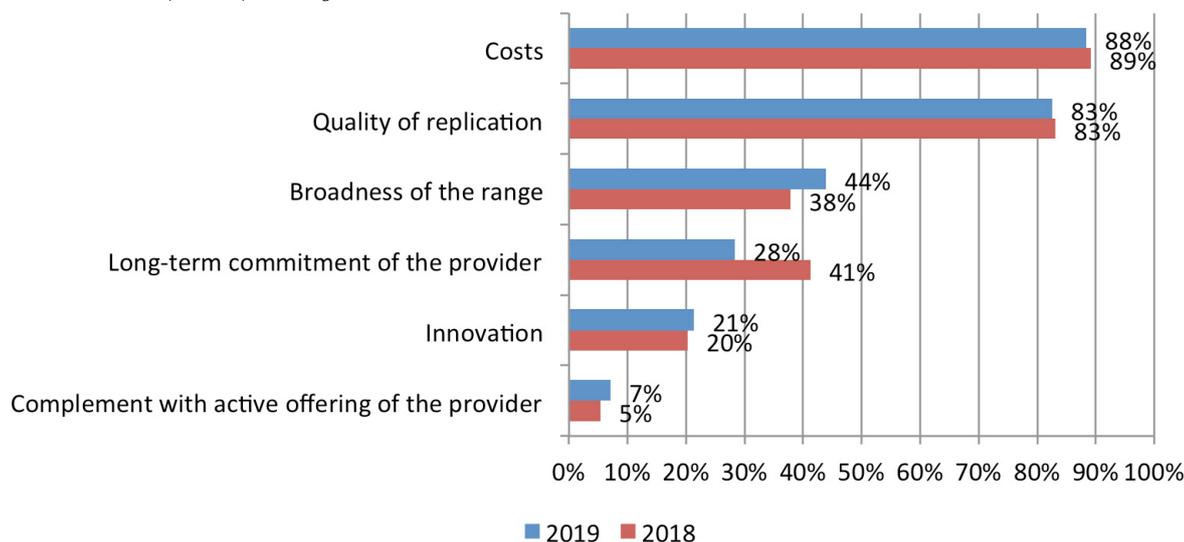
used to manage cash flow (23%), neutralise factor exposures related to other investments (14%), for dynamic portfolio insurance strategies (13%), to access tax advantages (11%) or to capture arbitrage opportunities (8%).

Selecting an ETF provider

Respondents were then asked to choose from a list the criteria they consider important when selecting an ETF provider. The results are displayed in Exhibit 4.7. There are two criteria in particular that respondents prioritise when selecting an ETF provider. The first is costs, cited by the vast majority (88%) of respondents. This shows that respondents closely scrutinise costs within ETFs, even though they are already a comparatively low-cost vehicle. The second is the quality of replication, with more than four-fifths of respondents (83%) considering this criterion when selecting an ETF provider. This result is not surprising as these two criteria are related to the main motivations for using ETFs, namely reducing investment costs, while optimally tracking the performance of the underlying index. It should

Exhibit 4.7 What Criteria Do You Consider When Selecting an ETF Provider?

This exhibit indicates the criteria respondents look for when selecting an ETF provider. More than one response can be given. We also display the 2018 results to show year-on-year changes.



4. Results

be noted that cost and replication quality are two criteria that are easy to ground on an analytic basis of measurement of results, which may also be product-specific rather than provider-specific, and that such measurable product qualities are at the forefront of investor preoccupations.

On the other hand, there are more potentially subjective quality criteria associated with ETF providers that play a lesser role. For 44% of respondents, the broadness of the range is also a criterion that is quite important when choosing an ETF provider. However, the provider's long-term commitment and innovation seem less important for respondents, with only 28% and 21% of respondents citing them respectively. Finally, 7% of respondents consider it important to select an ETF as a complement alongside the provider's active offering. These results are comparable to those obtained in 2018, except for long-term commitment, which is considered important for significantly fewer respondents this year (41% in 2018 versus 28% in 2019).

Given that the key decision criteria are more product-specific and are actually "hard" measurable criteria, while "soft" criteria that may be more provider-specific have less importance, competition for offering the best products can be expected to remain strong in the ETF market. This implies that it will be difficult to build barriers of entry for existing providers unless they are related to hurdles associated with an ability to offer products with low cost and high replication quality.

4.1.4. Future Development of ETFs

So far, our questions have focused mainly on the

current usage of ETFs. A clear advantage of our survey methodology (with access to a sample of investment management professionals) is that we can also analyse the plans for the future rather than just observe current results. Thus, in the last set of questions in this section on ETFs, we offer a glimpse into the future by asking survey participants about their views on their use of ETFs going forward. This allows us to gain some perspective on future developments on the demand side of the ETF industry.

Need for further products

First, we try to more clearly define the type of niche markets where investors would like to see further product development. Since 2000, the industry has become more mature and there are now over 1,700 ETFs in the European market (ETFGI, 2018b), so it will be very interesting to see where the gaps in the market lie in terms of investor demand. Exhibit 4.8 illustrates the types of ETFs that respondents would like to see further developed in the future. Respondents were given the option of selecting more than one answer.

As shown in Exhibit 4.8, Ethical/SRI ETFs (31%) are the top concern among respondents. Just behind are ETFs based on multi-factor indices and emerging-market equity ETFs, with 30% of respondents citing them both, and ETFs based on smart beta indices and emerging-market bond ETFs (28% of respondents). The fact that about 30% of investors still see room for further product development in the area of smart beta indices and multi-factor indices, though there have been a considerable number of product launches in the area of smart beta ETFs (see Section 2.2 of this document for some background on smart

4. Results

beta and factor investing strategies), indicates a strong and still growing interest in alternative indices and perhaps a lack of diversification in the strategies of the products launched.

In addition, volatility ETFs (26%), ETFs based on single-factor indices (26%), equity style ETFs (23%), ETFs based on smart bond indices (23%) and low carbon ETFs (23%) are also in the top half of the list of respondents' further demands. Actively managed equity ETFs are in 14th position in the list, though their market share is currently very small, with 1% of AUM, according to Morningstar (2019a).

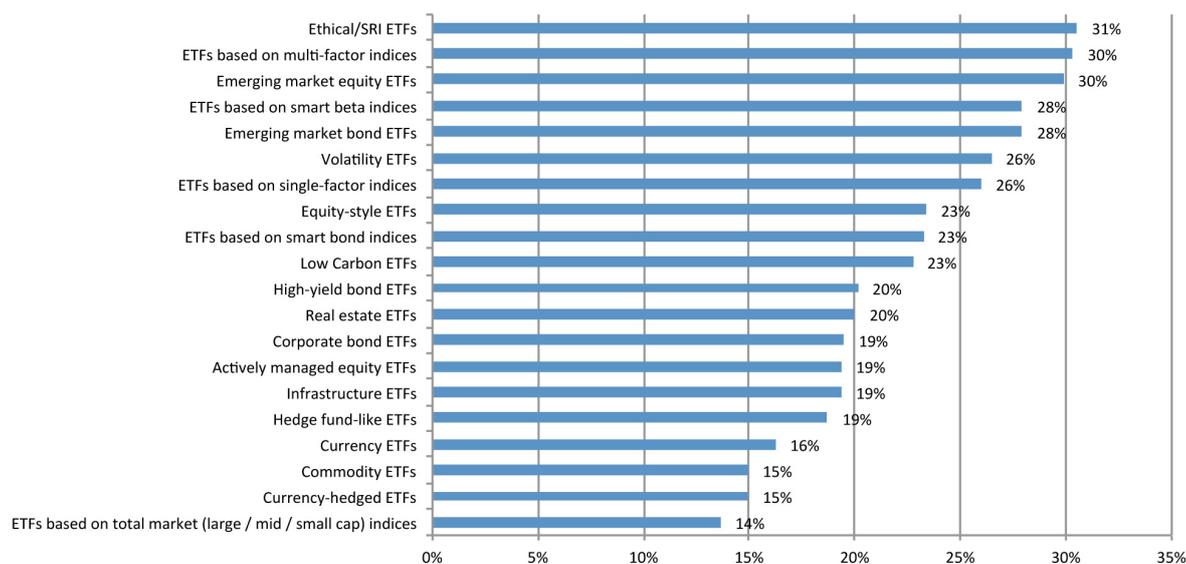
Smart beta indices remain in the top four categories of most interest to respondents in terms of product development. Additional results concerning smart beta and factor investing strategies will be developed in Section 4.2 of this document, fully dedicated to smart beta

and factor investing strategies. The Ethical/SRI category is at the top of the list for the second consecutive year, showing increasing interest among respondents in this investment category. We also note the year-on-year progression of demands for low-carbon ETFs since we first introduced it in 2015, even though this category is still at the bottom of the first half of the list.

In more detail, compared to last year's results, there has been an increase in the demand for product development within 11 out of 20 categories of ETFs, namely volatilities, equity-style, single- and multi-factor indices, actively managed equity, low-carbon, commodity, currency, smart beta indices, hedge funds, and smart bond indices located both in the top and bottom halves of the list of respondents' demands (see Exhibit 4.9). It is interesting to note that two of these categories, including actively managed equity and low-carbon ETFs, already saw an increase in

Exhibit 4.8: What Type of ETF Products Would You Like to See Developed Further in the Future?

This exhibit indicates the percentage of respondents who would like to see further development of different ETF products in the future. Respondents were able to choose more than one product.



4. Results

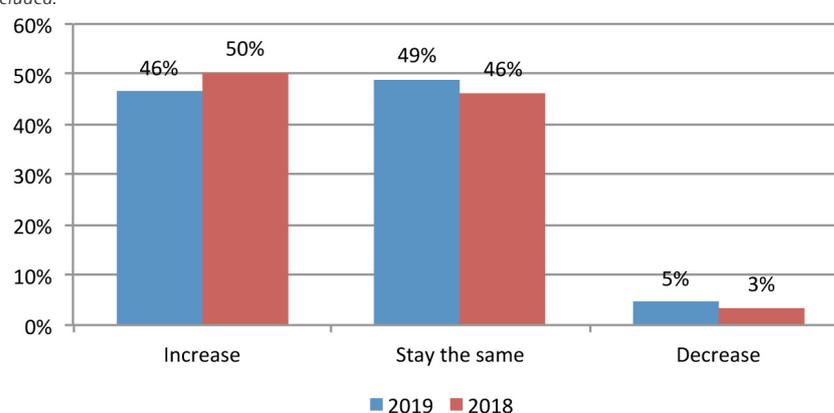
Exhibit 4.9: Largest increases in demand for product development in 2019

This exhibit shows the types of ETFs for which there were increases in demand for future product development between 2018 and 2019, ranked in decreasing order of percentage increase.

What type of ETF products would you like to see developed further in the future?	2018	2019	% Increase
Volatility ETFs	20.3%	26.5%	6.2%
Equity-style ETFs	17.6%	23.4%	5.8%
ETFs based on single-factor indices	20.3%	26.0%	5.7%
ETFs based on multi-factor indices	25.0%	30.3%	5.3%
Actively managed equity ETFs	14.9%	19.4%	4.5%
Low carbon ETFs	18.2%	22.7%	4.5%
Commodity ETFs	11.5%	14.9%	3.4%
Currency ETFs	14.9%	16.2%	1.4%
ETFs based on smart beta indices	27.0%	27.9%	0.9%
Hedge fund-like ETFs	18.2%	18.7%	0.5%
ETFs based on smart bond indices	23.0%	23.2%	0.3%

Exhibit 4.10: How Do You Predict Your Future Use of ETFs?

This exhibit indicates respondents' forecasts about their future use of ETFs. We also display the 2018 results to show year-on-year changes. Non-responses are excluded.



respondent demands between 2016 and 2018, as well as between 2015 and 2016. The decrease in demand for other categories of ETFs may be the result of increased satisfaction with products already developed in these areas in recent years.

Future evolution of the use of ETFs

After establishing priorities for new ETF product development, we then asked respondents to comment on how they planned their future

use of ETFs. From Exhibit 4.10 we can see that 46% of respondents (compared to 50% in 2018) report that they expect to increase their use of ETFs. About half of them (49%, compared to 46% in 2018) indicated that their use of ETFs would stay the same. Adding the percentages of respondents who answered "Increase" or "Stay the same" gives us a total of 95%, meaning that only 5% of respondents plan to decrease their use of ETFs. While there has been a slight

4. Results

decrease in the number of respondents thinking of increasing the share of their investment in ETFs, this is probably because a growing number of respondents have reached a level of investment in ETFs that suits them. Consequently, the percentage of those who are thinking of reducing their investment in ETFs has remained stable and quite low over the years (further details on this trend over time will be provided in Exhibit 4.17 in Section 4.1.5).

Motivations for increasing the use of ETFs

Respondents who declared that they planned to increase their use of ETFs were also asked about their motivations for planning such an increase (the results are displayed in Exhibit 4.11). It appears that increasing the use of ETFs will serve as a substitute for the use of active managers for the vast majority of respondents (71% versus 70% in 2018), while 42% (versus 45% in 2018) of them will substitute them for other index products. These results are comparable to those obtained in 2018. Comparisons with previous years are to

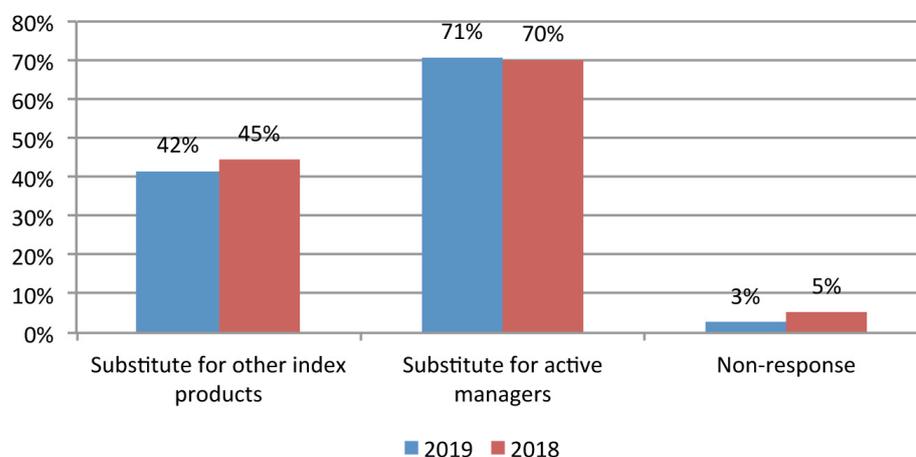
be found in Exhibit 4.18 in Section 4.1.5, which displays trends over time.

These results should be associated with the disappointing performance of active management. Investors may see the use of ETFs as more profitable and less costly than the use of active managers. ETFs allow investors to mimic the performance of all types of asset classes, including various smart beta products, while limiting costs. Indeed, investors are now offered a wide range of smart beta ETFs with the promise of achieving performance at lower costs compared to active management (Latham, 2018).²²

This is all the more likely given that the leading reason (74%, versus 86% in 2018) given by survey respondents for increasing ETF usage is cost (see Exhibit 4.12). Investors seem to be well aware of the effects of costs on long-term performance. Next, respondents cited performance and liquidity (53% of respondents for both, versus 51% and 42% in 2018, respectively). Finally, 38% of respondents

Exhibit 4.11: Increase in the Use of ETFs Will Serve as...

This exhibit indicates the reasons given by respondents for planning to increase their use of ETFs. More than one response could be given. We also display the 2018 results to show year-on-year changes.

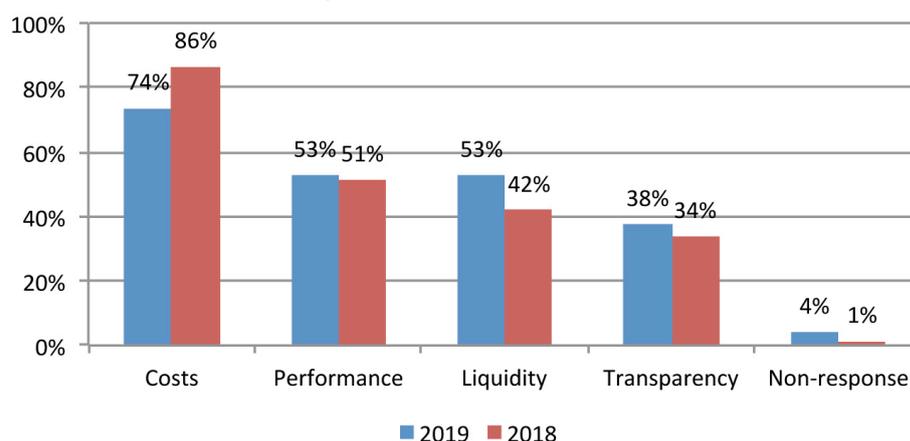


22 - Mark Latham. 2018. Smart Beta: Active, passive or somewhere in between? Funds Europe (December 17/ January 18): available at <http://www.funds-europe.com/dec-2017-jan-2018/smart-beta-active-passive-or-somewhere-in-between>.

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Exhibit 4.12: Increase in the use of ETFs will be motivated by...

This exhibit indicates the motivations given by respondents for planning to increase their use of ETFs. More than one response could be given. We also display the 2018 results to show year-on-year changes.



(versus 34% in 2018) cite transparency as a motivation. These results confirm those of last year in terms of the relative importance of the various occurrences. However, even though the results are quite similar to 2018 for performance and transparency, we observe a significant decrease for costs and a significant increase for liquidity (see Exhibit 4.12). Comparisons with previous years are to be found in Exhibit 4.19, which displays the trends over time.

4.1.5. Trends: Use of and Satisfaction with ETFs over Time

Over the past decade, investment in ETFs has increased significantly, as already shown in Section 2.1. Not only is investment in standard ETFs growing, but so too are more advanced products and sophisticated ways of using them. In this section, we compare the results of the ETF section of the 2019 survey with the answers obtained in previous ETF surveys from 2006 to 2018. This comparison will shed some light on how the current state of ETF usage compares to past years and will provide some insight into the evolution of ETF usage so far.

Frequency of ETF usage

When comparing the usage of ETFs and ETF-like products over time, we observe an increase in their adoption over the past 13 years. The usage of ETFs and ETF-like products displayed in Exhibit 4.13 refers to the number of respondents who use ETFs among all those who invest in a particular asset class. In other words, it indicates usage frequency. Since 2006, the increase in the percentage of respondents using ETFs in traditional asset classes has been spectacular. In 2006, the rate of use was under 20% for six out of seven asset classes, and none of the class reached 50%. At that time, 45% of respondents used ETFs to invest in equities, compared with 91% in 2019. As for governments and corporate bonds, the result has risen from 13% and 6% in 2006, to 66% and 68% respectively in 2019. A large increase from 15% of respondents in 2006 to 68% in 2019 was also observed for commodities, while the share of respondents using ETFs to invest in real estate has risen from 6% in 2006 to 39% in 2019. It appears that (with the exception of real estate, infrastructure and hedge funds) all usage rates are quite high, above 60%. It should

4. Results

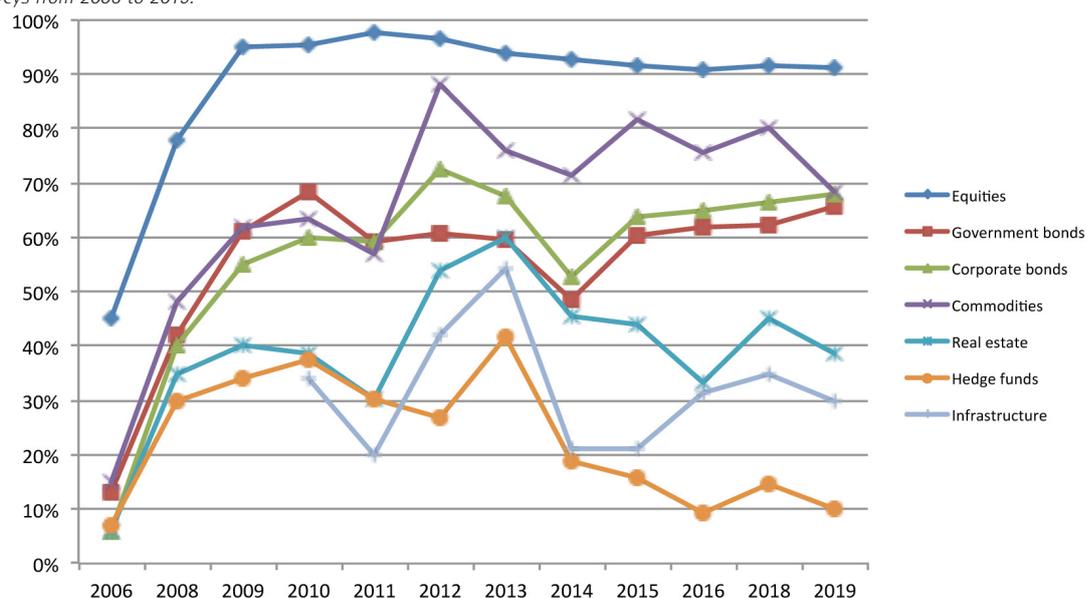
be noted that in Exhibit 4.13 we only present the asset classes for which we have data since at least 2009; other asset classes (including volatilities, sectors, SRI, money market funds, currencies and smart beta and factor investing) were introduced into our survey more recently.

After a slight increase in the use of ETFs for investing in bond asset classes between 2016 and 2018, both for government and corporate bonds, we observe another increase this year for both asset classes compared to 2018, when 62% and 66% of respondents used ETFs to invest in government and corporate bonds respectively, compared with 66% and 68% of respondents in 2019. This steady increase to such a high level of ETF usage for investing in bond asset classes is likely related to the high level of satisfaction observed over several years, with government bonds enjoying a satisfaction rate ranging from

87% to 95% since 2012, while the figures for corporate bonds have ranged from 83% to 91% since 2011 (see Exhibit 4.15). With 68% of respondents using ETFs, commodities show a decrease of 12 points compared to 2018. This significant decrease follows a slight increase observed between 2016 and 2018, such that the percentage of ETF users is lower in 2019 than that observed since 2012. The equity class has shown quite a stable rate (over 90%) ETF usage for some years. Other asset classes, such as real estate, infrastructure and hedge funds, exhibit larger variations in their usage rates over time compared to other asset classes. This year we observe a decrease in the use of ETFs for the three asset classes, compared to 2018. This decrease is quite moderate for these three asset classes, compared to the large variations usually observed. Respectively 39%, 30% and 10% of respondents report using ETFs to invest in real

Exhibit 4.13: Use of ETFs or ETF-like Products over Time

This exhibit indicates the use of ETFs or ETF-like products for different asset classes over time. The percentages are based on the results of the EDHEC ETF surveys from 2006 to 2019.



4. Results

estate, infrastructure and hedge funds in 2019, compared to 45%, 35% and 15% respectively in 2018.

Density of ETF usage

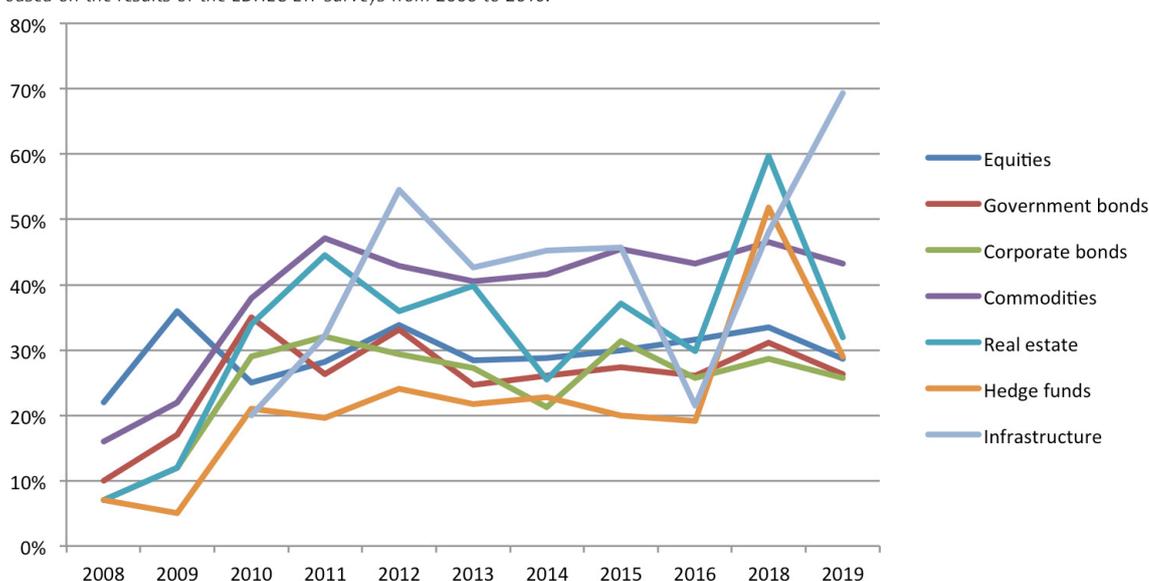
Exhibit 4.14 compares the proportions of our respondents' portfolios invested in ETFs.²³ In Exhibit 4.14, the use of ETFs or ETF-like products refers to the density of usage in each asset class. While the equity asset class is the most widely used for ETF investment, it is currently not the asset class with the highest proportion or density of ETF investment. In 2008, 22% of investment in the equity asset class was made using ETFs, compared to 29% in 2019. As for government and corporate bonds, the increase in the proportion of ETF investment is more spectacular, respectively accounting for 10% and 7% of total investment in 2008, compared to 26% for both in 2019. The increase in the use

of ETFs to invest in commodities and real estate has also been quite significant during this period, with 16% of the former investments being made using ETFs in 2008, compared to 43% in 2019, and 7% of the latter in 2008, compared to 32% in 2019. Although we also see a strong increase in the use of ETFs for the infrastructure class between the beginning of the observation period and 2019, it should be noted that there can be many variations from one year to another, due to a narrow sample of respondents using ETFs for this asset class.

In 2019, we observe that all asset classes, except infrastructure, post a decrease in their ETF market share, compared to 2018. This decrease is slight or moderate for commodities, corporate bonds, equities and government bonds (-3%, -3%, -4%, and -5%, respectively). If we consider that this moderate decrease followed an increase in the

Exhibit 4.14: Percentage of Total Investment Accounted for by ETFs or ETF-like Products

This exhibit indicates the percentage of total investment accounted for by ETFs or ETF-like products for different asset classes over time. The percentages are based on the results of the EDHEC ETF surveys from 2008 to 2019.



23 - Since this question was not asked in the EDHEC European ETF Survey 2006, we can only provide a comparison with answers from 2008 to 2018.

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same range observed in 2018 for these asset classes, it appears that ETF market share has been quite stable for the equity, government bond, corporate bond and commodity asset classes for some years, suggesting that investors have reached a satisfactory level of ETF usage for these asset classes and are not looking to expand beyond this level. The decrease is much higher for the real estate (-28%) and hedge fund (-23%) asset classes, for which it is usual to observe strong upward or downward variations from year to another, as is clear from the saw-tooth graph. As mentioned above, the sample of respondents using ETFs for the hedge fund asset class is particularly small. Infrastructure is the only asset class for which we observe a large increase (21%) in usage in 2019, compared to 2018. As for the hedge fund class, the sample of respondents is small, and we are also used to observing large variations from one year to another.

Satisfaction with ETFs

Satisfaction with standard ETFs has generally remained at high levels as shown in Exhibit 4.15. Compared to 2018, three out of seven asset classes exhibit increases in satisfaction rates. We observe a decrease of 2% in satisfaction with equity ETFs, although the figure stands at 95%, the highest satisfaction rate among all asset classes. The high rate of satisfaction with equity ETFs, which has consistently been in the region of 90% since our first survey in 2006, may be due to the greater consensus for equity indices. Equity indices have the longest history of development and the most innovations, which consequently carries over to equity ETFs. Investors are therefore more familiar with equity indices as well as their drawbacks. Given the large variety of alternative weighting

schemes for equity indices, investors have a wide range of products to invest in. Government bonds and hedge fund asset classes have encountered a moderate increase in satisfaction in terms of ETF usage (3% for both), with the former asset class this year posting the same level of satisfaction (95%) as the equity asset class, while the hedge fund asset class still exhibits the lowest satisfaction rate for the use of ETFs among the seven classes displayed in Exhibit 4.15.

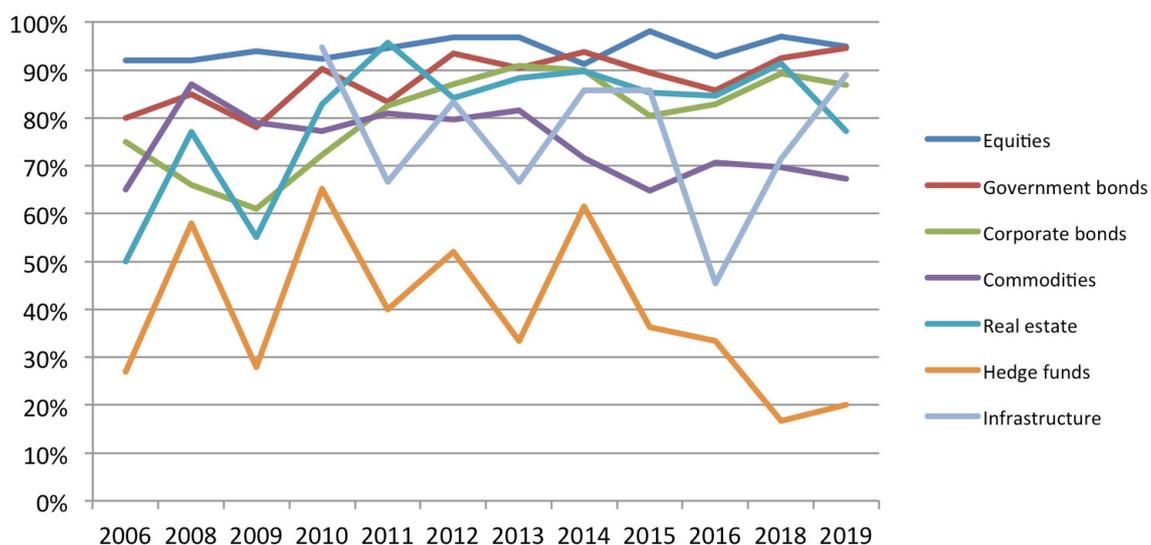
The commodity asset class exhibits a 3% decrease in satisfaction compared to 2018, after another slight decrease between 2016 and 2018. However, its satisfaction rates remain close to 70% and have been rather stable since 2014. Finally, the infrastructure ETF asset class exhibits a spectacular increase of 18% in satisfaction rates to reach 89%, its maximum value over the period beginning in 2006. This result is correlated with the increase in market share for infrastructure ETFs displayed in Exhibit 4.14.

Since the beginning of our observation period, the satisfaction rates for hedge fund and infrastructure ETFs have been the two most volatile. It seems clear that the less liquid and less mature ETF markets experience the most varying levels of satisfaction. The graph for hedge fund ETF satisfaction rates clearly displays a saw-tooth shape, with high figures in 2008, 2010, 2012 and 2014 (58%, 65%, 52% and 62% respectively) and lower figures in 2006, 2009, 2011, 2013, 2015, 2016, 2018 and 2019 (27%, 28%, 40%, 33%, 36%, 33%, 17% and 20% respectively). A similar graph emerges for infrastructure ETFs, with high figures in 2010, 2012, 2014, 2015, 2018 and 2019 (95%, 83%, 86%, 86%, 71% and 89% respectively) and

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Exhibit 4.15: Satisfaction with ETFs or ETF-like Products over Time

This exhibit indicates the percentages of respondents that are satisfied with ETFs or ETF-like products for different asset classes over time. The percentages are based on the results of the EDHEC ETF surveys from 2006 to 2019.



lower figures in 2011, 2013 and 2016 (67%, 67% and 45% respectively).

This may be due to the suitability of ETFs to more liquid asset classes or the fact that investor expectations are still adjusting with regard to the benefits and drawbacks of ETFs based on those asset classes. For instance, we observed large variations over the years in the number of ETF users for these two asset classes, as well as in the share of investment dedicated to ETFs. However, it should be noted that the sample of respondents who indicated their level of satisfaction with infrastructure ETFs was very small, with only nine providing responses this year. Similarly, the sample of respondents who answered whether or not they were satisfied with hedge fund ETFs was also quite small, with only five providing responses in 2019. As a result, the impact of a single respondent opinion has a considerable impact on the result.

4. Results

Use of ETFs for Different Purposes

The main purpose for using ETFs is still to obtain broad market exposure, with more or less 70% of respondents reporting the use of ETFs for this purpose since 2009 (see Exhibit 4.16).

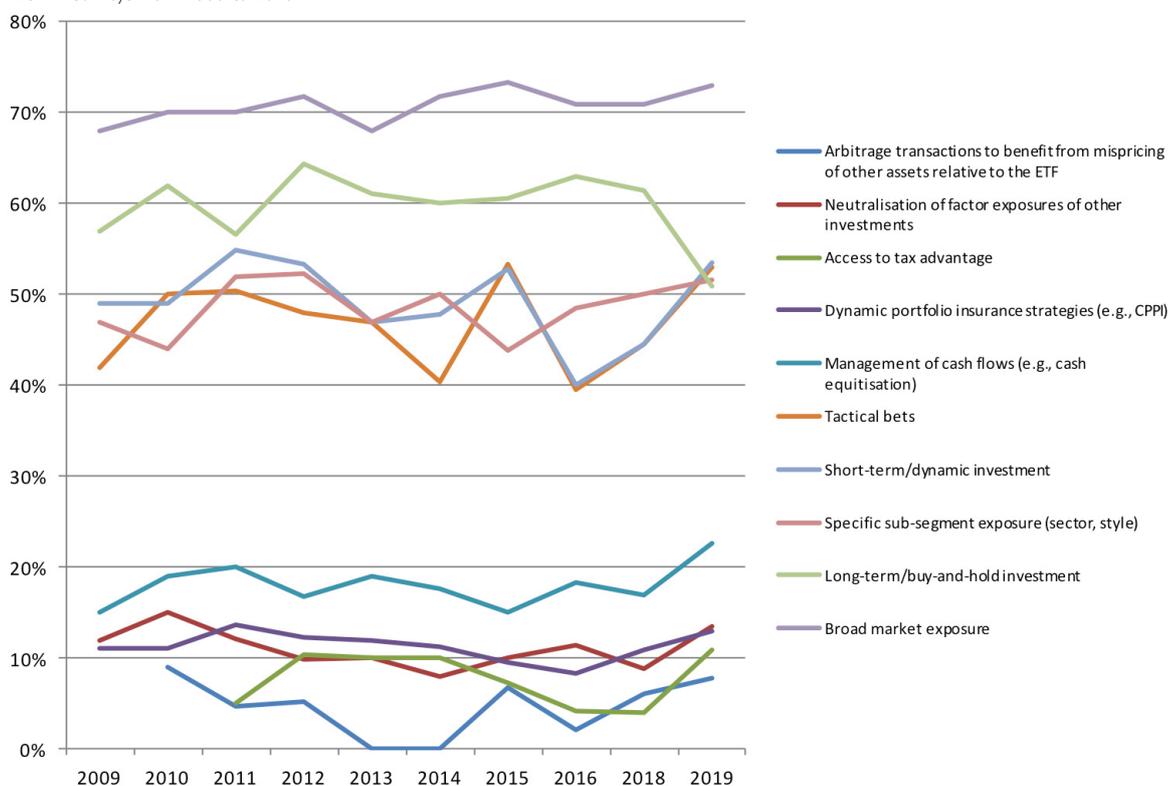
Future use of ETFs

Finally, we also look at investors' expected use of ETFs over time. The results are shown in Exhibit 4.17. They suggest that despite the past growth and increasing maturity of the ETF market, investors are still looking to increase (or to at least maintain) their use of ETFs. By adding the percentages of respondents who answered

"Increase" or "Stay the same", we see that the total has stayed above 90% since 2009. The percentage of respondents planning to increase their use of ETFs, a figure that hovered around 60% from 2013 to 2016, is now lower than 50% since last year, with a transfer towards the percentage of respondents who answered that their use of ETFs would stay the same – now not far from 50% –, leaving only around 5% of respondents that planned to reduce their use of ETFs. Given that this survey only covers respondents who are already ETF investors, the still large share of the increase in expected usage is even more remarkable.

Exhibit 4.16: Frequent Use of ETFs for the Following Purposes over Time.

This exhibit indicates the percentages of respondents who frequently use ETFs for each of the purposes listed over time. Respondents were asked to rate usage frequency from 1 to 6. The "Frequently" category would include ratings from 4 to 6. The percentages are based on the results of the EDHEC ETF surveys from 2009 to 2019.²⁴



24 - The question was not asked in the survey before 2009.

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Exhibit 4.17: How Do You Plan the Evolution of Your Use of ETFs?

This exhibit indicates the future potential for investors to change the use of ETFs over time. The percentages are based on the results of the EDHEC ETF surveys from 2006 to 2019.

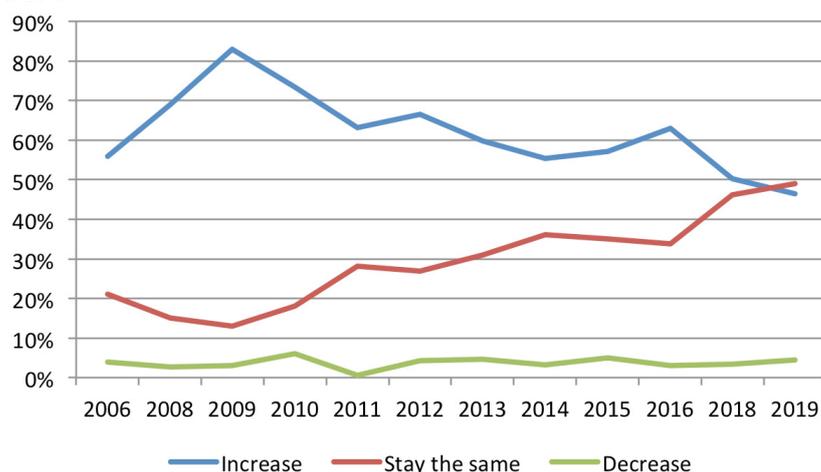
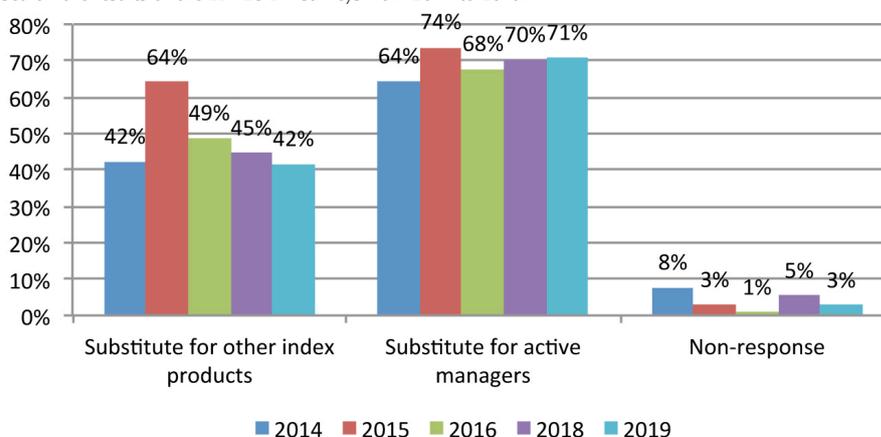


Exhibit 4.18: Increase in the Use of ETFs Will Serve as...

This exhibit indicates the reasons given by respondents for planning to increase their use of ETFs. More than one response could be given. The percentages are based on the results of the EDHEC ETF surveys from 2014 to 2019.



Since 2014, we have been asking respondents who stated that they planned to increase their use of ETFs about their motivations for planning such an increase. The results are displayed in Exhibit 4.18. Since then, the vast majority of respondents, starting at around two-thirds in 2014 and reaching three-quarters by 2015, indicated that increasing the use of ETFs would serve as a substitute for the use of active managers. As

explained in Section 4.1.4, this result should be associated with the disappointing performance of active management. Investors may see the use of ETFs as more profitable and less costly than the use of active managers. The fact that an average of almost half of respondents over this five-year period have substituted ETFs in favour of other index products is also a major reason for the increase in ETF usage.

4. Results

The hypothesis of reducing costs with an increase in the use of ETFs is confirmed as survey respondents declare that this replacement will first of all be motivated by costs, with a percentage ranging from 70% to 86% over the five-year period (see Exhibit 4.19). The second and third motivations given by respondents are performance and liquidity, which are now considered at the same level, whereas performance was above liquidity in the 2014 survey. Transparency is the

last criteria given, cited by 37% of respondents in 2014, and at a similar level (38%) in 2019. It should be noted that we observe an increase in the percentage of respondents mentioning each criterion between 2014 and 2019.

Smart Beta and Factor Investing ETFs

In this first section of the survey, we collected initial results about investor perceptions of smart beta and factor investing strategies, through their

Exhibit 4.19: Increase in the Use of ETFs Will Be Motivated by...

This exhibit indicates the motivations given by respondents for planning to increase their use of ETFs. More than one response could be given. The percentages are based on the results of the EDHEC ETF surveys from 2014 to 2019.

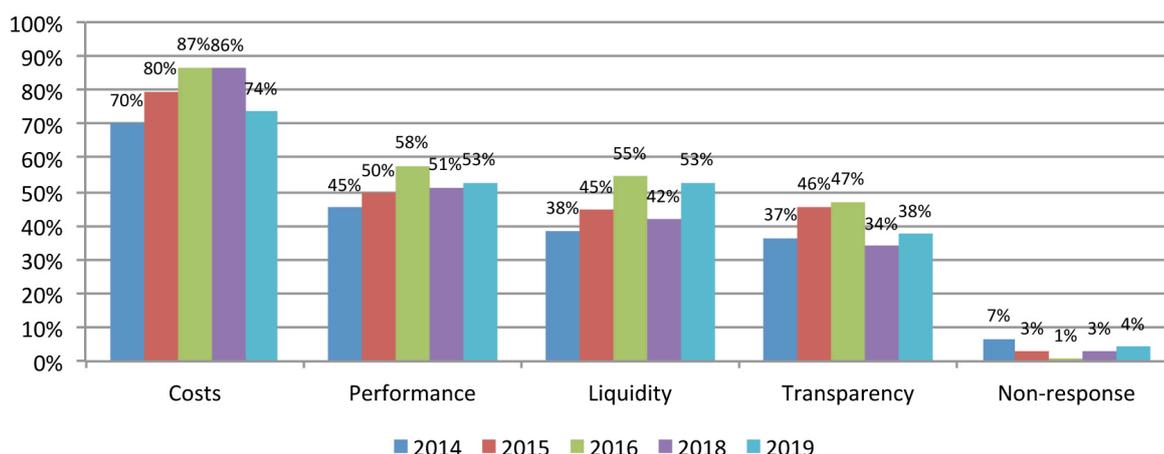
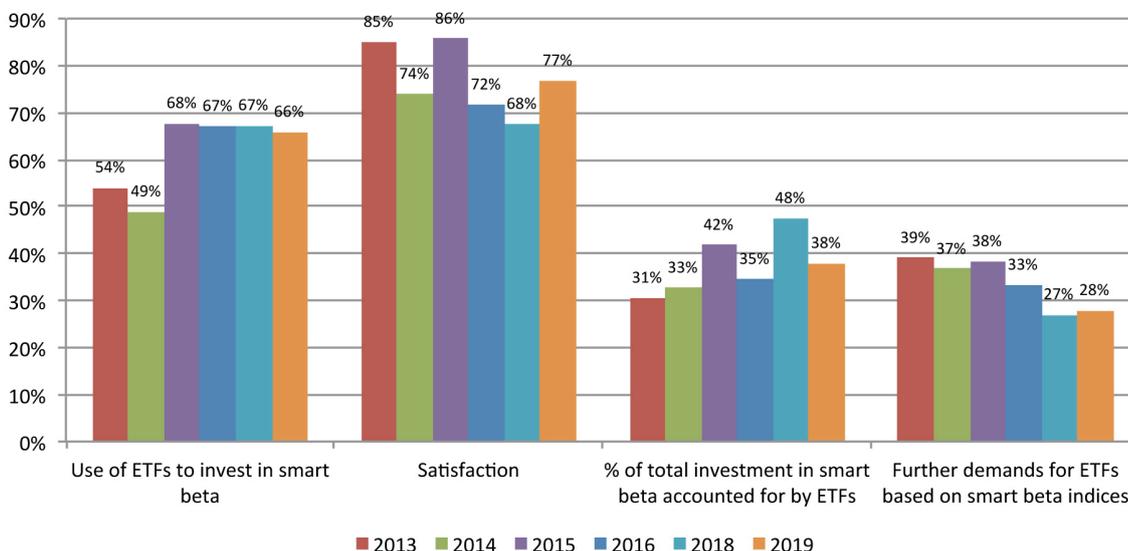


Exhibit 4.20: Smart Beta ETFs: Usage and Satisfaction Levels

This exhibit indicates the use of and satisfaction with smart beta ETFs. The percentages are based on the results of the EDHEC ETF surveys from 2013 to 2019.



4. Results

use of smart beta ETFs, showing an increase in interest, as well as high satisfaction rates with ETFs in this asset class (see Exhibit 4.20). About two-thirds of respondents (66%) used ETFs or ETF-like products to invest in smart beta and factor investing in 2019, a considerable increase on the 49% reported in 2014. Since 2013, satisfaction rates with smart beta and factor investing ETFs have been quite high, with 77% of respondents being satisfied in 2019, though we observe variations from one year to another. Less than one-third (31%) of smart beta investing has been made through ETFs since 2013, compared to 38% in 2019, after reaching a level of 48% in 2018. While in 2013, 39% of respondents had further demands for ETFs based on smart beta indices, this figure is just 28% in 2019, comparable to the 27% observed in 2018, which shows a relative stabilization in such demands. The large use of ETFs based on smart beta and factor investing indices, as well as the desire for additional developments, fully justify that a large share of our survey should be dedicated to smart beta and factor investing strategies, the results of which will be presented in the following sub-section.

4.2. Smart Beta and Factor Investing Strategies

The results of the first sub-section of the survey results reveal that respondents have an interest in ETFs that track smart beta and factor investing indices. In this second sub-section, we invited survey participants to give their opinion on smart beta and factor investing strategies beyond their use through ETFs. While questions about smart beta and factor investing products were

first introduced in our 2013 survey, this group of questions was considerably developed in the 2016 survey to reflect the increasing appeal of these strategies as a way to improve passive investment. Last year, we introduced questions concerning smart beta and factor investing for fixed income, and this year we continue to develop the section dedicated to fixed income with additional questions. The emergence of smart beta and factor investing products offers exposure to a variety of alternatively weighted indices. There is recent evidence that combining optimal portfolios constructed under different assumptions results in a higher probability of outperformance (compared to the cap-weighted index) over market cycles than any one alternatively constructed weighting scheme. Hence it makes sense that investors can benefit from exploiting such diversification-based strategies.

In this section, we begin by analysing the use of smart beta and factor investing strategies, in terms of the number of investors and the amount of investment, as well as the strategies used to invest in smart beta and factor investing solutions. A sub-section is specifically dedicated to smart beta and factor investing for fixed-income strategies. Respondents were then invited to share their opinions on smart beta and factor investing indices and on the information they require before investing in smart beta and factor investing strategies. They were also asked to express their views on the changes they envisage in their use of these strategies going forward. Finally, we look at the trends in the use of these strategies observed over the last five years.

4. Results

4.2.1. Use of Smart Beta and Factor Investing Strategies

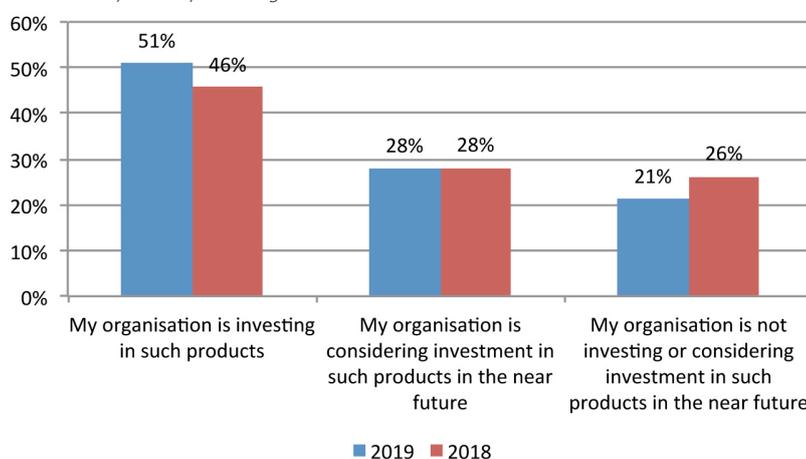
Respondents were first asked about their use of smart beta and factor investing strategies. From Exhibit 4.21, we can see that 51% of respondents already use such solutions, and that 28% of them are considering investing in such solutions in the near future. These results show that investors already have significant interest in such solutions. Compared to last year, we see a slight increase in the share of respondents that already use smart beta and factor investing solutions. However, the percentage of respondents considering investment in such solutions in the near future is still the same, such that the cumulative percentage of those that already invest and those considering investing in the near future is still higher in 2019 (79%) than in 2018 (74%), which might point to further development of this investment in the near future.

Those who already invest in smart beta and factor investing strategies were asked the percentage of total investment such strategies represent.

The results are displayed in Exhibit 4.22. More than two-thirds of respondents (70%) invest less than 20% of their total investments in these strategies. If we compare these results to those presented in Exhibit 4.21, we can see that while there are still more respondents who invest in smart beta and factor investing strategies, this approach applies to a restricted share of investment for the vast majority of them. Among the 30% of respondents that invest more than 20% in these strategies, 14% invest between 20% and 40%, 9% invest between 40% and 60%, while only 6% of respondents invest more than 60% of their total investments in smart beta and factor investing strategies. If we compare the present results to those obtained in 2018, we note an increase in the share dedicated to such solutions: 16% of respondents in 2019, versus 11% in 2018, dedicate more than 40% of their total investment to smart beta and factor investing strategies. However, these results suggest there are opportunities for further development of these investing strategies in the near future.

Exhibit 4.21: Use of Smart Beta and Factor Investing Solutions

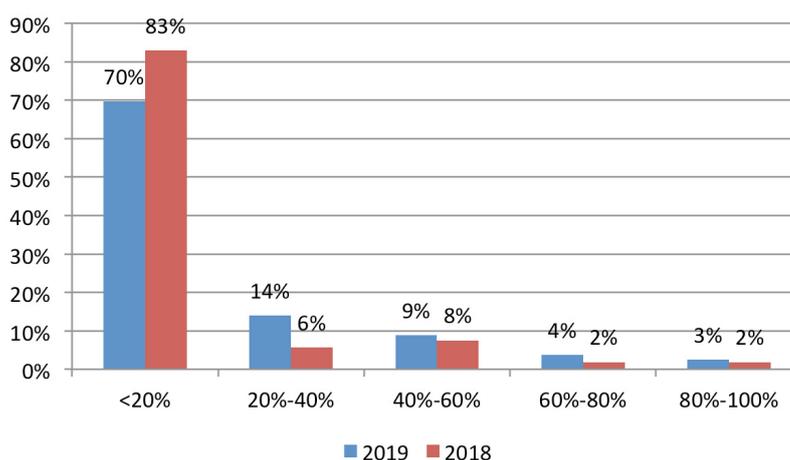
This exhibit indicates the percentages of respondents that reported using smart beta and factor investing solutions. Non-responses are excluded. We also display the 2018 results to show year-on-year changes.



4. Results

Exhibit 4.22: Percentage of Total Investment Already Invested in Smart Beta and Factor Investing Solutions

This exhibit indicates the average percentage of total investment already invested in smart beta and factor investing solutions. We only consider respondents that already use such strategies. We also display the 2018 results to show year-on-year changes. Non-responses are excluded.

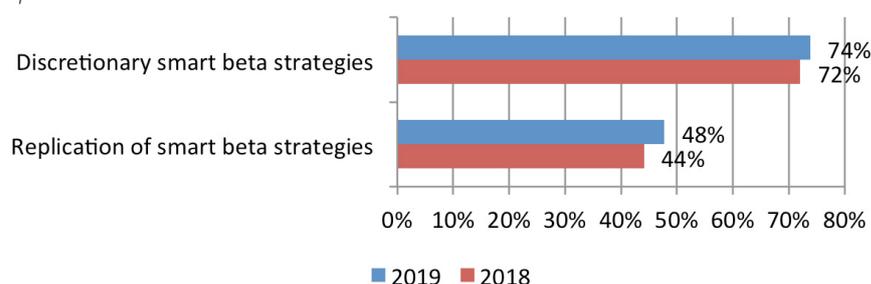


Respondents already investing in smart beta and factor investing strategies were also asked to detail the category of these strategies they use. The results are displayed in Exhibit 4.23. We can see that considerably more respondents use

discretionary smart beta and factor investing strategies rather than resort to the replication of such strategies (74% versus 48%). Only 22% of respondents use both categories. These results are quite similar to those obtained in 2018.

Exhibit 4.23: Strategies Used to Invest in Smart Beta and Factor Investing Solutions

This exhibit indicates the categories of smart beta and factor investing strategies used by respondents. The percentages are based only on respondents that already use smart beta and factor investing strategies. More than one response could be given. We also display the 2018 results to show year-on-year changes. Non-responses are excluded.



Respondents already investing in smart beta and factor investing strategies were finally asked to explicitly state the wrapper they use to invest in these strategies. The results are displayed in Exhibit 4.24, which shows that the majority of respondents (61%) use active solutions as a wrapper, slightly

more than the 55% who use open-ended passive funds (ETFs and index funds), while only one-fifth (20%) use dedicated passive mandates. We note that while the vast majority of respondents (71%) use only one category of wrapper (active solutions for 34% of respondents, open-ended

4. Results

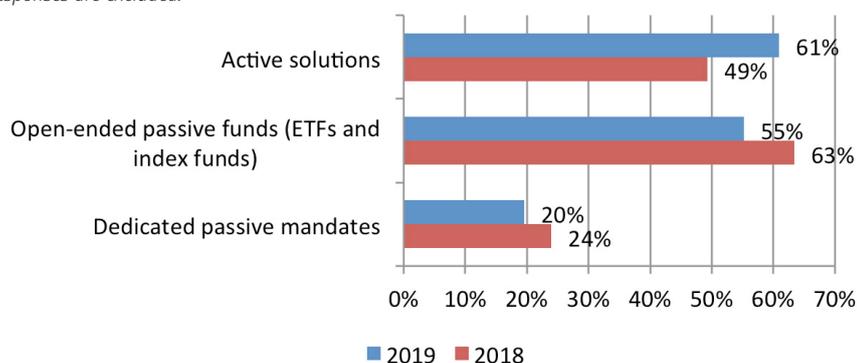
passive funds for 31% of them, and dedicated passive mandates for 6% of them), some of them use two or three. 2% of respondents use both categories of passive wrappers. Some respondents use active solutions and only one category of passive wrapper – 15% use open-ended passive funds and 5% use dedicated passive mandates. Finally, 7% of respondents report using the three categories of wrappers. These results remain quite similar to those obtained in 2018.

The remaining questions of the smart beta and factor investing section of the survey were put to all respondents whether or not they were already investing in such strategies. Respondents were asked to rate the advantages of discretionary smart beta and factor investing strategies and of replication strategies. The results for the former are displayed in Exhibit 4.25 and for the latter in Exhibit 4.26. Exhibit 4.27 compares the favourable scores for both strategies. We can see from Exhibits 4.25 and 4.26 that the majority of respondents have a favourable opinion of all the characteristics of both strategies, as all of them are considered to be favourable for more than 50% of respondents. The percentage of respondents with a

favourable opinion of the various characteristics of the discretionary strategies indicates a moderate increase for three of them compared to 2018, including ease of changing portfolio allocation over time, availability of information for assessing strategies, and transparency of methodology, while the other characteristics see a moderate decrease. With regard to the characteristics of replication strategies, we observe larger variations compared to 2018, with a significant decrease in favourable opinions when it comes to mitigating possible provider–investor conflicts of interest, from 73% in 2018 to 50% in 2019, as well as broadness of the available solutions, though to a lesser extent (60% in 2019 versus 72% in 2018). Elsewhere, we observe a significant increase in favourable opinions on the ease of use of replication strategies as building blocks in portfolio allocation (73% in 2019 versus 64% in 2018). Other variations are more moderate, whether upward (ease of changing portfolio over time and transparency of methodology) or downward availability of information for assessing strategies, possibility to create alignment with investor beliefs, and costs).

Exhibit 4.24: Wrapper Used to Invest in Smart Beta and Factor Investing Solutions

This exhibit indicates the categories of wrapper respondents use to invest in smart beta and factor investing strategies. The percentages are based only on respondents that already invest in these strategies. More than one response could be given. We also display the 2018 results to show year-on-year changes. Non-responses are excluded.



4. Results

Exhibit 4.25: Perceived Advantages of Discretionary Smart Beta and Factor Investing Strategies

This exhibit indicates how respondents rate the advantages of discretionary smart beta and factor investing strategies. Respondents were asked to rate the various advantages from 0 (not favourable) to 5 (highly favourable). The "favourable" category includes ratings from 3 to 5 while "not favourable" indicates ratings from 0 to 2, such that the aggregate percentages of "favourable" and "not favourable" add up to 100%. Non-responses are excluded. This exhibit only displays the favourable scores, together with the 2018 results to show year-on-year changes.

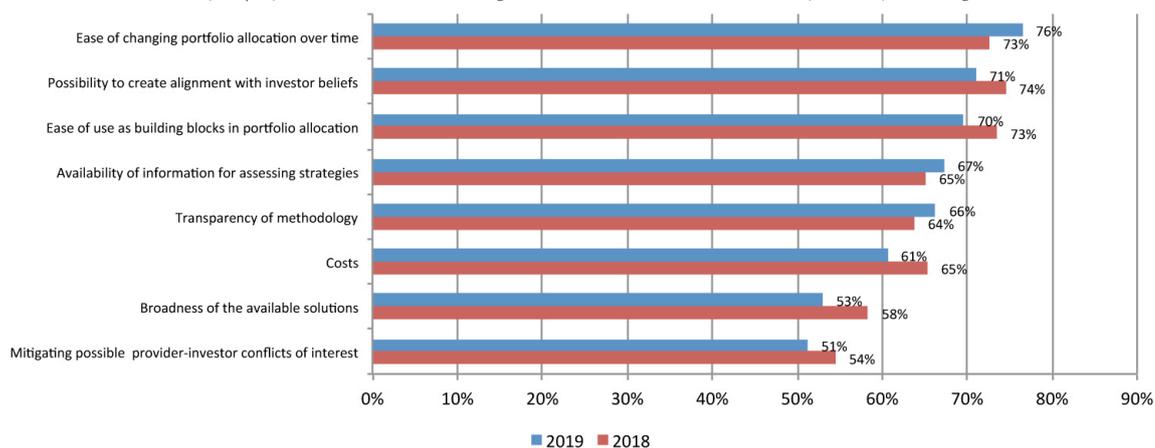
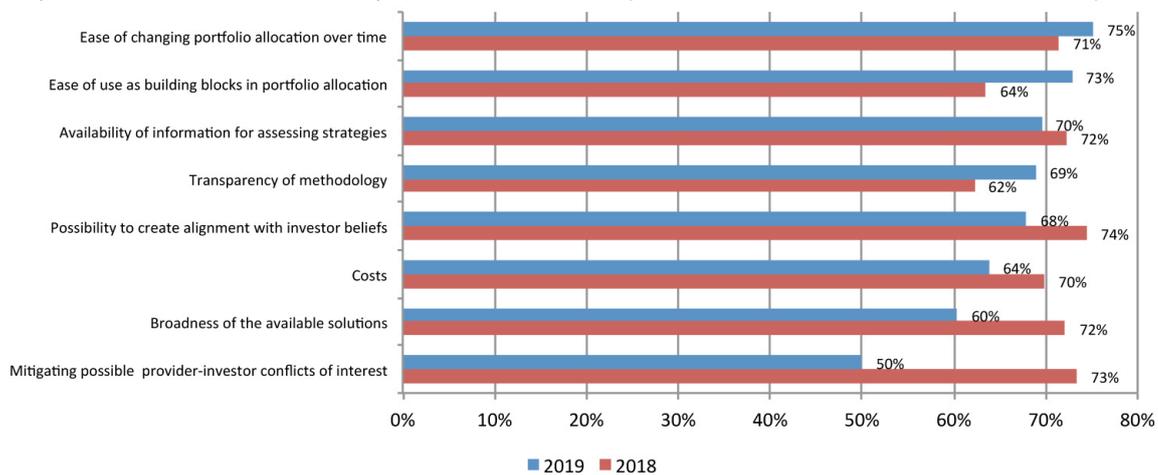


Exhibit 4.26: Perceived Advantages of Replication of Smart Beta and Factor Investing Strategies

This exhibit indicates how respondents rate the advantages of the replication of smart beta and factor investing strategies. Respondents were asked to rate the various advantages from 0 (not favourable) to 5 (highly favourable). The "favourable" category includes ratings from 3 to 5 while "not favourable" indicates ratings from 0 to 2, such that the aggregate percentages of "favourable" and "not favourable" scores add up to 100%. Non-responses are excluded. This exhibit only displays the favourable scores, together with the 2018 results to show year-on-year changes.



The comparison between the scores for the characteristics in the two categories is also interesting. Some characteristics receive favourable scores in the same ranges for both strategies, but with a slight advantage for discretionary smart beta and factor investing strategies. These include

mitigating possible provider-investor conflicts of interest, the possibility to create alignment with investor beliefs, and ease of changing portfolio allocation over time, with 51%, 71% and 76% of respondents respectively finding them favourable in the case of discretionary smart beta and

4. Results

factor investing strategies, versus 60%, 68%, and 75% respectively for replication strategies, which show a slight advantage for the other five characteristics. Exhibit 4.27 provides more detail.

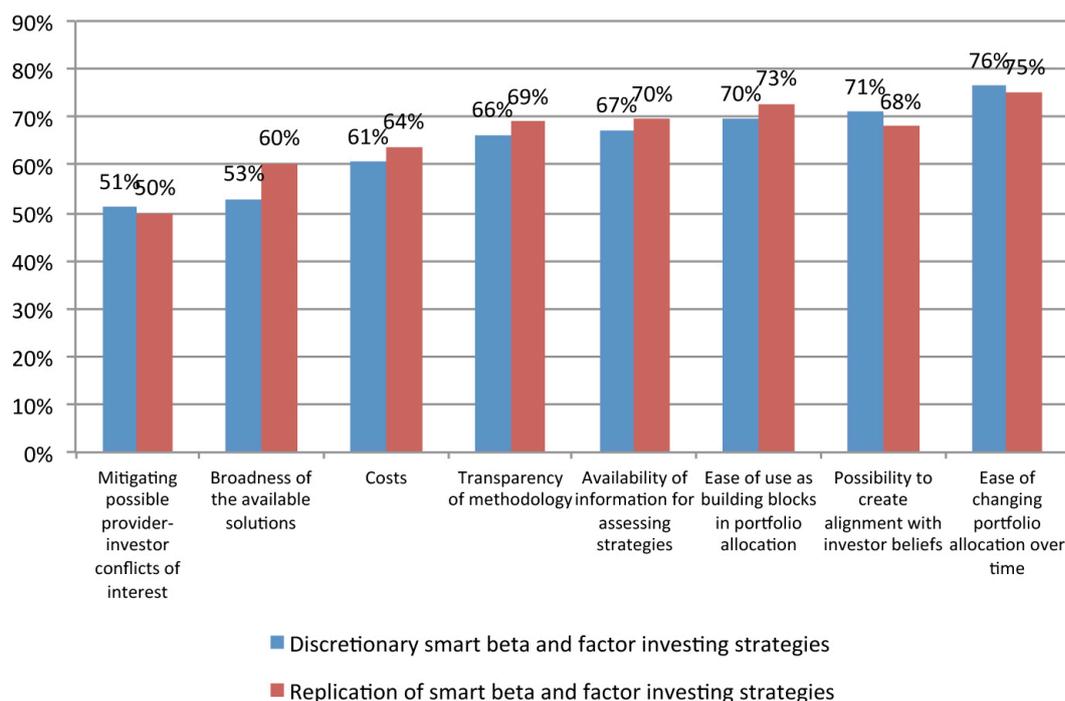
4.2.2. Smart Beta and Factor Investing Strategies in Fixed Income

Last year, we introduced a special focus on fixed-income smart beta and factor investing strategies in our survey, which we continue to develop this year. Exhibit 4.28 shows that only 13% of the total sample of respondents already use smart beta and factor investing strategies for fixed income. If we only consider the sub-sample of those respondents that reported already investing in smart beta and factor investing solutions (see Exhibit 4.21), we find that a little more than a fifth (21%) use smart beta and factor investing

strategies for fixed income. This result is not surprising as such strategies top the list when respondents are asked about the products they would like to see further developed (see Exhibit 4.48 in Section 4.2.6).

As the number of respondents already using smart beta and factor investing for fixed income is very restricted, we felt it would be interesting to ask the other respondents why they do not invest in such products. They were presented with a list of reasons. From Exhibit 4.29, we can see that 38% consider that the offer does not correspond to their needs in terms of risk factor and that fixed-income factor risk premia are not sufficiently documented in the literature. More than a third (35%) of respondents also cited a lack of efficient bond benchmarks. At the bottom of the list, the

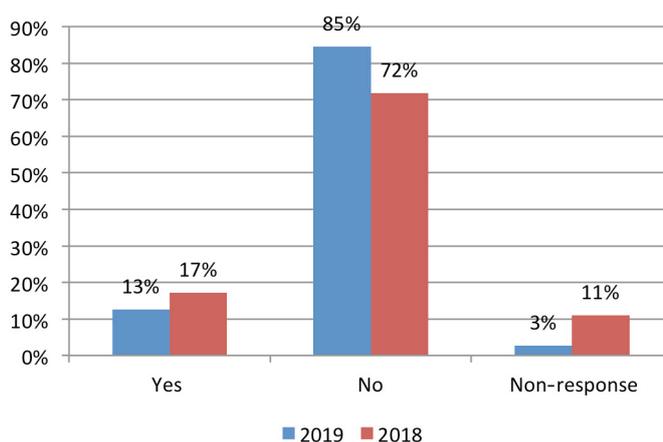
Exhibit 4.27: Comparative Advantages of Discretionary Smart Beta and Factor Investing Strategies and Replication Strategies
This exhibit compares the favourable scores obtained for each advantage of discretionary smart beta and factor investing strategies and replication strategies. Non-responses are excluded.



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Exhibit 4.28: Do You Already Invest in Smart Beta and Factor Investing Strategies for Fixed Income?

This exhibit indicates the percentage of respondents that reported investing in smart beta and factor investing strategies for fixed income. Percentages are based on 182 replies. We also display the 2018 results to show year-on-year changes.



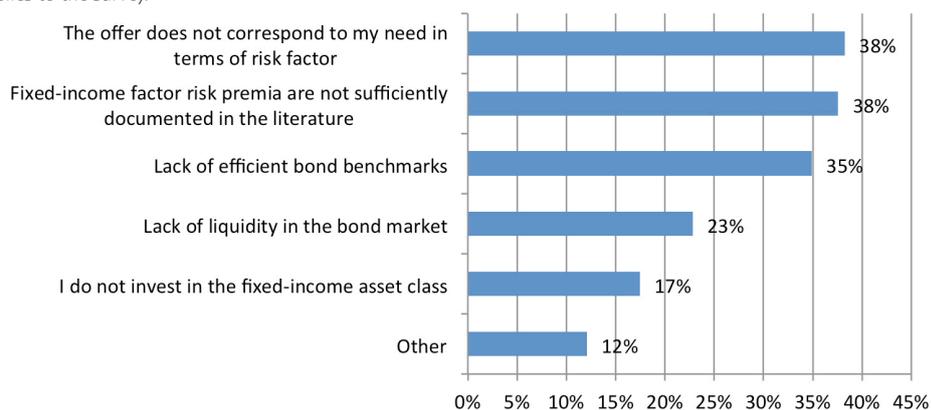
lack of liquidity in the bond market was cited by 23% of respondents, while only 17% do not invest in the fixed-income asset class.

Respondents were also invited to specify their other motivations, if any. The main additional motivations related to a lack of knowledge and

information, including academic information, concerning these products, and the insufficient quality of the available products. Some respondents prefer using other strategies or products to invest in the fixed-income asset class, including in-house factor investing strategies.

Exhibit 4.29: Which of the following are the main reasons for not using fixed-income smart beta and factor investing products?

This exhibit indicates the reasons why respondents do not invest in smart beta and factor investing strategies for fixed-income. Percentages are based on 182 replies to the survey.



Those respondents who already invest in smart beta and factor investing strategies for fixed income were asked the percentage of total investment these strategies represent. The results are displayed

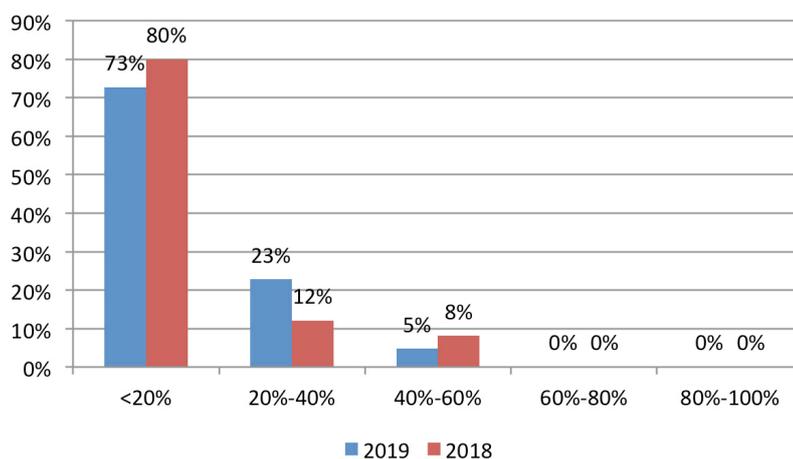
in Exhibit 4.30. For about three-quarters of respondents (73%), the figure is less than 20%. This result is comparable to that obtained for investment in smart beta and factor investing

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solutions in general (see Exhibit 4.22). Among the respondents that invest more than 20% in these strategies, the figures lie between 20% and 40% for 23% of them, while 5% invest between 40% and 60%. If we compare these results to those obtained in 2018, we note an increase in the share dedicated to smart beta and factor investing

solutions for fixed income: 27% of respondents in 2019, versus 20% in 2018, dedicate more than 20% of their total investment to these strategies. These results point to the opportunities for further development of these investing strategies in the near future.

Exhibit 4.30: Percentage of Total Investment Already Invested in Fixed-Income Smart Beta and Factor Investing Solutions
 This exhibit indicates the average percentage of total investment already invested in smart beta and factor investing solutions for fixed income. We only consider respondents that already use such strategies for fixed income. Non-responses are excluded. We also display the 2018 results to show year-on-year changes.



These respondents were also asked about their rate of satisfaction with smart beta and factor investing solutions for fixed income. On a scale from 0 (not satisfied at all) to 5 (highly satisfied), the average satisfaction score was 3.04, which indicates quite good satisfaction levels for those already using smart beta and factor investing solutions for fixed income.

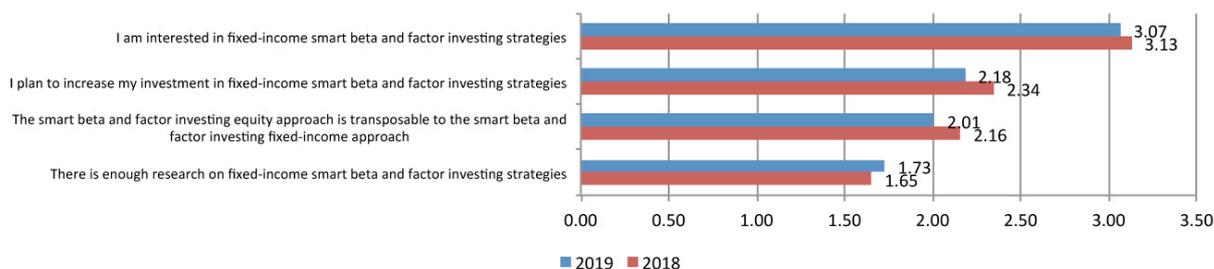
In order to obtain more information about the needs and requirements of respondents when it comes to smart beta and factor investing for fixed income, respondents were asked to give their opinion about a list of assertions. The results are displayed in Exhibit 4.31, which shows that respondents have a significant interest in smart beta and factor investing for fixed income with a

score of 3.07, on a scale from 0 (strongly disagree) to 5 (strongly agree). However, there is a significant gap between the interest in this investment and forecasts of an increase in it: when asked about their plans to increase their investment in smart beta and factor investing for fixed income, the average score is only 2.18. The following findings go some way towards explaining this disparity. First, the average score of agreement with the statement that the smart beta and factor investing equity approach is transposable to fixed income is only 2.01; second, respondents consider that there is not enough research in the area of smart beta and factor investing for fixed income (average score of 1.73). These results are comparable to those obtained in 2018.

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Exhibit 4.31: Respondent Opinions about Statements Concerning Smart Beta and Factor Investing for Fixed Income.

This exhibit indicates the extent to which respondents agree with the statement on a scale from 0 (strongly disagree) to 5 (strongly agree). More than one response could be given. Non-responses are excluded. We also display the 2018 results to show year-on-year changes.

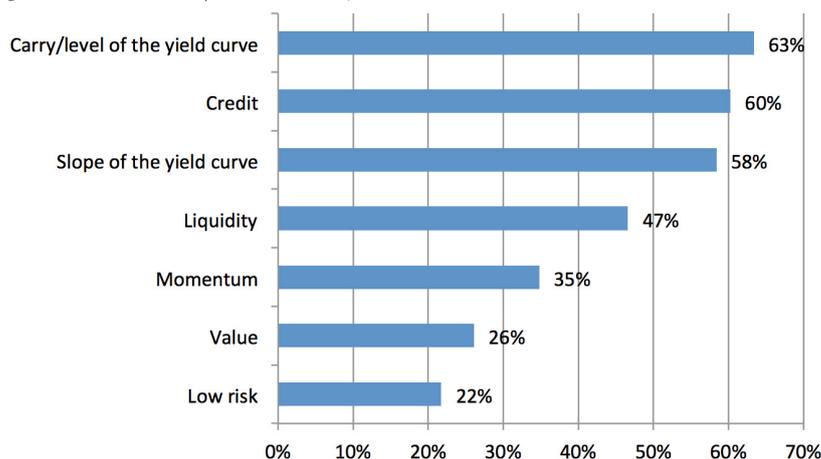


Respondents were further asked to indicate the rewarded factors they find most relevant in fixed-income markets. The results are displayed in Exhibit 4.32, where we see that about three-fifths of respondents considered that the three typical factors of the credit risk market, namely carry/level of the yield curve, credit and slope of the yield curve, are the most relevant (63%, 60% and 58% respectively). The liquidity factor comes in fourth position, with 47% of respondents finding

it relevant. Finally, at the bottom of the list, we find three factors that are more specifically related to the equity market, namely momentum, value and low risk, with only 35%, 26% and 22% of respondents respectively finding them relevant in fixed-income markets, which is coherent with respondents saying that smart beta and factor investing for equity is not transposable to fixed income (see Exhibit 4.31).

Exhibit 4.32: Respondent Opinions about Rewarded Factors in Fixed-Income Markets

This exhibit indicates for each rewarded factor the percentage of respondents that find it relevant in fixed-income markets. More than one response could be given. Percentages are based on 182 replies to the survey.



In addition, respondents were invited to evaluate the different purposes for which they consider smart beta and factor investing bond solutions

to be useful. The results are displayed in Exhibit 4.33, which shows that respondents consider smart beta and factor investing bond solutions

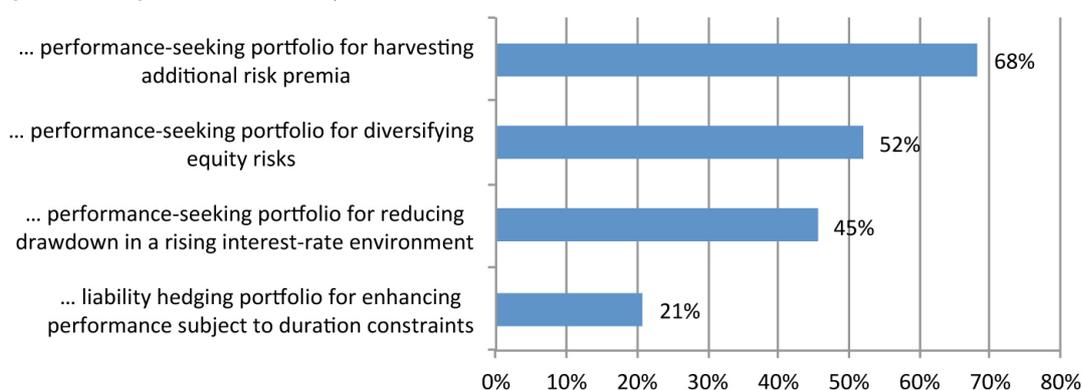
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to be especially useful in performance-seeking portfolios, first for harvesting risk premia for about two-thirds (68%) of respondents, second for diversifying equity risks (52%), and third for reducing drawdown in a rising interest-rate

environment (45%). Liability hedging portfolios to enhance performance subject to duration constraints come far behind, with only 21% of respondents considering smart beta and factor investing bond solutions useful for this purpose.

Exhibit 4.33: Do You Think that Smart Beta and Factor Investing Bond Solutions Are Useful in ...?

This exhibit indicates for which purposes respondents consider smart beta and factor investing bond solutions to be useful. More than one response could be given. Percentages are based on 182 replies to the survey.

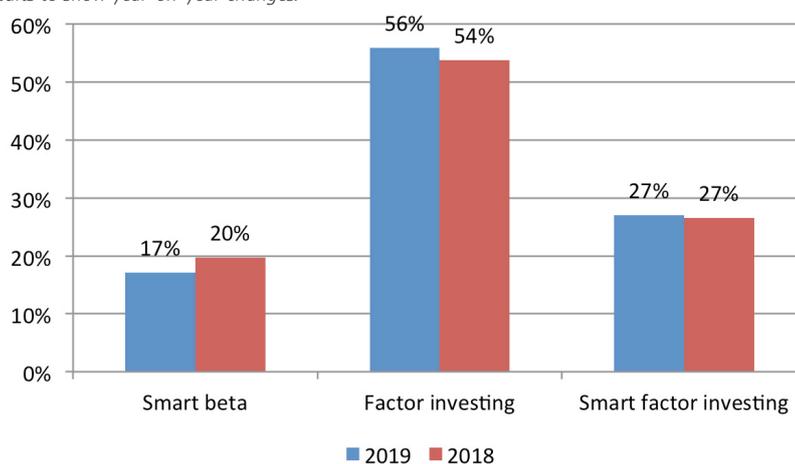


Respondents were then asked specifically about how to achieve efficient harvesting of risk premia in bond markets. They were presented with three propositions. The first was the application of smart weighting schemes (minimum variance, risk parity, etc.) to a broad universe (in short, smart beta). The second was the selection of bonds according to rewarded attributes such as value, momentum, credit, liquidity etc. (in short, factor

investing). The third was the application of smart weighting schemes to factor-tilted selections of bonds (in short, smart factor investing). The results are displayed in Exhibit 4.34, where we see that more than half of respondents (56%) think that the best solution is factor investing. More than a quarter (27%) think it is smart factor investing, and only 17% think it is smart beta. These results are comparable to those obtained in 2018.

Exhibit 4.34: How Should Investors Achieve Efficient Harvesting of Risk Premia in Bond Markets?

This exhibit indicates respondent opinions on how to achieve efficient harvesting of risk premia in bond markets. Non-responses are excluded. We also display the 2018 results to show year-on-year changes.



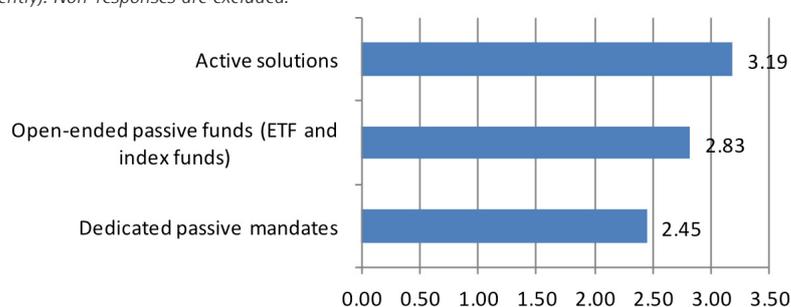
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Finally, to conclude the section on smart beta and factor investing for fixed income, respondents were asked about the vehicles they plan to use in the future to invest in these products. The results are displayed in Exhibit 4.35, which reveals that

more respondents plan to use active solutions, with a score of 3.19 on a scale from 0 (never use) to 5 (use very frequently), than passive ones, whether open-ended passive funds (score of 2.83) or dedicated passive mandates (2.45).

Exhibit 4.35: Which Vehicles Do You Plan to Use in the Future for Fixed-Income Smart Beta and Factor Investing?

This exhibit indicates the vehicles respondents plan to use in the future for fixed-income smart beta and factor investing on a scale from 0 (never use) to 5 (use very frequently). Non-responses are excluded.



4.2.3. Smart Beta and Factor Investing Indices

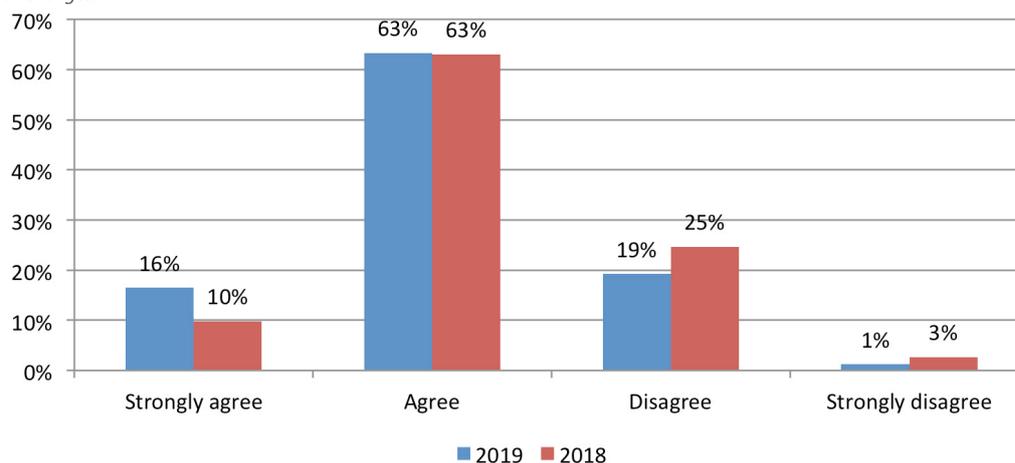
Investors were then asked about their agreement with different propositions. Smart beta and factor investing indices were developed to overcome the shortcomings of cap-weighted indices, which included their poor risk-adjusted performance (Haugen and Baker, 1991; Grinold, 1992; Schwartz, 2000; Cochrane, 2005; Arnott, Hsu and Moore, 2005; Amenc, Goltz and Le Sourd, 2006; Goltz and Le Sourd, 2011, among others). Respondents were therefore first asked if, in their view, smart beta and factor investing indices provided significant potential to outperform cap-weighted indices in the long term.

they agree or strongly agree with this argument, 16% of whom strongly agree. Compared to 2018, this result is even more significant for those who strongly agree with the proposition. It thus appears that a large and stable group of investors are now convinced of the superiority of smart beta and factor investing indices in terms of performance over the long term.

From Exhibit 4.36, we can see that the vast majority of respondents agree that smart beta and factor investing indices provide significant potential to outperform cap-weighted indices in the long term, as almost four-fifths of them (79%) indicate

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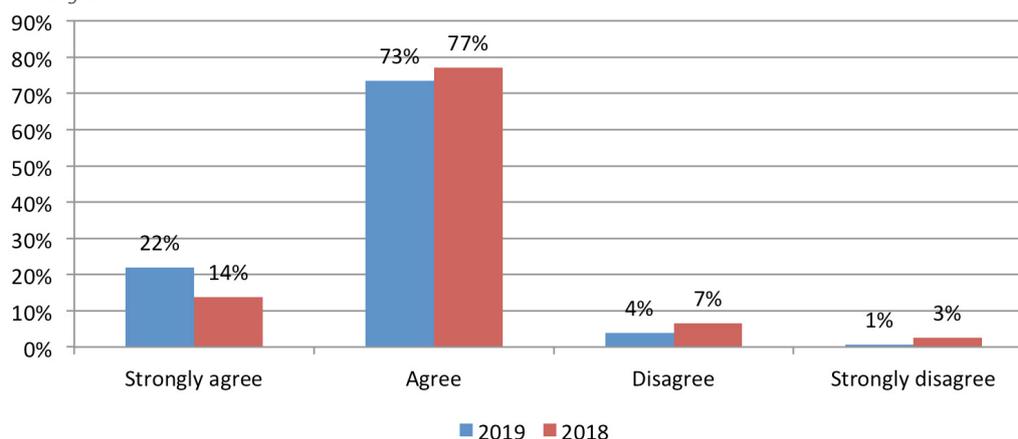
Exhibit 4.36: Do You Think Smart Beta and Factor Investing Indices Provide Significant Potential to Outperform Cap-Weighted Indices in the Long Term? This exhibit indicates the percentages of agreement with this statement. Non-responses are excluded. We also display the 2018 results to show year-on-year changes.



Respondents were then asked if they thought smart beta and factor investing indices allowed factor risk premia such as value and small-cap to be captured. Exhibit 4.37 shows that the vast majority of respondents (95%) believe this to be

the case, an even higher percentage than the already high value of 91% obtained in 2018, with a particular increase in the percentage of respondents who strongly agree (22% in 2019 versus 14% in 2018).

Exhibit 4.37: Do You Think Smart Beta and Factor Investing Indices Allow Factor Risk Premia Such As Value and Small-Cap to Be Captured? This exhibit indicates the percentages of agreement with this statement. Non-responses are excluded. We also display the 2018 results to show year-on-year changes.



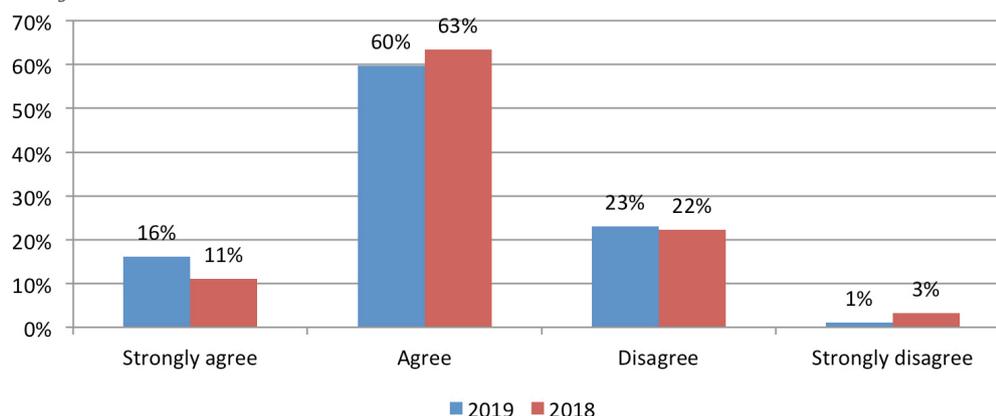
Another important shortcoming of cap-weighted indices documented in the literature is their over-concentration (see Tabner, 2007; Malevergne, Santa Clara and Sornette, 2009). We therefore asked respondents if they thought smart beta and factor investing indices allowed the concentration

of cap-weighted indices in very few stocks or sectors to be avoided. Exhibit 4.38 again shows that a large share of respondents, about three-quarters (76%), agree or strongly agree with this assertion, which is comparable to 2018 results.

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Exhibit 4.38: Do You Think Smart Beta and Factor Investing Indices Allow the Concentration of Cap-Weighted Indices in Very Few Stocks or Sectors to Be Avoided?

This exhibit indicates the percentages of agreement with this statement. Non-responses are excluded. We also display the 2018 results to show year-on-year changes.



In conclusion, respondents show great interest in products based on smart beta and factor investing indices as they see them as providing potential improvement in their investment, and this interest is still growing (or at least remains at comparably high levels), as shown by a comparison with the results of 2018.

4.2.4. Information about Smart Beta and Factor Investing Strategies

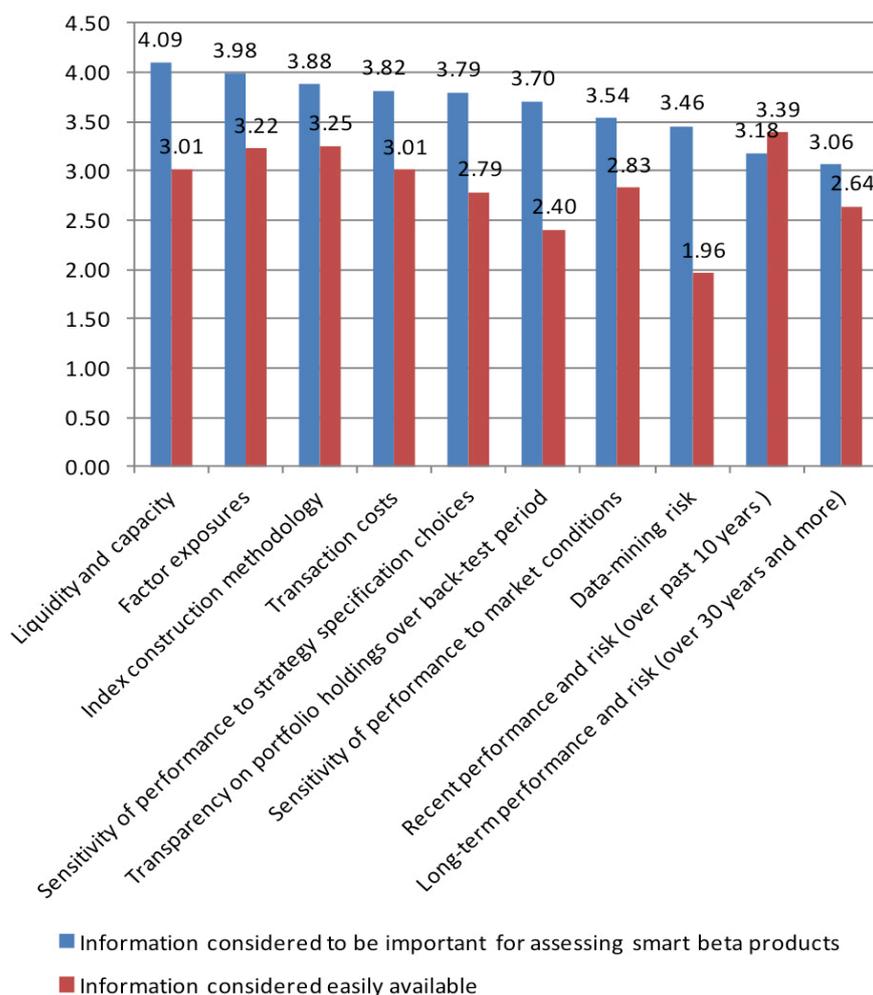
We then asked respondents about the information they consider important to assess smart beta and factor investing. At the same time, they were asked whether they considered this information easily available (see Exhibit 4.39). It is interesting to see the spread between the importance of and accessibility to this information. It appears that the highest spread is observed for information respondents consider crucial. For example, data-mining risk and information about transparency on portfolio holdings over a back-test period are two crucial pieces of information for respondents, with scores of 3.46 and 3.70 respectively. Data-mining risk is also

the information that appears to be the most difficult to obtain for respondents, with a score of 1.96, while information about transparency on portfolio holdings over a back-test period is the second most difficult to obtain, with a score of 2.40. Even relatively basic information such as the index construction methodology is not judged to be easily available (score of 3.25) relative to its importance (score of 3.88). On the contrary, information about recent performance and risk over the past ten years is among the least important for respondents with a score of 3.18, but it is also the most easily available, exhibiting the highest score (3.39) across the board in terms of availability. The gap between information importance and its accessibility as seen by investors is displayed in Exhibit 4.40.

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Exhibit 4.39: Information About Beta Products

This exhibit indicates the information respondents consider important for assessing smart beta and factor investing products on a scale from 0 (not important) to 5 (crucial) and which information they consider to be easily available on a scale from 0 (difficult to obtain) to 5 (easy to obtain).



It is interesting to note that, compared to 2018, the gap between information importance and its accessibility has evolved a little up or down depending of the piece of information. The best improvements perceived by respondents between the importance of information and its accessibility are for long-term performance and risk and sensitivity of performance to strategy specification choices. The highest increases in the gap, compared to 2018, are observed for factor

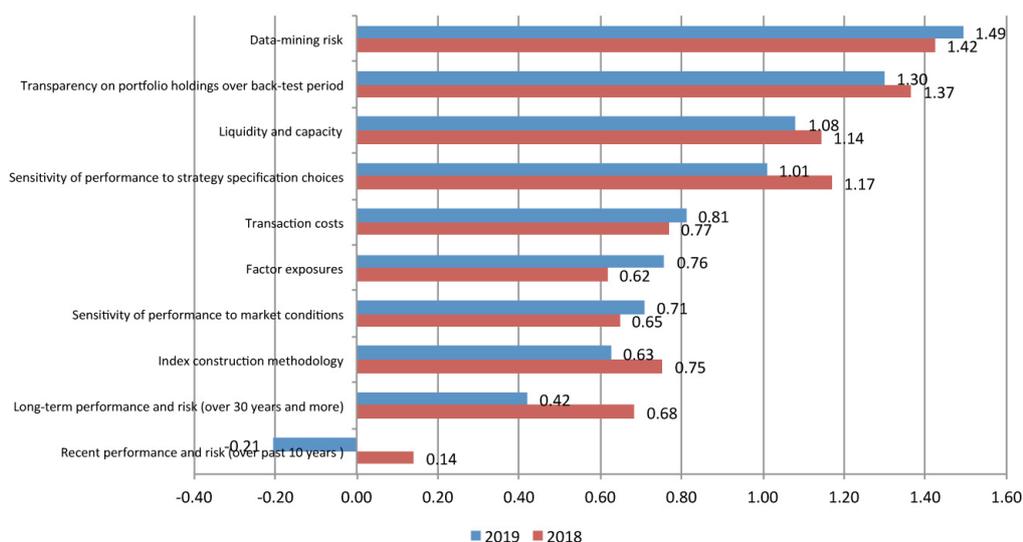
exposures, as well as for sensitivity of performance to market conditions.

The fact that information regarded as important is not considered to be easily available clearly calls into question the information provision practices of smart beta and factor investing providers. In fact, the only area in which a significantly reduced gap exists between the importance and ease of accessibility scores is

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Exhibit 4.40: Gap Between Information Importance and Its Accessibility

This exhibit indicates the gap between information importance and its accessibility according to investors. We also display the 2018 results to show year-on-year changes.



for recent performance numbers. Performance and risk information is judged to be moderately easily available and moderately important. All other areas show more pronounced gaps between these two metrics. Moreover, there is on average a gap of 0.80 between importance of information items and their ease of accessibility, lower than that observed in 2018 (0.87). However, the means of the respective scores of importance of information items and their ease of accessibility (3.65 and 2.85 respectively) is slightly lower for the former, and slightly higher for the latter, than those reported by respondents in 2018 (3.70 and 2.83 respectively). Overall, these results suggest that there is still room for further improvement, as investors still do not believe that information considered important for assessing smart beta and factor investing strategies is made available to them with sufficient ease.

4.2.5. The Importance of Factors as Performance Drivers

The last group of questions in this section of the survey relates to the factors inherent in equity strategies and how these factors explain their performance.

Respondents were more specifically asked about their requirements when considering the selection of a given set of factors in their investment approach. They were presented with a list of factor characteristics and asked to rate them from 0 (if the assertion was not important) to 5 (if it was absolutely crucial). The results are displayed in Exhibit 4.41, which shows that with the exception of 'factors should be proprietary or novel', all the other proposed characteristics receive quite high scores, ranging from 2.83 to 3.87. However, respondents are primarily concerned with the existence of a rational risk premium, with a score of 3.87, closely followed

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by the existence of extensive empirical literature documenting factor premium (3.79), as well as ease of implementation and low turnover and transaction costs (3.71). The least important requirement for them is that factors should be proprietary or novel, with a score of 2.25.

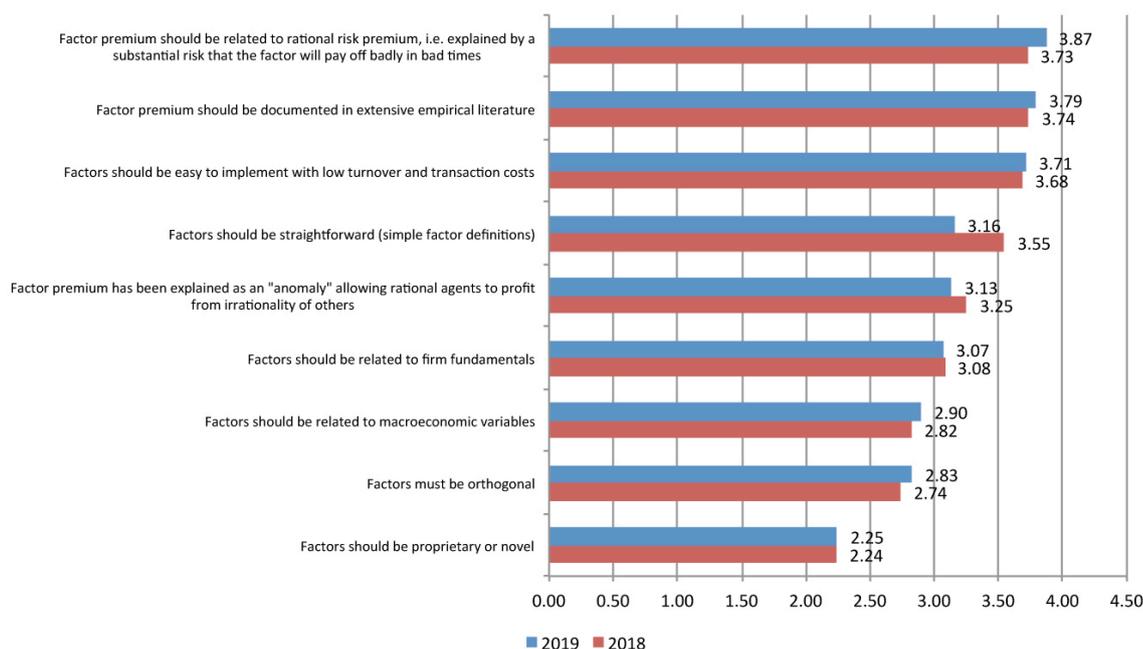
The existence of a rational explanation for factor risk premia is of principal importance to investors; this is probably because such an explanation suggests that the premium will be persistent. Indeed, if the literature interprets the factor premia as compensation for risk, the existence of such premia could also be explained by investors making systematic errors due to behavioural biases such as over- or under-reactions to news about a stock. However, whether such behavioural biases can persistently affect asset prices in the presence of some smart investors who do not suffer from these biases is a point of contention.

In fact, even if the average investor makes systematic errors due to behavioural biases, it is still possible that some rational investors who are not subject to such biases might exploit any small opportunity resulting from the irrationality of the average investor. The trading activity of such smart investors may then make the return opportunities disappear. Therefore, behavioural explanations of persistent factor premia often introduce so-called "limits to arbitrage", which prevent smart investors from fully exploiting the opportunities arising from the irrational behaviour of other investors.

Compared to 2018, there is a slight increase in most scores, indicating that respondents are increasingly demanding when it comes to factors. Moreover, the priorities in their requirements are consistent from one year to the other, with the same order of requirements given.

Exhibit 4.41: Requirements for Factor

This exhibit indicates respondent requirements when considering a given set of factors in their investment approach on a scale from 0 (not important) to 5 (absolutely crucial). We also display the 2018 results to show year-on-year changes.



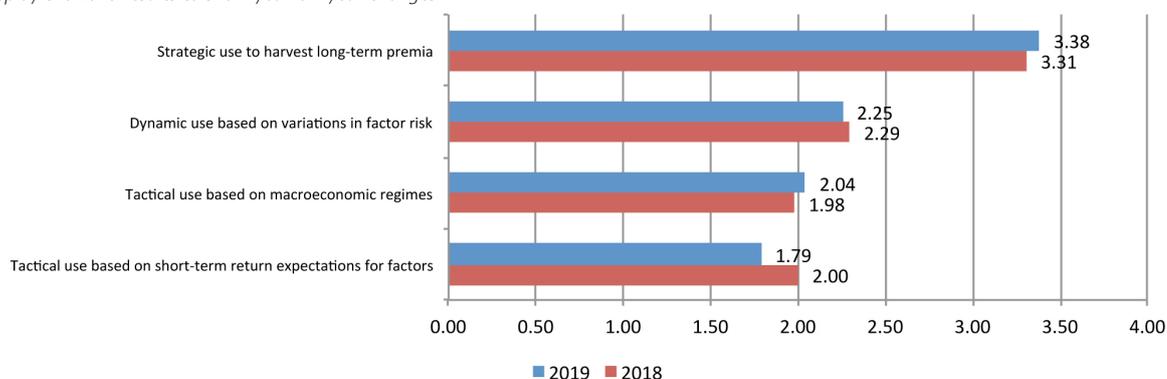
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To conclude this sub-section about factors, respondents were asked about the kinds of uses they make of smart beta / factor-based exposures. They were invited to rate a list of propositions from 0 (if they do not use smart beta / factor-based exposures in this way) to 5 (if such use of

smart beta / factor-based exposures was highly frequent). The results are displayed in Exhibit 4.42, where we see that the most frequent use respondents have for smart beta / factor-based exposures is a strategic use to harvest long-term premia, with a score of 3.38. Other uses are

Exhibit 4.42: Use of Smart Beta / Factor-Based Exposures

This exhibit indicates the use respondents make of smart beta / factor-based exposures on a scale from 0 (no use) to 5 (highly frequent use). We also display the 2018 results to show year-on-year changes.



less frequent, such as dynamic use based on variations in factor risk (2.25), tactical use based on macroeconomic regimes (2.04), and tactical use based on short-term return expectations for factors (1.79). Compared to 2018, the results are quite similar.

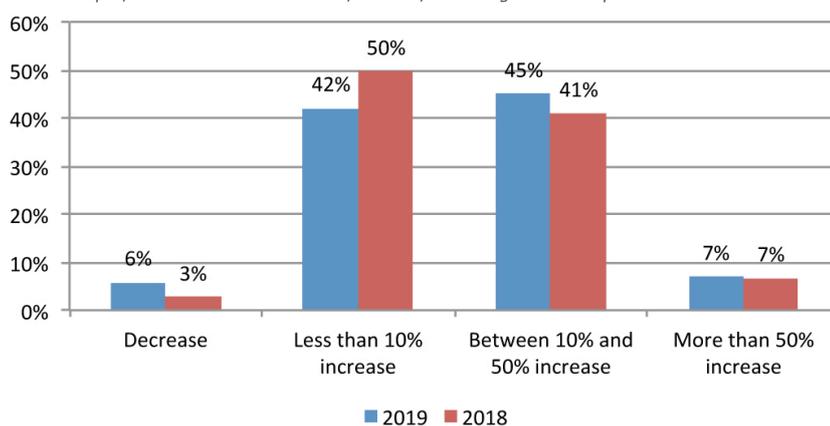
4.2.6. Future Developments for Smart Beta and Factor Investing Strategies

Finally, the last group of questions in the smart beta and factor investing survey sections were dedicated to future perspectives and additional requirements for smart beta and factor investing strategies. First, respondents were asked whether or not they planned to increase their investment in smart beta or factor-based products in the near future. The results are displayed in Exhibit 4.43, which shows that the vast majority of respondents (94%) plan to increase their investment in smart

beta and factor investing products over the next three years, a slightly lower percentage than the 97% of 2018, while only 6% of them plan to decrease it. However, compared to 2018, a slightly higher number of respondents are considering a substantial increase of between 10% and 50% (45% of respondents, versus 41% in 2018), compared to plans of a moderate increase of less than 10% (42% of respondents, versus 50% in 2018). Similar to 2018, only 7% of respondents are thinking of increasing their investment in smart beta and factor investing strategies by more than 50%.

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Exhibit 4.43: Planned Changes in Use of Smart Beta / Factor-Based Investment Products in Terms of Assets in the Near Future
This exhibit indicates whether respondents plan to increase or decrease their use of smart beta / factor-based investment products (in terms of assets) over the next 3 years. We also display the 2018 results to show year-on-year changes. Non-responses are excluded.



These results indicate that the investment in smart beta and factor investing will increase in the coming years, not only in terms of investor numbers, as shown in the results in Exhibit 4.21, but also assets for each investor, which is not surprising as the current share of investment dedicated to smart beta and factor investing strategies is relatively restricted for a majority of respondents (70%), as shown in Exhibit 4.22.

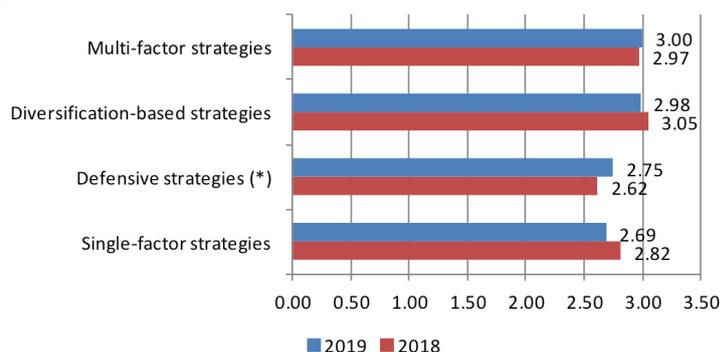
Respondents were then asked to detail the strategies they plan to use in the future. They were presented with a list of strategies and invited to rate them from 0 (if they did not plan to use them in the future) to 5 (if they planned to use them very frequently). The results are displayed in Exhibit 4.44, which shows that the average scores obtained for the four strategies were quite high and contained within a very narrow spread, from 2.69 for single factor strategies to 3 for multi-factor strategies. Of the two, diversification-based strategies obtained a score of 2.98 for future investment perspectives, while

defensive strategies obtained a score of 2.75. It therefore appears that respondents are aiming to diversify their new investment in smart beta and factor investing strategies across the different categories. Compared to 2018, there were few changes in the scores. It is interesting to note that the highest increase in the planning of future use is for defensive strategies, while the lowest decrease is for single-factor strategies, which was historically the most familiar to investors. This shows that respondents plan to move towards more sophisticated strategies than single-factor strategies.

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Exhibit 4.44: Strategies to Be Used in the Future to Invest in Smart Beta and Factor Investing

This exhibit indicates the categories of strategies respondents plan to use in the future to invest in smart beta and factor investing on a scale from 0 (never plan to use) to 5 (plan to use very frequently). More than one response could be given. We also display the 2018 results to show year-on-year changes. Non-responses are excluded.



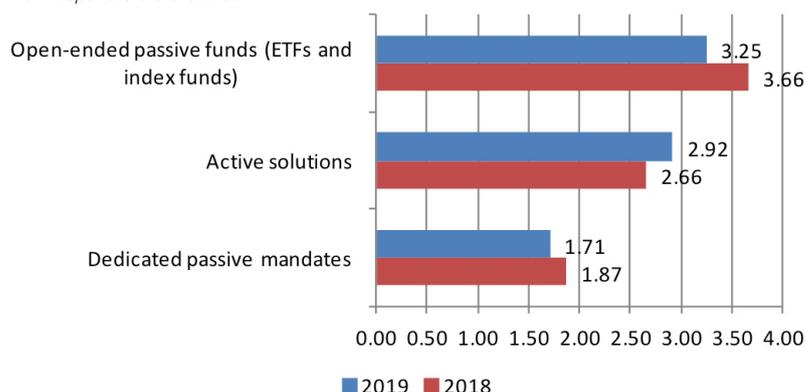
(*) e.g. Minimum or low-volatility strategies

As respondents already investing in smart beta and factor investing strategies were asked to detail the wrapper they use to invest (see Exhibit 4.24), all respondents were asked about the wrapper they planned to use in the future to invest in these strategies. The results are displayed in Exhibit 4.45. Not surprisingly, the two wrappers already used by a majority (55% and 61% respectively) of respondents, namely open-ended passive funds (ETFs and index funds) and active solutions, are also the wrappers respondents plan to use the most frequently in the future, with a score of 3.25 and 2.92 respectively. Compared to 2018,

we note an increase in the score of future use of active solutions and a decrease in the score of future use of open-ended passive funds, which can be put in perspective with the results displayed in Exhibit 4.24, where active solutions now appear as the most widely used category of wrapper ahead of open-ended passive funds. The third category of wrapper, dedicated passive mandates, is far behind, with a score of 1.71 for future uses, consistent with the lowest share of 20% of respondents using them, among those who already invest in smart beta and factor investing products.

Exhibit 4.45: Wrapper to Be Used in the Future to Invest in Smart Beta and Factor Investing Solutions

This exhibit indicates the categories of wrapper respondents plan to use in the future to invest in smart beta and factor investing strategies on a scale from 0 (never plan to use) to 5 (plan to use very frequently). We also display the 2018 results to show year-on-year changes. More than one response could be given. Non-responses are excluded.



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Respondents were then asked about their key motivations for using smart beta and factor investing strategies in their portfolio. They were presented with a list of motivations and invited to rate them from 0 (no motivation), to 5 (strong motivation). The results are displayed in Exhibit 4.46. Above all, improving performance was the first motivation given by respondents for investing in smart beta and factor investing strategies, with a score of 3.76. Managing risk follows with a score of 3.25. Managing exposure to macro risk factors, increased transparency and lower costs followed closely with scores in the same range (3.01, 2.93 and 2.92 respectively). Finally, far behind the others, the least pressing motivation for investors is addressing regulatory constraints, with a score of 1.41. While the first two motivations for using smart beta and factor investing strategies remain the same as in 2018, as well as the last one, small changes in the order can be seen for the other three. Managing exposure to macro risk factors moved up from fifth position to third, with a slight increase in the score (3.01 versus 2.97 in 2018), at the expense of increasing transparency and lower costs, which both post a slight decrease in their score (2.93 and 2.92 respectively, versus 3.08 and 3.03 respectively in 2018).

It is not surprising that among the motivations for investing in smart beta and factor investing strategies, improving performance obtains such a high score. Smart beta and factor investing indices appear to be an alternative to investment in cap-weighted indices, which provide poor performance. Early papers by Haugen and Baker (1991) and Grinold (1992) provide empirical evidence that market-cap-weighted indices provide an inefficient risk/return trade-off. From

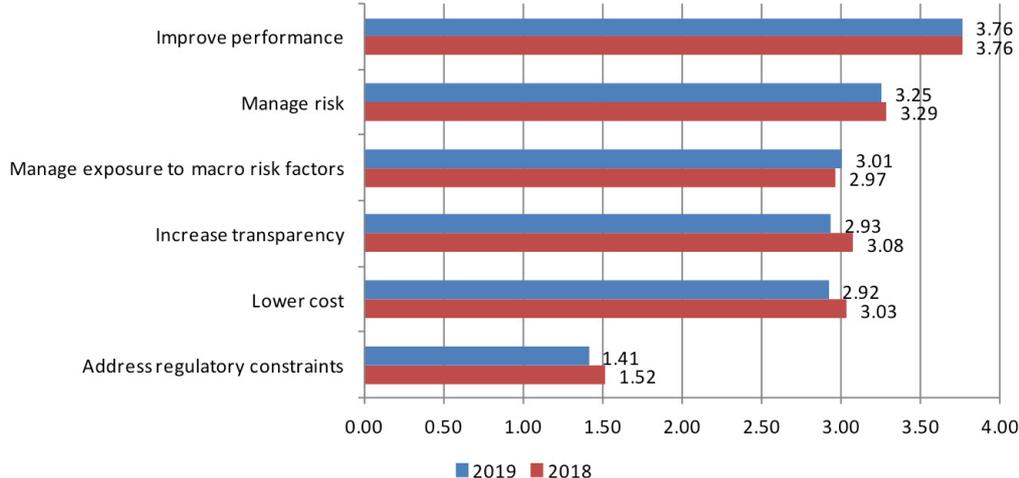
a theoretical standpoint, the poor risk-adjusted performance of such indices should come as no surprise, as market-cap-weighting schemes are risk/return efficient only at the cost of heroic assumptions. An extensive body of literature has shown that the theoretical prediction of an efficient market portfolio breaks down when some of the highly unrealistic assumptions of the CAPM do not bear out. Smart beta and factor investing strategies, whose goal is to improve index efficiency, are therefore promising in terms of performance (see Amenc et al., 2010). For similar reasons, respondents perceive the management of risk as better addressed with smart beta and factor investing strategies.

The answers to this question are consistent with those provided in Section 4.2.3, where about 80% of respondents agreed that smart beta and factor investing indices provide significant potential to outperform cap-weighted indices in the long term and 95% agreed that such indices allowed factor risk premia such as value and small cap to be captured (see Exhibits 4.36 and 4.37).

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Exhibit 4.46: Key Motivations for Using Smart Beta and Factor Investing Strategies in a Portfolio

This exhibit indicates the key motivations for using smart beta and factor investing strategies in a portfolio on a scale from 0 (no motivation) to 5 (strong motivation). We also display the 2018 results to show year-on-year changes. More than one response could be given. Non-responses are excluded.



Respondents were also free to give additional motivations for using smart beta and factor investing strategies in the portfolio. 14 respondents (about 8% of the sample) made contributions. The main arguments they gave were for diversification purposes, and to obtain a better/risk return trade-off.

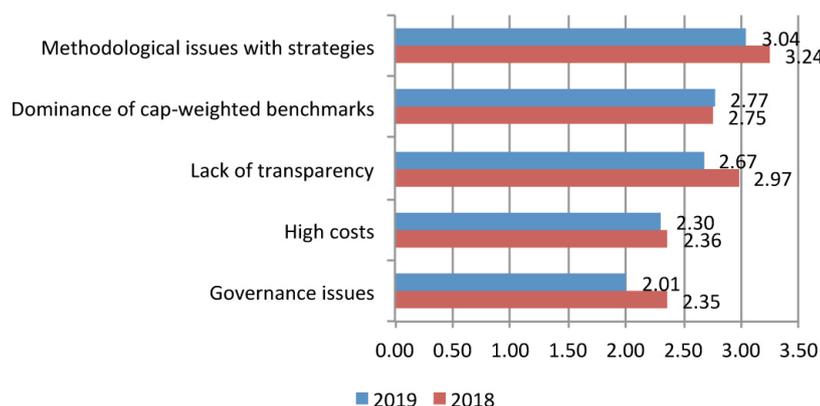
Respondents were also asked about the major hurdles that prevent them from increasing their use of smart beta and factor investing strategies. They were asked to rate a list of hurdles from 0 (no hurdle) to 5 (significant hurdle). The results are displayed in Exhibit 4.47. The major hurdle appears to be the methodological issues associated with with strategies, with quite a high score of 3.04. The dominance of cap-weighted benchmarks and the lack of transparency followed closely with scores of 2.77 and 2.67 respectively. The dominance of cap-weighted indices is a problem that has been denounced for years (see e.g. Arnott et al., 2010b). These indices are still considered as the reference benchmark and it may be difficult

to change this thinking. Finally, respondents rank high costs and governance issues at the bottom of the list of hurdles, with scores of 2.30 and 2.01 respectively. We note that none of the hurdles obtained a low score. While the scores obtained for the dominance of cap-weighted benchmarks and high costs are quite similar to those obtained in 2018, we note a decrease in those of the three other hurdles, compared to 2018, though the scores of the first three ranked hurdles remain quite high. Regarding the lack of transparency, the decrease in the score should be seen against the results displayed in Exhibit 4.40, where we see an improvement in the gap between the importance and availability of information for index construction methodology and, to a lesser extent, transparency on portfolio holdings.

4. Results

Exhibit 4.47: Major Hurdles to Increase Your Use of Smart Beta and Factor Investing Strategies in Portfolios

This exhibit indicates the major hurdles to increase the use of smart beta and factor investing strategies in a portfolio on a scale from 0 (no hurdle) to 5 (significant hurdle). More than one response could be given. Non-responses are excluded. We also display the 2018 results to show year-on-year changes.



Respondents were also free to detail additional hurdles that prevent them from increasing their investment in smart beta and factor investing strategies. 23 respondents (about 13% of the sample) made contributions. The main arguments they gave were related to the difficulty of communicating and explaining the relatively new concepts to managers and board members, who are non-experts, as well as a lack of clear and comprehensive information from providers. Others highlighted the lack of products in the asset classes (e.g. fixed income) or regions/ countries they want to invest in, given that the majority of smart beta and factor investing products are equity-related, or a lack of capacity and liquidity. Finally, some respondents mentioned recent poor performance.

Finally, respondents were asked about the solutions they think require further product development from providers. They were asked to rate a list of solutions from 0 (not required) to 5 (strong priority). The results are displayed in Exhibit 4.48, where we can see that all the propositions obtained quite a high score, ranging

from 2.34 to 3.46. Among those, respondents identified the development of fixed-income smart beta and factor investing strategies as a priority, with a score of 3.46. This result is to be compared to those detailed in Section 4.2.2, which show increasing levels of interest in these products, but a still limited share devoted to them. Integration of ESG in smart beta and factor investing, and strategies in alternative asset classes (currencies, commodities, etc.), closely follow with scores of 3.05 and 2.99 respectively. The following two proposals, namely solutions addressing specific investor objectives and long/short equity strategies, obtained scores in comparable ranges (2.77 and 2.74 respectively). Finally, at the bottom of the list, 'products offering exposure to novel factors' obtains a score of 2.34. The relative ranking of propositions is quite similar to 2018. It is not surprising that respondents require further development in the area of fixed income and in alternative asset classes, as smart beta and factor investing strategies were first developed for equity investment. There continues to be a lack of products when it comes to other asset classes and this is particularly acute for the fixed-income

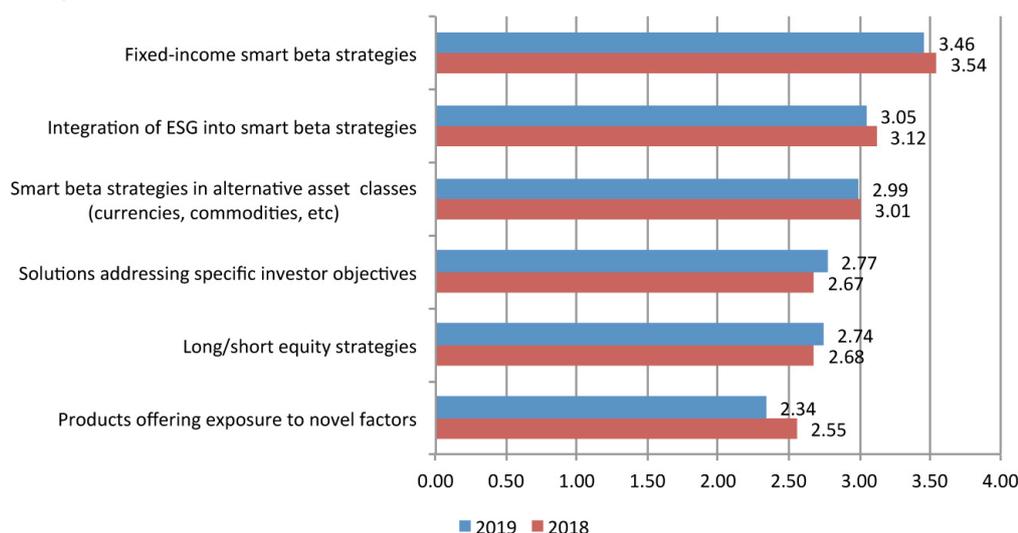
4. Results

asset class, which is largely used by investors. This request was already at the top of the list in 2018. Similarly, integration of ESG into smart beta and factor investing strategies ranked in second place in 2018 in the list of products that respondents wanted to see further developed, in front of alternative asset classes. We note a slight increase in respondent demands for the

development of customised solutions, as well as long/short equity strategies, in fourth and fifth positions respectively. However, it is likely that the development of new products corresponding to investor specific objectives may lead to an even wider adoption of smart beta and factor investing solutions.

Exhibit 4.48: Which Type of Solutions Do You Think Require Further Product Development from Providers?

This exhibit indicates the types of solutions for which respondents would like to see further product developments from providers on a scale from 0 (not required) to 5 (strong priority). More than one response could be given. Non-responses are excluded. We also display the 2018 results to show year-on-year changes.



4.2.7. Trends: Use of and Satisfaction with Smart Beta and Factor Investing Strategies Over Time

In recent years, smart beta and factor investing strategies have undergone considerable development and are increasingly used by investors, as shown in the present survey. As a large share of the questions presented in this section were progressively introduced over the latest three years, the comparison of results will mainly focus on the perception respondents have of smart beta and factor investing indices, for which we have now a history of six years.

Exhibit 4.49 shows an increasing trend in the number of smart beta and factor investing product investors. Since 2013, the increase has been more than 80%. From one year to another, we also see that the cumulative percentages of those who are already investing in smart beta and factor investing products and those who are considering investment in such products in the near future has been steadily increasing, from 64% in 2013 to 79% in 2019, showing a constant decline in the proportion of respondents who are not considering investment in such products in the near future.

4. Results

Exhibit 4.49: Use of Smart Beta and Factor Investing Solutions

This exhibit indicates the percentages of respondents that reported using smart beta and factor investing solutions. Non-responses are excluded. The percentages for 2013 to 2018 are based on the results of the EDHEC ETF surveys from 2013 to 2018.

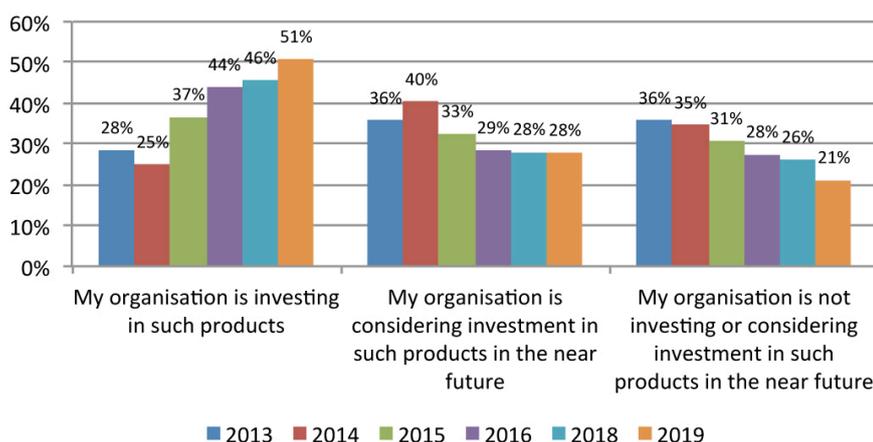


Exhibit 4.50: Agreement of Respondents With Statements About Smart Beta and Factor Investing Indices

This exhibit indicates the percentage of respondents that agree or strongly agree with the statement about smart beta and factor investing indices. Non-responses are excluded. The percentages for 2013 to 2018 are based on the results of the EDHEC ETF surveys from 2013 to 2018.

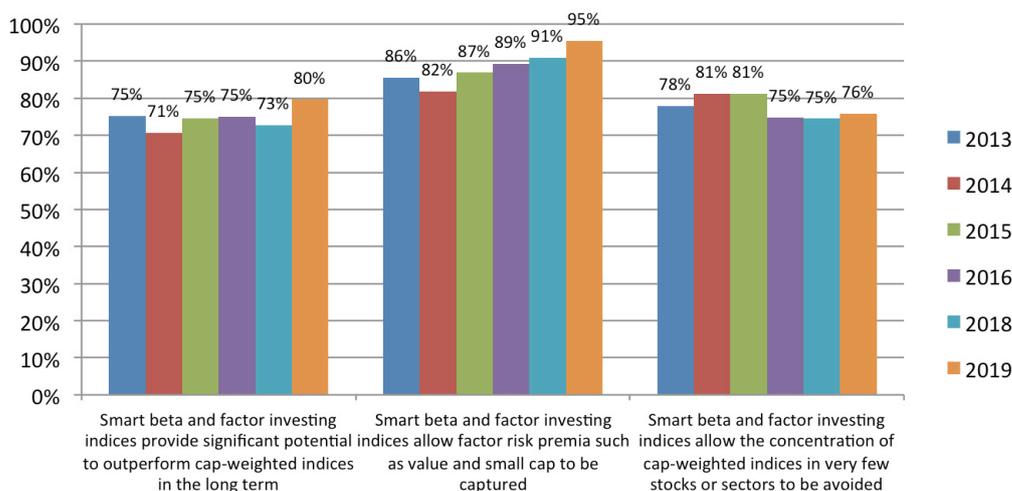


Exhibit 4.50 summarises the opinions of respondents invited to comment on the distinctive characteristics of smart beta and factor investing indices compared to the cap-weighted indices over six years. We can see that as early as 2013, the vast majority of respondents (at least three-quarters) were already convinced of the advantages smart beta and factor investing indices provide in terms

of performance gains, index deconcentration and risk reduction, compared to cap-weighted indices. We therefore do not observe a dramatic increase over the six years in the proportion of respondents who have a favourable opinion of smart beta and factor investing index characteristics, since very high proportions of respondents had already identified their advantages when they were first

4. Results

included in the survey. This favourable opinion was confirmed in the following years, even slightly progressing with regard to the opinion that smart beta and factor investing indices provide significant potential to outperform cap-weighted indices in the long term (75% of respondents agreed in 2013, versus 80% in 2019) and the opinion that these indices allow factor risk premia such as value and small cap to be captured (86% of respondents agreed in 2013, versus 95% in 2019).

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References

References

- Agarwal, V., P. Hanouna, R. Moussawi and C. Stahel. 2016. Do ETFs Increase the Commonality in Liquidity of Underlying Stocks? Working paper, Villanova University.
- Amenc, N. and F. Goltz (2016). Long-Term Rewarded Equity Factors: What Can Investors Learn from Academic Research? *Journal of Index Investing* 7 (2), 39–56.
- Amenc, N., F. Goltz and V. Le Sourd. 2006. Assessing the Quality of Stock Market Indices: Requirements for Asset Allocation and Performance Measurement. EDHEC-Risk Institute.
- Amenc, N., F. Goltz, L. Martellini and P. Retkowsky. 2010. Efficient Indexation: An Alternative to Cap-Weighted Indices. EDHEC-Risk Institute Publication.
- Arnott, R., J. Hsu, L. Feifei and S. Shane. 2010a. Valuation Indifferent Weighting for Bonds. *Journal of Portfolio Management* 36(3).
- Arnott, R. D., J. C. Hsu and P. Moore. 2005. Fundamental Indexation. *Financial Analysts Journal* 61(2): 83-99.
- Arnott, R., V. Kalesnik, P. Moghtader and C. Scholl. 2010b. Beyond Cap-weight. *Journal of Indexes* (January/February): 16-29.
- Asness, C. S., T. J. Moskowitz, and L. H. Pedersen (2013). Value and Momentum Everywhere. *Journal of Finance* 68 (3), 929–985.
- Bai, J., B. Turan G., and W. Quan (2018). Common risk factors in the cross-section of corporate bond returns. Forthcoming in *Journal of Financial Economics*.
- Bektic, D., J. Wenzler, M. Wegener, D. Schiereck, and T. Spielmann (2017). Extending Fama-French factors to corporate bond markets. Working Paper.
- Ben-David, I., F. A. Franzoni and R. Moussawi. 2015. Do ETFs Increase Volatility? Working paper. Available at: <https://www.sec.gov/comments/s7-11-15/s71115-1.pdf>.
- Ben-David, I., F. A. Franzoni and R. Moussawi. 2017. Exchange Traded Funds (ETFs). *Annual Review of Financial Economics* 9: 169-189.
- BlackRock. 2018. BlackRock Global ETP Landscape – Industry Highlights (December).
- Broman, M. S. 2016. Liquidity, Style Investing and Excess Comovement of Exchange-Traded Fund Returns. *Journal of Financial Markets* 30: 27-53.
- Campani, C. and F. Goltz. 2011. A Review of Corporate Bond Indices: Construction Principles, Return Heterogeneity, and Fluctuations in Risk Exposures. EDHEC-Risk Institute Publication.
- Chen, L., D. A. Lesmond, and J. Wei (2007). Corporate yield spreads and bond liquidity. *Journal of Finance* 62 (1), 119–149.
- Cochrane, J. H. (2010). Discount rates. Working Paper.
- Cochrane, J. H. (2011). Presidential address: Discount rates. *Journal of Finance* 66 (4), 1047–1108.
- Cochrane, J.H. 2005. Asset Pricing (Revised Edition). Princeton University Press.
- Correia, M., S. Richardson, and I. Tuna (2012). Value investing in credit markets. *Review of Accounting Studies* 17 (3), 572–609.
- Cremers, M., M.A. Ferreira, P.P. Matos and L.T. Starks. 2013. The Mutual Fund Industry Worldwide: Explicit and Closet Indexing, Fees, and Performance. Working paper.

References

- Da, Z. and S. Shive. 2016. Exchange Traded Funds and Asset Return Correlations. Working paper, Notre Dame University.
- de Carvalho, R. L., P. Dugnonle, X. Lu, and P. Moulin (2014). Low-Risk Anomalies in Global Fixed Income: Evidence from Major Broad Markets. *Journal of Fixed Income* 23 (4), 51–70.
- Deguest, R., F. Fabozzi, L. Martellini and V. Milhau. 2013. Bond Portfolio Optimization in the Presence of Duration Constraint. EDHEC-Risk Institute Publication.
- ETFGI. 2018b. ETFGI monthly newsletter December 2018. Available at www.etfgi.com.
- ETFGI. 2018a. Global ETF and ETP Smart Beta Insights. January 2018. Available at www.etfgi.com.
- European Securities and Markets Authority. 2011. ESMA's discussion paper on guidelines for UCITS exchange-traded funds and structured UCITS.
- Fama, E. F. and K. R. French (1993). Common Risk Factors in the Returns on Stocks and Bonds. *Journal of Financial Economics* 33 (1), 3–56.
- Fuhr, D. and S. Kelly. 2011. ETF Landscape Industry Review May 2011. BlackRock.
- Gebhardt, W. R., S. Hvidkjaer, and B. Swaminathan (2005a). Stock and Bond Market Interaction: Does Momentum Spill Over? *Journal of Financial Economics* 75 (3), 651–690.
- Gebhardt, W. R., S. Hvidkjaer, and B. Swaminathan (2005b). The Cross-Section of Expected Corporate Bond Returns: Betas or Characteristics? *Journal of Financial Economics* 75 (1), 85–114.
- Giannotti, T. and F. Maciver. 2016. Distribution Transition. Fund Buyer Focus. Available at: <http://fundbuyerfocus.com/2016/02/941/>
- Glosten, L., S. Nallareddy and Y. Zou. 2016. ETF Trading and Informational Efficiency of Underlying Securities. Working paper, Duke University.
- Goltz, F. and V. Le Sourd. 2011. Does Finance Theory Make the Case for Capitalization-Weighted Indices? *Journal of Index Investing* 2(2): 59–75.
- Grinold, R. 1992. Are Benchmark Portfolios Efficient? *Journal of Portfolio Management* 19(1): 34–40.
- Hamm, S. J. W. 2014. The Effects of ETFs on Stock Liquidity. Working paper, Ohio State University. Available at SSRN: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1687914.
- Haugen, R.A. and N.L. Baker. 1991. The Efficient Market Inefficiency of Capitalization-Weighted Stock Portfolios. *Journal of Portfolio Management* 17(3): 35–40.
- Houweling, P. and J. van Zundert (2017). Factor investing in the corporate bond market. *Financial Analysts Journal* 73 (2), 100–115.
- Huang, J. and M. Huang (2012). How Much of the Corporate-Treasury Yield Spread is Due to Credit Risk? *Review of Asset Pricing Studies* 2 (2), 153–202.
- Ilmanen, A. (2011). Expected Returns. Wiley & Sons.
- IPE. 2018. Exchange-Traded Fund Guide. Available at: <https://www.ipe.com/Uploads/z/x/s/ETFs2018.pdf>.
- Israel, R., D. Palhares, and S. Richardson (2018). Common Factors in Corporate Bond Returns. Forthcoming in the *Journal of Investment Management*.
- Israeli, D., C. M. C. Lee and S. Sridharan. 2016. Is there a Dark Side to Exchange Traded Funds (ETFs)? An Information Perspective. (Stanford University Graduate School of Business Research Paper n° 15-42). Available at SSRN: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2625975.

References

- Jostova, G., S. Nikolova, A. Philipov, and C. W. Stahel (2013). Momentum in Corporate Bond Returns. *Review of Financial Studies* 26 (7), 1649–1693.
- Kahn, R. N., and M. Lemmon. 2015. Smart Beta: The Owner's Manual. *Journal of Portfolio Management* 41(2): 76–83.
- Koijen, R., T. Moskowitz, L. Pedersen, and V. E.B. (2017). Carry. *Journal of Financial Economics*.
- L'Hoir, M. and M. Boulhabel (2010). A Bond-Picking Model for Corporate Bond Allocation. *The Journal of Portfolio Management* 36 (3), 131–139.
- Lyxor ETF Research. 2018. Smart Beta Barometer. Q2 2018.
- Madhavan, A. 2016. Exchange-Traded Funds and the New Dynamics of Investing. Oxford University Press.
- Madhavan, A., U. Marchioni, W. Li and D. Du. 2014. Equity ETFs vs. Index Futures: A Comparison for the Fully-Funded Investor. *Journal of Index Investing* 5 (2): 66–75.
- Madhavan, A. and A. Sobczyk. 2016. Price Dynamics and Liquidity of Exchange-Traded Funds. *Journal of Investment Management* 14(2): 1–17.
- Maeso, J.-M, L. Martellini, and R. Rebonato. 2019a. Factor Investing in Sovereign Bond Markets – A Time-Series Perspective. An EDHEC-Risk Institute Publication (May).
- Maeso, J.-M, L. Martellini, and R. Rebonato. 2019b. Factor Investing in Fixed-Income – Cross-Sectional and Time-Series Momentum in Sovereign Bond Markets. An EDHEC-Risk Institute Publication (May).
- Maeso, J.-M, L. Martellini, and R. Rebonato. 2019c. Factor Investing in Fixed-Income – Defining and Exploiting Value in Sovereign Bond Markets. An EDHEC-Risk Institute Publication (May).
- Malevergne, Y., P. Santa Clara and D. Sornette. 2009. Professor Zipf Goes to Wall Street. National Bureau of Economic Research.
- Martellini, L. and V. Milhau (2015). Factor Investing: A Welfare-Improving New Investment Paradigm or Yet Another Marketing Fad? Technical report, EDHEC-Risk Institute Publication.
- Morningstar. 2019a. A Guided Tour of the European ETF Marketplace (April). Available at: http://images.mscomm.morningstar.com/Web/MorningstarInc/%7Bd4288644-b38b-47c0-b4fb-a4b9b87192f8%7D_A_Guided_Tour_of_the_European ETF_Marketplace.pdf.
- Morningstar. 2019b. A Global Guide to Strategic Beta Exchange-Traded Products. Available at: https://www.morningstar.com/content/dam/marketing/shared/pdfs/Research/A_Global_Guide_To_Strategic_Beta_Exchange-Traded_Products.pdf.
- Pospisil, L. and J. Zhang (2010). Momentum and Reversal Effects in Corporate Bond Prices and Credit Cycles. *Journal of Fixed Income* 20 (2), 101–115.
- Rebonato, R. (2018). Are non-level factors rewarded in the treasury yield curve? EDHEC-Risk Institute Working Paper.
- Rebonato, R. and S. Hong (2017). A New Measure of Liquidity from Publicly Available Data. Working Paper.
- Rebonato, R. and T. Hatano (2018). The Economic Origin of Treasury Excess Returns: A Cycles and Trend Explanation. Working Paper.

References

- Reilly, F., G. Kao, and J. Wright (1992). Alternative Bond Market Indices. *Financial Analysts Journal* 48 (3), 44–58.
- Schwartz, T. 2000. How to Beat the S&P500 with Portfolio Optimization. DePaul University. Working Paper.
- Siegel, L. 2003. Benchmarks and Investment Management. The Research Foundation of the Association for Investment Management and Research. Charlottesville, Virginia.
- Tabner, I. 2007. Benchmark Concentration: Capitalization Weights versus Equal Weights in the FTSE 100 Index. University of Stirling. Working Paper.
- Wermers, R. and J. Xue. 2015. Intraday ETF Trading and the Volatility of the Underlying. Working paper, University of Maryland, Study sponsored by Lyxor Asset Management.
- Wurgler, J. 2011. On the Economic Consequences of the Growing Popularity of Index Trading. Working paper, New York University.

References

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Indexing and
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About Amundi ETF, Indexing and Smart Beta

With more than €114 billion¹ in assets under management, Amundi ETF, Indexing and Smart Beta is one of Amundi's strategic business areas and is a key growth driver for the Group.

Amundi ETF, Indexing and Smart Beta business line provides investors - whether institutional or distributors - with robust, innovative, and cost-efficient solutions, leveraging Amundi Group's scale and large resources. The platform also offers investors fully customized solutions (ESG, Low Carbon, specific exclusions, risk constraints, etc.).

With over 30 years of benchmark construction and replication expertise, Amundi is a trusted name in ETF & Index management among the world's largest institutions. The team is also recognized for its ability to develop Smart Beta & Factor Investing solutions, with more than 10-year track-record.

1- All figures and data are provided by Amundi ETF, Indexing & Smart Beta at end June 2019

About EDHEC-Risk Institute

About EDHEC-Risk Institute

Founded in 1906, EDHEC is one of the foremost international business schools. Operating from campuses in Lille, Nice, Paris, London and Singapore, EDHEC is one of the top 15 European business schools. Accredited by the three main international academic organisations, EQUIS, AACSB, and Association of MBAs, EDHEC has for a number of years been pursuing a strategy of international excellence that led it to set up EDHEC-Risk Institute in 2001. This Institute boasts a team of permanent professors, engineers and support staff, and counts a large number of affiliate professors and research associates from the financial industry among its ranks.

The Need for Investment Solutions and Risk Management

Investment management is justified as an industry only to the extent that it can demonstrate a capacity to add value through the design of dedicated and meaningful investor-centric investment solutions, as opposed to one-size-fits-all manager-centric investment products. After several decades of relative inertia, the much needed move towards investment solutions has been greatly facilitated by a true industrial revolution triggered by profound paradigm changes in terms of (1) mass production of cost- and risk-efficient smart factor indices; (2) mass customisation of liability-driven investing and goal-based investing strategies; and (3) mass distribution, with robo-advisor technologies. In parallel, the investment industry is strongly impacted by two other major external revolutions, namely the digital revolution and the environmental revolution.

In this fast-moving environment, EDHEC-Risk Institute positions itself as the leading academic think-tank in the area of investment solutions, which gives true significance to the investment management practice. Through our multi-faceted programme of research, outreach, education and industry partnership initiatives, our ambition is to support industry players, both asset owners and asset managers, in their efforts to transition towards a novel, welfare-improving, investment management paradigm.

EDHEC-Risk New Initiatives

In addition to the EDHEC Alternative Indexes, which are used as performance benchmarks for risk analysis by hedge funds investors, and the EDHEC-IEIF Monthly Commercial Property index, which tracks the performance of the French commercial property market through SCPIs, EDHEC-Risk has recently launched a series of new initiatives:

- The EDHEC-Princeton Retirement Goal-Based Investing Index Series, launched in May 2018, which presents asset allocation benchmarks for innovative mass-customised target-date solutions for individuals preparing for retirement;
- The EDHEC Bond Risk Premium Monitor, designed to offer investment and academic communities a tool to quantify and analyse the risk premium associated with Government bonds;
- The EDHEC-Risk Investment Solutions (Serious) Game, intended to facilitate engagement with graduate students or investment professionals enrolled on one of EDHEC-Risk's various campus-based, blended or fully-digital educational programmes.

About EDHEC-Risk Institute

Academic Excellence and Industry Relevance

In an attempt to ensure that the research it carries out is truly applicable, EDHEC has implemented a dual validation system for the work of EDHEC-Risk. All research work must be part of a research programme, the relevance and goals of which have been validated from both an academic and a business viewpoint by the Institute's advisory board. This board is made up of internationally recognised researchers, the Institute's business partners, and representatives of major international institutional investors. Management of the research programmes respects a rigorous validation process, which guarantees the scientific quality and the operational usefulness of the programmes.

Seven research programmes have been conducted by the centre to date:

- Investment Solutions in Institutional and Individual Money Management;
- Equity Risk Premia in Investment Solutions;
- Fixed-Income Risk Premia in Investment Solutions;
- Alternative Risk Premia in Investment Solutions;
- Multi-Asset Multi-Factor Investment Solutions;
- Reporting and Regulation for Investment Solutions;
- Technology, Big Data and Artificial Intelligence for Investment Solutions.

EDHEC-Risk Institute's seven research programmes explore interrelated aspects of investment solutions to advance the frontiers of knowledge and foster industry innovation. They receive the support of a large number of financial companies. The results of the research programmes are disseminated through the EDHEC-Risk locations in the City of London (United Kingdom) and Nice, (France).

EDHEC-Risk has developed a close partnership with a small number of sponsors within the framework of research chairs or major research projects:

- **Financial Risk Management as a Source of Performance**,
in partnership with the *French Asset Management Association (Association Française de la Gestion financière – AFG)*;
- **ETF, Indexing and Smart Beta Investment Strategies**,
in partnership with *Amundi*;
- **Regulation and Institutional Investment**,
in partnership with *AXA Investment Managers*;
- **Optimising Bond Portfolios**,
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- **Asset-Liability Management and Institutional Investment Management**,
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- **Risk Allocation Framework for Goal-Driven Investing Strategies**,
in partnership with *Merrill Lynch Wealth Management*;
- **Financial Engineering and Global Alternative Portfolios for Institutional Investors**,
in partnership with *Morgan Stanley Investment Management*;
- **Investment and Governance Characteristics of Infrastructure Debt Investments**,
in partnership with *Natixis*;
- **Advanced Investment Solutions for Liability Hedging for Inflation Risk**,
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- **Cross-Sectional and Time-Series Estimates of Risk Premia in Bond Markets**,
in partnership with *PIMCO*;
- **Active Allocation to Smart Factor Indices**,
in partnership with *Rothschild & Cie*;
- **Solvency II**,
in partnership with *Russell Investments*;
- **Advanced Modelling for Alternative Investments**,
in partnership with *Société Générale Prime Services (Newedge)*;
- **Structured Equity Investment Strategies for Long-Term Asian Investors**,
in partnership with *Société Générale Corporate & Investment Banking*.

The philosophy of the Institute is to validate its work by publishing in international academic journals, as well as to make it available to the sector through its position papers, published studies and global conferences.

To ensure the distribution of its research to the investment industry, EDHEC-Risk also provides professionals with access to its website, <https://risk.edhec.edu>, which is devoted to international risk and investment management research. The website is aimed at professionals who wish to benefit from EDHEC-Risk's analysis and expertise in the area of investment solutions. Its quarterly newsletter is distributed to over 100,000 readers.

About EDHEC-Risk Institute

Research for Business

EDHEC-Risk Institute also has highly significant executive education activities for professionals, in partnership with prestigious academic partners. EDHEC-Risk's executive education programmes help investment professionals upgrade their skills with advanced asset allocation and risk management training across traditional and alternative classes.

In 2012, EDHEC-Risk Institute signed two strategic partnership agreements. The first was with the Operations Research and Financial Engineering department of Princeton University to set up a joint research programme in the area of investment solutions for institutions and individuals. The second was with Yale School of Management to set up joint certified executive training courses in North America and Europe in the area of risk and investment management.

As part of its policy of transferring know-how to the investment industry, in 2013 EDHEC-Risk Institute also set up ERI Scientific Beta, which is an original initiative that aims to favour the adoption of the latest advances in smart beta design and implementation by the whole investment industry. Its academic roots provide the foundation for its strategy: offer, in the best economic conditions possible, the smart beta solutions that are most proven scientifically with full transparency of both methods and associated risks.

EDHEC-Risk Institute also contributed to the 2016 launch of EDHEC Infrastructure Institute (EDHECinfra), a spin-off dedicated to benchmarking private infrastructure investments. EDHECinfra was created to address the profound knowledge gap faced by infrastructure investors by collecting and standardising private investment and cash flow data and running state-of-the-art asset pricing and risk models to create the performance benchmarks that are needed for asset allocation, prudential regulation and the design of infrastructure investment solutions.

About EDHEC-Risk Institute

EDHEC-Risk Institute
Publications and Position
Papers (2016-2019)

EDHEC-Risk Institute

Publications and Position Papers (2016–2019)

2019

- Le Sourd, V. and L. Martellini. The EDHEC European ETF, Smart Beta and Factor Investing Survey 2019 (September).
- Maeso, J.M., Martellini, L. and R. Rebonato. Cross-Sectional and Time-Series Momentum in Sovereign Bond Markets (May).
- Maeso, J.M., Martellini, L. and R. Rebonato. Defining and Exploiting Value in Sovereign Bond Market (May).
- Maeso, J.M., Martellini, L. and R. Rebonato. Factor Investing in Sovereign Bond Markets - Time-Series Perspective (May).

2018

- Goltz, F. and V. Le Sourd. The EDHEC European ETF and Smart Beta and Factor Investing Survey 2018 (August).
- Mantilla-Garcia, D. Maximising the Volatility Return: A Risk-Based Strategy for Homogeneous Groups of Assets (June).
- Giron, K., L. Martellini, V. Milhau, J. Mulvey and A. Suri. Applying Goal-Based Investing Principles to the Retirement Problem (May).
- Martellini, L. and V. Milhau. Smart Beta and Beyond: Maximising the Benefits of Factor Investing (February).

2017

- Amenc, N., F. Goltz, V. Le Sourd. EDHEC Survey on Equity Factor Investing (November).
- Amenc, N., F. Goltz, V. Le Sourd. The EDHEC European ETF and Smart Beta Survey 2016 (May).
- Maeso, J.M., Martellini, L. Maximising an Equity Portfolio Excess Growth Rate: A New Form of Smart Beta Strategy? (November).
- Martellini, L. and V. Milhau. Mass Customisation versus Mass Production in Retirement Investment Management. Addressing a "Tough Engineering Problem" (May).
- Esakia, M., F. Goltz, S. Sivasubramanian and J. Ulahel. Smart Beta Replication Costs (February).
- Maeso, J.M., Martellini, L. Measuring Volatility Pumping Benefits in Equity Markets (February).

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- Amenc, N., F. Goltz, V. Le Sourd. Investor Perceptions about Smart Beta ETFs (August).
- Giron, K., L. Martellini and V. Milhau. Multi-Dimensional Risk and Performance Analysis for Equity Portfolios (July).
- Maeso, J.M., L. Martellini. Factor Investing and Risk Allocation. From Traditional to Alternative Risk Premia Harvesting (June).
- Amenc, N., F. Goltz, V. Le Sourd, A. Lodh and S. Sivasubramanian. The EDHEC European ETF Survey 2015 (February).
- Martellini, L. Mass Customisation versus Mass Production in Investment Management (January).

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