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Approaches to mutual funds selection: The importance of an appropriate selection process

MICHELE GHEDINI

Student number: 33985

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João Pedro Pereira

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Abstract

After years of contrasting opinions, financial literature is converging to the conviction that, in funds selection, a study based on both quantitative and qualitative analysis allows to build portfolios that produce higher performances than adopting only one of these approaches. Studying some factitious portfolios, obtained from the investible universe of mutual funds of a small Italian asset management company, this research confirms this conclusion. Moreover, through the introduction of an ESG filter to the first part of the analysis, the statement that counting for values and ethics in portfolio construction enhances the performance of financial products is validated.

Keywords: mutual funds selection, selection approaches, sustainable investing.

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1. Introduction

Understanding the investment industry is not an easy task. Many individual investors do not have the skills, resources or time to properly manage a portfolio, and several times they are not even conscious of all the strategies that they could benefit from. In this sense, a proper investment plan can be provided by asset management companies (AMCs). These firms manage money collected from clients and invest it in different asset classes according to stated investment goals. By doing so, they create a wide selection of products, presenting investment solutions that are suitable for every kind of investor, from high-net-worth-individual portfolios to mutual and index funds.

The European Directive 1985/611/EEC by the European Economic Community has been the first attempt to regulate investment funds, subjected to national laws until that time, at a European level. The outcome of this directive has been the creation of the Undertaking for Collective Investment in Transferable Securities (UCITS), harmonized regulated investment funds that invest in liquid assets and can be distributed publicly to retail and institutional investors across the EU with one unique authorisation. The main benefits of UCITS funds are the high liquidity, the transparency of information and the access to a wide variety of securities, ensuring investment diversification. The Quarterly Statistical Release for the second trimester of 2019, published by the European Fund and Asset Management Association (EFAMA), reported an increase in net assets of UCITS of 1.4% to €10,144 billion compared to the previous period.

Among UCITS, mutual funds are the most widespread and are nowadays recognised as the best instruments for the majority of investors: thanks to their accessibility, versatility and quite simple structure, these funds allow to have access to different investment strategies and so to deliver more consistent returns and to be exposed to a more diversified risk. Their popularity has dramatically increased over the years: in the last decade, the number of

worldwide regulated open-end funds, almost entirely represented by mutual funds, has constantly grown passing from 82,991 in 2009 to 118,978 in 2018 (Investment Company Institute, 2019), with their net value increased from $26.7 trillion to $46.7 trillion.

In constructing portfolios, AMCs select instruments customized for individual's needs, expectations and risk perception, so to achieve the best solution for their clients. Asset managers follow different procedures for the selection of mutual funds, as there are no evidences of strategies that systematically outperform the others. Essentially, the debate is about the use of quantitative or qualitative analysis to determine which funds to invest in. In the first case, depending on their inclination, fund selectors rely on some specific indicators that provide information on how funds performed across time. However, as it's well known across the industry, historical performance are not a guarantee of future returns, with performance persistence that is a crucial factor that has to be evaluated. For this reason, the quantitative examination of financial products must be flanked by a qualitative study that investigates the non-empirical features of firms and funds. Blending together the quantitative and the qualitative analysis seems to be the best way to reduce the uncertainty related to funds and to select products that are prone to persistently outperform the market.

In order to assess the validity of the previous assumption, this study explores the features of different investment approaches, presenting their characteristics and trying to verify through empirical calculations if it's true that integrating quantitative and qualitative analysis in the same selection process allows to enhance portfolio performances. The baseline of the study is the investment process of a small Italian asset management company, whose investible universe of more than 400 mutual funds is filtered according to some quantitative and qualitative criteria to obtain several portfolios representative of different investment strategies. Comparing their performance, the study aims to test if investing in a blend portfolio, obtained through the integration of the two analysis, provides higher returns.

This paper also addresses the topic of sustainable investing. This theme, who's gaining an increasing importance among the public opinion, has a significant impact also on financial markets, where a massive growth has been registered especially after the burst of the financial crisis in 2007, with managers that are starting to consider environment, social and governance (ESG) factors in the construction of portfolios. The increasing demand for ESG investments has led professionals to question the effect of these instruments on portfolio performances. Several studies provided contrasting findings, while others certified better returns thanks to sustainability filters. Working on the AMC's data, this project evaluates if ESG filtering is able to enhance portfolio performances. The examination is conducted on the portfolios built in the first step, filtered according to their ESG scores, provided by the MSCI ESG metrics: data pre- and post-filtering are analysed in order to find evidences of better results. In case of positive outcomes, this could be an interesting spark for the AMC in object, since it's still not fully engaged in considering ESG feature as a discriminating factor for funds selection.

The rest of this study is organized as follows. In section 2 the most widespread techniques for mutual fund selection are described: the focus is on quantitative and qualitative approaches and on their interaction. Section 3 is dedicated to sustainable investing, describing its impressive growth and diffusion and the different ways in which the topic is tackled in financial markets. Section 4 provides the results of the analysis on the effect of different investment approaches on portfolio performances and on the impact of ESG filters. Conclusions are presented in section 5.

2. Mutual funds selection

Asset management companies adopt several strategies to invest in financial markets. The selection of mutual funds is a complex process that requires a detailed study of the products. Anyway, there's not a unique or preferred approach across the industry: each AMC follows a different strategy related to the firm's philosophy and goals. There is a wide debate on which

is the most efficient way to select mutual funds, but a common answer to this question is still far to be reached. The core of the discussion is related to the role of quantitative and qualitative analysis: should managers be focused on just one of them or on both? How much should they rely on each one? This section goes through both selection approaches in order to provide a general outlook of how they work and then it points out how blending them together allows to get a more exhaustive and reliable knowledge of mutual funds and increases portfolio performance.

2.1 Combination of quantitative and qualitative analysis

A common idea of "quantitative analysis" is quite widespread among professionals. De Larminat (2013) interviewed several fund managers who defined quantitative analysis as the stochastic study of past prices to assess funds' performance during different market cycles and to compare it with its peers and benchmark. According to their investment philosophy, professionals use different types of quantitative indicators to evaluate the fund from a reward and risk perspective, including both traditional performance measures and risk adjusted returns. In addition to historical returns and volatility, other widespread measures of risk are the beta and the maximum drawdown, that are indicative by themselves but also allow to derive some risk-to-return ratios (Sharpe ratio, Treynor ratio) used to compare funds to their peers. Other useful indicators are the tracking error of a fund, asset size and expense ratio. Overall, the quantitative analysis provides an accurate description of funds through the elaboration of several parameters which allow their classification and the comparison among different categories.

Through the analysis of past performance, funds selectors assess mutual funds' ability to generate alpha, meaning that they identify those succeeding in beating the market by generating excess return. Anyway, bearing in mind the fundamental principle that historical returns are not a guarantee of future returns, it's important to evaluate to what extent past performances are predictive of the future. Persistence implies that funds ranked as "past

winners/losers" tend to stay the same in the future, indicating a positive correlation between past and future returns. Academic literature is characterized by a large debate on this topic. Hereil et al. (2010) present a wide range of contrasting opinions, but the general belief has evolved across decades until reaching the widespread conclusion that the persistence in fund performances holds only in the short-term. In this sense, the last report of the S&P semiannually-published "The Persistence Scorecard" indicates that, at March 2019, only the 11.4% of US equity funds has remained a top-quartile over a three-year period, with this number typically falling over longer horizons. Given these results, a meaningful relationship between past and future performance over the long-term is excluded. This unquestionably indicates that the selection of mutual funds cannot be based exclusively on a quantitative study: a qualitative analysis is necessary to get a more realistic knowledge of funds and to have more reliable clues about their future performance.

The qualitative analysis consists in all the operations not resulting from the empirical study of historical returns. Despite some of these actions have been "institutionalized", professionals investigate on the topics that are more relevant according to their investment philosophy. In general, it consists in the definition of the objective of the portfolio, the analysis of the funds' investment strategy and of the general structure and policy of the management company. An accurate study of these data allows selectors to assess the reliability of historical returns and to pick funds that reflect their investment objectives.

On one hand, the scarce persistence of past performance is recognized by almost all the professionals. On the other, an exclusively quality-based analysis is suspected to be affected by individual feelings and perceptions. The incompleteness of both these analysis and the only partial overlap of knowledge that they bring encourage fund selectors to combine them: this is probably the best way to reduce the uncertainty related to a fund and, in this way, one type of analysis allows to confirm or reject the results obtained by the other one. Studying the

firm's conditions in which past returns have been realized, a qualitative approach aims to verify the reliability of quantitative factors as indicators of future performances. Therefore, in order to provide realistic results, an efficient fund selection should be based on the combination of both these approaches.

2.2 Multimanager approach

In the selection of mutual funds, blending quantitative and qualitative analysis has proved to be much more appropriate than relying on just one of them. This methodology results particularly efficient when the fund selector follows a multimanager strategy, that aims to improve portfolio efficiency through diversification among managers. Picking several managers allows to benefit of professionals that are specialized in different asset classes, to enhance the diversification and so to lower the volatility of tracking errors. Anyway because of these benefits, multimanager funds require higher payments in terms of management fees. Relying on third-party managers, the portfolio is exposed to risks related to their choices, views, timing and efficiency, and so, to reduce these risks as much as possible, a rigorous due diligence is necessary to understand each manager's attitude. A well-defined and robust investment philosophy paired to the ability to generate informational advantages through its researches and to capture market inefficiencies, are the most important characteristics that make an investment manager attractive for multimanager funds.

3. Sustainable investing

Sustainable investing is an approach that considers environmental, social and governance (ESG) factors in portfolio selection and management, seeking both positive performance and long-term impact on society. Depending on its purpose, it includes different categories, such as impact investing, socially responsible investing (SRI), ESG and values-based investing. Once viewed as a niche segment, sustainable investing is nowadays one of the main investment trends all over the world, pushed by mounting fears about climate change, high-

profile scams and damaging corporate governance failures, and it's seen as the best signal of potential risks to future corporate earnings risk. From January 2004, when UN Secretary-General Kofi Annan wrote to the CEOs of significant financial institutions inviting them to integrate ESG factors into capital markets, sustainable investing has faced a fast-pace growth, representing 39% of global managed assets and exceeding the threshold of $30 trillion (precisely $30,7 trillion) worldwide at the beginning of 2018, with a 34% increase in two years (GSIA, 2018). There are different types of sustainable investing strategies, standardized by GSIA (2012) in seven different classes, but the so called "multi-strategy" investments, consisting in the combination of multiple strategies, are not uncommon.

In order to evaluate the ESG features of funds, the selection of a benchmark is important to classify the performance of financial instruments. ESG indexes are usually built by filtering traditional indexes, taking into account only the universe of securities that are considered sustainable. Building a sustainability index requires an accurate research to identify and classify several parameters across a wide universe of assets. For this reason, this activity is usually conducted by rating agencies, both independently and as part of index providers. Anyway, given the qualitative nature of this study, there's not an homogeneous and clear procedure, so different agencies could provide different scores for the same instrument.

The increasing demand for ESG investments has led institutions to question if the consensus around this topic is also reflected in better financial performance, bearing in mind that the impact of ESG screening essentially depends on three factors: time period, investment universe and strategy. Roncalli and Mortier (2019) provided contrasting findings, indicating a limited effect on portfolio risk, in terms of volatility and drawdown, but a significant positive impact on portfolio returns. This study also underlined that ESG criteria don't affect all the securities but tend to have an influence on the best and the worst of each category. In favour

of this approach, Konqui et al. (2019) found that ESG filters improve both the absolute and risk-adjusted performance of portfolios.

4. Empirical analysis

In this section, an analysis on the reliability of the conclusions previously illustrated is conducted. The baseline of the examination is the selection process adopted by a small Italian Asset Management Company. The firm invests in UCITS funds following a multimanager approach, thus picking different funds from different fund houses to have a higher degree of diversification. Given the investment philosophy of the firm, whose business is mainly focused on mutual funds, this procedure has been shaped taking into account the characteristics of these products, to obtain a final result that is as accurate as possible.

The first objective of the analysis is to verify if approaching the selection of mutual funds both quantitatively and qualitatively allows portfolio managers to get superior performance rather than following only one of the two strategies. Secondly, evidences of better portfolio performance due to the imposition of ESG filters are pursued. Moreover, the alpha generated by each portfolio has been estimated. To do that, equity and equity-like portfolios' returns are regressed on the base of the Fama and French 3-factor model plus momentum, while for bond and bond-like portfolios the regressors are the market factor, a term factor, computed as the 30Y-10Y Treasury-bond spread, and a default factor, that is the difference between the CRSP value-weighted stock return and the Treasury-bill rate, (Choi et al., 2017). Anyway, as suggested by past literature, these models turn out to be not really accurate to explain the returns: values of the adjusted R^2 are generally very low.

Going on with the reading, it's important to bear in mind that some expedients have been adopted in running the analysis. These disclaimers have been discussed in the *Appendix*.

Due to the annual revision of the potentially investible universe, the number of funds analysed is different across each time period: 443 mutual funds have been considered in 2017, 436 in

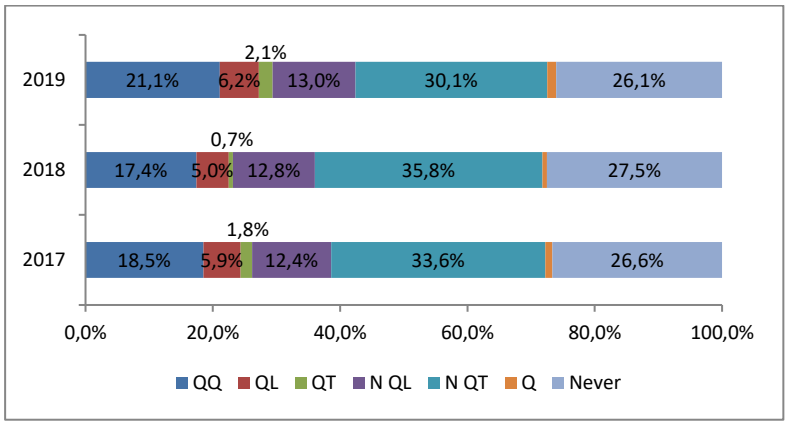
2018 and 422 in 2019. Despite the differences, the biggest share of each selection is represented by the same funds. All the universes are composed by roughly 60 peer groups, providing a quite complete representation of the market. Henceforth, hypothetical portfolios, built only for the scope of this study, will be named as follow: the "quality portfolio" ("QL" in tables and graphs) is the one created by following a pure qualitative approach, the "quantity portfolio" ("QT") is the one based on a quantitative approach and the "blend portfolio" ("QQ") derives from the combination of the two approaches.

4.1 Results of the three approaches

The first part of the study has been executed trying to be consistent as much as possible with the procedure of the AMC. The selection of funds has been made according to some specific scores provided by the firm, that are calculated by a dedicated software based on the collection of quantitative and qualitative information: in this way they can be considered as fully representative of the company's approach. The technique adopted for the construction of portfolios takes inspiration from the one adopted by the AMC: the blend portfolio has been obtained by picking the eligible funds, those with a top-60% overall score within their peer group, and whose quality score is at least 70% of the maximum, that is exactly how the firm selects its investible universe. Similarly, the quality portfolio has been obtained by picking, among the eligible funds, those with a qualitative score of at least 70% of the maximum. Finally, because of the lack of quantitative restrictions in the AMC's procedure, the quantity portfolio results from simply selecting those funds with a top-60% quantitative score within each peer group.

The differences in the initial universe and the implementation of three different procedures suggest heterogeneity of portfolios both in terms of composition and performance. Anyway, the percentage of funds that are selected by all the strategies fluctuates between 17,5% and 21,1% across years; and also, a significant portion of the investible universe, between 26% and 28%, is picked by none of the strategies (**Graph 1**).

Graph 1: Selection statistics year by year



QQ	Picked in all the 3 approaches
QL	Picked with AMC's rules and qualitative approach
QT	Picked with AMC's rules and quantitative approach
N QL	Picked only with qualitative approach
N QT	Picked only with quantitative approach
Q	Picked only with AMC's approach
Never	Never picked

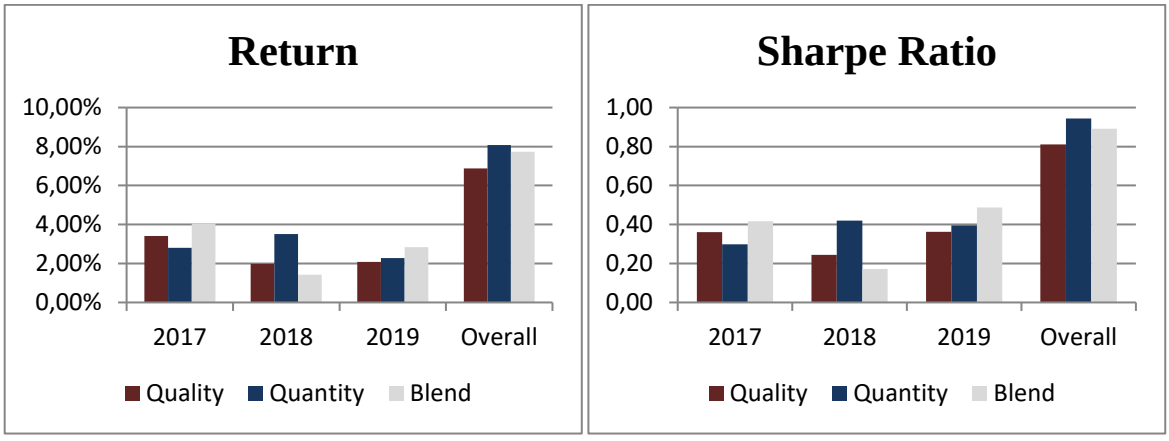
Not surprisingly, for each of the three time periods, the more restrictive the selection criteria, the lower the number of funds in the portfolio: due to less binding constraints, quantity portfolios are those made up by the highest number of funds, while blend portfolios are the least populated due to more restrictive limitations.

For what concerns performances, **Table 1** and **Graph 2** illustrate overall portfolios values.

Table 1: Performance of overall portfolios divided by year and investment strategy

	2017			*2018*			*2019*			*Overall*		
	QL	**QT**	**QQ**	**QL**	**QT**	**QQ**	**QL**	**QT**	**QQ**	**QL**	**QT**	**QQ**
# funds	163	241	121	154	235	104	170	226	130			
Return	3,41%	2,81%	4,05%	1,99%	3,52%	1,43%	2,09%	2,29%	2,84%	6,88%	8,07%	7,73%
Volatility	9,48%	9,44%	9,72%	8,16%	8,36%	8,34%	5,77%	5,79%	5,83%	8,48%	8,55%	8,68%
Sharpe Ratio	0,36	0,30	0,42	0,24	0,42	0,17	0,36	0,39	0,49	0,81	0,94	0,89
Alpha	0,00%	0,08%	0,03%	0,11%	0,21%	0,16%	-0,33%	-0,18%	-0,29%	0,00%	0,03%	0,02%
t-Stats	0,005	0,177	0,078	0,384	0,680	0,537	-0,712	-0,411	-0,645	-0,006	0,157	0,106

Graph 2: Return and Sharpe Ratio of the overall portfolios across years



In terms of volatility, there are no significant differences among the strategies, meaning that the main discriminating factor is represented by returns. It's important to bear in mind that, despite the difficulties that characterized the market, positive values in 2018 are due to the appreciation of the US dollar. Across the whole time-span, the quantitative portfolio is the one providing the highest return both in absolute (8,07%) and risk adjusted terms (Sharpe Ratio equal to 0,94). Anyway, distinguishing between the different approaches, results reveal an interesting path: when the market is strong, like in 2017 and 2019, the blend approach is the one that provides better returns, both in absolute (respectively +4,05% and +2,84%) and risk-adjusted (Sharpe Ratio equal to 0,42 and 0,49) terms; on the other hand, when the market is bearish like in 2018, the quantitative portfolio turns out to be the best performer (return +3,52% and Sharpe Ratio 0,42), while the blend strategy returns the lowest value compared to others. An overall consideration about this approach is that, adding a subjective filter to the pure quantitative analysis, it seems appropriate to catch the upside corrections of the market and, despite suffering in bad periods, to allow a recovery when conditions are good. For what concerns the alpha generated, low values of t-stats reveal a lack of statistical significance of excess returns in all the conditions. Regardless of the t-value, alphas created are really poor, with 2018 portfolios providing the highest value-added and the quantitative being the best one among the three strategies: given the relative short length of the time intervals, the result would be in line with expectations.

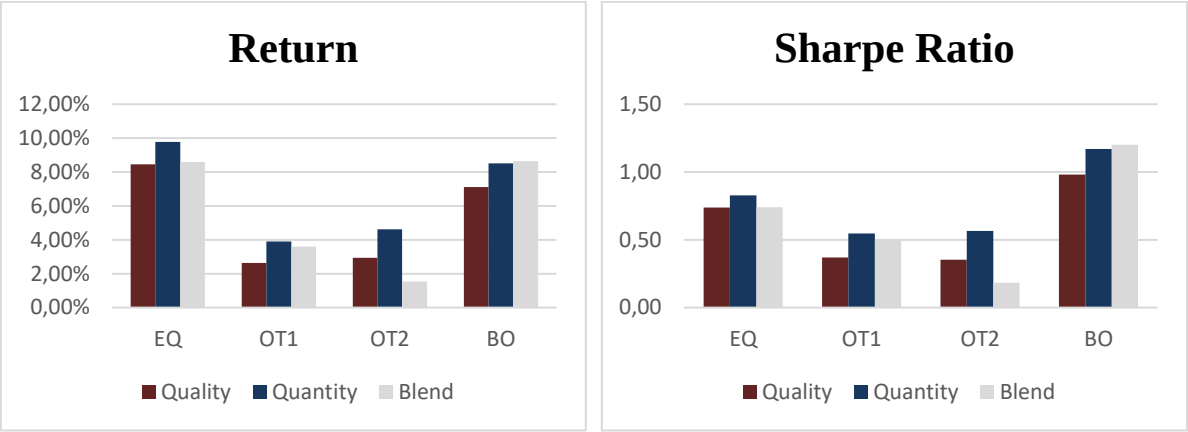
Going beyond this generic framework, the analysis looks deeper at the behaviour across time of single asset classes, equity, bond-like flexible, equity-like flexible and bond, according to the different approaches. Looking at the performance across the whole period, it's clear that the quantitative approach is the one that generally provides the best results, both in terms of returns and Sharpe Ratio. The only exception is represented by bonds, for which the blend strategy is the most indicated. A complete picture of the outcomes is presented in **Table 2** and

Graph 3. In terms of alpha, none of the asset class is able to produce a relevant excess return, regardless of the strategy adopted. Anyway, also in this case really low t-values define these values as not statistically significant.

Table 2: Overall performance of different asset classes

	EQ			*OT1*			*OT2*			*BO*		
	QL	**QT**	**QQ**	**QL**	**QT**	**QQ**	**QL**	**QT**	**QQ**	**QL**	**QT**	**QQ**
Return	8,44%	9,78%	8,58%	2,64%	3,90%	3,61%	2,93%	4,61%	1,54%	7,12%	8,51%	8,65%
Volatility	11,44%	11,81%	11,59%	7,12%	7,13%	7,15%	8,32%	8,16%	8,42%	7,25%	7,27%	7,20%
Sharpe Ratio	0,74	0,83	0,74	0,37	0,55	0,50	0,35	0,57	0,18	0,98	1,17	1,20
Alpha	0,00%	0,00%	0,00%	-0,01%	-0,02%	-0,03%	-0,01%	0,00%	-0,01%	-0,01%	0,01%	0,01%
t-Stats	0,136	0,168	0,154	-0,071	-0,132	-0,214	-0,444	-0,132	-0,553	-0,071	0,041	0,077

Graph 3: Overall return and Sharpe Ratio of different asset classes



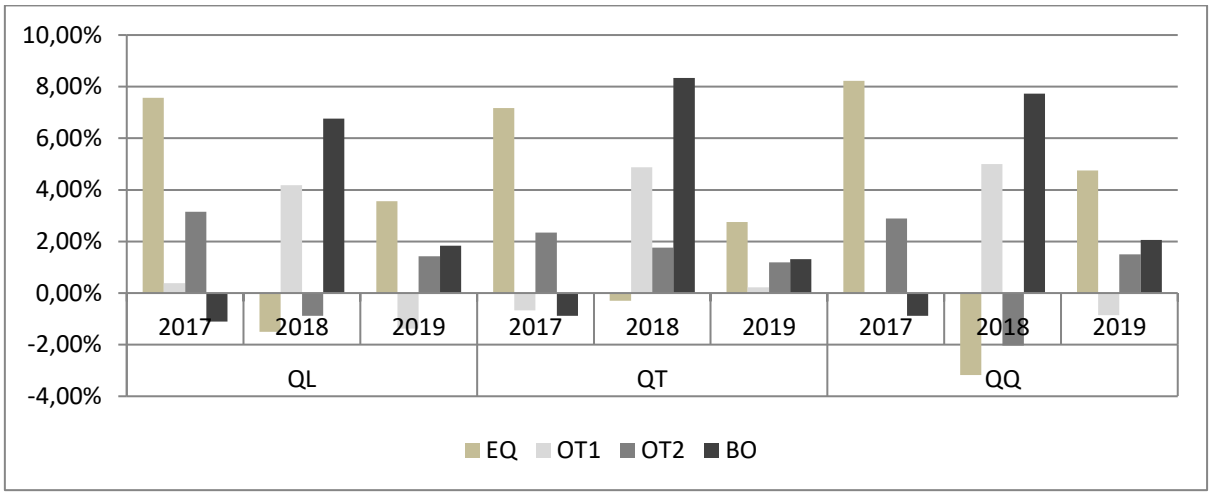
Splitting asset classes' performance across the three time intervals, it's possible to observe the same patterns as in the general case: with a bull market, the blend portfolios allow the capture the highest return, while under bearish conditions this is true for quantitative approaches. Full results are illustrated in **Table 3** and **Graphs 4** and **5**. It's possible to identify similarities between 2017 and 2019, where equity represents by far the main driver of performance. In the first case, it's supported by returns coming from equity-like funds, while in the most recent period the second source of returns is represented by bonds. Just like in the general framework, in 2018 the outcomes are quite different: bond funds' returns have been extremely high, and also bond-like securities performed really well, while equities and equity-like assets

faced negative results. In terms of Sharpe Ratio, the patterns are really close to those followed by portfolios return, with the main difference represented by the similarity in the values of equities and bonds in 2019. Looking at portfolios' alpha, in the majority of cases they're not able to beat the market, especially in 2017, when, for every strategy, bonds have been the only asset class able to generate extra-return, and in 2019, when only equity produced non-negative excess return. Instead, in 2018 both equity and bonds succeeded in generating alpha, with fixed income producing the best results. Anyway, also in this case the t-stats underline the lack of statistical significance of these values.

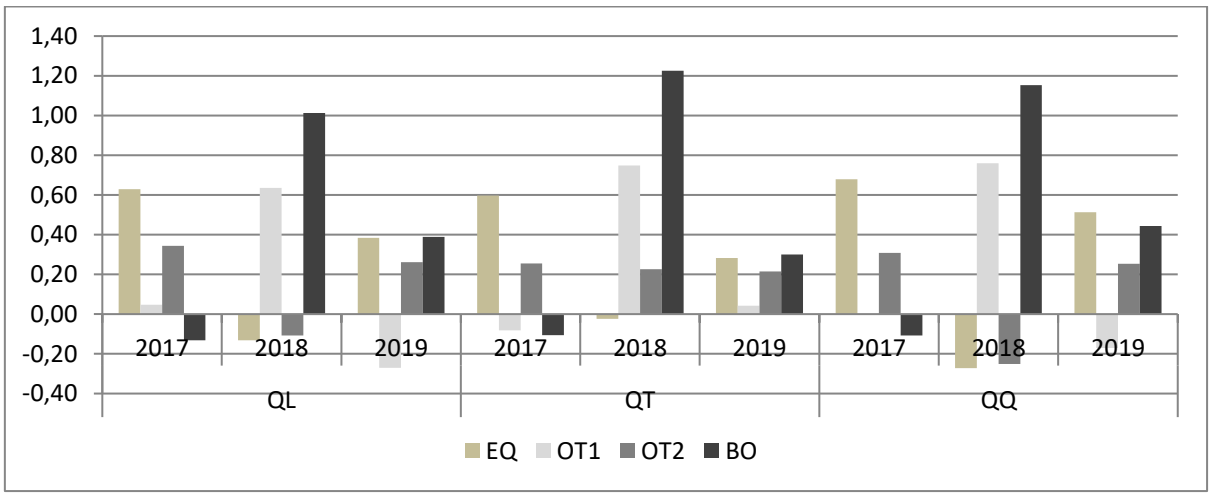
Table 3: Portfolios performance across years

		Quality				***Quantity***				***Blend***			
		EQ	**OT1**	**OT2**	**BO**	**EQ**	**OT1**	**OT2**	**BO**	**EQ**	**OT1**	**OT2**	**BO**
2017	**# funds**	67	24	28	44	95	28	37	81	58	14	15	34
	Return	7,57%	0,38%	3,15%	-1,10%	7,17%	-0,67%	2,34%	-0,89%	8,23%	0,00%	2,89%	-0,89%
	Volatility	12,03%	8,13%	9,17%	8,39%	12,02%	8,18%	9,18%	8,38%	12,12%	8,20%	9,36%	8,26%
	Sharpe Ratio	0,63	0,05	0,34	-0,13	0,60	-0,08	0,25	-0,11	0,68	0,00	0,31	-0,11
	Alpha	-0,01%	-0,13%	-0,01%	0,06%	-0,01%	-0,01%	-0,01%	0,11%	-0,01%	-0,06%	-0,01%	0,12%
	t-Stats	-0,262	-0,364	-0,216	0,155	-0,303	-0,027	-0,178	0,282	-0,184	-0,157	-0,280	0,312
2018	**# funds**	62	21	22	49	93	27	36	79	44	14	14	32
	Return	-1,51%	4,18%	-0,88%	6,76%	-0,30%	4,87%	1,76%	8,34%	-3,18%	5,00%	-2,04%	7,73%
	Volatility	11,43%	6,58%	8,19%	6,67%	12,18%	6,51%	7,78%	6,80%	11,70%	6,58%	8,11%	6,70%
	Sharpe Ratio	-0,13	0,64	-0,11	1,01	-0,02	0,75	0,23	1,23	-0,27	0,76	-0,25	1,15
	Alpha	0,01%	-0,01%	-0,01%	0,12%	0,02%	-0,03%	0,01%	0,16%	0,02%	-0,01%	-0,03%	0,16%
	t-Stats	0,407	-0,049	-0,231	0,448	0,671	-0,108	0,224	0,592	0,538	-0,026	-0,902	0,585
2019	**# funds**	71	22	23	54	92	29	30	75	57	15	14	44
	Return	3,56%	-1,38%	1,42%	1,83%	2,75%	0,22%	1,19%	1,31%	4,76%	-0,86%	1,50%	2,05%
	Volatility	9,28%	5,10%	5,45%	4,72%	9,76%	5,13%	5,51%	4,36%	9,28%	5,05%	5,92%	4,63%
	Sharpe Ratio	0,38	-0,27	0,26	0,39	0,28	0,04	0,22	0,30	0,51	-0,17	0,25	0,44
	Alpha	0,00%	-0,68%	0,00%	-0,61%	0,00%	-0,62%	-0,01%	-0,54%	0,01%	-0,61%	-0,01%	-0,51%
	t-Stats	-0,075	-1,173	-0,076	-1,194	0,025	-1,098	-0,298	-1,149	0,266	-1,084	-0,179	-1,051

Graph 4: Return of the different asset classes divided by investment strategy across years



Graph 5: Sharpe Ratio of the different asset classes divided by investment strategy across years



Overall, the main finding of this analysis is that a combination of quantitative and qualitative studies to determine which funds to invest in results particularly efficient with positive market conditions. This strategy is highly prolific also in negative times, but better performances can be obtained investing on the basis of quantitative indications. Anyway, it's important to bear in mind that values in 2018 have been affected by the abnormal behaviour of the market. For this reason the indications inferred from this period could be less significant than the others.

4.2 Introduction of ESG filters

The second part of the analysis focuses on studying the impact of ESG filters on portfolio performance, in order to assess the truthfulness of the currently spreading conception that ESG investments provide better returns than traditional investments. This check is realized by

taking 2018 and 2019 portfolios built in the first part of the analysis and filtering them according to their ESG score, provided by the MSCI ESG Metrics: only those funds that received a score of at least 5 (out of 10) are included in ESG portfolios. The examination aims to identify the effect of sustainable investing on portfolios performance and to assess how the different investment approaches compare to each other after this constraint.

Just like before, a portfolio composed of all the investible mutual funds, equally-weighted, is built for each strategy in order to have a general overview. For what concerns the composition, **Table 4** illustrates that in 2018 a potential ESG portfolio would include between 54% and 60% of funds of the traditional portfolio, while in the following year this range shifted up to 56% and 64%, with the highest jump regarding the blend portfolio (from 54,81% to 63,85%). Even in absolute terms, the number of funds picked in 2019 is higher than those selected in 2018, providing an evidence of the increasing diffusion of ESG-compliant instruments.

Table 4: Composition of ESG and non-ESG portfolios

	2018			***2019***		
	QL	**QT**	**QQ**	**QL**	**QT**	**QQ**
ESG	85	139	57	96	138	83
Non-ESG	154	235	104	170	226	130
%	55,19%	59,15%	54,81%	56,47%	61,06%	63,85%

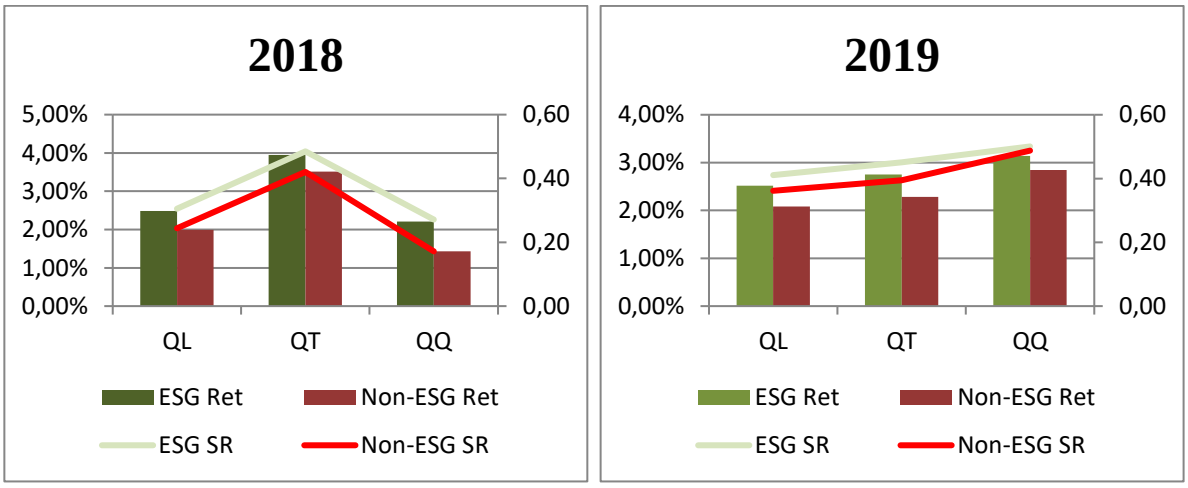
This result could be affected by several factors, such as the lack of ESG score for some funds. Actually this bias is not expected to have a huge impact on the final evaluation, since the universes are really similar among the two periods and the funds that did not receive a score are almost the same. Looking at overall performances, **Table 5** and **Graph 6** reveal a strong ESG investments' ability to systematically outperform traditional investments. Just like in the first part of this study, in 2018 the best returns came from the quantitative approach, while in the following year the blend strategy has revealed to be the most indicated. For what concerns volatility, the application of ESG filters does not result in a significant reduction of risk.

Indeed, in 2019 the exposition is even enhanced, in opposition to what the intrinsic bias of sustainable investments suggests. Also in terms of alpha, sustainable portfolios generally provide higher excess return, but this information is not significant because of low t-values.

Table 5: Comparison between ESG and non-ESG performance of overall portfolios divided by year

	2018						2019					
	ESG			*No ESG*			*ESG*			*No ESG*		
	QL	QT	QQ	QL	QT	QQ	QL	QT	QQ	QL	QT	QQ
Return	2,48%	3,94%	2,21%	1,99%	3,52%	1,43%	2,52%	2,75%	3,14%	2,09%	2,29%	2,84%
Volatility	8,13%	8,13%	8,15%	8,16%	8,36%	8,34%	6,14%	6,10%	6,27%	5,77%	5,79%	5,83%
Sharpe Ratio	0,31	0,48	0,27	0,24	0,42	0,17	0,41	0,45	0,50	0,36	0,39	0,49
Alpha	0,23%	0,32%	0,31%	0,11%	0,21%	0,16%	-0,38%	-0,22%	-0,21%	-0,33%	-0,18%	-0,29%
t-Stats	0,787	1,095	1,038	0,384	0,680	0,537	-0,807	-0,454	-0,458	-0,712	-0,411	-0,645

Graph 6: Return and Sharpe Ratio of the ESG and non-ESG overall portfolios in 2018 and 2019



Focusing on individual asset classes' returns, the introduction of ESG filters allows to increase portfolios performance in almost all the scenarios. Only in 2018, the sustainability constraint dramatically depleted returns in the case of equity-like portfolios selected through qualitative and blend processes. After the introduction of the ESG filter, the relative performances of the three investment strategies are not really altered: the approach that had the best returns within a single asset class in the first part of the analysis, generally maintains this position even after the application of the filter. Looking at the effect on alpha generation, in 2018 the introduction of the constraint provided in the majority of cases an increase, even if not so pronounced, in the excess return over the market compared to the one generated by

non-ESG portfolios. Sometimes, this spread persisted also in 2019, but it's been not frequent and less marked. Still, these data don't have a statistical significance. Detailed results are presented in **Tables 6-7** and **Graphs 7-8**.

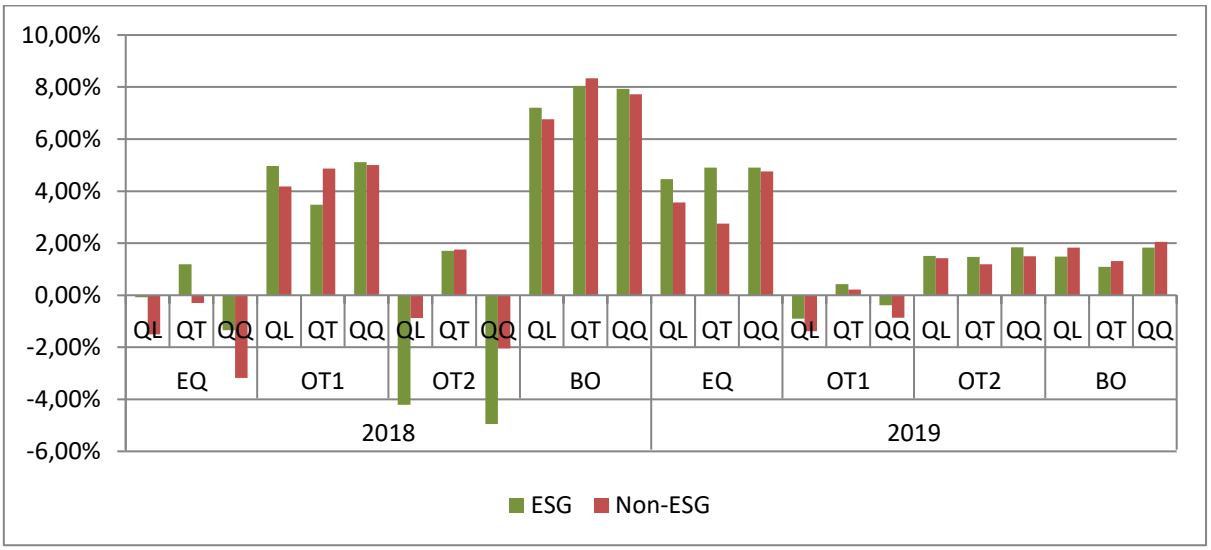
Table 6: Comparison between ESG and non-ESG performance divided by investment strategy in 2018

		Quality				*Quantity*				*Blend*			
		EQ	**OT1**	**OT2**	**BO**	**EQ**	**OT1**	**OT2**	**BO**	**EQ**	**OT1**	**OT2**	**BO**
ESG	**# funds**	37	8	10	30	55	13	21	50	25	6	6	20
	Return	-0,08%	4,97%	-4,21%	7,21%	1,18%	3,47%	1,71%	8,04%	-1,34%	5,11%	-4,95%	7,93%
	Volatility	10,87%	7,03%	10,16%	6,61%	11,78%	6,50%	8,12%	6,68%	11,26%	6,70%	8,95%	6,61%
	Sharpe Ratio	-0,01	0,71	-0,41	1,09	0,10	0,53	0,21	1,20	-0,12	0,76	-0,55	1,20
	Alpha	0,02%	0,09%	-0,02%	0,17%	0,02%	0,02%	0,01%	0,21%	0,02%	0,12%	-0,03%	0,22%
	t-Stats	0,532	0,328	-0,709	0,648	0,671	0,060	0,224	0,780	0,538	0,444	-0,902	0,826
Non-ESG	**# funds**	62	21	22	49	93	27	36	79	44	14	14	32
	Return	-1,51%	4,18%	-0,88%	6,76%	-0,30%	4,87%	1,76%	8,34%	-3,18%	5,00%	-2,04%	7,73%
	Volatility	11,43%	6,58%	8,19%	6,67%	12,18%	6,51%	7,78%	6,80%	11,70%	6,58%	8,11%	6,70%
	Sharpe Ratio	-0,13	0,64	-0,11	1,01	-0,02	0,75	0,23	1,23	-0,27	0,76	-0,25	1,15
	Alpha	0,01%	-0,08%	-0,01%	0,07%	0,02%	-0,03%	0,01%	0,13%	0,02%	-0,09%	-0,03%	0,11%
	t-Stats	0,407	-0,049	-0,231	0,448	0,671	-0,108	0,224	0,592	0,538	-0,026	-0,902	0,585

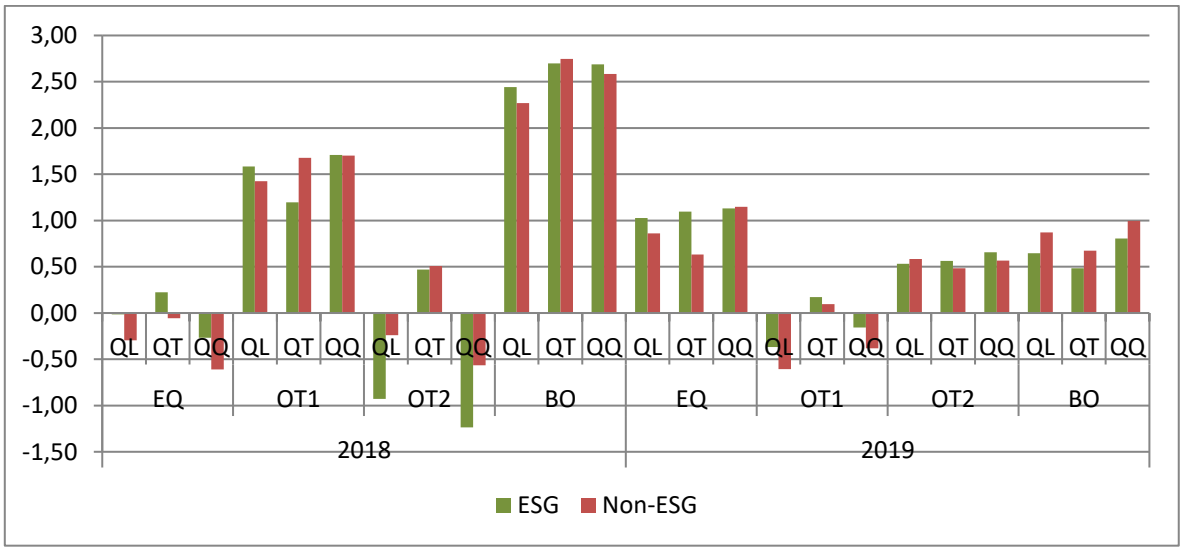
Table 7: Comparison between ESG and non-ESG performance divided by investment strategy in 2019

		Quality				*Quantity*				*Blend*			
		EQ	**OT1**	**OT2**	**BO**	**EQ**	**OT1**	**OT2**	**BO**	**EQ**	**OT1**	**OT2**	**BO**
ESG	**# funds**	43	12	11	30	61	14	15	48	41	8	8	26
	Return	4,46%	-0,90%	1,51%	1,48%	4,91%	0,43%	1,47%	1,09%	4,91%	-0,39%	1,84%	1,83%
	Volatility	9,74%	5,48%	6,33%	5,14%	10,03%	5,60%	5,84%	5,04%	9,72%	5,55%	6,27%	5,10%
	Sharpe Ratio	0,46	-0,16	0,24	0,29	0,49	0,08	0,25	0,22	0,51	-0,07	0,29	0,36
	Alpha	0,00%	-0,75%	-0,01%	-0,52%	0,00%	-0,70%	0,00%	-0,58%	0,00%	-0,61%	0,00%	-0,50%
	t-Stats	0,804	0,083	0,320	-0,951	0,784	0,116	0,310	-1,078	0,782	0,103	0,295	-0,939
Non-ESG	**# funds**	71	22	23	54	92	29	30	75	57	15	14	44
	Return	3,56%	-1,38%	1,42%	1,83%	2,75%	0,22%	1,19%	1,31%	4,76%	-0,86%	1,50%	2,05%
	Volatility	9,28%	5,10%	5,45%	4,72%	9,76%	5,13%	5,51%	4,36%	9,28%	5,05%	5,92%	4,63%
	Sharpe Ratio	0,38	-0,27	0,26	0,39	0,28	0,04	0,22	0,30	0,51	-0,17	0,25	0,44
	Alpha	0,00%	-0,72%	0,01%	-0,61%	0,00%	-0,67%	-0,01%	-0,53%	0,00%	-0,58%	-0,00%	-0,51%
	t-Stats	-0,128	-1,157	-0,249	-1,194	0,087	-1,075	-0,147	-1,149	0,085	-0,932	-0,085	-1,051

Graph 7: ESG and non-ESG returns for each asset class divided by investment strategy in 2018 and 2019



Graph 8: ESG and non-ESG Sharpe Ratio for each asset class divided by investment strategy in 2018 and 2019



As shown in **Table 8**, both in 2018 and 2019 equity is the asset class that benefitted the most from the introduction of ESG filters, consistently beating traditional portfolios no matter the strategy implemented: on average, its performance has increased respectively by 1,58% and 1,07% and its Sharpe Ratio by 0,13 and 0,09. Instead, while in 2018 the most damaged have been the equity-like securities, in the following year it has been the case of bonds. There is a clear distinction between the impact of ESG investing on portfolios: regardless of the approach implemented, it succeeded in adding value in 2019, while in 2018 it damaged portfolios performance. The aggregation of the results of the two periods reveals that the

quantitative approach has been the most advantaged in terms of both excess returns (+2,16%) and Sharpe Ratio (+0,07). The blend approach is overall slightly damaged by the introduction of the ESG filter, even if this result is significantly affected by the anomalous negative performance of equity-like funds in 2018. These results seems to suggest that the lower the level of complexity of the selection strategy for the construction of portfolios, the higher is the benefit produced by the ESG filter.

Table 8: Value added by the introduction of the ESG filter on returns and Sharpe Ratios

		2018					2019					Overall
		EQ	OT1	OT2	BO	Total	EQ	OT1	OT2	BO	Total	
QL	**Ret.**	1,43%	0,79%	-3,34%	0,45%	-0,67%	0,89%	0,48%	0,08%	-0,35%	1,11%	0,44%
	SR	0,12	0,07	-0,31	0,08	-0,03	0,07	0,11	-0,02	-0,10	0,06	0,02
QT	**Ret.**	1,48%	-1,40%	-0,05%	-0,30%	-0,27%	2,16%	0,21%	0,28%	-0,22%	2,43%	2,16%
	SR	0,13	-0,21	-0,02	-0,02	-0,13	0,21	0,03	0,04	-0,08	0,19	0,07
QQ	**Ret.**	1,84%	0,11%	-2,91%	0,20%	-0,76%	0,15%	0,47%	0,33%	-0,23%	0,73%	-0,03%
	SR	0,15	0,00	-0,30	0,05	-0,10	-0,01	0,10	0,04	-0,08	0,05	-0,05

In short, the introduction of ESG filters in funds selection seems to be a useful tool for managers to enhance portfolio performance, especially when the initial strategy is too broad and simple. The increase in the demand of sustainable investments, that pushes up prices, is just a marginal cause of this result. In fact, the overperformance on traditional instruments is primarily due to a better stock picking. A study from Morningstar (2019) states that the firms that are less volatile and possess stronger competitive advantages and healthier balance sheets are more likely to be included in their ESG indexes: these factors are all linked to a positive long-term investor experience, that translate in improved performance.

5. Conclusion

In this document, an accurate analysis of the performances of different types of portfolio in three consecutive periods has been conducted. These portfolios are constituted by mutual funds taken from the investible universe of a small Italian AMC that adopts some of these funds into the financial instruments and services offered to its clientele. For this study, mutual

funds have been used to create hypothetical portfolios obtained following three different approaches: a qualitative selection, a quantitative selection and a combination of these two. The reason behind this approach lies in the purpose of the study, that is to assess if the third strategy provides higher returns than the others, as it's argued by past literature. The analysis has been performed on both overall portfolios and single asset classes within each portfolio.

The first evidence from the study is that, from a generic point of view, the conditions of financial markets seems to have a strong impact on the goodness of a strategy. In fact, in years of positive market the blend approach has provided the highest returns, in terms of both absolute and risk-adjusted performance, while with a bearish market, this strategy appeared to be the less recommended, with the quantitative approach being the most indicated. The same trend is observed also at a single-asset-class level. Along the three-year period, quantitative portfolios are those providing the highest return. The biggest portion of these returns has been produced in 2018, an extraordinarily negative year in which financial markets have suffered much more than expected, with all the main asset classes that registered depressed results. For this reason, it's difficult to believe that the outcomes from this period are as reliable as those from the other years, where the combination of qualitative and quantitative analysis allowed to construct the best portfolios. It's interesting to notice that graphs of similar asset classes have similar shapes, even if they're still characterized by differences in the magnitude: it happens for both equity with equity-like flexible funds and bond with bond-like flexible funds, even if the second case presents some discrepancies. Overall, results obtained through this analysis can be read as a confirmation of the goodness of the combination of quantitative and qualitative analysis for funds selection as a proper way to enhance portfolio performance. This outcome is both consistent with past literature and supports the AMC's philosophy.

The second part of the research focuses on the assessment of how the compliance to ESG criteria impacts portfolio returns. Nowadays, sustainable investing is a common practice

within the industry, and an increasing number of firms adopts it as a discriminating factor for selecting funds to be included in their portfolios. Nevertheless, the AMC that provided the data for this analysis is not adopting sustainability parameters for its selection process yet. For this reason, the aim of this second step is to establish if integrating ESG criteria with the more traditional firm's approach can be beneficial in terms of performance. For all the three investment strategies, despite the lack of significant improvements in terms of volatility, that could be expected because of intrinsic features of ESG instruments, the analysis returned a quite consistent outperformance of sustainable portfolios compared to traditional investments, with only few occasions in which this result has been contradicted. Here, the outcomes are not as accurate as in the previous case, especially because of the lack of ESG scores for a significant number of mutual funds. Anyway, they allow a sufficiently truthful evaluation of the topic. In the AMC's perspective, this study suggests that the implementation of ESG-compliant strategies could be an interesting path: even if the blend approach suffered a slight loss along the periods, the impact of the adverse conditions of financial markets in 2018 cannot be ignored. For this reason it's not an hazard to affirm that sustainable investing can be considered as a good strategy to increase portfolio performances.

Overall, the study has returned positive outcomes for both the issues addressed. For sure it presents some pitfalls, that should be overcome in order to have a more consistent picture. Anyway, results remain encouraging and represent an efficient contribution to the literature related to these topics. For what concerns mutual funds selection techniques, it's been proved that combining together quantitative and qualitative analysis provides better results than relying on just one of them. Concerning the effects of ESG filtering on performances, calculations demonstrated that in general sustainable investing enhances portfolio returns.

6. References

Abate, Guido. 2018. *The multimanager approach in mutual funds investments*. Investment Management and Financial Innovations.

Beeman, Lucinda. 2014. *What are multi-manager funds and are they right for you?*. Yourmoney.com

Ben-David, Itzhak; Li; Rossi, Andrea; Song Yang. 2019. *What Do Mutual Fund Investors Really Care About?*. papers.SSRN.

Bonati, Aldo; Bonaventura, Matteo; Capelli, Paolo; Dal Santo, Andrea; Gamba, Anna; Grassadonia, Luca. 2018. *Investimenti ESG*. CFA Society Italy.

Chen, Hsiu-Lang; Jegadeesh, Narasimhan; Wermers, Russ. 1999. *The Value of Active Mutual Fund Management: An Examination of the Stockholdings and Trades of Fund Managers*. The Journal of Financial and Quantitative Analysis.

Choi, Jeawon ; Kronlund, Mathias. 2017. *Reaching for Yield in Corporate Bond Mutual Funds*. The Review of Financial Studies.

De Larminat, Pierre. 2013. *Between "Quantitative" and "Qualitative" Analysis: the Evaluation of Asset Managers by Professional Investors*. L'Année sociologique, p. 77 – 105.

Delbecque, Bernard; Tilley, Thomas; Yang, Hailin. 2019. *Trends in the European Investment Fund Industry in the Second Quarter of 2019*. European Fund and Asset Management Association (EFAMA).

Di Fazio, Davide. 2014. *From a Single-Product To Open-Architecture: The Multi-Manager Approach in the Asset Management Industry*.

Eurosif. 2018. *European SRI Study*.

Gittelsohn, John. 2019. *End of Era: Passive Equity Funds Surpass Active in Epic Shift*. Bloomberg.

Grønborg, Niels S.; Lunde, Asger. 2018. *Picking Funds with Confidence*. papers.SSRN.

Hereil, Pierre; Mitaine, Philippe; Moussavi, Nicolas; Roncalli, Thierry. 2010. *Mutual Fund Ratings and Performance Persistence*. papers.SSRN.

ICIfactbook.org. 2019. *2019 Investment Company Fact Book.*

Konqui, Marlene Hassine; Millet, Francois; Darolles, Serge. 2019. *Why using ESG helps you build better portfolios*. Lyxor/Dauphine Research Academy.

Lefkovitz, Dan. 2019. *Morningstar's ESG Indexes Exhibit Attractive Investment Attributes*. Morningstar.

Liu, Berlinda; Preston, Hamish; Soe, Aye M.. 2019. *Does Past Performance Matter? The Persistence Scorecard*. S&P Global.

Muller, Charles; Ruttiens, Alain. 2014. *A practical guide to UCITS funds and their risk management*. EdiPro.

Panserra.com. 2019. *The Breathtaking Growth of ESG Investing*.

Roncalli, Thierry; Mortier, Vincent. 2019. *The alpha and beta of ESG investing*. Amundi.

SEC Office of Investor Education and Advocacy. 2016. *Mutual Funds and ETFs, A Guide for Investors*.

Taivainen, Max. 2018. *Performance Comparison Between Green and Conventional Mutual Funds: the U.S. Evidence*.

Thune, Kent. 2019. *What Is a Mutual Fund*. Thebalance.com

Tidd, Diana; Subramanian, Raman Aylur. 2019. *ESG investing is here to stay*. MSCI.

Voorhes, Meg; Lang, Kristin. 2018. *Global Sustainable Investment Review*. Global Sustainable Investment Alliance.

7. Appendix

Disclaimers

- The number of eligible funds within a specific universe is affected by the number of clusters in which funds are stored: the higher the number of fund within each subset, the higher is their probability to be considered as eligible;
- The hypothetical portfolios have been created specifically for the scope of the study. The AMC doesn't own a portfolio constituted by all the investible funds, similarly to those built for the analysis. Only a share of these funds are used in firm's financial products, and they're periodically added or removed from portfolios according to its current needs and targets, to product features and to current macroeconomic conditions;
- Funds' performance are expressed in USD;
- All the funds have been equally weighted within each hypothetical portfolio;
- The potentially investible universe is revised each year at the end of May, and so the analysis has been split in three 1-year time periods, denominated 2017, 2018 and 2019, that go from June 1st of the year to May 31st of the following year. The only exception is represented by the period 2019, in which data go from June 1st, 2019 to September 30th, 2019;
- All the scores (qualitative, quantitative, overall) and have been provided by the AMC;
- "QL", "QT" and "QQ" respectively stand for qualitative analysis, quantitative analysis and quali-quantitative analysis;
- Flexible securities, indicated as "other", have been split in "other 1" (OT1), representing bond-like assets with volatility lower than 5%, and "other 2" (OT2) that are equity-like assets with volatility higher than 5%. This is a simplification of a more complex universe that includes different kinds of alternative funds. Including all of

them in a unique category would have been not significant, because it would implicate treating in the same way funds with significantly different characteristics. This distinction in two quite-homogeneous asset classes increases the consistency and the reliability of the analysis.

- Risk-free rate for the calculation of Sharpe ratios is assumed to be 0, that is actually close to its current value;
- For the ESG analysis, ratings have been provided by MSCI;
- In the ESG selection, some funds have been excluded because of the absence or unavailability of the ESG score; this can have an impact on the analysis of portfolios performance.