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**A performance comparison of active
managed Bond funds and Bond ETFs
in the United States**

Master Dissertation

Master's in Finance

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Resumo

Os mercados financeiros desempenham um papel fundamental na dinamização das economias modernas. Por isso, é necessário o desenvolvimento de diferentes classes de investimento, permitindo uma maior diversificação ao mercado sendo os Exchange Traded Funds (ETFs) e os fundos de investimento abertos de gestão ativa e passiva dois dos segmentos que mais cresceram no mercado financeiro em geral. Sendo assim, é necessário perceber se estas classes de investimento são realmente boas alternativas de investimento para o mercado financeiro.

Este estudo avalia o desempenho destes diferentes tipos de fundos de investimento nos EUA relativamente ao benchmark de mercado, usando uma ampla e abrangente amostra de 275 fundos, ao longo do período de agosto de 2002 a dezembro de 2018. Este estudo centra-se na análise do desempenho financeiro, no custo de investimento e no grau de gestão ativa para os fundos em análise. Relativamente à avaliação do desempenho, os fundos de obrigações de gestão ativa e passiva são analisados tendo como comparação um índice geral, e os ETFs são avaliados relativamente a um índice geral, e ao índice que cada fundo replica.

Os resultados mostram que, em média, os fundos de obrigações de gestão ativa apresentam um melhor desempenho que os fundos de obrigações de gestão passiva e os ETFs (líquido e bruto). No entanto, o valor médio dos alfas é muito próximo de zero e, ao nível de significância de 1%, os resultados demonstram um desempenho inferior (maior número de alfas negativos significativos do que positivos) comparativamente ao mercado.

Em relação à escolha do modelo a utilizar, os resultados da regressão usando o multi-fator melhoraram quase todas as estatísticas dos 3 grupos de fundos, explicando de uma forma mais robusta os retornos dos fundos.

Além disso, os fundos de obrigações ativos apresentam um nível mais baixo de gestão ativa, em comparação com os ETFs. Isto pode significar que os investidores podem estar a pagar a fee da gestão ativa, quando pouco ou nada está sendo implementado pelo gestor do fundo.

Palavras chave: Títulos de dívida, ETFs (Exchange-Traded Funds), Gestão ativa versus Gestão passiva, Estados Unidos da América

Abstract

Financial markets play a key role in boosting modern economies. Therefore, the development of different investment classes is necessary, allowing greater diversification to the market, with Exchange Traded Funds (ETFs) and active/passive mutual funds being two of the fastest growing segments in the financial market in general. So, it is necessary to understand if these investment classes are really good investment alternatives for the financial market.

This study evaluates the performance of these different types of investment funds using a comprehensive dataset of corporate bond funds over a long time period from August 2002 to December 2018. Moreover, this study focuses on the financial performance, cost of investing and degree of active management. The performance of bond mutual funds is evaluated relative to a general index, and the bond ETFs are evaluated relative either to a general index and to the self-declared benchmark of each fund.

The results show that, on average, actively managed bond funds perform better than both passive bond funds and bond ETFs (net and gross). However, the average alpha is very close to zero and as for the 1% level, the results show underperformance (greater number of statistically significant negative alphas) compared to the market.

Regarding the one-factor or multi-factor model's choice, the regression results using the multi-factor improved almost all the statistics of the 3 groups of funds, indicating a better job in explaining the bond fund returns.

Furthermore, the active bond funds present a lower level of activeness, compared with bond ETFs. Therefore, investors may be overpaying for active management funds where little or none is being implemented by the fund manager.

Keywords: Bonds, ETFs (Exchange-Traded Funds), Active versus Passive Fund Performance, United States of América

Table of Contents

1. Introduction	1
2. Literature review	3
2.1. ETF's	3
2.2. Mutual Funds	4
2.3. Active vs Passive management strategies	6
2.4. Performance comparison of active managed mutual funds and ETFs	7
3. Methodology	9
3.1. Fund Performance Evaluation	9
3.2. Expense ratio and fund performance	11
3.3. Level of active management	11
4. Data	12
4.1. Bond funds	12
4.2. Bond risk factors	14
5. Empirical Analysis	16
5.1. Risk-adjusted returns	16
5.1.1. ETFs vs Market Benchmark	23
5.2. Expense ratio and fund performance	24
5.3. Level of active management	26
6. Conclusion	29
References	33
Annexes	37

Table Index

Table 1 - Number of surviving and dead funds in the classified fund groups -----	13
Table 2 - Descriptive Statistics for all dataset funds-----	14
Table 3 - Descriptive Statistics for the Multi Factors-----	15
Table 4 - One-factor model - Alphas, net of expense fees, and Betas estimates -----	17
Table 5 - Multi-factor model – Alphas, net of expense fees, and Factor Loadings estimates -----	19
Table 6 - Passive bond ETFs and the Benchmarks each fund replicates-----	23
Table 7 - Average (annual) expense ratio for active and passive funds-----	24
Table 8 - Multi-factor model – Alpha estimates, gross of expense fees compared with Alpha estimates, net of expense fees -----	25
Table 9 - Summary statistics of active management measures -----	27
Table 10 - Cross correlation results -----	28

1. Introduction

With Exchange-traded funds (ETFs) and mutual funds being two of the hottest financial instruments in financial markets nowadays, it is important to exploit more about them. Moreover, as far as I am aware of, bond ETFs and bond funds are still understudied subjects, specifically the debate over passive and active investing.

ETFs are funds that trade like regular stocks on exchanges, and investors can take either long or short positions. ETFs trading today offers several important features to the bond market, such as low-cost transactions, intraday liquidity, diversification, passive index tracking or more transparency in terms of their holdings. If we compare a conventional mutual fund or an active management investment strategy with a ETF investment strategy tracking the same index, ETF shareholders will outperform the other two investment options because of the combination of these features (Gastineau, 2010).

ETFs have become one of the most relevant segments of the investment management business. The present and potential importance of ETFs can be judged by looking at some historical data. Since 1993, (SPDRs tracking the S&P 500 Index were the first ETF to be launched), the global market for these financial instruments recorded annual double-digit growth rates. Furthermore, the 132% average annual growth rate of ETF assets from 1995 through 2001 (Gastineau, 2002), illustrates the increasing importance of these instruments. By the end of 2016, the market share of ETFs exceeded 10% of the total market capitalization traded on U.S. exchanges, representing more than 30% of overall trading volume (Ben-David, Franzoni & Moussawi, 2017).

Bond ETFs are a type of exchange-traded fund (ETF) that invests exclusively in bonds. The first corporate bond ETF available on the market was offered by BlackRock in 2002 (Holden & Nam, 2019). The U.S. ETFs market has continued to see rapid growth over the past decade and is not showing any signs of slowing down. However, while there exists much academic evidence regarding the performance of actively managed equity funds, far less attention has focused on actively managed bond funds.

A mutual fund is a portfolio which can consist of stocks, bonds and other various securities. The fund is owned by people or companies that have invested their money in it. Mutual funds can be traded only once a day at net asset value calculated after the close of the market (Deville, 2008).

The first official open-ended mutual fund, Massachusetts Investors Trust, was created on March 21st, 1924. The fund, with the ticker of MITTX is still alive today. In recent years, the use of passively managed funds has increased in bonds industry, which had been traditionally dominated by active mutual funds. This study analyses whether this financial innovation is useful to bond investors. Can active fund managers generate outperforming results over the long run that justifies the higher expense fees charged, or are passive managed funds a rational choice for the average investors?

Therefore, we conduct a systematic comparison between active and passive bond funds and ETFs concerning expense ratios and active management. Following Chen and Scholtens (2018), we focus on answer these main questions:

- Does the financial performance of actively managed bond funds significantly differ from that of their passively managed counterparts?
- How do expense ratios differ between actively managed and passively managed bond funds, and what impact do they have on fund performance?
- To what extent do bond funds actively manage their portfolios?

The main goal of this research is to exploit the bond funds market and make a comparison of active managed bond funds and bond ETFs, on the U.S. market. For that, the study uses a dataset of 275 funds over the period from October 2002 to December 2018. The study analyses the risk-adjusted returns of the funds by controlling for well-known bond market factors over the period of time. Moreover, the study compares the expense ratios between active funds and passive funds and examine how they affect bond fund performance. Then, the study quantifies the level of active management and relates it to fund performance and expense ratio.

These issues represent the main properties of fund performance and can be used to compare active and passive funds. By trying to answer these questions, the study expands the literature of bond ETFs, because some state-of-the-art is lacking. Moreover, it is also important to state whether active bond funds add value to the investors, in a systematic manner.

On average, the active bond mutual funds perform better than passive managed bond funds and bond ETFs. Yet, the average alpha is very close to zero and as for the 1% level, the results show underperformance compared to the market. Moreover, bond ETFs presents a higher level of activeness, compared with the active bond funds. Thus,

investors may be overpaying for active management funds where little or none is being implemented by the fund manager.

The remainder of this dissertation is structured as follows. Section 2 gives an overview of the literature related to bond ETFs and bond fund performance. Section 3 introduces the models and methods that are used to evaluate the performance of the bond funds and bond ETFs. In section 4, the study presents the dataset used. presents and discuss the results. Section 5 presents the empirical analysis results and section 6 presents the main conclusions and limitations of this study and some suggestions for future research.

2. Literature review

2.1. ETF's

Despite the increasing importance of ETF markets, literature on these topics is still scarce, although research perspectives are promising.

Since ETFs appeared as an investment vehicle, researchers started studying what we can expect about their performance. This investment vehicle offers several important combinations of features that have not been available to investors before, such as low-cost transactions, intraday liquidity, diversification, passive index tracking or transparency in terms of their holdings. In the literature, some authors explain that these features help develop the functioning of financial markets. Glosten, Nallareddy and Zou (2016) find that ETFs trading activity improves the market efficiency, because indexes will incorporate accounting information before the underlying securities. Madhavan and Sobczyk (2016) argue that ETFs allow investors to gain a wide range of diversified exposures at low cost. This discussion is further continued by Lehtonen (2017) who criticizes the choice of investing into a mutual fund instead of an ETF. For example, the author argues that ETFs can offer simpler asset class diversification or a very strong passive investment strategy. The author concludes that ETFs are satisfying the needs, which mutual funds used to, that is, reducing the time needed to choose securities one by one for diversification purposes.

Research has also covered the differences between ETFs and conventional passive mutual funds, by trying to assess which of both products is more efficient. Agapova

(2011) finds that conventional index funds and ETFs are substitutes, but not perfect substitutes. ETFs have not replaced the conventional index funds, but they are a new investment vehicle that has added new features previously unavailable in conventional mutual funds, helping to complete the market.

However, some implications concerning ETFs were documented. Huang and Stoll (2001) argue that some worries about the effect of the bid-ask spreads on total ETFs costs were uncovered at the start of the decade. Because it is a relatively recent type of investment, some authors are worried that only a relatively small proportion of ETFs, such as Standard and Poors Depository Receipts (SPDRs) will continue growing, while the other more exotic ETFs classes, such as commodity or leveraged ETFs, will be trading at smaller volumes, increasing their price volatility (Malhotra, Shekhar & Russel, 2004).

Moreover, another issue was pointed out by Delcoure (2001). She conducted a study comparing the performance of ETFs over passive mutual funds, from 1993 to 2000. There the conclusion was that ETFs do outperform passive mutual funds. However, the author document that the study limits itself by the small sample size of ETFs data at the time being and that the testing was conducted during high unprecedented economic growth in the U.S.

2.2. Mutual Funds

Despite the economic importance in investor portfolios, there are fewer studies of bond fund performance than studies of equity fund performance. Like ETFs, empirical work on mutual fund performance has involved essentially common stock or funds that invest in either common stock or debt instruments.

Like stocks, bond fund studies employ similar performance attribution models and testing methods where single and multi-factor models are employed. Moreover, some studies have been made about bond fund performance evaluation. Theories have been developed since the 1990s, with most empirical literature based on linear unconditional asset pricing models. Similarly to the evidence for equity funds, bond fund performance results show that managers hardly outperform the corresponding benchmark. Cornell and Green (1991) examine the performance of low-grade bond funds. They find that,

over the long run, low-grade bond fund returns are approximately equal to the returns provided by high-grade bonds, after controlling for risk factors.

Blake, Elton, and Gruber (1993) analyse the performance of bond funds by employing both a broad market index of government and corporate bonds as well as more specific investment style benchmark indices. They conclude that the underperformance is equal to the fees charged by the funds, meaning that bond fund performance does not surpass that of the market benchmark. Later, Elton, Gruber and Blake (1995) develop an Arbitrage Pricing Theory (APT) model. For that, they employed fundamental economic variables as well as return indices to explain the returns on bond funds. The study finds negative and statistically significant net-of-fees alphas in all the categories analysed, such as corporate, mortgage and government bond funds.

Silva, Cortez and Armada (2003), using a dataset of European bond funds, obtained evidence that bond funds are not able to outperform passive strategies.

Ferson, Henry, and Kisgen (2006) study U.S. bond mutual fund performance, concentrating on the funds' risk-adjusted returns. They find that the average performance is slightly negative after costs, and largely driven by funds' expenses. This might suggest that investors would be better off selecting low-cost passive funds.

Gutierrez, Maxwell and Xu (2008) evaluate the performances of corporate-bond mutual funds from 1990 to 2004. On average, they find that funds generate slightly positive abnormal returns before fees and slightly negative abnormal returns after fees, suggesting that fund managers are able to beat the market with their selection and trading of bonds, but the outperformance is cancelled by the expense fees. Cici and Gibson (2012) realized the first study of corporate bond mutual fund performance that examines detailed security-level holdings and returns. They do not find evidence that, on average, bond fund managers outperform other bonds of similar characteristics.

However, it is also possible to verify outperformance in the literature of mutual funds. Clare, O'Sullivan, Sherman and Zhu (2019) evaluate the performance of the US bond mutual fund industry using a comprehensive sample of bond funds from January 1998 to February 2017. They found considerable strong abnormal performance among funds both to the fund (gross returns) and to the investor (net returns).

In times of investing in today`s climate of market distress and high uncertainty, investors typically rebalance their portfolios and asset allocation strategy towards less risky and more liquid assets (Longstaff, 2004). This constant fight for hedging the risk, with the recent financial crisis, urged the development of new investment classes, being bond ETFs and bond mutual funds two of the fastest growing segments of the overall financial market.

2.3. Active vs Passive management strategies

Over the last years, the investors have switched their equity investments from actively managed funds to funds that track a specific market index. Investors chose active management mainly in anticipation of excess risk-adjusted returns ($\alpha > 0$) on their investments. Because of that, the success of active management depends crucially on the efficiency of the underlying market.

Between active and passive funds, the excess management fees imposed by active funds are a premium for an active management style. If active management does not deliver better fund performance, rational investors would switch to low cost passive funds and this process would drive down the cost of investing in active funds.

Despite the enormous size of the market for actively managed bond funds, surprisingly little is known about whether active portfolio management generates abnormal bond investment returns. For example, Blake et al. (1993) suggest that the return spread between actively managed bonds portfolios can be explained either by differences in the maturity range or by differences in the risk premiums of the securities that are held. For asset management, the active versus passive management debate has been central to the investment literature since the pioneering study of Jensen (1968). The current consensus is that, while there is evidence of skill and persistence for a subset of mutual fund managers, typical active funds do not produce persistence risk-adjusted excess returns ($\alpha > 0$) after fees, and hence average investors will be better off using passive strategies (Busse, Goyal & Wahal, 2010).

Cremers, Ferreira, Matos and Starks (2016) examine the relation between indexing and active management in the mutual fund industry worldwide. The study concluded that

low-cost indexed funds force actively managed funds to be more active and charge lower fees. This improves the efficiency and the competition of the market.

Berk and Van Binsbergen (2015) state that, in recent years, the rise of passively managed funds reignited this debate, particularly in the form of index mutual funds and ETFs.

There are several factors behind this shift. Passive ETFs offers some arbitrage opportunities when a gap exists between the trading price of ETFs, and the value of their underlying security. Besides, the investors now focused on value-for-money and, for this reason, they are tracking more passive funds because they tend to have lower fees than active funds.

Moreover, several academic papers have shown that, on average, active equity managers offer poor value for money. Fama and French (2010), after examining the performance of active U.S. equity funds conclude that, “in terms of net returns to investors, performance is poor”, page 1921.

2.4. Performance comparison of active managed mutual funds and ETFs

ETFs and mutual funds are similar investment vehicles. Due to the existence of actively and passively managed funds of both types, the question arises, whether they provide similar returns with similar risk.

The literature show that, on average, very few active managed funds outperform passive funds. Authors such as Malkiel (1995), Carhart (1997) and Daniel, Grinblatt, Titman and Wermers (1997) all find that funds have underperformed benchmark portfolios both after management expenses and even gross of expenses.

Sorensen, Miller and Samak (1998) find that passive management outperforms active management on average, arguing that the active management is costly and not profitable.

Fama and French (2008) study shows that the cost of active investing plays a very important role because abnormal returns may not be realizable because of the high costs of trading.

Fama and French (2010) conduct a study using a portfolio of active funds that invest primarily in U.S. market. They find that, on average, the portfolio of active funds

produces alphas close to zero (gross of fees returns) and negative alphas (net of fees returns) by the amount of fund expenses.

Rompotis (2009) expands the discussion about "active vs. passive" management using data from active and passive ETFs listed in the U.S. market. The results show that the active ETFs fail to beat the market, using the Standard and Poor's 500 Index. Moreover, the active ETFs (in two out of the three cases) underperform their passive ETF counterparts.

Pinheiro and Varela (2018) investigate the performance of the PPP ETF which tracks the Portuguese stock index PSI20, since 2012. Analysing Jensen's alpha, they do not find evidence that ETFs can earn substantial abnormal returns or returns higher than the risk adjusted return for the Portuguese market.

The current market consensus is that, on average, active managed funds do not produce persistent risk-adjusted excess return net of fees. Thus, authors such Busse et al. (2010), Charlo, Moya and Muñoz (2015) or Doshi, Elkamhi and Simutin (2015) state that investors will have better results using passive investment strategies.

With more and more investors sinking to passive funds, particularly in form of index mutual funds and ETFs, academic studies have started to evaluate actively managed funds with reference to passively managed funds (Berk & Green, 2004). Passively managed mutual funds have revolutionized the way retail investors behave, as they have made it very easy and relatively cheap to get broad market exposure. However, they still have limitations in terms of liquidity and pricing efficiency.

Prather, Chu, Mazumder, and Topuz (2009) reach a similar conclusion, as they find that active managers do not outperform passive benchmarks mainly because of market competition.

Therefore, the failure of active mutual funds to generate significant persistent positive performance returns contributes to the increase in passively managed funds like index funds or ETFs, with lower expense ratios.

Regarding this, it is of interest to exploit further research and try to reach some conclusions for this uncovered topic by the literature.

3. Methodology

This section introduces the models and methods that are used to evaluate the performance of the bond funds and bond ETFs. To investigate the risk-adjusted returns of the bond funds, the study employs both a single-factor and multi-factor regression analysis. Since there is evidence that multi-factor models are more effective evaluation models (Blake et al. 1993), the study aims to check if the same applies in this case. Moreover, this study also aims to analyze the impact of expense fees on the performance of the funds and the level of active management exhibited by the three sample fund groups.

3.1. Fund Performance Evaluation

As argued by Chen and Scholtens (2018), investors chose active management mainly in anticipations of excess risk-adjusted returns (i.e. positive alpha) on their investments. The success of active management depends on the efficiency of the underlying market. If the underlying market is effectively efficient, the investors will be willing to pay the management fee imposed by active bond funds. If active management does not deliver better fund performance, rational investors would switch to low-cost passive funds. In an efficient market, it should be expected only a small number of active bonds generate significant positive alphas. Regarding the passive management strategy, if the efficient strategy holds, the fund should neither outperform nor underperform the passive benchmark return before fees and slightly underperform after fees. If the hypothesis of underperformance after fees hold for bond funds, the alphas estimated may be either statistically insignificant or slightly negative.

To investigate the risk-adjusted returns, the study employs both a single-factor and multi-factor regression analysis.

The first estimation is a baseline single index model. The single-factor regression is an approach highly referenced in financial literature (Jensen, 1968). The model is expressed as follows:

$$R_{p,t} - R_{f,t} = \alpha_{p,t} + \beta_{p,t} (R_{m,t} - R_{f,t}) + \varepsilon_{p,t} \quad (1)$$

where $R_{p,t}$ denotes the monthly fund return over period t ; $R_{m,t}$ represents the return of a general bond market portfolio; and $R_{f,t}$ is the risk-free rate, expressed by the monthly risk-free return.

Moreover, the study evaluates the performance of each bond ETFs relative to their self-declared benchmark. The coefficient $\alpha_{p,t}$ presents the excess returns a fund can achieve above the market return. Given the structure of active bond funds, which the objective is to beat the market, it is expected the alpha coefficient to be positive and statistically significant. Regarding the passive bond funds, it is expected neither outperform nor underperformance relative to the passive benchmark, with α being statistically insignificant.

The beta (β) coefficient in Equation (1) is an estimate for the systematic risk a fund is exposed to and reflects the aggressiveness of the management strategy. A $\beta > 1$ suggests an aggressive investment strategy, which usually allows funds to have higher returns than the benchmark in bull markets, but makes funds decline rapidly in bear markets. A $\beta < 1$ suggests that the fund is more conservative than the market. A $\beta = 1$ means that fund moves according to the underlying market index. It should be expected a superior β for active bond funds, compared to both passive bond funds and bond ETFs.

To get more effective results that capture all the different bond types, the study applies the four-factor model developed by Elton et al. (1995) and used by Derwall and Koedijk (2009) which captures broad bond market sensitivities, expressed as:

$$R_{p,t} - R_{f,t} = \alpha_{p,t} + \beta_{1p} (R_{m,t} - R_{f,t}) + \beta_{2p} \text{DEFAULT}_t + \beta_{3p} \text{OPTION}_t + \beta_{4p} \text{EQUITY}_t + \varepsilon_{p,t} \quad (2)$$

Where DEFAULT is the spread between a High Yield corporate bond index and a Low Yield Corporate bond index; OPTION is the spread between a Mortgage backed security index return and a Treasury index return; EQUITY represents the excess return of a Stock index; $\varepsilon_{p,t}$ is a residual term. α_p measures the abnormal returns of the fund. A statistically significant positive alpha means an outperformance, while a statistically significant negative alpha means an underperformance.

3.2. Expense ratio and fund performance

The expense ratio measures the annual operating costs of running a fund as a percentage of the fund's net assets. When an investor is making a decision whether to invest or not, the expense ratio plays a very important role in the final decision. Active funds have higher expense ratios than passive funds. French (2008) finds that investors sacrifice, on average, 0,67% of returns per year. Regarding active management, the costs can be allocated to universe selection or the active management costs. This cost investing premium should be explained by a skilled active fund manager delivering risk-adjusted returns that partially or fully absorb the management fees and expenses. Concerning passive fund managers, they may underperform because of fund expenses, and such underperformance should be explained by the expense ratio.

In order to analyze the impact of expense fees on the performance of the funds, the study re-estimates the multi-factor model, adding the monthly expense ratio to the returns. To test for outperformance, when adding the expense ratio and if the manager has skills, the active fund should be able to generate a positive alpha on gross returns. For the passive funds, it is not expected so.

3.3. Level of active management

According to Amihud & Goyenko (2013) and Cremers et al., (2016), the objective of actively managed portfolios is to achieve higher alphas relative to the market. The level of active management exhibited by a fund is very important when an investor is considering a fund selection and choosing whether to invest using an active or passive strategy.

However, if a fund with a self-declared active management strategy presents a low level of active management, is it worth paying for a higher premium fee?

Regarding the passive strategy, a good performing passive fund will display a minimal level of active management. Thus, it is expected to see actively bond funds display higher levels of active management than passive bond funds and bond ETFs, which should have a zero level of active management.

In order to measure the level of active management, the study applies two active management measures. The first active management measure is the tracking error (TE), which is defined as the time-series standard deviation of $\varepsilon_{p,t}$ from the Equation (2). It focuses on the volatility of the difference between the fund return and its benchmark index, measuring how consistently a manager outperforms or underperforms the benchmark.

The second measure was proposed by Amihud et al. (2013). The authors defend that fund performance can be predicted by its R^2 , obtained from the Equation (1). R^2 is the proportion of the fund return variance that is explained by the variation in these factors while $1 - R^2$ is a measure of selectivity. Thus, lower R^2 means that the fund tracks them less closely, predicting better performance. For funds, R^2 relates positively to fund size and relates negatively to its expenses. They also conclude that an investment strategy based on R^2 can generate significantly positive risk-adjusted excess returns.

Considering the information presented above, it is expected passive funds to have R^2 values that are close to 1, so as for ETFs. For active funds, it should be expected relatively low R^2 values. As for selectivity, it is expected to have higher selectivity on actively managed funds compared with passive ones.

4. Data

This section describes the data collection process for bonds funds and bond ETFs and bond risk factors.

4.1. Bond funds

The dataset funds were collected from the CRSP Database.

The first step was getting all the U.S. bond funds available in the database, from 01.01.1993 to 31.12.2018, resulting in 56,347 funds. To mitigate the survivorship bias, inactive funds were also included in the search.

Then, the Lipper classification was used to identify and limit the dataset to corporate bond funds, reducing it to 991 funds. Since the first corporate ETF available started in 2002, the period of analysis is from August 2002 to December 2018.

Moreover, using the Flags available on CRSP dataset (ETF Fund Flag and Index Fund Flag), it was possible to identify 29 passive bond ETFs and 31 passive bond mutual funds. The remaining 931 funds were considered active bond mutual funds.

To ensure meaningful regressions, it was required the funds to have at least 24 monthly observations.

In the U.S. funds market, there are funds with more than one share class (the fund is the same but the class changes); for these specific cases, the oldest one was chosen and excluded the others from the sample. When the fund has more than one share class with the same inception date, the one with the highest Average TNA (Total Net Assets) was chosen.

After applying all the criteria above, the final dataset is composed of 275 funds. Among these funds, there are 14 passive bond ETFs, 15 passive bond mutual funds and 246 Active bond mutual funds. As for market status, 183 funds are still active while 92 funds ceased to exist by the end of the period of analysis as reported in table 1. The list of the funds is presented in Annex 1.

Table 1 - Number of surviving and dead funds in the classified fund groups

Fund Group	Surviving Funds	Dead Funds
- Passive ETFs	13	1
- Passive Mutual Funds	12	3
- Active Mutual Funds	158	88
All Funds	183	92

The table presents the classification for all dataset funds as surviving or dead funds.

Descriptive statistics regarding the returns of all dataset funds are reported below, in Tables 2.

Table 2 – Descriptive Statistics for all dataset funds

Descriptive Statistics	Active Mutual Funds	Passive Mutual Funds	Passive ETFs
Mean %	0.2692	0.3197	0.3470
Median %	0.3481	0.3179	0.3956
Maximum %	4.2452	3.984	5.5591
Minimum %	-5.3437	-3.4924	-5.5697
Std. Dev. %	1.3156	1.3725	1.7295
Skewness	-0.6695	-0.1419	-0.2569
Kurtosis	7.3092	3.9997	5.5934
Jarque-Bera	298.6138	8.5263	156.6920
Probability	0.0499	0.2741	0.3901
Observations	197	197	197

The table presents the descriptive statistics for all dataset funds. The reported statistics are the mean excess return in percentage, the median of excess returns in percentage, the maximum and minimum of excess returns in percentage, the standard deviation in percentage, skewness, kurtosis, the value of the Jarque-Bera normality test, the probability value associated with the test, and, finally, the number of monthly observations collected from August 2002 to December 2018.

The average statistics are similar between the created portfolios. The active mutual fund group presents the lower average return comparing to the other two groups and the passive ETF group presents the highest average return, which is accompanied by a slightly higher standard deviation as well. The passive mutual fund and the ETF fund datasets obtain values approaching higher than 0.05 in the p-value of the Jarque-Bera test, meaning that the hypothesis that these returns follow normality is not rejected, for a 5% significance level.

The descriptive statistics for the individual funds contained in the dataset are present in Annex 2.

4.2. Bond risk factors

As a proxy for the excess return on the "market", to be used in the single and multi-factor models, the study considers the return of ICE BofA U.S. Corporate Index and subtract from this a proxy for the risk free rate (Rf) measured by the monthly risk-free return provided in the professor's Kenneth French website. This general index aims to capture broad market sensitivity and tracks the performance of U.S. dollar-denominated investment-grade rated corporate debt publicly issued in the U.S. domestic market.

Besides the bond market factor, the multi-factor model has also a Default factor that intends to capture default risk compensation in fixed-income portfolio returns. This factor consists of the return difference between a High Yield Index, measured by the ICE BoFA BBB U.S. Corporate Index and a Low Yield Index, measured by the ICE BoFA AAA U.S. Corporate Index.

Moreover, another factor is the Option spread, which consists of the return difference between a Mortgage Index, measured by the ICE BoFA U.S. FNMA Mortgage-Backed Securities Index, used to capture option features in specific bonds, and a Treasury Index, measured by the ICE BoFA U.S. Treasury Index.

The last is the Equity factor, which consists of the return difference between an Equity Index, measured by the S&P 500 COMPOSITE and the risk-free rate (Rf). Including a stock factor that is defined as the value-weighted return on a portfolio of stocks is important because it captures significant exposure to the stock market and because bond funds may hold convertible debt.

For all market indices described above, the end of month total return index for the period from August 2002 to December 2018 were collected from Datastream. Then, the monthly returns were calculated.

Descriptive statistics regarding the risk factors used in the multi-factor model are reported below, in Tables 3.

Table 3 – Descriptive Statistics for the Risk Factors

Descriptive Statistics	USBIG	DEFAULT	OPTION	EQUITY
Mean %	0.3384	0.1496	0.0233	0.6663
Median %	0.3993	0.2105	0.0658	1.0229
Maximum %	5.5948	6.5951	3.3244	10.9292
Minimum %	-7.4714	-8.9587	-2.3007	-16.8751
Std. Dev. %	1.5818	1.2672	0.7526	4.0005
Skewness	-0.9634	-0.971487	0.1049	-0.7602
Kurtosis	8.5590	19.7412	5.4288	4.9840
Jarque-Bera	284.1295	2331.5100	48.7823	51.2872
Probability	0.0000	0.0000	0.0000	0.0000
Observations	197	197	197	197

The table presents the descriptive statistics for the risk factors used in multi-factor models. The reported statistics are the mean excess return in percentage, the median of excess returns in percentage, the maximum and minimum of excess returns in percentage, the standard deviation in percentage, skewness, kurtosis, the value of the Jarque-Bera normality test, the probability value associated with the test, and, finally, the number of monthly observations collected from August 2002 to December 2018.

Regarding the average statistics, all the risk factors present a positive mean. The EQUITY factor presents the highest value which is accompanied by a higher standard deviation. The average values for the USBIG and DEFAULT risk factor are similar between them. The OPTION risk factor presents the lowest average value and consequently the lowest standard deviation. All four risk factor returns present values approaching zero in the p-value of the Jarque-Bera test, meaning that the hypothesis that these returns follow normality is rejected.

5. Empirical Analysis

This section presents and discusses the empirical results. In the first part, we analyze the alphas and betas estimates from the one-factor and multi-factor models applied, based on both net and gross fund returns. Moreover, we compare the results of active and passive funds. For the second part, we investigate the impact of the expense fee in the risk-adjusted performance. Finally, in the last part we analyze the level of activeness of the different groups of funds using two measures.

5.1. Risk-adjusted returns

First, the one-factor (Equation 1) and multi-factor models (Equation 2) were estimated on each fund's excess returns. To account for any possible time-series correlation and for heteroskedasticity of regression residuals, standard errors were estimated using the Newey-West procedure.

The regression results at the fund level allows us to conclude on Bond funds' financial performance and their exposure to the different risk factors.

The next tables report the performance and risk loadings for the 3 groups of funds presented in Table 1. Table 4 presents the performance and risk loadings of the one-factor model and Table 5 presents the performance and risk loadings of the multi-factor model.

The analysis focuses on the summary statistics for the alphas (Panel A) and the average factor loadings (Panel B).

Regardless which model is used, it is expected that the active mutual funds generate alphas of higher magnitude in both directions than passive funds.

Regarding the comparison between one-factor and multi-factor models, it is expected a higher correlation between the portfolio's returns and the benchmark returns (higher R²) in the multi-factor model.

Table 4 - One-factor model – Alphas, net of expense fees, and Betas estimates

One factor model - Factor Loadings net of expense fees	Active Mutual Funds	Passive Mutual Funds	Passive ETF
A. Summary statistics for the Alphas			
Minimum	-0.3719	-0.3165	-0.2945
Median	0.0184	0.0030	-0.0142
Maximum	0.3496	0.3945	0.1889
Mean	0.0078	-0.0104	-0.0304
Std Dev.	0.0979	0.1623	0.1291
Nº of funds	246	15	14
Nº of positive Alphas	145	8	6
At 10%	38	2	0
At 5%	19	1	0
At 1%	10	1	0
Nº of negative Alphas	101	7	8
At 10%	35	4	3
At 5%	28	1	3
At 1%	12	1	1
B. Mean factor loadings for the Betas and Adjusted R²			
β MARKET	0.7071	0.8161	1.0568
Adjusted R ²	77	67	63

The table presents alphas in percentage, net of expense fees, and Market Beta estimates regarding the one-factor model for all dataset funds.

The top of Panel A of Table 4 shows that the mean risk-adjusted return (alpha) is positive for the active bond mutual funds and negative for both passive bond mutual funds and passive bond ETFs.

As expected, the active bond mutual funds present the higher alpha (0.0078%). Of the 246 active funds, 145 present positive alphas and 101 negative alphas. For the positive alphas, 10 are statistically significant at the 1% level, while 19 and 38 are statistically significant at 5% and 10%, respectively. Regarding the negative alphas, 35, 28 and 12 are statistically significant at 10%, 5% and 1% respectively.

As for risk factors, the general market has a loading of 0.7071. All Betas are positive and statistically significant at the 1% level with exception of one fund that is significant only at the 5% level, (see Annex 3).

Analyzing the relationship between the portfolio and its benchmark index, the value of the adjusted R^2 is of 77%, revealing a high correlation between the funds' returns and the benchmark's returns.

Regarding the index bond funds, the one-factor model show that they underperform the market, presenting a slightly negative average alpha (-0.0104%). For the one-factor model, 8 out of 15 present positive alphas with only 1 being statistically significant at the 5% level. The remaining 7 funds present negative alphas, with only 1 fund alpha statistically significant at the 5% level.

As for the risk factor, the general market beta presents a value of 0.8161, suggesting a strong correlation with the market. All betas are positive and 14 out of 15 are statistically significant at 1% level, (see Annex 3).

Looking at the relationship between a portfolio and its benchmark index, the adjusted R^2 results show a mean value of 67%, revealing some average correlation.

As for the bond ETFs, estimates from the one-factor show that they underperform the market. The average alphas are slightly negative, although very close to zero (-0.0304%). For the one-factor model, 6 out of the 14 funds have positive alphas although with none of them being statistically significant as expected. The remaining 8 funds have negative alphas, with only 3 being statistically significant at 5% level.

As for the risk factor, the general bond market presents an average coefficient of 1.0568, suggesting a strong correlation with the market. All betas are positive and 13 out of the 14 funds are statistically significant at 5% level, (see Annex 3). As for the adjusted R^2 , the results show a value of 63%, revealing average correlation with the benchmark.

Table 5 - Multi-factor model – Alphas, net of expense fees, and Factor Loadings estimates

Multifactor model - Factor Loadings net of expense fees	Active Mutual Funds	Passive Mutual Funds	Passive ETF
A. Summary statistics for the Alphas			
Minimum	-0.3290	-0.1961	-0.3441
Median	0.0230	0.0110	-0.0272
Maximum	0.5258	0.4392	0.1271
Mean	0.0115	0.0227	-0.0630
Std Dev.	0.1018	0.1533	0.1310
Nº of funds	246	15	14
Nº of positive Alphas	139	9	6
At 10%	63	4	1
At 5%	45	4	1
At 1%	14	2	0
Nº of negative Alphas	107	6	8
At 10%	41	4	4
At 5%	31	2	3
At 1%	22	2	1
B. Mean factor loadings for the Betas and Adjusted R²			
β USBIG	0.6803	0.8487	1.0413
β DEFAULT	0.0058	-0.1917	-0.0954
β OPTION	-0.1488	-0.1491	0.0250
β EQUITY	0.0171	-0.0052	0.0718
Adjusted R ²	83	84	78

The table presents alphas in percentage, net of expense fees, and Betas estimates regarding the multi-factor model for all dataset funds.

For the multi-factor model, the mean risk-adjusted return of the active bond fund increased (0.0115%), compared to the one-factor model. The number of positive alphas decreased to 139 representing 57% of all funds, with 45 statistically significant at 5% level. The negative alphas also increased to 107 representing 43% with 31 funds statistically significant at 5% level. As in the one-factor model, the results show more negative alphas at a 1% significance level.

Analyzing each risk factor individually, the market risk factor has an average loading of 0.6803, very similar to the one-factor model, suggesting a more conservative strategy than the market. The USBIG factor presents 246 positive betas with 240 statistically significant at a 5%. Regarding the other risk factors that capture the systematic risk, the results show low coefficient values. The DEFAULT factor presents a value of 0.0058. Of the total 246 betas, 141 have positive coefficients with 38, 57, and 66 being statistically significant at 1%, 5%, and 10% respectively. The remaining 105 funds present negative values with 42, 50 and 54 being statistically significant at 1%, 5%, and 10% respectively. The OPTION factor stands with a negative average coefficient of -0.1488. The factor has only 74 positive coefficients (25, 37 and 38 being statistically significant at 1%, 5% and

10% respectively) and 172 negative coefficients (39, 66 and 87 statistically significant at 1%, 5% and 10% level respectively). For the EQUITY factor, the average coefficient is 0.0171. 145 out of 246 are positive (30, 48 and 56 are statistically significant at 1%, 5%, and 10% respectively). The remaining 101 presents negative coefficients, with only 39 being statistically significant at the 10% level (see Annex 4).

Looking at the adjusted R^2 of the multi-factor, it presents an average value of 83%. This means a high correlation between the portfolio's returns and the benchmark's returns. As expected, the active management strategy delivers more positive and statistically significant alphas, compared with passive funds. However, analyzing the results at a 5% significance level, the results show more significant negative alphas compared to the positive ones. Analyzing the beta values, it suggests that the funds are more conservative, less volatile compared to the market. The R^2 presents a high value in both models, meaning a high correlation between the portfolio's returns and the benchmark's returns. A lower R^2 value was expected since this is an active strategy with the objective of outperforming the market and not having a high correlation with a benchmark.

Regarding the Passive Mutual Funds, the multi-factor model presents a slightly positive average alpha, although very close to zero (0.0227%). The mean risk-adjusted return increased, compared to the one-factor model. Although it is higher compared to the one-factor model, the value continues to be close to zero as expected.

Regarding the alphas for the individual funds, 9 funds present positive values, with 4 funds presenting statistically significant alphas at the 5%, and only 6 presenting negative alphas, with only 2 being statistically significant at the 5% level.

Analyzing each risk factor individually, the market risk factor has an average loading of 0.8487, very similar to the one-factor model, suggesting a 15% less sensitive or volatile strategy compared to the market. It is the only risk factor with a positive average loading. All the 15 bond market betas are positive and statistically significant at a 1% level (with exception of one fund that is only at a 5% level).

Regarding the other risk factors that capture the systematic risk, the results show low coefficients values, similar to the active mutual funds. The DEFAULT factor has a value of -0.1917. Out of 16, only 2 present a positive coefficient with 1 fund statistically significant at the 5% level. The remaining 13 funds present a negative coefficient, with 10 being statistically

significant at 5%. The OPTION factor has also a negative average value of -0.1491. For this contributes only 4 positive coefficients (1, 2 and 2 statistically significant Betas at 1%, 5% and 10% respectively) and 11 negative coefficients (2, 3 and 5 statistically significant Betas at 1%, 5% and 10%, respectively). Finally, for the Equity factor, the average coefficient is at -0.0052. The results show 4 positive coefficients (with only 1 being statistically significant at 5% level) and 11 negative coefficients (2, 8 and 9 statistically significant Betas at 1%, 5% and 10% respectively, (see Annex 5).

Looking at R^2 of the multi-factor model, it presents a value of 84%. This means a high correlation between the portfolio's returns and the benchmark's returns and a value 17% higher than that of the one-factor model.

As expected, passive mutual funds present an average alpha very close to zero. The R^2 presents a high value, especially in the multi-factor model, meaning a high correlation between the portfolio's returns and the benchmark's returns.

As for the passive bond ETFs, the multi-factor model underperforms the market. The average alphas are slightly negative, although very close to zero (-0.0630%). The mean risk-adjusted return decreased compared to the one-factor model (-0.03%). Although it is lower, the value continues to be very close to zero as expected. Regarding the alpha estimates for the individual ETFs, 6 present positive alphas, with only one being statistically significant at a 5% level, and 8 funds present negative alphas, with 3 being statistically significant at a 5% level. Analyzing each risk factor individually, the market risk factor has an average coefficient of 1.0413, very similar to the one-factor model. All the 14 coefficients are positive and statistically significant at a 1% level (with the exception of one fund that is only at a 5% level). Regarding the other risk factors, the DEFAULT is the only factor presenting a negative average coefficient, with a value of -0.0954. Out of 14 funds, 5 present a positive coefficient with 3 and 4 being statistically significant at 1% and 5% respectively. The remaining 9 funds present a negative coefficient, being 6 and 7 statistically significant values at 5% and 10%, respectively. The OPTION factor presents an average positive coefficient of 0.0250. The results show 8 positive coefficients (with only one being statistically significant at a 5% level) and 6 negative coefficients (with only one statistically significant at a 5% level). Finally, for the EQUITY factor, the average coefficient is 0.0718. The results show 11 positive coefficients (with

3, 5 and 6 being statistically significant at 1%, 5% and 10% level, respectively) and 3 negative coefficients (with 2 statistically significant Betas at 5%), (see Annex 6).

Looking at the R^2 of the multi-factor, it presents an average value of 78%. This means a high correlation between the portfolio's returns and the benchmark's returns, as expected.

Summarizing the results obtained for the passive bond ETFs, the funds slightly underperform the benchmark, but with an average alpha very close to zero. The coefficient of the USBIG risk factor are slightly higher and very close to 1, compared to the other two groups. These results suggest that the passive ETFs are more conservative, less volatile compared to the market, as expected. Moreover, the R^2 results present a high value specially in the multi-factor model, meaning a high correlation between the portfolio's returns and the benchmark's returns.

Considering the results presented above for the 3 fund groups, the conclusion is that on average, active management strategies delivers slightly a positive performance regarding both models. For the passive funds, the passive mutual funds also slightly outperform the market in the multi-factor model. However, looking at the multi-factor model, the active mutual funds present more negative statistically funds at a 1% level and the passive bond funds present the same negative and positive alphas at a 1% level, meaning that the positive average alphas value are not statistically significant at a 1% level. For the one factor model, the passive mutual fund slightly underperforms in the one factor model. The passive ETF group slightly underperforms the market in both models. The average alphas presented in both passive fund groups are close to zero, as initially expected.

Regarding the adjusted R^2 values of the multi-factor model, the 2 passive groups display a high coefficient. These results are in accordance with the literature, meaning a high correlation between the portfolio's returns and the benchmark's returns, the principal objective of a fund with a passive strategy.

As for the active mutual funds' group, it displays an adjusted R^2 of 83%. A lower value would be expected because active management strategies seek excess return (alpha) through their active positioning versus the benchmark, and not by following an index. This result could mean lack of skills like selectivity, with the managers just following

some index portfolio in order to not outperform the market and get a better performance.

Regarding the results of the one-factor and multi-factor model, although the average alpha got worse for the active mutual fund group and for passive ETF group, the regression results using the multi-factor improved the passive mutual fund average alpha and generated more statistically significant positive alphas. Moreover, all adjusted R² increased using the multi-factor model, compared to the one-factor model. The multi-factor model does indeed a good job in explaining the returns of the 3 group of funds.

5.1.1. ETFs vs Market Benchmark

In order to compare the performance of ETFs more robustly, we obtain the specific benchmarks that each of the fund aims to replicate. Annex 7 presents the 14 ETFs with the respective benchmark that each fund replicates.

For the 14 bond ETFs, we were only able to obtain the benchmarks of 5 funds. Moreover, the one-factor model (Equation 1) was used to evaluate the performance of each fund. Table 6 presents the average risk-adjusted returns (alpha), the market risk factor coefficient (beta), and the R² for each bond ETF.

Table 6 – Passive bond ETFs and the Benchmarks each fund replicates

ETF Identification	Alphas	MARKET Betas	Adjusted R ²
iShares Trust: iShares iBoxx \$ Investment Grade Corporate Bond ETF	-0.0325***	1.0024***	100%
Invesco Exchange-Traded Fund Trust II: Invesco Preferred ETF	0.5803***	1.0392***	97%
SPDR Series Trust: SPDR Wells Fargo Preferred Stock ETF	-0.0958**	1.1580***	93%
Vanguard Scottsdale Funds: Vanguard Long-Term Corporate Bond Index Fund; ETF Class Shares	0.5297***	1.0070***	98%
ProShares Trust: ProShares Ultra Investment Grade Corporate	-0.1176**	2.0642***	97%

The table presents the average risk-adjusted returns (alpha), the market risk factor coefficient (beta), and the R² for each bond ETF that we were able to obtain the benchmark that each funds replicate. *, ** and *** represent the statistically significance levels for 10%, 5% and 1%, respectively.

The results show that three of the funds' alphas are negative, meaning underperformance relative to the benchmark. However, 2 funds were able to outperform the market, presenting positive average alphas. 3 out of the 5 funds present statistically significant alphas at the 1%, and the remaining 2 are statistically significant at the 5% level.

Regarding the systematic risk factor (beta), the coefficients are all positive and statistically significant at the 1% level. Moreover, almost all betas present values very close to 1, meaning that the fund moves according to the underlying market index.

About the R^2 , the values are very high and close to 100%. This means a very high correlation between the portfolio's returns and the benchmark's returns.

Overall, these results reveal more statistically significant alphas and higher R^2 , meaning better explanatory power compared to the results using the general benchmark (Table 4).

5.2. Expense ratio and fund performance

The results in Section 5.1 are generated using fund returns net of expenses. This study wants to understand how much the expense ratio affects risk-adjusted performance.

The CRSP database was used to get the annual expense fees and calculate the monthly average expense fees. For 7 passive bond mutual funds and 40 active bond mutual funds, the expense ratio values were not available in the database.

A comparison of average expense ratios for the different groups of funds is provided in Table 7.

Table 7 - Average (annual) expense ratio for active and passive funds

	Funds with Expense Fee Available	Average Annual Expense ratio	Average Annual Expense ratio %
Active Bond Funds	206 (246)	0.0083	0.8282
Passive Bond Funds	9 (15)	0.0046	0.4556
Passive ETF's	14 (14)	0.0031	0.3063

The table presents the average (annual) expense ratio for the different groups of funds. The Funds column represents the funds with the expense ratio available (i.e. for the active mutual funds, only 206 of the 246 have the expense fees available on the CRSP database).

Table 7 suggests investors face a much higher expense fee if they choose an actively managed strategy over a passive one. The differences amount to 0.37% comparing to passive bond mutual funds and 0.52% comparing to passive bond ETFs per year, which is in line with the findings of French (2008).

Analyzing individually, the table shows that investors of active funds sacrifice on average 0.83% per year. Regarding the passive mutual funds, the results show that investors spend on average 0.46% per year, significantly lower than their counterpart.

For the passive ETFs group, the average annual expense fee charged is about 0.31%. This is the group with the lowest fee, as expected. It is one of the advantages of passive ETFs over passive funds. Because of the passive management style, the number of trades an ETF executes a year is very low, resulting in more efficiency trading and low operating expenses.

To explore the impact of the expense ratio on the fund's ability to achieve its financial objective, the expense fees were added to the returns to get the gross returns. Then, the regressions were estimated again for the 3 group of funds using the multi-factor model (Equation 2). We only consider the funds for which expense fees were available. The results are summarized in Table 8.

Table 8 - Multi-factor model – Alpha estimates, gross of expense fees compared with Alpha estimates, net of expense fees

Statistics	Active Mutual Funds		Passive Mutual Funds		Passive ETFs	
	Net of fees	Gross of fees	Net of fees	Gross of fees	Net of fees	Gross of fees
Average Alphas	0.0065	0.0753	-0.0527	-0.0148	-0.0706	-0.0375
Nº of positive Alphas	112	164	3	3	6	7
At 10%	50	113	2	3	1	1
At 5%	34	101	2	3	1	1
At 1%	9	72	0	3	0	1
Nº of negative Alphas	94	42	6	6	8	7
At 10%	40	7	4	1	4	3
At 5%	31	5	2	1	3	2
At 1%	22	2	2	1	1	1
Nº of funds	206	206	9	9	14	14

The table presents, for the funds which expense fees were available, the average of the alpha estimates in %, gross of expense fees compared with alpha estimates, net of expense fees.

Looking at the results, in all 3 datasets the average alpha values increased when the expense fee is added to returns. Looking at the active bond mutual funds' group, the expense fee has a greater impact in the average alpha, compared to the passive group funds. Comparing the net of fees results, relative to gross of fees results, the number of positive alphas decreased, and the number of negative alphas increased. At the 1% significance level, the results show 9 positive alphas compared to 22 negative alphas statistically significant.

Regarding the results for the passive bond mutual funds' group, the expense fees have an impact of over 0,28% in the average alpha. Moreover, the results net and gross of

fees show the same number of positive and negative, but with 2 negative alphas net of fees statistically significant at the 1% level.

On average, the passive ETFs slightly underperform the market after and before expense fees. Without the expense fees, the results show a decrease over 0,53% in the average alphas (from -0.0375 to -0.0706). As we take out the expense fees, the number of positive alphas decreased (from 7 to 6) and the number of negative alphas increased (from 7 to 8) with 1 negative fund being statistically significant at the 1% level.

Overall, the expense ratio has a significant impact over fund's performance, suggesting that fund managers can beat the market with their selection and trading of bonds, but the outperformance is cancelled by the expense fees, similar results to what we find in the literature.

5.3. Level of active management

We analyze the level of activeness of the different groups of funds using two measures. The first active management measure is the tracking error (TE), which is defined as the time-series standard deviation of $\varepsilon_{p,t}$ from the Equation (1). It focuses on the volatility of the difference between the fund return and its market benchmark.

The second measure was proposed by Amihud et al. (2013). The authors defend that fund performance can be predicted by its R^2 , obtained from the Equation (1). R^2 is the proportion of the fund return variance that is explained by the variation in the market benchmark while $1 - R^2$ is a measure of selectivity. Thus, lower R^2 means that the fund tracks them less closely, predicting better performance.

It is expected passive funds to have R^2 values that are close to 1, so as for ETFs. For active funds, it is expected relatively low R^2 values. As for selectivity, it is expected to have higher selectivity on actively managed funds compared with passive ones.

The two active management measures are derived from the Equation (1), which regresses the fund's excess return against a general market benchmark index's excess return.

Annex 8 presents the results of this active management analysis for all funds, and a summary of the descriptive statistics for these measures is provided in Table 9.

Table 9 - Summary statistics of active management measures

Active Mutual Fund	Average	Minimum	Median	Maximum
TE	1.3156	0.2232	1.1794	6.1272
R ²	77%	4%	81%	99%
Passive Mutual Fund	Average	Minimum	Median	Maximum
TE	1.3724	0.8320	1.0362	2.3672
R ²	67%	-1%	70%	96%
Passive ETFs	Average	Minimum	Median	Maximum
TE	1.7295	0.4459	1.4315	4.6919
R ²	63%	4%	76%	97%

The table presents the summary of the descriptive statistics for the two active management measures.

Contrary to expectations, active bond mutual funds on average demonstrate low levels of average active management (TE) comparing to the passive groups.

Looking at the TE values of the passive funds, the passive bond ETFs group presents the highest TE value. This is a problem for investors of passive bond ETFs, as high active management is a sign of poor tracking ability, a key measure of passive fund performance (Amihud et al., 2013).

Regarding the R² values, the results are also different from the initial expectation. The active bond mutual funds group presents the higher average R² value, compared to the two passive managed groups, meaning low levels of selectivity.

Although the results are noticeably different from initial expectation, the degree to which active bond funds actively managed their portfolios may be understated due to the methodology that has been employed. The accuracy of these two active management measures depends especially on the benchmark used in regressions. Since a general benchmark has been employed and not the specific benchmark each actively managed bond mutual fund replicate, this could affect the output.

Despite the use of a general benchmark for the 3 fund groups, it is possible to infer that investors may be overpaying for active management funds where little or none is being implemented by the fund manager. These active managers may be basing the investment strategy on R², since it can generate significantly positive risk-adjusted excess returns. Another possibility is that active fund managers may change the investment strategy and follow a benchmark index to avoid underperformance.

Moreover, looking at the active bond mutual funds R², 61 funds present a R² above 90%. Out of these funds, 39 have TE below the average of active managed funds (1.3156).

These values can indicate that these active funds practically index most of their holdings and use discretion with a very small part of their net asset value, yet they charge management fees as if they were active funds. High R^2 values combined with their low level of active management are examples of so-called "closet indexers".

To analyze the potential link between the degree of active management and fund performance, we compute the cross-correlation between TE, R^2 , the alpha for the four-factor model and its absolute value. For this, the values used are the ones presented in Annex 9.

As argued by Chen and Scholtens (2018), active management is a necessary but not sufficient condition for a fund to outperform the benchmark return. On the other side, unsuccessful active management will result in underperformance.

Having these interpretations into account, active management should be strongly correlated with the absolute value of alpha, $|\alpha|$. On the other hand, we can have managers following a benchmark index to avoid poor performance ($\alpha < 0$). If this is the case, it is expected a positive correlation between active management measures and the nominal value of alpha. The results are presented in Table 10.

Table 10 - Cross correlation results

Active Mutual Funds / All Sample Funds	TE	Adjusted R^2	Alpha	Absolute Alpha
TE	-	-0.1661	-0.1735	0.4619
Adjusted R^2	-0.2081	-	-0.2749	-0.2897
Alpha	-0.0267	-0.2724	-	0.0825
Absolute Alpha	0.4410	-0.2712	0.1220	-

This table presents the cross correlation between tracking error volatility (TE), R^2 of Equation (1) and the alpha estimate from Equation (2). The figures reported in the upper right portion of the table are based on all dataset Bond Funds, while those reported in the lower left portion of the table are based on active Bond Funds only.

Table 10 reveals that the variables do not present high coefficient levels of correlation between each other. Moreover, the table shows that the two active management measures share a weak negative correlation of -0.1661 and -0.2081 (based only on active bond mutual funds), which implies that a fund with low tracking error volatility (TE) is likely to have a higher R^2 , meaning some selectivity.

However, regarding the relation between active management and fund performance, the results found are different results compared to some previous studies (Amihud et al. 2013; Cremers & Petajisto, 2009). Instead, the results are similar to Chen and

Scholtens (2018), with a moderate value of 0.4619 correlation between TE and the absolute alpha, and a negative moderate correlation of -0.2712 between R^2 and the absolute value of alpha.

Nominal alphas share weak negative correlation with both active management measures for all sample funds (-0.1735 and -0.2749 with TE and R^2 , respectively). This correlation pattern does not vary if only consider active bond mutual funds (-0.0267 and -0.2724 with TE and R^2 , respectively). A possible explanation for this weak relationship is that active bond mutual funds simply lack timing and picking skills. This meets the conclusion of the previous point that active bond mutual funds present low levels of active management in both measures.

6. Conclusion

To the best of my knowledge, little evidence exists on the performance of bond funds compared with bond ETFs.

In this work, an empirical investigation of the performance of active bond mutual funds, passive bond mutual funds and passive bond ETFs, three relevant types of investment in the market has been conducted.

A dataset composed of 275 bond U.S. funds were investigated for the period of August 2002 to December 2018 concerning the financial performance and cost of investing between active and passive bond funds.

The objective of this study was to address the following questions:

- Does the financial performance of actively managed bond funds significantly differ from that of their passively managed counterparts?
- How do expense ratios differ between actively managed and passively managed bond funds and what impact do they have on fund performance?
- To what extent do active bond funds manage their portfolios?

Regarding the first question of this study, as expected, the active management strategy delivers more positive and statistically significant alphas, compared with passive funds. However, the mean risk adjusted returns are very close to zero and, for both one-factor and multi-factor, the results show a higher number of negative significant alphas at the

1% level, comparing to the number of positive alphas. This indicates underperformance at the 1% level.

Moreover, regarding the passively managed funds, the results show a slightly positive average risk-adjusted return for the passive mutual funds in the multi-factor model. However, the positive alphas are not statistically significant at the 1% level, since the results present the same number of significant negative and positive funds. As for the passive bond ETF group, the funds slightly underperform the market in both models at the 1% level. Thus, for the two groups, the average alpha is very close to zero, as expected.

Regarding the loadings for the market risk factor, the passive groups display betas close to 1, suggesting a strong correlation with the market. The beta values for the active funds suggest that the funds are more conservative, less sensitive or volatile compared to the market.

The adjusted R^2 of the multi-factor model reveals high coefficient values for both passive funds as expected, meaning a high correlation between the portfolio's returns and the benchmark's returns. The active bond funds also present a high adjusted R^2 , what could mean low selectivity abilities.

Regarding the one-factor or multi-factor model's choice, the regression results using the multi-factor improved almost all the statistics of the 3 groups of funds. This indicates that the multi-factor model does indeed a better job in explaining the bond fund returns. In order to compare the performance of ETFs more robustly, the specific benchmarks that each of the fund replicates were obtained. Overall, the results reveal more statistically significant alphas and higher R^2 , meaning a better explanatory power if the specific benchmark each fund replicates is used, compared with using the general benchmark.

Concerning expense fees, the results show that investors face a much higher expense fee if they choose an actively managed strategy over a passive one. The differences amount to 0,37% comparing to passive mutual funds and 0,52% comparing to passive ETFs per year.

To explore the impact of the expense ratio on the fund's ability to achieve its financial objective, expense fees were added to the returns to get the gross returns. The results show that expense fees significantly worsen the fund's performance of all 3 sample

groups. The negative impact is reflected in the average alphas, in the decreasing number of funds that can achieve a significant positive outperformance relative to the benchmark and in the increasing number of funds that significantly underperform the benchmark.

Even though there is a negative impact of the expense fees, the actively managed bond funds were still able to outperform the market, on average, although the average alpha estimates are very close to zero. As for the passive funds, the results show that the passive bond funds and the passive bond ETF funds underperform the market in both net and gross of fees. But, as initially expected, the average risk-adjusted returns are very close to zero.

Regarding the question of the level of active management, the results did not meet the initial expectations, revealing inconsistency between the level of activeness and performance. Despite active bond mutual funds on average demonstrate low levels of active management (TE) comparing to the passive funds, revealing a more conservative approach, most of funds outperform the market. The passive Bond ETFs present the higher Tracking error value, indicating a poor tracking ability.

Concerning the R^2 values, the results are also different from the initial expectation. The active bond mutual funds present the higher average value, compared to the passive managed and ETFs, meaning low levels of selectivity abilities.

The accuracy of these two active management measures depends especially on the benchmark used in regressions. Since general benchmark was used and not the specific benchmark each active managed bond mutual fund replicate, this could affect the output.

Despite the use of a general benchmark, investors may be overpaying for active management funds where little or none is being implemented by the fund manager. These active managers may be basing the investment strategy on R^2 , since it can generate significantly positive risk-adjusted excess returns. It can also be argued that incompetent active fund managers may revert to following a benchmark index to avoid registering negative alphas, adopting a more conservative approach.

Moreover, some active funds combine high levels of R^2 and low levels of active management, which can indicate examples of so-called "closet indexers".

The results show low correlation values between active management measures and the risk-adjusted returns. The active managers show a conservative approach, with low values of selectivity, possibly following a given index to avoid underperformance. It can reveal that active bond mutual funds simply lack timing and picking skills, revealing low levels of active management in both active management measures. However, and despite the results mentioned above, active mutual fund returns on average were able to outperform the market, both net and gross of expenses. Looking at the 5% significance level, the results and findings seem to differ from what most of the literature reports that active managed funds are not able to outperform the market. However, as for the 1% significance level, the active bond funds reveal underperforming results. These findings are very much in accordance with the major literature regarding this topic.

Looking at the corporate bond market industry, most of the investments are made in active bond mutual funds, a phenomenon that also exists for equity funds. A possible explanation are the investment rules used in passive investment, that can create distortions in the pricing of individual securities. If this become more significant overtime, active investment strategies can exploit these distortions and increase profitability (Anadu, Kruttli, McCabe & Osambela, 2020).

This trend is changing over the last years. This shift has been driven by a desire for low-cost exposure to fixed-income markets. Further research is required for analyzing the fund returns. Incorporating other regression models, using the specific benchmark each fund replicates or start including active bond ETFs are some examples. Due to the lack of academic literature over these topics, some types of investments other than stocks have not yet come into force in investor options. In addition to stocks, studies must incorporate other investment classes, such as Bonds or ETFs.

In addition, the expectation for the coming years is that investors continue their move to low-fee passive products, as the passive bond mutual funds or bond ETFs.

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Annexes

Annex 1 - List of all sample funds

Fund Type	Fund Name	Lipper Fund Classification	First monthly trading day	Status
Active Bond Mutual Fund	AARP Funds: AARP Income Fund	Corporate Debt Funds BBB-Rated	31/08/2006	Dead
Active Bond Mutual Fund	GuideStone Funds: Extended-Duration Bond Fund; Investor Class Shares	Corporate Debt Funds BBB-Rated	31/07/2001	Active
Active Bond Mutual Fund	AIM Investment Securities Funds (Invesco Investment Securities Funds): Invesco Income Fund; Class A Shares	Corporate Debt Funds BBB-Rated	29/11/1968	Dead
Active Bond Mutual Fund	AXP Income Series, Inc: RiverSource Selective Fund; Class A Shares	Corporate Debt Funds A Rated	29/12/1961	Dead
Active Bond Mutual Fund	Advance Capital I, Inc: Retirement Income Fund; Retail Class Shares	Corporate Debt Funds BBB-Rated	31/12/1992	Active
Active Bond Mutual Fund	Nationwide Mutual Funds: Nationwide Core Plus Bond Fund; Institutional Class Shares	Corporate Debt Funds A Rated	31/07/1992	Active
Active Bond Mutual Fund	Advisors' Inner Circle Fund: Sirach Bond Portfolio; Institutional Class Shares	Corporate Debt Funds BBB-Rated	28/11/1997	Dead
Active Bond Mutual Fund	Dunham Funds: Dunham Corporate/Government Bond Fund; Class N Shares	Corporate Debt Funds BBB-Rated	30/11/2004	Active
Active Bond Mutual Fund	Advisors Series Trust: PIA Moderate Duration Bond Fund; Advisor Class Shares	Corporate Debt Funds BBB-Rated	31/08/1998	Dead
Active Bond Mutual Fund	Advisors Series Trust: PIA BBB Bond Fund; Managed Account Completion Shares	Corporate Debt Funds BBB-Rated	29/08/2003	Active
Active Bond Mutual Fund	PNC Funds: PNC Total Return Advantage Fund; Class I Shares	Corporate Debt Funds BBB-Rated	29/07/1994	Dead
Active Bond Mutual Fund	Allegiant Funds: Allegiant Total Return Advantage Fund; Class B Shares	Corporate Debt Funds BBB-Rated	31/08/1999	Dead
Active Bond Mutual Fund	Allegiant Funds: Allegiant Bond Fund; Class B Shares	Corporate Debt Funds A Rated	28/02/1994	Dead
Active Bond Mutual Fund	PNC Funds: PNC Bond Fund; Class I Shares	Corporate Debt Funds A Rated	31/10/1988	Active
Active Bond Mutual Fund	AllianceBernstein Bond Fund, Inc: AllianceBernstein Corporate Bond Portfolio; Class A Shares	Corporate Debt Funds BBB-Rated	29/03/1974	Dead
Active Bond Mutual Fund	AllianceBernstein Portfolios: AllianceBernstein Conservative Wealth Strategy; Class A Shares	Corporate Debt Funds BBB-Rated	29/08/2003	Active
Active Bond Mutual Fund	American Century Investment Trust: American Century-Mason Street Select Bond Fund; A Class Shares	Corporate Debt Funds A Rated	31/03/1997	Dead
Active Bond Mutual Fund	American Century Investment Trust: Diversified Bond Fund; Institutional Class Shares	Corporate Debt Funds A Rated	30/04/1993	Active
Active Bond Mutual Fund	AmSouth Funds: AmSouth High Quality Bond Fund; Class A Shares	Corporate Debt Funds A Rated	30/12/1988	Dead
Active Bond Mutual Fund	GPS Funds I: GuideMark Core Fixed Income Fund; Service Share Class	Corporate Debt Funds BBB-Rated	31/05/2001	Active
Active Bond Mutual Fund	Sterling Capital Funds: Sterling Capital Total Return Bond Fund; Institutional Class Shares	Corporate Debt Funds BBB-Rated	30/11/1999	Active
Active Bond Mutual Fund	BBH Trust: BBH Limited Duration Fund; Class N Shares	Corporate Debt Funds BBB-Rated	30/11/2000	Active
Active Bond Mutual Fund	Sanford C Bernstein Fund II, Inc: Bernstein Intermediate Duration Institutional Portfolio	Corporate Debt Funds A Rated	30/04/2002	Active
Active Bond Mutual Fund	Bishop Street Funds: High Grade Income Fund; Class I Shares	Corporate Debt Funds A Rated	31/01/1997	Active
Active Bond Mutual Fund	BlackRock Bond Fund, Inc: BlackRock Bond Fund; Institutional Shares	Corporate Debt Funds A Rated	31/10/1980	Dead
Active Bond Mutual Fund	Bond Fund of America; A	Corporate Debt Funds A Rated	31/05/1974	Active
Active Bond Mutual Fund	CCMI Funds: CCMI Bond Fund	Corporate Debt Funds BBB-Rated	28/06/2002	Dead
Active Bond Mutual Fund	City National Rochdale Funds: City National Rochdale Full Maturity Fixed Income Fund; Institutional Class Shs	Corporate Debt Funds A Rated	31/10/1988	Dead
Active Bond Mutual Fund	Calvert Fund: Calvert Income Fund; Class A Shares	Corporate Debt Funds BBB-Rated	29/10/1982	Active
Active Bond Mutual Fund	Calvert Social Investment Fund: Calvert Bond Portfolio; Class A Shares	Corporate Debt Funds A Rated	31/08/1987	Active
Passive Bond Mutual Fund	Capstone Social Ethics & Religious Values Fund: Bond Fund; Class A Shares	Corporate Debt Funds BBB-Rated	30/09/1998	Dead
Active Bond Mutual Fund	Columbia Fixed Income Securities Fund, Inc; Class Z Shares	Corporate Debt Funds A Rated	31/01/1983	Dead
Active Bond Mutual Fund	Columbia Funds Trust III: Columbia Contrarian Income Fund; Class A Shares	Corporate Debt Funds A Rated	31/01/1989	Dead
Active Bond Mutual Fund	Columbia Funds Institutional Trust: CMG Core Bond Fund	Corporate Debt Funds A Rated	31/08/2000	Dead
Active Bond Mutual Fund	COUNTRY Mutual Funds Trust: COUNTRY Bond Fund; Class Y Shares	Corporate Debt Funds A Rated	31/01/1997	Dead
Active Bond Mutual Fund	Wasatch Funds Trust: Wasatch-1st Source Income Fund; Investor Class Shares	Corporate Debt Funds A Rated	30/09/1996	Active
Active Bond Mutual Fund	Credit Suisse Institutional Fund, Inc: Investment Grade Fixed Income Portfolio	Corporate Debt Funds A Rated	30/04/2002	Dead
Active Bond Mutual Fund	Credit Suisse Institutional Fixed Income Fund, Inc	Corporate Debt Funds A Rated	31/03/1994	Dead
Active Bond Mutual Fund	Croft Funds Corporation: Croft Income Fund	Corporate Debt Funds BBB-Rated	31/05/1995	Active
Active Bond Mutual Fund	DWS Portfolio Trust: DWS Core Plus Income Fund; Class AARP Shares	Corporate Debt Funds A Rated	31/01/1992	Dead
Active Bond Mutual Fund	Deutsche Portfolio Trust: Deutsche Core Plus Income Fund; Class S Shares	Corporate Debt Funds A Rated	29/12/1961	Active
Passive Bond Mutual Fund	Deutsche Institutional Funds: Deutsche US Bond Index Fund; Institutional Class Shares	Corporate Debt Funds BBB-Rated	30/06/1997	Active
Active Bond Mutual Fund	Delaware Group Income Funds: Delaware Corporate Bond Fund; Class A Shares	Corporate Debt Funds BBB-Rated	30/09/1998	Active
Active Bond Mutual Fund	Delaware Group Income Funds: Delaware Extended Duration Bond Fund; Institutional Class Shares	Corporate Debt Funds BBB-Rated	30/09/1998	Active
Active Bond Mutual Fund	Dodge & Cox Funds: Dodge & Cox Income Fund	Corporate Debt Funds A Rated	31/01/1989	Active
Active Bond Mutual Fund	Domini Social Investment Trust: Domini Social Bond Fund; Investor Shares	Corporate Debt Funds BBB-Rated	31/05/2000	Active
Active Bond Mutual Fund	Dreyfus A Bonds Plus, Inc	Corporate Debt Funds A Rated	30/06/1976	Dead
Active Bond Mutual Fund	Dreyfus Premier Fixed Income Funds: Dreyfus Premier Corporate Bond Fund; Class A Shares	Corporate Debt Funds BBB-Rated	31/10/2002	Dead
Active Bond Mutual Fund	Endowments Trust: Bond Portfolio	Corporate Debt Funds A Rated	30/03/1972	Dead
Active Bond Mutual Fund	Enterprise Group of Funds, Inc: Enterprise Total Return Fund; Class A Shares	Corporate Debt Funds BBB-Rated	31/07/2001	Dead
Active Bond Mutual Fund	EquiTrust Series Fund, Inc: High Grade Bond Portfolio; Traditional Shares Class B	Corporate Debt Funds A Rated	31/12/1987	Dead
Active Bond Mutual Fund	Evergreen Fixed Income Trust: Evergreen Core Plus Bond Fund; Class B Shares	Corporate Debt Funds BBB-Rated	29/12/1961	Dead
Active Bond Mutual Fund	Columbia Funds Series Trust I: Columbia Bond Fund; Class Z Shares	Corporate Debt Funds A Rated	31/01/1986	Active
Active Bond Mutual Fund	Excelsior Funds, Inc: Core Bond Fund; Retirement Shares	Corporate Debt Funds A Rated	30/11/2004	Dead
Active Bond Mutual Fund	Excelsior Funds Trust: Excelsior Total Return Bond Fund; Institutional Shares	Corporate Debt Funds A Rated	31/01/1995	Dead
Active Bond Mutual Fund	FDP Series Inc: Franklin Templeton Total Return FDP Fund; Investor C Shares	Corporate Debt Funds BBB-Rated	30/06/2005	Active
Active Bond Mutual Fund	FPA New Income, Inc	Corporate Debt Funds A Rated	30/04/1969	Active
Active Bond Mutual Fund	Federated Investment Series Funds, Inc: Federated Bond Fund; Class F Shares	Corporate Debt Funds BBB-Rated	29/05/1987	Active
Active Bond Mutual Fund	Fifth Third Funds: Fifth Third Total Return Bond Fund; Institutional Shares	Corporate Debt Funds A Rated	31/03/1995	Dead
Active Bond Mutual Fund	Fifth Third Funds: Fifth Third Bond Fund; Advisor Shares	Corporate Debt Funds A Rated	31/03/1995	Dead
Active Bond Mutual Fund	Financial Investors Trust: Aristata Quality Bond Fund	Corporate Debt Funds A Rated	31/03/1998	Dead
Active Bond Mutual Fund	Nuveen Investment Funds, Inc: Nuveen Core Plus Bond Fund; Class A Shares	Corporate Debt Funds A Rated	31/12/1987	Active
Active Bond Mutual Fund	Nuveen Investment Funds, Inc: Nuveen Strategic Income Fund; Class I Shares	Corporate Debt Funds BBB-Rated	31/01/2000	Active
Active Bond Mutual Fund	Tributary Funds, Inc: Tributary Income Fund; Institutional Class Shares	Corporate Debt Funds BBB-Rated	28/02/2001	Active
Active Bond Mutual Fund	First Investors Income Funds: Investment Grade Fund; Class A Shares	Corporate Debt Funds BBB-Rated	28/02/1991	Active
Active Bond Mutual Fund	Forum Funds: Investors Bond Fund	Corporate Debt Funds BBB-Rated	31/10/1989	Dead
Active Bond Mutual Fund	Franklin Global Trust: Franklin Templeton Core Plus Fixed Income Fund	Corporate Debt Funds BBB-Rated	31/07/2003	Dead
Active Bond Mutual Fund	Scout Funds: Scout Core Bond Fund; Institutional Share Class	Corporate Debt Funds BBB-Rated	31/01/2001	Active
Active Bond Mutual Fund	Goldman Sachs Trust: Goldman Sachs Investment Grade Credit Fund; Separate Acct Institutional Shares	Corporate Debt Funds BBB-Rated	31/10/2003	Active
Active Bond Mutual Fund	Harris Insight Funds Trust: Harris Insight Bond Fund; N Shares	Corporate Debt Funds A Rated	30/04/1996	Dead
Active Bond Mutual Fund	Hallmark Investment Series Trust: Hallmark Total Return Bond; Class I Shares	Corporate Debt Funds A Rated	31/10/1996	Dead
Active Bond Mutual Fund	Advisors' Inner Circle Fund II: Hancock Horizon Core Bond Fund; Institutional Class Shares	Corporate Debt Funds BBB-Rated	28/04/2000	Active
Active Bond Mutual Fund	John Hancock Variable Insurance Trust: Core Bond Trust; NAV Shares	Corporate Debt Funds BBB-Rated	31/05/2007	Active
Active Bond Mutual Fund	John Hancock Sovereign Bond Fund: John Hancock Bond Fund; Class A Shares	Corporate Debt Funds A Rated	30/11/1973	Active
Active Bond Mutual Fund	Hartford Mutual Funds, Inc: Hartford Total Return Bond Fund; Class Y Shares	Corporate Debt Funds BBB-Rated	31/07/1996	Active
Active Bond Mutual Fund	Hartford Mutual Funds, Inc: Hartford Unconstrained Bond Fund; Class A Shares	Corporate Debt Funds BBB-Rated	31/10/2002	Active
Active Bond Mutual Fund	HighMark Funds: HighMark Bond Fund; Class B Shares	Corporate Debt Funds A Rated	31/10/2000	Dead
Active Bond Mutual Fund	Nationwide Mutual Funds: Nationwide HighMark Bond Fund; Institutional Service Class Shares	Corporate Debt Funds A Rated	29/02/1984	Active
Active Bond Mutual Fund	ICON Funds: ICON Bond Fund; Class I Shares	Corporate Debt Funds BBB-Rated	30/09/2002	Dead
Passive ETF	iShares Trust: iShares iBoxx \$ Investment Grade Corporate Bond ETF	Corporate Debt Funds BBB-Rated	28/06/2002	Active

Active Bond Mutual Fund	Iy Funds: Iy Bond Fund; Class A Shares	Corporate Debt Funds A Rated	30/10/1987	Dead
Active Bond Mutual Fund	John Hancock Funds II: Investment Quality Bond Fund; Class NAV Shares	Corporate Debt Funds BBB-Rated	30/09/2005	Active
Active Bond Mutual Fund	LKCM Funds: LKCM Aquinas Fixed Income Fund	Corporate Debt Funds A Rated	31/01/1994	Dead
Active Bond Mutual Fund	Lebenthal Funds, Inc.: Lebenthal Taxable Municipal Bond Fund	Corporate Debt Funds A Rated	30/11/1993	Dead
Active Bond Mutual Fund	Legg Mason Partners Income Trust: Western Asset Corporate Bond Fund; Class B Shares	Corporate Debt Funds A Rated	29/01/1982	Active
Active Bond Mutual Fund	Legg Mason Income Trust, Inc: Legg Mason Investment Grade Income Portfolio; Primary Class Shares	Corporate Debt Funds BBB-Rated	31/08/1987	Dead
Active Bond Mutual Fund	Loomis Sayles Funds I: Natixis Loomis Sayles Investment Grade Bond Fund; Class Y Shares	Corporate Debt Funds BBB-Rated	31/01/1997	Active
Passive Bond Mutual Fund	Loomis Sayles Funds I: Loomis Sayles Benchmark Core Bond Fund; Institutional Shares	Corporate Debt Funds A Rated	30/04/1996	Dead
Active Bond Mutual Fund	Loomis Sayles Funds I: Loomis Sayles Bond Fund; Institutional Class	Corporate Debt Funds BBB-Rated	31/05/1991	Active
Active Bond Mutual Fund	Lord Abbett Investment Trust: Lord Abbett Income Fund; Class A Shares	Corporate Debt Funds BBB-Rated	29/12/1961	Active
Active Bond Mutual Fund	MFS Series Trust IX: MFS Bond Fund; Class A Shares	Corporate Debt Funds BBB-Rated	31/05/1974	Active
Active Bond Mutual Fund	MFS Series Trust IX: MFS Research Bond Fund; Class I Shares	Corporate Debt Funds A Rated	31/12/1998	Active
Active Bond Mutual Fund	Wilmington Funds: Wilmington Broad Market Bond Fund; Institutional Class	Corporate Debt Funds A Rated	30/07/1993	Active
Active Bond Mutual Fund	MTB Group of Funds: MTB Income Fund; Class B Shares	Corporate Debt Funds A Rated	30/07/1993	Dead
Active Bond Mutual Fund	Madison Funds: Madison High Quality Bond Fund; Class Y Shares	Corporate Debt Funds A Rated	28/04/2000	Active
Active Bond Mutual Fund	AMG Funds III: AMG Managers Bond Fund; Service Class Shares	Corporate Debt Funds BBB-Rated	31/05/1984	Active
Active Bond Mutual Fund	Managers Trust II: Total Return Bond Fund	Corporate Debt Funds BBB-Rated	29/11/2002	Dead
Active Bond Mutual Fund	AMG Funds II: AMG GW&K Enhanced Core Bond Fund; Institutional Shares	Corporate Debt Funds BBB-Rated	31/01/1997	Active
Active Bond Mutual Fund	Managers Trust II: Managers AMG GW&K Fixed Income Fund; Class B Shares	Corporate Debt Funds BBB-Rated	31/03/1998	Dead
Active Bond Mutual Fund	Maxim Series Fund, Inc: Maxim Federated Bond Portfolio	Corporate Debt Funds BBB-Rated	30/05/2003	Active
Active Bond Mutual Fund	Great West Fund, Inc: Great West Loomis Sayles Bond Fund; Initial Class Shares	Corporate Debt Funds BBB-Rated	30/11/1994	Active
Active Bond Mutual Fund	McMorgan Funds: McMorgan Fixed Income Fund; McMorgan Funds Shares	Corporate Debt Funds BBB-Rated	29/07/1994	Dead
Active Bond Mutual Fund	PNC Funds, Inc: Total Return Bond Fund; Institutional Shares	Corporate Debt Funds A Rated	31/03/1998	Dead
Active Bond Mutual Fund	Morgan Stanley Institutional Fund Trust: Core Plus Fixed Income Portfolio; Class I Shares	Corporate Debt Funds BBB-Rated	30/11/1984	Active
Active Bond Mutual Fund	Morgan Stanley Institutional Fund Trust: Long Duration Fixed Income Portfolio; Class I Shares	Corporate Debt Funds BBB-Rated	30/06/2006	Dead
Active Bond Mutual Fund	Morgan Stanley Institutional Fund Trust: Corporate Bond Portfolio; Class I Shares	Corporate Debt Funds A Rated	31/08/1990	Active
Active Bond Mutual Fund	Morgan Stanley Income Trust: Class B Shares	Corporate Debt Funds BBB-Rated	28/04/1989	Dead
Active Bond Mutual Fund	Munder Series Trust: Munder Bond Fund; Class Y Shares	Corporate Debt Funds A Rated	28/12/1991	Active
Active Bond Mutual Fund	Mutual of America Institutional Funds, Inc: Bond Fund	Corporate Debt Funds BBB-Rated	31/05/1996	Active
Active Bond Mutual Fund	JP Morgan Mutual Fund Select Group: JPMorgan Bond Fund II, Select Shares	Corporate Debt Funds A Rated	31/01/1992	Dead
Active Bond Mutual Fund	Nationwide Mutual Funds: Nationwide Bond Fund; Institutional Service Class Shares	Corporate Debt Funds A Rated	31/03/1980	Active
Active Bond Mutual Fund	Nationwide Mutual Funds: Nationwide Enhanced Income Fund; Institutional Class Shares	Corporate Debt Funds BBB-Rated	30/11/1999	Active
Passive Bond Mutual Fund	Nationwide Mutual Funds: Nationwide Bond Index Fund; Institutional Class Shares	Corporate Debt Funds BBB-Rated	30/11/1999	Active
Active Bond Mutual Fund	Neuberger Berman Income Funds: Neuberger Berman Core Bond Fund; Institutional Class Shares	Corporate Debt Funds A Rated	29/08/1995	Active
Active Bond Mutual Fund	New Covenant Funds: New Covenant Income Fund	Corporate Debt Funds BBB-Rated	30/06/1999	Active
Active Bond Mutual Fund	Northern Funds: Fixed Income Fund	Corporate Debt Funds BBB-Rated	29/04/1994	Active
Active Bond Mutual Fund	Northern Funds: Core Bond Fund	Corporate Debt Funds BBB-Rated	28/02/2001	Active
Active Bond Mutual Fund	Northern Institutional Funds: Bond Portfolio; Class A Shares	Corporate Debt Funds BBB-Rated	29/01/1993	Dead
Active Bond Mutual Fund	Satuma Investment Trust: Sextant Bond Income Fund	Corporate Debt Funds A Rated	31/03/1993	Active
Active Bond Mutual Fund	Old Westbury Funds, Inc: Old Westbury Fixed Income Fund	Corporate Debt Funds BBB-Rated	31/03/1998	Active
Active Bond Mutual Fund	1838 Investment Advisors Funds: 1838 Fixed Income Fund	Corporate Debt Funds BBB-Rated	30/09/1997	Dead
Active Bond Mutual Fund	Oppenheimer Integrity Funds: Oppenheimer Core Bond Fund; Class A Shares	Corporate Debt Funds A Rated	29/04/1988	Active
Active Bond Mutual Fund	Pacific Capital Funds: High Grade Core Fixed Income Fund; Class B Shares	Corporate Debt Funds A Rated	31/10/1994	Dead
Active Bond Mutual Fund	Aberdeen Funds: Aberdeen Core Fixed Income Fund; Institutional Class Shares	Corporate Debt Funds A Rated	31/10/1977	Active
Active Bond Mutual Fund	Pacific Life Funds: PL Managed Bond Fund; Class A Shares	Corporate Debt Funds BBB-Rated	31/08/2001	Dead
Active Bond Mutual Fund	Parnassus Income Funds: Parnassus Fixed Income Fund	Corporate Debt Funds A Rated	31/08/1992	Active
Active Bond Mutual Fund	Permanent Portfolio Family of Funds, Inc: Versatile Bond Portfolio	Corporate Debt Funds BBB-Rated	30/09/1991	Active
Active Bond Mutual Fund	Phoenix Insight Funds Trust: Phoenix Insight Bond Fund; Class I Shares	Corporate Debt Funds A Rated	30/04/1996	Dead
Active Bond Mutual Fund	Virtus Institutional Trust: Virtus Institutional Bond Fund; Class X Shares	Corporate Debt Funds BBB-Rated	29/03/1996	Dead
Active Bond Mutual Fund	Virtus Opportunities Trust: Virtus Core Bond Fund; Class A Shares	Corporate Debt Funds BBB-Rated	31/03/1987	Dead
Active Bond Mutual Fund	PIMCO Funds: PIMCO Investment Grade Corporate Bond Fund; Institutional Class Shares	Corporate Debt Funds BBB-Rated	31/03/2000	Active
Active Bond Mutual Fund	PIMCO Funds: PIMCO Extended Duration Fund; Institutional Class Shares	Corporate Debt Funds BBB-Rated	31/07/2006	Active
Active Bond Mutual Fund	PIMCO Funds: PIMCO Long Duration Total Return Fund; Institutional Class Shares	Corporate Debt Funds BBB-Rated	31/07/2006	Active
Active Bond Mutual Fund	Pioneer Bond Fund; Class A Shares	Corporate Debt Funds A Rated	31/10/1978	Active
Active Bond Mutual Fund	Preferred Group of Mutual Funds: Preferred Fixed Income Fund	Corporate Debt Funds A Rated	31/07/1992	Dead
Active Bond Mutual Fund	T Rowe Price Corporate Income Fund, Inc	Corporate Debt Funds BBB-Rated	31/10/1995	Active
Active Bond Mutual Fund	Principal Investors Fund, Inc: High Quality Long-Term Bond Fund; Class J Shares	Corporate Debt Funds A Rated	28/02/2001	Dead
Active Bond Mutual Fund	Principal Funds, Inc: Preferred Securities Fund; Institutional Class Shares	Corporate Debt Funds BBB-Rated	30/04/2002	Active
Active Bond Mutual Fund	Principal Funds, Inc: Income Fund; Class A Shares	Corporate Debt Funds BBB-Rated	31/12/1975	Active
Active Bond Mutual Fund	Principal Bond Fund, Inc; Class A Shares	Corporate Debt Funds BBB-Rated	30/10/1987	Dead
Active Bond Mutual Fund	Putnam Income Fund; Class A Shares	Corporate Debt Funds A Rated	29/12/1961	Active
Active Bond Mutual Fund	Quaker Investment Trust: Quaker Fixed Income Fund; Class A Shares	Corporate Debt Funds BBB-Rated	29/11/1996	Dead
Active Bond Mutual Fund	Columbia Funds Series Trust II: Columbia Diversified Bond Fund; Class A Shares	Corporate Debt Funds BBB-Rated	31/10/1974	Dead
Active Bond Mutual Fund	T Rowe Price New Income Fund, Inc	Corporate Debt Funds A Rated	31/10/1973	Active
Active Bond Mutual Fund	Russell Investment Company: Russell Investment Grade Bond Fund; Class I Shares	Corporate Debt Funds A Rated	30/10/1981	Active
Active Bond Mutual Fund	Russell Investment Company: Russell Strategic Bond Fund; Class I Shares	Corporate Debt Funds BBB-Rated	29/01/1993	Active
Active Bond Mutual Fund	Russell Investment Company: Multistrategy Bond Fund; Class S Shares	Corporate Debt Funds BBB-Rated	29/01/1993	Dead
Active Bond Mutual Fund	Russell Investment Company: Diversified Bond Fund; Class S Shares	Corporate Debt Funds BBB-Rated	30/09/1985	Dead
Active Bond Mutual Fund	STI Classic Funds: High Quality Bond Fund; Class I Shares	Corporate Debt Funds A Rated	30/09/2003	Dead
Active Bond Mutual Fund	RidgeWorth Funds: Conservative Allocation Strategy Fund; Class B Shares	Corporate Debt Funds BBB-Rated	28/02/2003	Dead
Active Bond Mutual Fund	RidgeWorth Funds: Corporate Bond Fund; Class I Shares	Corporate Debt Funds BBB-Rated	31/10/2001	Active
Active Bond Mutual Fund	RidgeWorth Funds: Total Return Bond Fund; Class I Shares	Corporate Debt Funds BBB-Rated	31/12/1997	Active
Active Bond Mutual Fund	SSgA Funds: SSgA Bond Market Fund; Institutional Class Shares	Corporate Debt Funds A Rated	29/02/1996	Dead
Active Bond Mutual Fund	Schwartz Investment Trust: Ave Maria Bond Fund	Corporate Debt Funds A Rated	30/04/2003	Active
Active Bond Mutual Fund	Guggenheim Funds Trust: Guggenheim Investment Grade Bond Fund; Class A Shares	Corporate Debt Funds A Rated	30/08/1985	Active
Active Bond Mutual Fund	Seligman Core Fixed Income Fund, Inc; Class A Shares	Corporate Debt Funds BBB-Rated	28/09/2001	Dead
Active Bond Mutual Fund	Sentinel Group Funds, Inc: Sentinel Bond Fund; Class A Shares	Corporate Debt Funds A Rated	30/09/1969	Dead
Active Bond Mutual Fund	STAAR Investment Trust: Short Term Bond Fund	Corporate Debt Funds BBB-Rated	30/05/1997	Active
Active Bond Mutual Fund	State Farm Mutual Fund Trust: State Farm Bond Fund; Legacy Class A Shares	Corporate Debt Funds BBB-Rated	29/09/2000	Active
Active Bond Mutual Fund	State Street Research Institutional Funds: State Street Research Core Fixed Income Fund; Class IV Shares	Corporate Debt Funds BBB-Rated	30/07/1999	Dead
Active Bond Mutual Fund	Strategic Partners Mutual Funds, Inc: Strategic Partners Bond Fund; Class M Shares	Corporate Debt Funds A Rated	31/07/1997	Dead
Active Bond Mutual Fund	Strong Income Funds, Inc: Strong Corporate Income Fund; Investor Class Shares	Corporate Debt Funds A Rated	31/10/2002	Dead
Active Bond Mutual Fund	Strategic Partners Style Specific Funds: Strategic Partners Total Return Bond Fund; Class B Shares	Corporate Debt Funds BBB-Rated	31/10/1999	Dead
Active Bond Mutual Fund	Summit Mutual Funds, Inc: Apex Bond Fund; Class I Shares	Corporate Debt Funds BBB-Rated	31/03/2000	Dead
Active Bond Mutual Fund	SunAmerica Income Funds: SunAmerica Core Bond Fund; Class A Shares	Corporate Debt Funds A Rated	31/05/1991	Dead
Active Bond Mutual Fund	TCW Funds, Inc: TCW Core Fixed Income Fund; Class I Shares	Corporate Debt Funds A Rated	31/03/1993	Active
Active Bond Mutual Fund	Tamarack Funds Trust: Tamarack Quality Fixed Income Fund; Class I Shares	Corporate Debt Funds A Rated	30/04/1999	Dead
Active Bond Mutual Fund	Target Portfolio Trust: Target Total Return Bond Portfolio; Class T Shares	Corporate Debt Funds BBB-Rated	29/01/1993	Active
Active Bond Mutual Fund	Thrivent Mutual Funds: Thrivent Income Fund; Class A Shares	Corporate Debt Funds A Rated	30/06/1972	Active
Active Bond Mutual Fund	Timothy Plan: Timothy Plan Fixed-Income Fund; Class A Shares	Corporate Debt Funds BBB-Rated	30/06/1999	Active

Active Bond Mutual Fund	Touchstone Funds Group Trust: Touchstone Pitcairn Taxable Bond Fund; Class A Shares	Corporate Debt Funds BBB-Rated	31/07/2000	Dead
Active Bond Mutual Fund	Transamerica Investors, Inc.: Transamerica Premier Bond Fund; Investor Shares	Corporate Debt Funds BBB-Rated	31/1/1995	Dead
Active Bond Mutual Fund	Transamerica Funds: Transamerica Flexible Income; Class A Shares	Corporate Debt Funds BBB-Rated	30/06/1987	Active
Active Bond Mutual Fund	Transamerica Funds: Transamerica Bond; Class I2 Shares	Corporate Debt Funds BBB-Rated	31/01/2007	Active
Active Bond Mutual Fund	UBS Funds: UBS Core Plus Bond Fund; Class P Shares	Corporate Debt Funds BBB-Rated	31/08/1995	Active
Active Bond Mutual Fund	USAA Mutual Funds Trust: Income Fund; Fund Class Shares	Corporate Debt Funds A Rated	29/03/1974	Active
Active Bond Mutual Fund	VALIC Company I: Capital Conservation Fund	Corporate Debt Funds A Rated	31/05/2007	Active
Active Bond Mutual Fund	VALIC Company II: Core Bond Fund	Corporate Debt Funds A Rated	31/05/2007	Active
Active Bond Mutual Fund	AIM Investment Securities Funds (Invesco Investment Securities Funds): Invesco Corporate Bond Fund; CI A Shs	Corporate Debt Funds BBB-Rated	31/12/1964	Active
Active Bond Mutual Fund	Vanguard Fixed Income Securities Funds: Vanguard Long-Term Investment-Grade Fund; Investor Shares	Corporate Debt Funds A Rated	29/06/1973	Active
Active Bond Mutual Fund	WB Capital Mutual Funds, Inc.: WB Capital Bond Fund	Corporate Debt Funds A Rated	31/07/1995	Dead
Active Bond Mutual Fund	Waddell & Reed Advisors Funds: Waddell & Reed Advisors Bond Fund; Class A Shares	Corporate Debt Funds A Rated	31/03/1964	Active
Active Bond Mutual Fund	Wells Fargo Funds Trust: Income Fund; Class A Shares	Corporate Debt Funds A Rated	30/06/1987	Dead
Active Bond Mutual Fund	Wells Fargo Funds Trust: Wells Fargo Advantage Corporate Bond Fund; Investor Class Shares	Corporate Debt Funds BBB-Rated	31/12/1985	Dead
Active Bond Mutual Fund	WesMark Funds: WesMark Government Bond Fund	Corporate Debt Funds BBB-Rated	30/04/1998	Active
Active Bond Mutual Fund	World Funds, Inc.: CSI Fixed Income Fund	Corporate Debt Funds A Rated	30/01/1998	Dead
Active Bond Mutual Fund	Wright Managed Income Trust: Wright Total Return Bond Fund	Corporate Debt Funds A Rated	29/07/1983	Active
Active Bond Mutual Fund	BlackRock Funds II: BlackRock Investment Grade Bond Portfolio; BlackRock Shares	Corporate Debt Funds BBB-Rated	28/09/2007	Active
Active Bond Mutual Fund	Northern Lights Fund Trust: Pacific Financial Strategic Conservative Fund; Institutional Class Shares	Corporate Debt Funds BBB-Rated	29/06/2007	Active
Active Bond Mutual Fund	Trust for Professional Managers: PMC Core Fixed Income Fund	Corporate Debt Funds BBB-Rated	31/08/2007	Active
Passive ETF	PowerShares Exchange-Traded Fund Trust II: PowerShares Preferred Portfolio	Corporate Debt Funds BBB-Rated	31/01/2008	Active
Passive ETF	Claymore Exchange-Traded Fund Trust: Guggenheim Enhanced Core Bond ETF	Corporate Debt Funds BBB-Rated	29/02/2008	Dead
Active Bond Mutual Fund	Hartford Series Fund, Inc.: American Funds Bond HLS Fund; Class IB	Corporate Debt Funds BBB-Rated	30/05/2008	Active
Active Bond Mutual Fund	JPMorgan Trust I: JPMorgan Total Return Fund; Select Class Shares	Corporate Debt Funds BBB-Rated	30/06/2008	Active
Active Bond Mutual Fund	Principal Variable Contracts Funds, Inc.: Income Account; Class 1 Shares	Corporate Debt Funds BBB-Rated	30/09/2008	Active
Active Bond Mutual Fund	Ohio National Fund, Inc.: Bond Portfolio	Corporate Debt Funds BBB-Rated	30/09/2008	Active
Active Bond Mutual Fund	Metropolitan Series Fund, Inc.: BlackRock Bond Income Portfolio; Class A Shares	Corporate Debt Funds A Rated	30/09/2008	Active
Active Bond Mutual Fund	Thrivent Series Fund, Inc.: Thrivent Income Portfolio	Corporate Debt Funds BBB-Rated	30/09/2008	Active
Active Bond Mutual Fund	AIM Variable Insurance Funds (Invesco Variable Insurance Funds): Invesco VI Diversified Income Fd; Srs I Shs	Corporate Debt Funds BBB-Rated	30/09/2008	Active
Active Bond Mutual Fund	Lincoln Variable Insurance Products Trust: LVIP Delaware Bond Fund; Standard Class Shares	Corporate Debt Funds BBB-Rated	30/09/2008	Active
Active Bond Mutual Fund	BlackRock Variable Series Funds, Inc.: BlackRock Total Return VI Fund; Class I Common Stock Shares	Corporate Debt Funds A Rated	30/09/2008	Active
Active Bond Mutual Fund	BlackRock Series Fund, Inc.: BlackRock Total Return Portfolio	Corporate Debt Funds A Rated	30/09/2008	Active
Active Bond Mutual Fund	MainStay VP Funds Trust: MainStay VP Bond Portfolio; Initial Class Shares	Corporate Debt Funds A Rated	30/09/2008	Active
Active Bond Mutual Fund	Northwestern Mutual Series Fund, Inc.: Select Bond Portfolio	Corporate Debt Funds A Rated	30/09/2008	Active
Active Bond Mutual Fund	Oppenheimer Variable Account Funds: Oppenheimer Core Bond Fund/VA; Non-Service Shares	Corporate Debt Funds A Rated	30/09/2008	Active
Active Bond Mutual Fund	Penn Series Funds, Inc.: Quality Bond Fund	Corporate Debt Funds BBB-Rated	30/09/2008	Active
Active Bond Mutual Fund	Putnam Variable Trust: Putnam VT Income Fund; Class IA Shares	Corporate Debt Funds A Rated	30/09/2008	Active
Active Bond Mutual Fund	Pioneer Variable Contracts Trust: Pioneer Bond VCT Portfolio; Class I Shares	Corporate Debt Funds A Rated	30/09/2008	Active
Active Bond Mutual Fund	Deutsche Variable Series I: Deutsche Bond VIP; Class A Shares	Corporate Debt Funds A Rated	30/09/2008	Active
Active Bond Mutual Fund	ly Funds Variable Insurance Portfolios: ly Funds VIP Bond	Corporate Debt Funds A Rated	30/09/2008	Active
Active Bond Mutual Fund	Transamerica Series Trust: Transamerica JPMorgan Core Bond VP; Initial Class Shares	Corporate Debt Funds A Rated	30/09/2008	Active
Active Bond Mutual Fund	Vanguard Variable Insurance Fund: Total Bond Market Index Portfolio; Investor Share Class	Corporate Debt Funds A Rated	30/09/2008	Active
Active Bond Mutual Fund	Dreyfus Variable Investment Fund: Quality Bond Portfolio; Initial Shares	Corporate Debt Funds A Rated	30/09/2008	Active
Active Bond Mutual Fund	First Investors Life Series Funds: Investment Grade Fund	Corporate Debt Funds BBB-Rated	30/09/2008	Active
Active Bond Mutual Fund	AllianceBernstein Variable Products Series Fund, Inc.: AllianceBernstein VPS Intermediate Bond Port; CI A Sh	Corporate Debt Funds A Rated	30/09/2008	Active
Active Bond Mutual Fund	EquiTrust Variable Insurance Series Fund: High Grade Bond Portfolio; Initial Class Shares	Corporate Debt Funds A Rated	30/09/2008	Dead
Active Bond Mutual Fund	OneAmerica Funds, Inc.: OneAmerica Investment Grade Bond Portfolio; Class O Shares	Corporate Debt Funds BBB-Rated	31/07/2008	Active
Active Bond Mutual Fund	American Funds Insurance Series: Bond Fund; Class 2 Shares	Corporate Debt Funds BBB-Rated	30/09/2008	Active
Active Bond Mutual Fund	Russell Investment Funds: Core Bond Fund	Corporate Debt Funds BBB-Rated	30/09/2008	Active
Active Bond Mutual Fund	Morgan Stanley Variable Investment Series: Income Plus Portfolio; Class Y Shares	Corporate Debt Funds BBB-Rated	30/09/2008	Active
Active Bond Mutual Fund	MFS Variable Insurance Trust: MFS Research Bond Series; Service Class Shares	Corporate Debt Funds A Rated	30/09/2008	Active
Passive Bond Mutual Fund	Metropolitan Series Fund, Inc.: Barclays Aggregate Bond Index Portfolio; Class B Shares	Corporate Debt Funds BBB-Rated	30/09/2008	Active
Active Bond Mutual Fund	MFS Variable Insurance Trust II: MFS Bond Portfolio; Service Class Shares	Corporate Debt Funds BBB-Rated	30/09/2008	Active
Active Bond Mutual Fund	Calvert Variable Series, Inc.: Calvert VP Income Portfolio	Corporate Debt Funds BBB-Rated	30/09/2008	Dead
Active Bond Mutual Fund	SunAmerica Series Trust: Corporate Bond Portfolio; Class 3 Shares	Corporate Debt Funds BBB-Rated	30/09/2008	Active
Active Bond Mutual Fund	Seasons Series Trust: Diversified Fixed Income Portfolio; Class 3 Shares	Corporate Debt Funds A Rated	30/09/2008	Active
Active Bond Mutual Fund	Sentinel Variable Products Trust: Sentinel Variable Products Bond Fund	Corporate Debt Funds BBB-Rated	30/09/2008	Active
Passive Bond Mutual Fund	Nationwide Variable Insurance Trust: NVIT Bond Index Fund; Class Y Shares	Corporate Debt Funds BBB-Rated	30/09/2008	Active
Active Bond Mutual Fund	Nationwide Variable Insurance Trust: American Funds NVIT Bond Fund; Class II Shares	Corporate Debt Funds BBB-Rated	30/09/2008	Active
Active Bond Mutual Fund	ING Investors Trust: ING Bond Portfolio	Corporate Debt Funds BBB-Rated	30/09/2008	Dead
Active Bond Mutual Fund	Advanced Series Trust: AST Investment Grade Bond Portfolio	Corporate Debt Funds BBB-Rated	30/09/2008	Active
Active Bond Mutual Fund	Met Investors Series Trust: JPMorgan Core Bond Portfolio; Class B Shares	Corporate Debt Funds BBB-Rated	30/09/2008	Active
Active Bond Mutual Fund	Nationwide Variable Insurance Trust: NVIT Core Plus Bond Fund; Class Y Shares	Corporate Debt Funds BBB-Rated	30/09/2008	Active
Passive Bond Mutual Fund	Lincoln Variable Insurance Products Trust: LVIP SSGA Bond Index Fund; Service Class Shares	Corporate Debt Funds BBB-Rated	30/09/2008	Active
Passive Bond Mutual Fund	John Hancock Variable Insurance Trust: Total Bond Market Trust A; Series NAV Shares	Corporate Debt Funds BBB-Rated	31/07/2008	Dead
Active Bond Mutual Fund	Payden & Rygel Investment Group: Payden Corporate Bond Fund; Investor Class Shares	Corporate Debt Funds A Rated	30/04/2009	Active
Active Bond Mutual Fund	CIGNA Funds Group: TimesSquare Core Plus Bond Fund; Institutional Class	Corporate Debt Funds BBB-Rated	31/12/1999	Dead
Active Bond Mutual Fund	Loomis Sayles Funds II: Natixis Loomis Sayles Investment Grade Bond Fund; Class J Shares	Corporate Debt Funds BBB-Rated	28/05/1999	Dead
Active Bond Mutual Fund	Coventry Group: Signal Income Fund; Class I Shares	Corporate Debt Funds BBB-Rated	31/07/2002	Dead
Passive Bond Mutual Fund	Nationwide Mutual Funds: Nationwide Bond Index Fund; Class C Shares	Corporate Debt Funds BBB-Rated	31/03/2006	Active
Active Bond Mutual Fund	Eaton Vance Special Investment Trust: Eaton Vance Investment Grade Income Fund; Class I Shares	Corporate Debt Funds BBB-Rated	30/03/2007	Active
Active Bond Mutual Fund	Nuveen Investment Trust V: Nuveen Preferred Securities Fund; Class I Shares	Corporate Debt Funds BBB-Rated	29/12/2006	Active
Passive Bond Mutual Fund	Metropolitan Series Fund, Inc.: Barclays Aggregate Bond Index Portfolio; Class G Shares	Corporate Debt Funds BBB-Rated	30/06/2009	Active
Passive ETF	SPDR Series Trust: SPDR Wells Fargo Preferred Stock ETF	Corporate Debt Funds BBB-Rated	30/09/2009	Active
Passive ETF	Vanguard Scottsdale Funds: Vanguard Long-Term Corporate Bond Index Fund; ETF Class Shares	Corporate Debt Funds BBB-Rated	30/11/2009	Active
Passive ETF	iShares Trust: iShares 10+ Year Credit Bond ETF	Corporate Debt Funds BBB-Rated	31/12/2009	Active
Passive Bond Mutual Fund	Vanguard Scottsdale Funds: Vanguard Long-Term Corporate Bond Index Fund; Institutional Class Shares	Corporate Debt Funds BBB-Rated	31/12/2009	Active
Passive Bond Mutual Fund	Eagle Series Trust: Eagle Investment Grade Bond Fund; Class A Shares	Corporate Debt Funds BBB-Rated	31/03/2010	Active
Active Bond Mutual Fund	MML Series Investment Fund II: MML Managed Bond Fund; Service Class Shares	Corporate Debt Funds A Rated	29/08/2008	Active
Passive Bond Mutual Fund	Vanguard Scottsdale Funds: Vanguard Long-Term Corporate Bond Index Fund; Admiral Class Shares	Corporate Debt Funds BBB-Rated	31/03/2010	Active

Active Bond Mutual Fund	Cohen & Steers Preferred Securities and Income Fund, Inc; Class I Shares	Corporate Debt Funds BBB-Rated	28/05/2010	Active
Active Bond Mutual Fund	Fidelity Salem Street Trust: Fidelity Advisor Corporate Bond Fund; Class A Shares	Corporate Debt Funds A Rated	28/05/2010	Active
Active Bond Mutual Fund	Fidelity Salem Street Trust: Fidelity Corporate Bond Fund	Corporate Debt Funds A Rated	28/05/2010	Active
Passive ETF	Claymore Exchange-Traded Fund Trust: Guggenheim BulletShares 2016 Corporate Bond ETF	Corporate Debt Funds A Rated	30/06/2010	Active
Active Bond Mutual Fund	HC Capital Trust: US Corporate Fixed Income Securities Portfolio; HC Strategic Class Shares	Corporate Debt Funds A Rated	31/12/2010	Active
Active Bond Mutual Fund	BlackRock Funds III: BlackRock CoreAlpha Bond Fund; Institutional Shares	Corporate Debt Funds BBB-Rated	28/02/2011	Active
Passive ETF	SPDR Series Trust: SPDR Barclays Issuer Scored Corporate Bond ETF	Corporate Debt Funds BBB-Rated	29/04/2011	Active
Passive ETF	ProShares Trust: ProShares Ultra Investment Grade Corporate	Corporate Debt Funds BBB-Rated	29/04/2011	Active
Active Bond Mutual Fund	First Trust Series Fund: First Trust Preferred Securities and Income Fund; Class A Shares	Corporate Debt Funds BBB-Rated	28/02/2011	Active
Passive ETF	Market Vectors ETF Trust: Market Vectors-Investment Grade Floating Rate ETF	Corporate Debt Funds BBB-Rated	29/04/2011	Active
Active Bond Mutual Fund	Sterling Capital Funds: Sterling Capital Corporate Fund; Institutional Class Shares	Corporate Debt Funds BBB-Rated	30/06/2011	Active
Active Bond Mutual Fund	Sterling Capital Funds: Sterling Capital Securitized Opportunities Fund; Institutional Class Shares	Corporate Debt Funds BBB-Rated	30/06/2011	Active
Active Bond Mutual Fund	Manning & Napier Fund, Inc: Core Plus Bond Series; Class S Shares	Corporate Debt Funds BBB-Rated	29/04/2005	Active
Active Bond Mutual Fund	Aston Funds: ASTON/DoubleLine Core Plus Fixed Income Fund; Class I Shares	Corporate Debt Funds BBB-Rated	29/07/2011	Active
Passive ETF	Schwab Strategic Trust: Schwab US Aggregate Bond ETF	Corporate Debt Funds BBB-Rated	29/07/2011	Active
Active Bond Mutual Fund	Schroder Series Trust: Schroder Broad Tax-Aware Value Bond Fund; Investor Class Shares	Corporate Debt Funds BBB-Rated	31/10/2011	Active
Passive Bond Mutual Fund	Vanguard Bond Index Funds: Vanguard Long-Term Bond Index Fund; Institutional Plus Class Shares	Corporate Debt Funds A Rated	31/10/2011	Active
Active Bond Mutual Fund	Guggenheim Funds Trust: Guggenheim Total Return Bond Fund; Institutional Class Shares	Corporate Debt Funds BBB-Rated	30/11/2011	Active
Active Bond Mutual Fund	Guggenheim Funds Trust: Guggenheim Total Return Bond Fund; Class A Shares	Corporate Debt Funds BBB-Rated	30/11/2011	Active
Passive ETF	iShares Trust: iShares Aaa - A Rated Corporate Bond ETF	Corporate Debt Funds A Rated	29/02/2012	Active
Active Bond Mutual Fund	BNY Mellon Funds Trust: BNY Mellon Corporate Bond Fund; Class M Shares	Corporate Debt Funds BBB-Rated	30/03/2012	Active
Passive ETF	iShares Trust: iShares B - Ca Rated Corporate Bond ETF	Corporate Debt Funds BBB-Rated	30/04/2012	Active
Active Bond Mutual Fund	Securian Funds Trust: Advantus Bond Fund; Class 1 Shares	Corporate Debt Funds A Rated	29/02/2008	Active
Passive ETF	SPDR Series Trust: SPDR BofA Merrill Lynch Crossover Corporate Bond ETF	Corporate Debt Funds BBB-Rated	29/06/2012	Active
Active Bond Mutual Fund	AllianceBernstein Corporate Shares: AllianceBernstein Corporate Income Shares	Corporate Debt Funds BBB-Rated	28/09/2012	Active

Annex 2 - Descriptive statistics for all dataset funds

Funds	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Probability	Observations
AMF1	0,0037	0,0041	0,0357	-0,0265	0,0115	0,1096	3,8879	1,6379	0,4409	47
AMF10	0,0030	0,0039	0,0650	-0,1043	0,0169	-1,2135	11,9508	655,7966	0,0000	183
AMF100	0,0023	0,0032	0,0620	-0,0430	0,0113	-0,3342	9,2949	328,9256	0,0000	197
AMF101	0,0072	0,0049	0,1195	-0,0690	0,0300	0,7972	5,7865	29,6311	0,0000	69
AMF102	0,0023	0,0036	0,0886	-0,0397	0,0126	1,0878	13,9822	1 028,8460	0,0000	197
AMF103	-0,0011	0,0024	0,0570	-0,0864	0,0184	-1,7228	11,0893	254,4772	0,0000	79
AMF104	0,0017	0,0021	0,0324	-0,0400	0,0108	-0,6190	4,8405	40,3857	0,0000	197
AMF105	0,0022	0,0020	0,0245	-0,0340	0,0093	-0,6090	4,5615	32,1909	0,0000	197
AMF106	0,0035	0,0073	0,0293	-0,0474	0,0146	-1,5701	6,6269	28,7690	0,0000	30
AMF107	0,0027	0,0036	0,0327	-0,0427	0,0108	-0,6633	5,5354	67,2135	0,0000	197
AMF108	0,0005	0,0005	0,0093	-0,0117	0,0022	-0,6084	11,7692	476,8074	0,0000	146
AMF109	0,0025	0,0023	0,0481	-0,0411	0,0111	0,0603	6,1363	80,8581	0,0000	197
AMF11	0,0027	0,0035	0,0523	-0,0491	0,0154	-0,2314	5,0514	17,3211	0,0002	94
AMF110	0,0012	0,0023	0,0424	-0,0501	0,0110	-1,0456	8,4291	277,8337	0,0000	197
AMF111	0,0022	0,0030	0,0320	-0,0351	0,0098	-0,3138	4,1402	13,9050	0,0010	197
AMF112	0,0023	0,0029	0,0338	-0,0348	0,0099	-0,2880	4,0626	11,9921	0,0025	197
AMF113	0,0035	0,0042	0,0339	-0,0343	0,0104	-0,3543	4,3116	11,2967	0,0035	122
AMF114	0,0024	0,0021	0,0485	-0,0704	0,0142	-0,6699	7,4897	180,1972	0,0000	197
AMF115	0,0017	0,0016	0,0439	-0,0317	0,0087	0,6196	7,1319	152,7407	0,0000	197
AMF116	0,0028	0,0050	0,0221	-0,0300	0,0108	-1,0217	4,5720	9,6931	0,0079	35
AMF117	0,0008	0,0038	0,0410	-0,1920	0,0218	-4,9423	39,0924	11 494,7100	0,0000	197
AMF118	0,0015	0,0018	0,0377	-0,0408	0,0124	-0,2473	4,3904	8,6206	0,0134	95
AMF119	0,0029	0,0028	0,0392	-0,0397	0,0110	-0,3507	4,8200	23,7777	0,0000	150
AMF12	0,0001	0,0020	0,0514	-0,0487	0,0150	-0,3248	5,4277	21,0521	0,0000	80
AMF120	0,0038	0,0039	0,0614	-0,0452	0,0153	0,1062	5,9802	35,3359	0,0000	95
AMF121	0,0022	0,0021	0,0359	-0,0342	0,0088	-0,0927	5,0094	33,4257	0,0000	197
AMF122	0,0011	0,0003	0,0666	-0,0445	0,0088	1,3460	21,3241	2 815,6270	0,0000	197
AMF123	0,0009	0,0015	0,0280	-0,0366	0,0104	-0,5654	4,3992	9,3045	0,0095	69
AMF124	0,0031	0,0046	0,0391	-0,0563	0,0138	-0,7730	5,9183	50,4422	0,0000	111
AMF125	0,0005	0,0024	0,0367	-0,0469	0,0132	-0,6631	5,0377	20,1959	0,0000	82
AMF126	0,0046	0,0056	0,0718	-0,0634	0,0160	-0,2776	5,9006	71,5909	0,0000	197
AMF127	0,0078	0,0068	0,2454	-0,1877	0,0613	0,8949	5,9592	73,7553	0,0000	148
AMF128	0,0053	0,0058	0,1218	-0,0637	0,0262	0,4935	5,6232	48,4404	0,0000	148
AMF129	0,0030	0,0036	0,0295	-0,0520	0,0100	-1,0192	7,8561	226,5156	0,0000	196
AMF13	0,0003	0,0011	0,0386	-0,0372	0,0123	-0,2632	4,6113	9,5785	0,0083	80
AMF130	0,0025	0,0044	0,0300	-0,0384	0,0129	-0,6833	4,1615	6,1656	0,0458	46
AMF131	0,0035	0,0047	0,0548	-0,0835	0,0164	-1,1270	9,0710	344,2417	0,0000	197
AMF132	0,0033	0,0066	0,0325	-0,0508	0,0173	-0,9203	4,5335	7,8918	0,0193	33
AMF133	0,0041	0,0043	0,1652	-0,1943	0,0308	-0,7582	19,2895	2 185,7740	0,0000	196
AMF134	0,0031	0,0037	0,0398	-0,0510	0,0122	-0,5920	6,4704	110,3657	0,0000	197
AMF135	0,0033	0,0057	0,0259	-0,0345	0,0120	-1,0591	4,8962	11,7860	0,0028	35
AMF136	0,0029	0,0027	0,0752	-0,1206	0,0176	-1,9723	20,7606	2 716,9610	0,0000	197
AMF137	0,0000	0,0015	0,0201	-0,0254	0,0087	-0,3869	3,8061	2,3413	0,3102	45
AMF138	0,0030	0,0046	0,0297	-0,0475	0,0109	-1,0573	6,5308	89,6318	0,0000	127
AMF139	0,0025	0,0032	0,0313	-0,0370	0,0099	-0,6371	4,8782	42,2849	0,0000	197
AMF14	0,0020	0,0026	0,0384	-0,0375	0,0102	-0,4255	5,0748	40,6515	0,0000	194
AMF140	0,0028	0,0034	0,0383	-0,0336	0,0106	-0,4176	4,6372	25,3348	0,0000	180
AMF141	0,0032	0,0044	0,0365	-0,0476	0,0115	-0,5712	5,2582	48,0339	0,0000	180
AMF142	0,0014	0,0025	0,0231	-0,0294	0,0101	-0,5255	3,4488	3,9725	0,1372	73
AMF143	0,0012	0,0023	0,0246	-0,0333	0,0106	-0,5621	3,8480	5,1230	0,0772	62
AMF144	-0,0004	0,0014	0,0132	-0,0235	0,0072	-0,7746	4,0033	5,5353	0,0628	39
AMF145	0,0024	0,0031	0,0384	-0,0570	0,0144	-0,5971	5,8491	34,5957	0,0000	87
AMF146	0,0034	0,0038	0,0431	-0,0368	0,0133	-0,0419	3,4707	1,8760	0,3914	197
AMF147	0,0025	0,0025	0,0427	-0,0352	0,0100	0,0721	4,9094	30,0974	0,0000	197
AMF148	0,0015	0,0022	0,0335	-0,0449	0,0120	-0,8288	4,7129	31,2476	0,0000	132
AMF149	0,0022	0,0027	0,0282	-0,0519	0,0094	-0,8850	8,7254	279,8184	0,0000	187
AMF15	0,0047	0,0047	0,0487	-0,0428	0,0168	0,2609	3,5989	1,7091	0,4255	65
AMF150	0,0020	0,0032	0,0272	-0,0570	0,0103	-1,4115	8,9746	358,4219	0,0000	197
AMF151	0,0007	0,0025	0,0284	-0,0443	0,0130	-0,6247	4,5426	13,7923	0,0010	84
AMF152	0,0040	0,0059	0,0325	-0,0412	0,0131	-0,9218	5,6135	15,7693	0,0004	37

AMF153	-0,0002	0,0000	0,0293	-0,0294	0,0063	0,5815	12,3784	733,0573	0,0000	197
AMF154	0,0022	0,0017	0,0322	-0,0420	0,0107	-0,6011	5,0254	45,0750	0,0000	195
AMF155	0,0033	0,0069	0,0256	-0,0346	0,0130	-1,1448	4,6645	9,3487	0,0093	28
AMF156	0,0030	0,0050	0,0254	-0,0390	0,0124	-1,1138	5,5463	17,1688	0,0002	36
AMF157	0,0031	0,0025	0,0281	-0,0309	0,0137	-0,3877	3,4446	0,9321	0,6275	28
AMF158	0,0017	0,0029	0,0252	-0,0316	0,0109	-0,5213	3,7633	3,8261	0,1476	55
AMF159	-0,0010	0,0014	0,0299	-0,0828	0,0151	-2,5455	14,1572	476,2669	0,0000	76
AMF16	0,0022	0,0039	0,0505	-0,0955	0,0177	-1,0894	8,2547	246,7385	0,0000	183
AMF160	0,0016	0,0032	0,0258	-0,0368	0,0117	-0,7943	4,4232	8,7188	0,0128	46
AMF161	0,0029	0,0029	0,0327	-0,0270	0,0098	0,0435	3,6224	3,2419	0,1977	197
AMF162	-0,0001	0,0019	0,0257	-0,0429	0,0115	-0,7784	4,8406	20,5820	0,0000	85
AMF163	0,0038	0,0036	0,0500	-0,0451	0,0126	-0,1714	5,0624	27,6843	0,0000	152
AMF164	0,0028	0,0029	0,0483	-0,0723	0,0141	-0,7503	8,0155	224,9663	0,0000	197
AMF165	0,0016	0,0019	0,0310	-0,0488	0,0109	-0,6432	6,0263	88,3058	0,0000	196
AMF166	0,0016	0,0027	0,0304	-0,0402	0,0123	-0,3766	4,2445	5,9953	0,0499	68
AMF167	0,0048	0,0058	0,0397	-0,0399	0,0161	-0,3606	3,8730	1,7632	0,4141	33
AMF168	0,0027	0,0036	0,0483	-0,0992	0,0143	-1,7603	15,9491	1 478,1130	0,0000	197
AMF169	0,0052	0,0070	0,0751	-0,1291	0,0244	-1,2367	11,0254	396,6977	0,0000	135
AMF17	0,0012	0,0018	0,0332	-0,0465	0,0134	-0,5169	5,0225	16,9827	0,0002	79
AMF170	0,0016	0,0022	0,0270	-0,0444	0,0110	-1,1154	5,9677	99,3533	0,0000	173
AMF171	0,0026	0,0032	0,0394	-0,0559	0,0111	-0,9128	7,5729	199,0074	0,0000	197
AMF172	0,0023	0,0028	0,0270	-0,0430	0,0100	-0,7762	5,5548	51,7574	0,0000	139
AMF173	0,0027	0,0028	0,0328	-0,0581	0,0112	-1,1547	9,0425	242,3527	0,0000	139
AMF174	0,0033	0,0036	0,0628	-0,0830	0,0158	-0,7353	8,7513	289,2621	0,0000	197
AMF175	0,0046	0,0046	0,1308	-0,0931	0,0270	0,0638	5,8875	68,5703	0,0000	197
AMF176	0,0020	0,0036	0,0347	-0,0309	0,0117	-0,1891	3,9536	3,9906	0,1360	91
AMF177	0,0019	0,0022	0,0262	-0,0288	0,0098	-0,3894	3,4153	6,3938	0,0409	197
AMF178	0,0028	0,0041	0,0228	-0,0326	0,0132	-0,6769	3,3917	2,6481	0,2661	32
AMF179	0,0031	0,0055	0,0376	-0,0462	0,0145	-0,4347	4,3406	7,5529	0,0229	71
AMF18	0,0024	0,0026	0,0366	-0,0316	0,0097	-0,2350	4,0847	11,4719	0,0032	197
AMF180	0,0013	0,0016	0,0342	-0,0202	0,0071	0,1518	5,3598	46,4637	0,0000	197
AMF181	0,0007	0,0021	0,0221	-0,0327	0,0146	-0,5377	2,7241	1,1299	0,5684	22
AMF182	0,0024	0,0033	0,0469	-0,0377	0,0107	-0,2622	5,9424	55,0856	0,0000	148
AMF183	0,0050	0,0027	0,1282	-0,0575	0,0235	1,0529	8,9605	223,1209	0,0000	134
AMF184	0,0011	0,0021	0,0183	-0,0342	0,0085	-1,1604	5,7701	68,0180	0,0000	125
AMF185	0,0031	0,0027	0,0481	-0,0293	0,0105	-0,4432	5,5403	40,7182	0,0000	135
AMF186	0,0024	0,0024	0,0372	-0,0639	0,0138	-1,7619	10,1270	200,1709	0,0000	76
AMF187	0,0030	0,0039	0,0317	-0,0617	0,0115	-1,5066	10,2156	321,0077	0,0000	126
AMF188	0,0045	0,0049	0,0331	-0,0415	0,0106	-0,3813	5,5408	36,0663	0,0000	123
AMF189	0,0038	0,0043	0,0527	-0,0820	0,0145	-1,2744	12,3794	484,1572	0,0000	123
AMF19	0,0023	0,0037	0,0218	-0,0304	0,0123	-0,6827	3,4484	3,1844	0,2035	37
AMF190	0,0034	0,0040	0,0440	-0,0338	0,0101	-0,0674	5,5280	32,8458	0,0000	123
AMF191	0,0045	0,0046	0,0493	-0,0734	0,0149	-0,7944	8,8194	186,4994	0,0000	123
AMF192	0,0038	0,0045	0,0417	-0,1019	0,0157	-2,5448	18,6765	1 392,2420	0,0000	123
AMF193	0,0038	0,0035	0,0394	-0,0391	0,0107	-0,1433	5,4558	31,3288	0,0000	123
AMF194	0,0036	0,0040	0,0455	-0,0503	0,0125	-0,2887	7,4023	101,0349	0,0000	123
AMF195	0,0039	0,0039	0,0418	-0,0407	0,0114	-0,1334	5,6607	33,6663	0,0000	113
AMF196	0,0027	0,0028	0,0311	-0,0414	0,0102	-0,6762	5,5493	42,6802	0,0000	123
AMF197	0,0031	0,0031	0,0325	-0,0297	0,0091	-0,3489	4,5498	14,8050	0,0006	123
AMF198	0,0015	0,0039	0,0378	-0,2120	0,0269	-5,4663	40,0259	7 638,4830	0,0000	123
AMF199	0,0029	0,0019	0,0345	-0,0254	0,0096	0,0755	4,1215	6,5632	0,0376	123
AMF2	0,0052	0,0061	0,1100	-0,1329	0,0263	-0,6536	7,9606	216,0158	0,0000	197
AMF20	0,0019	0,0027	0,0371	-0,0629	0,0113	-1,0203	8,8033	310,6284	0,0000	197
AMF200	0,0049	0,0039	0,0764	-0,1452	0,0221	-3,0436	24,5341	2 566,4600	0,0000	123
AMF201	0,0040	0,0038	0,0305	-0,0410	0,0089	-0,7878	8,0246	142,1083	0,0000	123
AMF202	0,0022	0,0036	0,0266	-0,0782	0,0127	-2,7062	16,5070	1 085,1290	0,0000	123
AMF203	0,0027	0,0033	0,0241	-0,0251	0,0094	-0,4554	3,4134	5,1276	0,0770	123
AMF204	0,0033	0,0032	0,0326	-0,0222	0,0087	0,1249	3,8150	3,7239	0,1554	123
AMF205	0,0030	0,0036	0,0358	-0,0506	0,0109	-0,8179	7,4423	114,8500	0,0000	123
AMF206	0,0043	0,0046	0,0400	-0,0612	0,0135	-0,6642	6,8222	83,9159	0,0000	123
AMF207	0,0037	0,0037	0,0437	-0,0609	0,0119	-0,8077	10,0392	267,3188	0,0000	123
AMF208	0,0073	0,0107	0,0288	-0,0146	0,0102	-0,3487	2,7053	0,7882	0,6743	33
AMF209	0,0031	0,0041	0,0435	-0,0612	0,0130	-1,6572	10,8621	306,3559	0,0000	101
AMF21	0,0029	0,0034	0,0369	-0,0401	0,0108	-0,2419	4,9039	31,6752	0,0000	197
AMF210	0,0026	0,0027	0,0366	-0,0642	0,0112	-1,5359	12,4159	502,7417	0,0000	123

AMF211	0,0036	0,0038	0,0378	-0,0301	0,0106	-0,0558	4,3794	9,8156	0,0074	123
AMF212	0,0050	0,0046	0,0608	-0,0689	0,0168	-0,2102	6,1107	50,4981	0,0000	123
AMF213	0,0034	0,0038	0,0339	-0,0482	0,0103	-0,8480	7,5879	122,6161	0,0000	123
AMF214	0,0046	0,0051	0,0470	-0,0744	0,0149	-0,8967	8,6758	181,5847	0,0000	123
AMF215	0,0048	0,0056	0,0323	-0,0803	0,0154	-2,4303	15,2882	487,4957	0,0000	67
AMF216	0,0044	0,0045	0,0557	-0,0901	0,0177	-1,2383	10,1273	291,7796	0,0000	123
AMF217	0,0026	0,0028	0,0343	-0,0307	0,0100	-0,1237	4,4367	10,8927	0,0043	123
AMF218	0,0028	0,0031	0,0268	-0,0264	0,0100	-0,4082	3,4800	4,5964	0,1004	123
AMF219	0,0023	0,0019	0,0371	-0,0640	0,0112	-1,5082	12,3444	494,1346	0,0000	123
AMF22	0,0016	0,0014	0,0401	-0,0300	0,0080	0,2290	9,0664	303,7973	0,0000	197
AMF220	0,0042	0,0048	0,0368	-0,0638	0,0135	-1,9583	11,7197	247,4698	0,0000	65
AMF221	0,0050	0,0058	0,0593	-0,0325	0,0145	0,4835	4,7647	20,7507	0,0000	123
AMF222	0,0024	0,0028	0,0366	-0,0636	0,0110	-1,5582	12,8341	545,4087	0,0000	123
AMF223	0,0039	0,0040	0,0497	-0,0382	0,0109	0,2478	6,4914	63,7302	0,0000	123
AMF224	0,0049	0,0054	0,0458	-0,0357	0,0130	-0,1607	3,7565	3,2652	0,1954	116
AMF225	0,0057	0,0076	0,0261	-0,0298	0,0123	-1,2018	4,8251	9,4874	0,0087	25
AMF226	0,0056	0,0065	0,0635	-0,1157	0,0224	-1,4223	10,6035	310,3030	0,0000	113
AMF227	0,0007	0,0007	0,0222	-0,0287	0,0092	-0,4897	4,1243	5,1880	0,0747	56
AMF228	0,0026	0,0029	0,0429	-0,0294	0,0099	0,2342	5,9972	54,0644	0,0000	141
AMF229	0,0047	0,0066	0,2099	-0,1993	0,0402	-0,1940	15,7620	978,1138	0,0000	144
AMF23	0,0027	0,0038	0,0403	-0,0553	0,0112	-0,8498	7,6509	201,2664	0,0000	197
AMF230	0,0021	0,0022	0,0198	-0,0223	0,0080	-0,3298	3,2641	2,1872	0,3350	104
AMF231	0,0063	0,0073	0,0509	-0,0344	0,0145	-0,1731	3,8932	3,9386	0,1396	103
AMF232	0,0035	0,0032	0,0300	-0,0308	0,0120	-0,2505	3,1543	1,1793	0,5545	103
AMF233	0,0037	0,0035	0,0303	-0,0306	0,0120	-0,2542	3,1511	1,2070	0,5469	103
AMF234	0,0025	0,0027	0,0296	-0,0314	0,0121	-0,2299	3,2534	1,1024	0,5763	96
AMF235	0,0021	0,0021	0,0230	-0,0253	0,0084	-0,4963	3,7935	6,3254	0,0423	94
AMF236	0,0037	0,0051	0,0319	-0,0357	0,0123	-0,5505	3,7880	7,0278	0,0298	92
AMF237	0,0024	0,0024	0,0291	-0,0293	0,0097	-0,2145	4,3821	7,8536	0,0197	90
AMF238	0,0019	0,0018	0,0159	-0,0161	0,0059	-0,4163	3,7962	4,9770	0,0830	90
AMF239	0,0021	0,0022	0,0291	-0,0571	0,0117	-2,0691	11,9513	441,6826	0,0000	109
AMF24	0,0023	0,0019	0,0531	-0,0441	0,0118	0,1628	5,7535	63,1047	0,0000	197
AMF240	0,0029	0,0030	0,0241	-0,0267	0,0085	-0,4080	4,0142	6,2832	0,0432	89
AMF241	0,0034	0,0034	0,0426	-0,0500	0,0147	-0,2187	4,9234	13,9412	0,0009	86
AMF242	0,0040	0,0045	0,0196	-0,0278	0,0077	-0,7381	5,3565	27,3859	0,0000	85
AMF243	0,0038	0,0044	0,0194	-0,0278	0,0077	-0,7204	5,2174	24,7666	0,0000	85
AMF244	0,0024	0,0027	0,0215	-0,0240	0,0085	-0,4644	3,7862	4,9979	0,0822	81
AMF245	0,0028	0,0039	0,0249	-0,0442	0,0105	-0,8904	5,7193	57,2296	0,0000	130
AMF246	0,0017	0,0019	0,0306	-0,0321	0,0117	-0,3912	3,6290	3,1079	0,2114	74
AMF25	0,0014	0,0033	0,0237	-0,0326	0,0103	-0,5924	3,9972	6,1954	0,0452	62
AMF26	0,0023	0,0033	0,0324	-0,0653	0,0119	-1,2190	9,6396	410,6459	0,0000	197
AMF27	0,0031	0,0050	0,0264	-0,0437	0,0146	-1,1685	5,3521	14,2005	0,0008	31
AMF28	0,0023	0,0026	0,0311	-0,0381	0,0101	-0,4340	4,7030	20,7046	0,0000	136
AMF29	0,0024	0,0036	0,0366	-0,0926	0,0127	-2,1177	18,5314	2 127,2990	0,0000	197
AMF3	0,0019	0,0041	0,0456	-0,0958	0,0194	-2,2117	12,4666	482,2187	0,0000	106
AMF30	0,0024	0,0033	0,0320	-0,0527	0,0101	-0,9686	7,5476	200,5583	0,0000	197
AMF31	0,0022	0,0049	0,0250	-0,0320	0,0115	-0,7954	3,8583	5,1730	0,0753	38
AMF32	0,0024	0,0024	0,0198	-0,0197	0,0097	-0,1738	2,8940	0,1706	0,9182	31
AMF33	0,0014	0,0021	0,0346	-0,0347	0,0116	-0,4281	4,2407	7,8588	0,0197	83
AMF34	0,0025	0,0026	0,0315	-0,0343	0,0096	-0,3612	4,3844	13,7168	0,0011	135
AMF35	0,0013	0,0010	0,0238	-0,0234	0,0070	-0,0476	4,2788	13,0863	0,0014	191
AMF36	0,0016	0,0041	0,0257	-0,0364	0,0115	-0,8614	4,5881	11,4381	0,0033	50
AMF37	0,0027	0,0039	0,0263	-0,0335	0,0111	-0,8243	4,5864	11,1243	0,0038	51
AMF38	0,0024	0,0018	0,0369	-0,0490	0,0097	-0,5324	9,0687	291,0498	0,0000	184
AMF39	0,0019	0,0034	0,0263	-0,0327	0,0114	-0,5581	3,7053	3,4145	0,1814	47
AMF4	0,0015	0,0032	0,0238	-0,0347	0,0109	-0,9160	4,6918	11,1417	0,0038	43
AMF40	0,0013	0,0026	0,0263	-0,0788	0,0122	-2,1059	13,2052	1 000,4620	0,0000	197
AMF41	0,0041	0,0042	0,0612	-0,0803	0,0172	-0,6315	7,5386	182,1714	0,0000	197
AMF42	0,0059	0,0066	0,1285	-0,1023	0,0263	-0,0906	6,5772	105,3074	0,0000	197
AMF43	0,0029	0,0029	0,0611	-0,0392	0,0101	0,5257	9,7809	386,5023	0,0000	197
AMF44	0,0016	0,0013	0,0340	-0,0325	0,0088	-0,1502	5,0302	34,5730	0,0000	197
AMF45	0,0012	0,0007	0,0342	-0,0360	0,0114	-0,2818	4,6655	8,8881	0,0117	69
AMF46	0,0035	0,0057	0,0263	-0,0305	0,0136	-0,4320	2,9109	1,0689	0,5860	34
AMF47	0,0016	0,0036	0,0310	-0,0646	0,0150	-1,4956	7,6543	114,7859	0,0000	90
AMF48	0,0037	0,0062	0,0263	-0,0374	0,0123	-1,2045	5,6637	18,2727	0,0001	34

AMF49	0,0018	0,0034	0,0272	-0,0388	0,0109	-0,5744	4,5319	16,3463	0,0003	107
AMF5	0,0024	0,0032	0,0408	-0,0895	0,0148	-1,7381	12,2410	698,6109	0,0000	172
AMF50	0,0001	0,0025	0,0291	-0,0440	0,0130	-0,9056	4,7253	18,5096	0,0001	71
AMF51	0,0024	0,0026	0,0354	-0,0422	0,0104	-0,5983	5,5319	64,3691	0,0000	197
AMF52	-0,0002	0,0001	0,0133	-0,0141	0,0078	-0,0857	1,9108	1,9755	0,3724	39
AMF53	0,0021	0,0040	0,0304	-0,0475	0,0145	-0,7297	4,6626	9,9922	0,0068	49
AMF54	0,0016	0,0020	0,0420	-0,0689	0,0127	-0,8890	9,0795	269,1483	0,0000	161
AMF55	0,0014	0,0016	0,0174	-0,0185	0,0034	-0,1039	10,7816	497,4009	0,0000	197
AMF56	0,0037	0,0052	0,0552	-0,0922	0,0153	-1,3468	12,1787	751,1042	0,0000	197
AMF57	0,0023	0,0038	0,0318	-0,0366	0,0124	-0,6266	3,9486	12,4557	0,0020	121
AMF58	0,0006	0,0014	0,0263	-0,0359	0,0110	-0,4773	4,2729	6,6454	0,0361	63
AMF59	0,0021	0,0053	0,0267	-0,0371	0,0139	-1,1519	4,7682	9,4879	0,0087	27
AMF6	0,0025	0,0028	0,0453	-0,0746	0,0117	-1,4172	13,0544	895,7301	0,0000	197
AMF60	0,0023	0,0033	0,0564	-0,0502	0,0134	-0,0783	6,9002	125,0600	0,0000	197
AMF61	0,0037	0,0042	0,0942	-0,0762	0,0192	0,3848	8,8811	288,7633	0,0000	197
AMF62	0,0021	0,0026	0,0339	-0,0336	0,0094	-0,3809	4,7331	29,4191	0,0000	197
AMF63	0,0026	0,0035	0,0393	-0,0755	0,0149	-1,1559	8,4596	288,5403	0,0000	197
AMF64	0,0026	0,0021	0,0276	-0,0245	0,0115	-0,3115	3,3900	0,9680	0,6163	43
AMF65	-0,0005	0,0017	0,0311	-0,0608	0,0127	-1,8083	10,4682	177,8745	0,0000	62
AMF66	0,0029	0,0025	0,0991	-0,0673	0,0148	1,5400	17,5637	1 818,8660	0,0000	197
AMF67	0,0027	0,0035	0,0451	-0,0738	0,0147	-1,2384	9,2470	340,5823	0,0000	181
AMF68	0,0012	0,0033	0,0278	-0,0368	0,0115	-0,6901	4,3755	7,2778	0,0263	46
AMF69	0,0018	0,0003	0,0907	-0,0343	0,0153	3,2427	22,3717	956,3666	0,0000	55
AMF7	0,0038	0,0066	0,0217	-0,0292	0,0121	-0,9892	3,8900	5,0981	0,0782	26
AMF70	0,0020	0,0026	0,0396	-0,0281	0,0089	0,0568	5,6746	51,9550	0,0000	174
AMF71	0,0029	0,0033	0,0361	-0,0400	0,0100	-0,4254	5,7256	47,2170	0,0000	139
AMF72	0,0033	0,0035	0,0475	-0,0707	0,0128	-0,8670	8,9992	320,1002	0,0000	197
AMF73	0,0026	0,0033	0,0302	-0,0483	0,0104	-0,9101	6,4931	127,3488	0,0000	197
AMF74	0,0026	0,0039	0,0360	-0,0717	0,0130	-1,3987	9,8497	406,0165	0,0000	178
AMF75	0,0021	0,0033	0,0330	-0,0354	0,0105	-0,6264	4,7882	26,4195	0,0000	133
AMF76	0,0025	0,0034	0,0342	-0,0342	0,0097	-0,4794	4,7812	33,5865	0,0000	197
AMF77	0,0026	0,0031	0,0301	-0,0395	0,0132	-0,5666	3,8115	8,9040	0,0117	110
AMF78	0,0001	0,0010	0,0257	-0,0317	0,0105	-0,2764	3,5568	1,8215	0,4022	71
AMF79	0,0029	0,0026	0,0447	-0,0472	0,0121	-0,5175	5,9564	55,5995	0,0000	136
AMF8	0,0019	0,0025	0,0313	-0,0290	0,0096	-0,1668	3,7712	4,9425	0,0845	168
AMF80	0,0026	0,0034	0,0336	-0,0417	0,0122	-0,7061	5,0199	24,2985	0,0000	96
AMF81	0,0024	0,0046	0,0334	-0,0509	0,0176	-0,7224	3,7751	4,9289	0,0851	44
AMF82	0,0030	0,0042	0,0860	-0,1413	0,0261	-1,4143	11,7621	582,8367	0,0000	165
AMF83	0,0013	0,0030	0,1112	-0,1646	0,0340	-1,2269	12,2100	314,1711	0,0000	83
AMF84	0,0047	0,0057	0,0637	-0,1148	0,0188	-1,2164	11,9269	702,6957	0,0000	197
AMF85	0,0056	0,0075	0,0860	-0,1479	0,0240	-1,5129	13,3944	961,9958	0,0000	197
AMF86	0,0033	0,0040	0,0637	-0,1013	0,0163	-1,0649	13,1180	877,5458	0,0000	197
AMF87	0,0034	0,0043	0,0482	-0,0720	0,0144	-0,7732	7,5451	189,1969	0,0000	197
AMF88	0,0028	0,0034	0,0356	-0,0560	0,0112	-0,8111	7,4443	183,7293	0,0000	197
AMF89	0,0021	0,0029	0,0246	-0,0386	0,0101	-0,6676	4,7208	38,9413	0,0000	197
AMF9	0,0024	0,0026	0,0412	-0,0357	0,0102	0,0607	5,6795	40,4675	0,0000	135
AMF90	0,0015	0,0025	0,0248	-0,0393	0,0114	-0,8536	4,7813	26,3806	0,0000	104
AMF91	0,0013	0,0010	0,0367	-0,0169	0,0067	0,8254	7,4300	183,4586	0,0000	197
AMF92	0,0037	0,0045	0,0736	-0,1266	0,0186	-1,9933	18,6155	2 132,0040	0,0000	197
AMF93	0,0018	0,0039	0,0249	-0,0324	0,0121	-0,8972	4,4340	6,5949	0,0370	30
AMF94	0,0032	0,0044	0,0562	-0,0901	0,0155	-1,3979	12,9848	882,4919	0,0000	197
AMF95	0,0038	0,0058	0,0558	-0,0909	0,0181	-1,4908	11,0886	383,9636	0,0000	124
AMF96	-0,0001	0,0020	0,0257	-0,0377	0,0127	-1,1200	5,3326	10,4589	0,0054	24
AMF97	0,0079	0,0111	0,0642	-0,1442	0,0261	-1,8199	11,9204	498,9174	0,0000	129
AMF98	0,0016	0,0037	0,0363	-0,0489	0,0139	-0,5610	5,0969	14,8467	0,0006	63
AMF99	0,0029	0,0045	0,0509	-0,0295	0,0119	0,4199	5,5868	27,7377	0,0000	90
PMF1	0,0033	0,0054	0,0317	-0,0484	0,0176	-1,0728	4,5588	7,6191	0,0222	26
PMF10	0,0014	0,0006	0,0340	-0,0251	0,0092	0,0628	4,2430	9,9502	0,0069	153
PMF11	0,0021	0,0017	0,0210	-0,0240	0,0083	-0,3688	3,1530	2,6953	0,2599	114
PMF12	0,0051	0,0034	0,0577	-0,0506	0,0230	-0,0493	2,8665	0,1227	0,9405	107
PMF13	0,0049	0,0040	0,0579	-0,0508	0,0232	-0,0470	2,8395	0,1499	0,9278	104
PMF14	0,0032	0,0040	0,0665	-0,0622	0,0237	-0,1009	3,2859	0,4388	0,8030	86
PMF15	0,0039	0,0066	0,0512	-0,0336	0,0193	0,0338	2,8791	0,0408	0,9798	51
PMF2	0,0022	0,0020	0,0366	-0,0356	0,0099	-0,1720	4,7204	24,8823	0,0000	194
PMF3	0,0031	0,0051	0,0242	-0,0334	0,0124	-0,9377	4,1178	6,5540	0,0377	33
PMF4	0,0022	0,0018	0,0349	-0,0347	0,0098	-0,2379	4,4533	19,1947	0,0001	197
PMF5	0,0041	0,0033	0,0351	-0,0267	0,0104	0,0260	4,3526	5,4967	0,0640	72

PMF6	0,0025	0,0017	0,0370	-0,0258	0,0096	0,2092	5,0102	21,6062	0,0000	123
PMF7	0,0027	0,0018	0,0350	-0,0253	0,0094	0,0576	4,5000	11,5988	0,0030	123
PMF8	0,0024	0,0015	0,0355	-0,0246	0,0094	0,2185	4,4694	12,0442	0,0024	123
PMF9	0,0049	0,0048	0,0391	-0,0231	0,0109	0,2499	4,5461	5,5003	0,0639	50
ETF1	0,0034	0,0039	0,1101	-0,0837	0,0190	0,0855	9,8518	385,6012	0,0000	197
ETF2	0,0032	0,0063	0,1777	-0,2826	0,0469	-2,2686	19,5522	1 607,8010	0,0000	131
ETF3	0,0029	0,0016	0,0432	-0,0227	0,0110	0,5677	5,5747	23,7550	0,0000	72
ETF4	0,0047	0,0064	0,0555	-0,0466	0,0171	0,0026	4,2821	7,6029	0,0223	111
ETF5	0,0049	0,0034	0,0578	-0,0507	0,0229	-0,0543	2,8627	0,1392	0,9328	109
ETF6	0,0048	0,0047	0,0558	-0,0506	0,0216	-0,2217	3,0568	0,8988	0,6380	108
ETF7	0,0026	0,0009	0,0247	-0,0169	0,0074	0,5057	4,6724	12,2557	0,0022	77
ETF8	0,0026	0,0029	0,0283	-0,0267	0,0106	-0,2501	3,3252	1,3646	0,5055	92
ETF9	0,0088	0,0119	0,0749	-0,0668	0,0315	-0,1660	3,0968	0,3188	0,8526	64
ETF10	0,0006	0,0009	0,0136	-0,0177	0,0045	-1,2076	8,7610	149,5830	0,0000	92
ETF11	0,0016	0,0010	0,0215	-0,0240	0,0081	-0,2795	3,5018	2,0925	0,3513	89
ETF12	0,0018	0,0024	0,0298	-0,0261	0,0107	-0,2158	3,5301	1,5964	0,4501	82
ETF13	0,0039	0,0066	0,0512	-0,0336	0,0193	0,0338	2,8791	0,0408	0,9798	51
ETF14	0,0029	0,0024	0,0342	-0,0312	0,0115	-0,1284	3,3612	0,6384	0,7267	78

Annex 3 - Beta factors loadings of the one-factor model for all dataset funds

<i>Market Factor</i>	<i>Signal</i>	<i>1%</i>	<i>5%</i>	<i>10%</i>	<i>Nº Funds</i>
Active Mutual Funds	<i>Positive</i>	245	246	246	246
	<i>Negative</i>	0	0	0	0
Passive Mutual Funds	<i>Positive</i>	14	14	14	15
	<i>Negative</i>	0	0	0	0
Passive ETF	<i>Positive</i>	13	13	14	14
	<i>Negative</i>	0	0	0	0

Annex 4 - Active mutual funds – Beta factors loadings of the Multi-factor model net of expense fees

<i>Factor</i>	<i>Signal</i>	<i>1%</i>	<i>5%</i>	<i>10%</i>	<i>Nº Funds</i>
USBIG	<i>Positive</i>	239	240	242	246
	<i>Negative</i>	0	0	0	0
DEFAULT	<i>Positive</i>	38	57	66	141
	<i>Negative</i>	42	50	54	105
OPTION	<i>Positive</i>	25	37	38	74
	<i>Negative</i>	39	66	87	172
EQUITY	<i>Positive</i>	30	48	56	145
	<i>Negative</i>	13	28	39	101

Annex 5 - Passive mutual funds – Beta factors loadings of the Multi-factor model net of expense fees

Factor	Signal	1%	5%	10%	Nº Funds
USBIG	Positive	14	15	15	15
	Negative	0	0	0	0
DEFAULT	Positive	1	1	1	2
	Negative	6	10	10	13
OPTION	Positive	1	2	3	4
	Negative	2	3	5	11
EQUITY	Positive	0	1	1	4
	Negative	2	8	9	11

Annex 6 - Passive ETFs – Beta factors loadings of the Multi-factor model net of expense fees

Factor	Signal	1%	5%	10%	Nº Funds
USBIG	Positive	13	14	14	14
	Negative	0	0	0	0
DEFAULT	Positive	3	4	4	5
	Negative	6	6	7	9
OPTION	Positive	0	1	1	8
	Negative	1	1	1	6
EQUITY	Positive	3	5	6	11
	Negative	0	2	2	3

Annex 7 – Passive bond ETFs with the respective Benchmark that each fund replicates

CRSP Fund Number	Fund Name	Benchmark
16419	iShares Trust: iShares iBoxx \$ Investment Grade Corporate Bond ETF	Markit iBoxx USD Liquid Investment Grade Index
36859	Invesco Exchange-Traded Fund Trust II: Invesco Preferred ETF	ICE BofAML Core Plus Fixed Rate Preferred Securities Index
36860	Claymore Exchange-Traded Fund Trust: Guggenheim Enhanced Core Bond ETF	Bloomberg Barclays U.S. Corporate High Yield Index
47363	SPDR Series Trust: SPDR Wells Fargo Preferred Stock ETF	Wells Fargo Hybrid and Preferred Securities Aggregate Index
47654	Vanguard Scottsdale Funds: Vanguard Long-Term Corporate Bond Index Fund; ETF Class Shares	BloomBarc US 10+ Year Corp Index
48442	iShares Trust: iShares Long-Term Corporate Bond ETF	ICE BofA 10+Y US Corp TR USD
49790	Claymore Exchange-Traded Fund Trust: Guggenheim BulletShares 2016 Corporate Bond ETF	Nasdaq BulletShares USD Corporate Bond 2024 Index
52143	SPDR Series Trust: SPDR Bloomberg Barclays Corporate Bond ETF	Bloomberg Barclays U.S. Corporate Bond Index
52151	ProShares Trust: ProShares Ultra Investment Grade Corporate	Markit iBoxx \$ Liquid Investment Grade Index
52472	VanEck Vectors ETF Trust: VanEck Vectors-Investment Grade Floating Rate ETF	MVIS Investment Grade Floating Rate Bond Index
52868	Schwab Strategic Trust: Schwab US Aggregate Bond ETF	Bloomberg Barclays US Aggregate Bond Index
54606	iShares Trust: iShares Aaa - A Rated Corporate Bond ETF	Bloomberg Barclays U.S. Corporate Aaa - A Capped Index
55136	iShares Trust: iShares B - Ca Rated Corporate Bond ETF	ICE BofA BB US High Yield Constrained Index
55624	SPDR Series Trust: SPDR ICE BofAML Crossover Corporate Bond ETF	ICE BofAML US US High Yield Index.

Annex 8 – Outputs of the active management analysis

Fund Classification	Fund Name	Alpha Levels	Beta Levels	TE	Adjusted R ²
Active Bond Mutual Fund	1838 Investment Advisors Funds: 1838 Fixed Income Fund	-0.0825**	0.641593***	1.081100	95%
Active Bond Mutual Fund	AARP Funds: AARP Income Fund	0.1939*	0.395942***	1.147700	65%
Active Bond Mutual Fund	Aberdeen Funds: Aberdeen Core Fixed Income Fund; Institutional Class Shares	0.0695	0.532939***	1.102500	69%
Active Bond Mutual Fund	Advance Capital I, Inc: Retirement Income Fund; Retail Class Shares	-0.0676	0.819685***	1.478000	85%
Active Bond Mutual Fund	Advanced Series Trust: AST Investment Grade Bond Portfolio	0.1361	0.761387***	1.453700	65%
Active Bond Mutual Fund	Advisors' Inner Circle Fund II: Hancock Horizon Core Bond Fund; Institutional Class Shares	0.018	0.483155***	0.887400	81%
Active Bond Mutual Fund	Advisors' Inner Circle Fund: Sirach Bond Portfolio; Institutional Class Shares	-0.0662	0.653019***	1.214600	94%
Active Bond Mutual Fund	Advsors Series Trust: PIA BBB Bond Fund; Managed Account Completion Shares	-0.0129	1.070308***	1.694800	94%
Active Bond Mutual Fund	Advsors Series Trust: PIA Moderate Duration Bond Fund; Advisor Class Shares	0.0653	0.447688***	1.021200	61%
Active Bond Mutual Fund	AIM Investment Securities Funds (Invesco Investment Securities Funds): Invesco Corporate Bond Fund; CI A Shs	0.00273	0.966898***	1.582500	93%
Active Bond Mutual Fund	AIM Investment Securities Funds (Invesco Investment Securities Funds): Invesco Income Fund; Class A Shares	-0.1661	0.934419***	1.935000	83%
Active Bond Mutual Fund	AIM Variable Insurance Funds (Invesco Variable Insurance Funds): Invesco VI Diversified Income Fd; Srs I Shs	-0.0581	0.91107***	1.568000	81%
Active Bond Mutual Fund	Allegiant Funds: Allegiant Bond Fund; Class B Shares	-0.0282	0.593823***	1.232600	87%
Active Bond Mutual Fund	Allegiant Funds: Allegiant Total Return Advantage Fund; Class B Shares	-0.0661	0.72452***	1.497100	88%
Active Bond Mutual Fund	AllianceBernstein Bond Fund, Inc: AllianceBernstein Corporate Bond Portfolio; Class A Shares	0.2057*	0.996488***	1.676900	69%
Active Bond Mutual Fund	AllianceBernstein Corporate Shares: AllianceBernstein Corporate Income Shares	-0.00899	1.072157***	1.171400	99%
Active Bond Mutual Fund	AllianceBernstein Portfolios: AllianceBernstein Conservative Wealth Strategy; Class A Shares	0.0209	0.67432***	1.766100	34%
Active Bond Mutual Fund	AllianceBernstein Variable Products Series Fund, Inc: AllianceBernstein VPS Intermediate Bond Port; CI A Sh	0.0355	0.705236***	1.192800	83%
Active Bond Mutual Fund	American Century Investment Trust: American Century-Mason Street Select Bond Fund; A Class Shares	0.0587	0.604833***	1.328200	77%
Active Bond Mutual Fund	American Century Investment Trust: Diversified Bond Fund; Institutional Class Shares	0.0598	0.519924***	0.965400	72%
Active Bond Mutual Fund	American Funds Insurance Series: Bond Fund; Class 2 Shares	-0.0545	0.65912***	1.119600	83%
Active Bond Mutual Fund	AMG Funds II: AMG GW&K Enhanced Core Bond Fund; Institutional Shares	0.0229	0.891549***	1.547700	83%
Active Bond Mutual Fund	AMG Funds III: AMG Managers Bond Fund; Service Class Shares	-0.000766	1.087079***	1.858700	86%
Active Bond Mutual Fund	AmSouth Funds: AmSouth High Quality Bond Fund; Class A Shares	-0.1564***	0.717341***	1.232400	90%
Active Bond Mutual Fund	Aston Funds: ASTON/DoubleLine Core Plus Fixed Income Fund; Class I Shares	0.1157*	0.64541***	0.849800	72%
Active Bond Mutual Fund	AXP Income Series, Inc: RiverSource Selective Fund; Class A Shares	-0.1204***	0.678705***	1.093500	97%
Active Bond Mutual Fund	BBH Trust: BBH Limited Duration Fund; Class N Shares	0.0314	0.392106***	0.799800	60%
Active Bond Mutual Fund	Bishop Street Funds: High Grade Income Fund; Class I Shares	0.018	0.618483***	1.184400	68%
Active Bond Mutual Fund	BlackRock Bond Fund, Inc: BlackRock Bond Fund; Institutional Shares	-0.0433	0.698888***	1.031300	94%
Active Bond Mutual Fund	BlackRock Funds II: BlackRock Investment Grade Bond Portfolio; BlackRock Shares	0.0979	1.074398***	2.348400	57%
Active Bond Mutual Fund	BlackRock Funds III: BlackRock CoreAlpha Bond Fund; Institutional Shares	0.00836	0.66451***	0.844100	79%
Active Bond Mutual Fund	BlackRock Series Fund, Inc: BlackRock Total Return Portfolio	0.0611*	0.616996***	1.141700	73%
Active Bond Mutual Fund	BlackRock Variable Series Funds, Inc: BlackRock Total Return VI Fund; Class I Common Stock Shares	0.0418	0.660227***	1.254500	66%
Active Bond Mutual Fund	BNY Mellon Funds Trust: BNY Mellon Corporate Bond Fund; Class M Shares	0.0526**	0.753114***	0.850300	94%
Active Bond Mutual Fund	Bond Fund of America; A	-0.00155	0.688889***	1.190500	84%
Active Bond Mutual Fund	Calvert Fund: Calvert Income Fund; Class A Shares	0.0111	0.681091***	1.265600	72%
Active Bond Mutual Fund	Calvert Social Investment Fund: Calvert Bond Portfolio; Class A Shares	0.0545*	0.545786***	1.005300	74%
Active Bond Mutual Fund	Calvert Variable Series, Inc: Calvert VP Income Portfolio	-0.0224	0.681096***	1.540700	65%
Passive Bond Mutual Fund	Capstone Social Ethics & Religious Values Fund: Bond Fund; Class A Shares	-0.003165***	0.952026***	1.759300	96%
Active Bond Mutual Fund	CCMI Funds: CCMI Bond Fund	-0.1848***	0.827164***	1.455600	94%
Active Bond Mutual Fund	CIGNA Funds Group: TimesSquare Core Plus Bond Fund; Institutional Class	0.1176***	0.651881***	1.227000	96%
Active Bond Mutual Fund	City National Rochdale Funds: City National Rochdale Full Maturity Fixed Income Fund; Institutional Class Shs	0.0388	0.497083***	1.013500	76%
Passive ETF	Claymore Exchange-Traded Fund Trust: Guggenheim BulletShares 2016 Corporate Bond ETF	0.1007	0.387899***	0.740800	39%
Passive ETF	Claymore Exchange-Traded Fund Trust: Guggenheim Enhanced Core Bond ETF	0.0741	0.414945***	1.099000	60%
Active Bond Mutual Fund	Cohen & Steers Preferred Securities and Income Fund, Inc: Class I Shares	0.3327***	0.883831***	1.453700	47%
Active Bond Mutual Fund	Columbia Fixed Income Securities Fund, Inc: Class Z Shares	-0.1072**	0.679136***	1.150400	95%
Active Bond Mutual Fund	Columbia Funds Institutional Trust: CMG Core Bond Fund	0.0254	0.528892***	1.162700	83%
Active Bond Mutual Fund	Columbia Funds Series Trust I: Columbia Bond Fund; Class Z Shares	0.0373	0.594423***	1.040100	82%
Active Bond Mutual Fund	Columbia Funds Series Trust II: Columbia Diversified Bond Fund; Class A Shares	0.0769*	0.529443***	1.091700	75%
Active Bond Mutual Fund	Columbia Funds Trust III: Columbia Contrarian Income Fund; Class A Shares	-0.0791**	0.532251***	0.966300	88%
Active Bond Mutual Fund	COUNTRY Mutual Funds Trust: COUNTRY Bond Fund; Class Y Shares	0.074	0.456645***	0.964500	71%
Active Bond Mutual Fund	Coventry Group: Signal Income Fund; Class I Shares	-0.1222***	0.596151***	0.924300	91%
Active Bond Mutual Fund	Credit Suisse Institutional Fixed Income Fund, Inc	0.0269	0.710406***	1.108600	93%
Active Bond Mutual Fund	Credit Suisse Institutional Fund, Inc: Investment Grade Fixed Income Portfolio	-0.0807*	0.707824***	1.152100	87%
Active Bond Mutual Fund	Croft Funds Corporation: Croft Income Fund	0.0573	0.483498***	0.970500	64%
Active Bond Mutual Fund	Delaware Group Income Funds: Delaware Corporate Bond Fund; Class A Shares	0.0589*	1.046099***	1.716300	93%
Active Bond Mutual Fund	Delaware Group Income Funds: Delaware Extended Duration Bond Fund; Institutional Class Shares	0.0566	1.572717***	2.625900	90%
Passive Bond Mutual Fund	Deutsche Institutional Funds: Deutsche US Bond Index Fund; Institutional Class Shares	0.000407	0.524537***	0.992700	70%
Active Bond Mutual Fund	Deutsche Portfolio Trust: Deutsche Core Plus Income Fund; Class S Shares	-0.0769	0.610324***	1.217900	63%
Active Bond Mutual Fund	Deutsche Variable Series I: Deutsche Bond VIP; Class A Shares	-0.0659	0.596974***	1.269600	52%
Active Bond Mutual Fund	Dodge & Cox Funds: Dodge & Cox Income Fund	0.09***	0.59099***	1.013500	85%
Active Bond Mutual Fund	Domini Social Investment Trust: Domini Social Bond Fund; Investor Shares	0.00732	0.448806***	0.879000	65%
Active Bond Mutual Fund	Dreyfus A Bonds Plus, Inc	-0.0805*	0.790702***	1.139200	92%
Active Bond Mutual Fund	Dreyfus Premier Fixed Income Funds: Dreyfus Premier Corporate Bond Fund; Class A Shares	0.0484	0.745674***	1.355000	83%
Active Bond Mutual Fund	Dreyfus Variable Investment Fund: Quality Bond Portfolio; Initial Shares	-0.0173	0.656188***	1.087200	87%
Active Bond Mutual Fund	Dunham Funds: Dunham Corporate/Government Bond Fund; Class N Shares	0.0307	0.539886***	0.955100	77%
Active Bond Mutual Fund	DWS Portfolio Trust: DWS Core Plus Income Fund; Class AARP Shares	-0.0214	0.716987***	1.135200	97%
Passive Bond Mutual Fund	Eagle Series Trust: Eagle Investment Grade Bond Fund; Class A Shares	-0.001456*	1.920244***	2.316100	88%
Active Bond Mutual Fund	Eaton Vance Special Investment Trust: Eaton Vance Investment Grade Income Fund; Class I Shares	0.0841	0.511604***	0.986800	71%
Active Bond Mutual Fund	Endowments Trust: Bond Portfolio	-0.0665	0.698809***	1.503200	86%
Active Bond Mutual Fund	Enterprise Group of Funds, Inc: Enterprise Total Return Fund; Class A Shares	-0.0392	0.717926***	1.232400	94%
Active Bond Mutual Fund	EquiTrust Series Fund, Inc: High Grade Bond Portfolio; Traditional Shares Class B	-0.0165	0.526538***	1.093600	82%
Active Bond Mutual Fund	EquiTrust Variable Insurance Series Fund: High Grade Bond Portfolio; Initial Class Shares	0.3496***	0.382338***	1.022500	72%
Active Bond Mutual Fund	Evergreen Fixed Income Trust: Evergreen Core Plus Bond Fund; Class B Shares	-0.1671**	0.832652***	1.298200	77%
Active Bond Mutual Fund	Excelsior Funds Trust: Excelsior Total Return Bond Fund; Institutional Shares	-0.1015**	0.9304***	1.451600	97%
Active Bond Mutual Fund	Excelsior Funds, Inc: Core Bond Fund; Retirement Shares	0.016	0.741309***	0.781900	86%
Active Bond Mutual Fund	FDP Series Inc: Franklin Templeton Total Return FDP Fund; Investor C Shares	-0.0563	0.72817***	1.274000	80%
Active Bond Mutual Fund	Federated Investment Series Funds, Inc: Federated Bond Fund; Class F Shares	0.0677	0.894655***	1.526400	86%
Active Bond Mutual Fund	Fidelity Salem Street Trust: Fidelity Advisor Corporate Bond Fund; Class A Shares	-0.00517	1.030381***	1.196000	95%

Active Bond Mutual Fund	Fidelity Salem Street Trust: Fidelity Corporate Bond Fund	0,0219	1,030571***	1,196200	96%
Active Bond Mutual Fund	Fifth Third Funds: Fifth Third Bond Fund; Advisor Shares	-0,1419***	0,749319***	1,095200	95%
Active Bond Mutual Fund	Fifth Third Funds: Fifth Third Total Return Bond Fund; Institutional Shares	0,0158	0,506058***	1,239700	55%
Active Bond Mutual Fund	Financial Investors Trust: Aristata Quality Bond Fund	-0,2985***	0,74379***	1,392800	89%
Active Bond Mutual Fund	First Investors Income Funds: Investment Grade Fund; Class A Shares	-0,0547**	0,916637***	1,487600	95%
Active Bond Mutual Fund	First Investors Life Series Funds: Investment Grade Fund	0,0256	0,845727***	1,349100	94%
Active Bond Mutual Fund	First Trust Series Fund: First Trust Preferred Securities and Income Fund; Class A Shares	0,1783	0,636809***	1,226900	34%
Active Bond Mutual Fund	Forum Funds: Investors Bond Fund	0,0199	0,607574***	1,152800	69%
Active Bond Mutual Fund	FPA New Income, Inc	0,1256***	0,048137**	0,342800	4%
Active Bond Mutual Fund	Franklin Global Trust: Franklin Templeton Core Plus Fixed Income Fund	0,06	0,682748***	1,273500	89%
Active Bond Mutual Fund	Goldman Sachs Trust: Goldman Sachs Investment Grade Credit Fund; Separate Acct Institutional Shares	-0,00609	0,918466***	1,469400	92%
Active Bond Mutual Fund	GPS Funds I: GuideMark Core Fixed Income Fund; Service Share Class	-0,0367	0,664058***	1,127800	87%
Active Bond Mutual Fund	Great West Fund, Inc: Great West Loomis Sayles Bond Fund; Initial Class Shares	0,3053	1,123611***	2,609900	58%
Active Bond Mutual Fund	Guggenheim Funds Trust: Guggenheim Investment Grade Bond Fund; Class A Shares	0,0205	0,521037***	1,025600	64%
Active Bond Mutual Fund	Guggenheim Funds Trust: Guggenheim Total Return Bond Fund; Class A Shares	0,2047***	0,599323***	0,771600	74%
Active Bond Mutual Fund	Guggenheim Funds Trust: Guggenheim Total Return Bond Fund; Institutional Class Shares	0,2333***	0,597521***	0,768500	74%
Active Bond Mutual Fund	GuideStone Funds: Extended-Duration Bond Fund; Investor Class Shares	-0,0252	1,608097***	2,632200	93%
Active Bond Mutual Fund	Hallmark Investment Series Trust: Hallmark Total Return Bond; Class I Shares	0,0151	0,477111***	1,534900	20%
Active Bond Mutual Fund	Harris Insight Funds Trust: Harris Insight Bond Fund; N Shares	-0,1059**	0,715484***	1,152500	95%
Active Bond Mutual Fund	Hartford Mutual Funds, Inc: Hartford Total Return Bond Fund; Class Y Shares	0,0459*	0,61836***	1,043700	88%
Active Bond Mutual Fund	Hartford Mutual Funds, Inc: Hartford Unconstrained Bond Fund; Class A Shares	-0,00367	0,69703***	1,297900	76%
Active Bond Mutual Fund	Hartford Series Fund, Inc: American Funds Bond HLS Fund; Class IB	-0,1133	0,634082***	1,378900	84%
Active Bond Mutual Fund	HC Capital Trust: US Corporate Fixed Income Securities Portfolio; HC Strategic Class Shares	-0,0746*	1,032953***	1,205000	92%
Active Bond Mutual Fund	HighMark Funds: HighMark Bond Fund; Class B Shares	0,00605	0,545246***	1,045300	87%
Active Bond Mutual Fund	ICON Funds: ICON Bond Fund; Class I Shares	0,031	0,621088***	1,320200	77%
Active Bond Mutual Fund	ING Investors Trust: ING Bond Portfolio	-0,0636	0,647866***	1,346500	80%
Passive ETF	iShares Trust: iShares 10+ Year Credit Bond ETF	-0,1796**	1,818912***	2,163900	90%
Passive ETF	iShares Trust: iShares Aaa - A Rated Corporate Bond ETF	-0,0464	0,962348***	1,067700	97%
Passive ETF	iShares Trust: iShares B - Ca Rated Corporate Bond ETF	0,0485	0,860749***	1,928800	25%
Passive ETF	iShares Trust: iShares iBoxx \$ Investment Grade Corporate Bond ETF	-0,054	1,160802***	1,903400	93%
Active Bond Mutual Fund	Ivy Funds Variable Insurance Portfolios: Ivy Funds VIP Bond	0,0147	0,531421***	0,936100	77%
Active Bond Mutual Fund	Ivy Funds: Ivy Bond Fund; Class A Shares	-0,1493***	0,727869***	1,047500	91%
Active Bond Mutual Fund	John Hancock Funds II: Investment Quality Bond Fund; Class NAV Shares	0,0405	0,68739***	1,211000	88%
Active Bond Mutual Fund	John Hancock Sovereign Bond Fund: John Hancock Bond Fund; Class A Shares	0,0951**	0,707563***	1,277900	77%
Active Bond Mutual Fund	John Hancock Variable Insurance Trust: Core Bond Trust; NAV Shares	0,1062*	0,519379***	0,996800	72%
Passive Bond Mutual Fund	John Hancock Variable Insurance Trust: Total Bond Market Trust A; Series NAV Shares	0,002239*	0,351859***	1,086300	54%
Active Bond Mutual Fund	JP Morgan Mutual Fund Select Group: JPMorgan Bond Fund II; Select Shares	-0,1777**	0,820568***	1,457800	93%
Active Bond Mutual Fund	JPMorgan Trust I: JPMorgan Total Return Fund; Select Class Shares	0,0519	0,600146***	1,151900	77%
Active Bond Mutual Fund	Lebenthal Funds, Inc: Lebenthal Taxable Municipal Bond Fund	-0,1246	1,045686***	1,755100	90%
Active Bond Mutual Fund	Legg Mason Income Trust, Inc: Legg Mason Investment Grade Income Portfolio; Primary Class Shares	-0,2103	1,50894***	3,400000	79%
Active Bond Mutual Fund	Legg Mason Partners Income Trust: Western Asset Corporate Bond Fund; Class B Shares	-0,2689**	1,449011***	2,609500	86%
Active Bond Mutual Fund	Lincoln Variable Insurance Products Trust: LVIP Delaware Bond Fund; Standard Class Shares	0,0717*	0,642893***	1,072100	86%
Passive Bond Mutual Fund	Lincoln Variable Insurance Products Trust: LVIP SSGA Bond Index Fund; Service Class Shares	0,0000304	0,48894***	0,938700	65%
Active Bond Mutual Fund	LKCM Funds: LKCM Aquinas Fixed Income Fund	0,0606	0,541204***	1,217300	76%
Passive Bond Mutual Fund	Loomis Sayles Funds I: Loomis Sayles Benchmark Core Bond Fund; Institutional Shares	-0,000888*	0,71685***	1,238100	96%
Active Bond Mutual Fund	Loomis Sayles Funds I: Loomis Sayles Bond Fund; Institutional Class	0,1661	1,155838***	2,396800	58%
Active Bond Mutual Fund	Loomis Sayles Funds II: Natixis Loomis Sayles Investment Grade Bond Fund; Class J Shares	0,1362	1,075793***	2,238400	80%
Active Bond Mutual Fund	Loomis Sayles Funds II: Natixis Loomis Sayles Investment Grade Bond Fund; Class Y Shares	0,122*	1,024419***	1,880600	74%
Active Bond Mutual Fund	Lord Abbett Investment Trust: Lord Abbett Income Fund; Class A Shares	0,0169	0,913877***	1,629700	79%
Active Bond Mutual Fund	Madison Funds: Madison High Quality Bond Fund; Class Y Shares	0,0166	0,339526***	0,672700	64%
Active Bond Mutual Fund	MainStay VP Funds Trust: MainStay VP Bond Portfolio; Initial Class Shares	0,0168	0,519341***	1,018700	62%
Active Bond Mutual Fund	Managers Trust II: Managers AMG GW&K Fixed Income Fund; Class B Shares	-0,0189	0,913576***	1,812800	83%
Active Bond Mutual Fund	Managers Trust II: Total Return Bond Fund	-0,1339**	0,732205***	1,205800	96%
Active Bond Mutual Fund	Manning & Napier Fund, Inc: Core Plus Bond Series; Class S Shares	-0,0673	0,754488***	1,174300	52%
Passive ETF	Market Vectors ETF Trust: Market Vectors-Investment Grade Floating Rate ETF	0,0339	0,092228*	0,445900	4%
Active Bond Mutual Fund	Maxim Series Fund, Inc: Maxim Federated Bond Portfolio	-0,1632***	0,743188***	1,268600	93%
Active Bond Mutual Fund	McMorgan Funds: McMorgan Fixed Income Fund; McMorgan Funds Shares	-0,1028**	0,955497***	1,389600	96%
Active Bond Mutual Fund	Met Investors Series Trust: JPMorgan Core Bond Portfolio; Class B Shares	-0,0638	0,63337***	1,097700	79%
Passive Bond Mutual Fund	Metropolitan Series Fund, Inc: Barclays Aggregate Bond Index Portfolio; Class B Shares	0,0000437	0,511751***	0,958400	68%
Passive Bond Mutual Fund	Metropolitan Series Fund, Inc: Barclays Aggregate Bond Index Portfolio; Class G Shares	-0,000443	0,603446***	0,832000	73%
Active Bond Mutual Fund	Metropolitan Series Fund, Inc: BlackRock Bond Income Portfolio; Class A Shares	0,0689*	0,567726***	1,006900	76%
Active Bond Mutual Fund	MFS Series Trust IX: MFS Bond Fund; Class A Shares	0,0555	0,854497***	1,438100	88%
Active Bond Mutual Fund	MFS Series Trust IX: MFS Research Bond Fund; Class I Shares	0,0517**	0,673939***	1,122600	90%
Active Bond Mutual Fund	MFS Variable Insurance Trust II: MFS Bond Portfolio; Service Class Shares	0,0422	0,879637***	1,493300	83%
Active Bond Mutual Fund	MFS Variable Insurance Trust: MFS Research Bond Series; Service Class Shares	0,0352	0,639598***	1,029400	92%
Active Bond Mutual Fund	MML Series Investment Fund II: MML Managed Bond Fund; Service Class Shares	-0,00792	0,661538***	0,801300	87%
Active Bond Mutual Fund	Morgan Stanley Income Trust; Class B Shares	-0,206***	0,910875***	1,840700	93%
Active Bond Mutual Fund	Morgan Stanley Institutional Fund Trust: Core Plus Fixed Income Portfolio; Class I Shares	0,0509	0,526944***	1,128700	54%
Active Bond Mutual Fund	Morgan Stanley Institutional Fund Trust: Corporate Bond Portfolio; Class I Shares	0,0324	0,597924***	1,258900	56%
Active Bond Mutual Fund	Morgan Stanley Institutional Fund Trust: Long Duration Fixed Income Portfolio; Class I Shares	0,2032	1,084053***	3,000900	53%
Active Bond Mutual Fund	Morgan Stanley Variable Investment Series: Income Plus Portfolio; Class Y Shares	-0,0018	1,036369***	1,680300	91%
Active Bond Mutual Fund	MTB Group of Funds: MTB Income Fund; Class B Shares	-0,0522	0,54482***	1,136400	83%
Active Bond Mutual Fund	Munder Series Trust: Munder Bond Fund; Class Y Shares	-0,04	0,62452***	1,082300	83%
Active Bond Mutual Fund	Mutual of America Institutional Funds, Inc: Bond Fund	0,0605	0,480214***	0,928100	67%
Active Bond Mutual Fund	Nationwide Mutual Funds: Nationwide Bond Fund; Institutional Service Class Shares	0,0673*	0,609724***	1,079300	80%
Passive Bond Mutual Fund	Nationwide Mutual Funds: Nationwide Bond Index Fund; Class C Shares	-0,000158	0,465591***	0,915900	65%
Passive Bond Mutual Fund	Nationwide Mutual Funds: Nationwide Bond Index Fund; Institutional Class Shares	0,000375	0,525585***	0,980300	72%
Active Bond Mutual Fund	Nationwide Mutual Funds: Nationwide Core Plus Bond Fund; Institutional Class Shares	0,0188	0,687352***	1,173800	86%
Active Bond Mutual Fund	Nationwide Mutual Funds: Nationwide Enhanced Income Fund; Institutional Class Shares	0,0137	0,085686***	0,223200	44%
Active Bond Mutual Fund	Nationwide Mutual Funds: Nationwide HighMark Bond Fund; Institutional Service Class Shares	0,0531	0,571867***	0,966200	88%

Active Bond Mutual Fund	Nationwide Variable Insurance Trust: American Funds NVIT Bond Fund; Class II Shares	-0,0846*	0,655088***	1,116100	82%
Passive Bond Mutual Fund	Nationwide Variable Insurance Trust: NVIT Bond Index Fund; Class Y Shares	0,000294	0,509755***	0,939100	70%
Active Bond Mutual Fund	Nationwide Variable Insurance Trust: NVIT Core Plus Bond Fund; Class Y Shares	0,0759**	0,654719***	1,086600	87%
Active Bond Mutual Fund	Neuberger Berman Income Funds: Neuberger Berman Core Bond Fund; Institutional Class Shares	0,0328	0,639102***	1,107500	83%
Active Bond Mutual Fund	New Covenant Funds: New Covenant Income Fund	-0,0662*	0,551007***	1,095500	63%
Active Bond Mutual Fund	Northern Funds: Core Bond Fund	0,0467	0,552681***	0,988500	78%
Active Bond Mutual Fund	Northern Funds: Fixed Income Fund	0,0352	0,543922***	0,978600	77%
Active Bond Mutual Fund	Northern Institutional Funds: Bond Portfolio; Class A Shares	0,1377*	0,492641***	1,040700	74%
Active Bond Mutual Fund	Northern Lights Fund Trust: Pacific Financial Strategic Conservative Fund; Institutional Class Shares	-0,0411	0,334874***	0,845800	44%
Active Bond Mutual Fund	Northwestern Mutual Series Fund, Inc: Select Bond Portfolio	0,0532	0,526703***	0,907500	80%
Active Bond Mutual Fund	Nuveen Investment Funds, Inc: Nuveen Core Plus Bond Fund; Class A Shares	-0,0141	0,722439***	1,339700	73%
Active Bond Mutual Fund	Nuveen Investment Funds, Inc: Nuveen Strategic Income Fund; Class I Shares	0,0392	0,975524***	1,923400	64%
Active Bond Mutual Fund	Nuveen Investment Trust V: Nuveen Preferred Securities Fund; Class I Shares	-0,0571	1,524447***	4,019200	37%
Active Bond Mutual Fund	Ohio National Fund, Inc: Bond Portfolio	-0,0496	0,894582***	1,453600	91%
Active Bond Mutual Fund	Old Westbury Funds, Inc: Old Westbury Fixed Income Fund	0,0434	0,378036***	0,868200	47%
Active Bond Mutual Fund	OneAmerica Funds, Inc: OneAmerica Investment Grade Bond Portfolio; Class O Shares	0,0241	0,561618***	1,304800	62%
Active Bond Mutual Fund	Oppenheimer Integrity Funds: Oppenheimer Core Bond Fund; Class A Shares	-0,1771	0,766655***	2,182200	31%
Active Bond Mutual Fund	Oppenheimer Variable Account Funds: Oppenheimer Core Bond Fund/VA; Non-Service Shares	-0,2037	0,743939***	2,686700	18%
Active Bond Mutual Fund	Pacific Capital Funds: High Grade Core Fixed Income Fund; Class B Shares	-0,035	0,517363***	1,240800	67%
Active Bond Mutual Fund	Pacific Life Funds: PL Managed Bond Fund; Class A Shares	0,1543	0,628873***	1,528800	65%
Active Bond Mutual Fund	Parnassus Income Funds: Parnassus Fixed Income Fund	0,0682	0,440627***	0,882200	62%
Active Bond Mutual Fund	Payden & Rygel Investment Group: Payden Corporate Bond Fund; Investor Class Shares	0,0207	0,96973***	1,297700	87%
Active Bond Mutual Fund	Penn Series Funds, Inc: Quality Bond Fund	0,0605	0,486283***	0,958800	61%
Active Bond Mutual Fund	Permanent Portfolio Family of Funds, Inc: Versatile Bond Portfolio	0,0305	0,229763***	0,879300	17%
Active Bond Mutual Fund	Phoenix Insight Funds Trust: Phoenix Insight Bond Fund; Class I Shares	-0,0898**	0,72923***	1,043700	93%
Active Bond Mutual Fund	PIMCO Funds: PIMCO Extended Duration Fund; Institutional Class Shares	0,1441	1,667781***	6,127200	18%
Active Bond Mutual Fund	PIMCO Funds: PIMCO Investment Grade Corporate Bond Fund; Institutional Class Shares	0,1422**	0,937117***	1,600400	86%
Active Bond Mutual Fund	PIMCO Funds: PIMCO Long Duration Total Return Fund; Institutional Class Shares	0,0832	1,329339***	2,615400	66%
Active Bond Mutual Fund	Pioneer Bond Fund; Class A Shares	0,1036***	0,581683***	1,001100	85%
Active Bond Mutual Fund	Pioneer Variable Contracts Trust: Pioneer Bond VCT Portfolio; Class I Shares	0,1445***	0,536781***	0,885000	88%
Active Bond Mutual Fund	PNC Funds, Inc: Total Return Bond Fund; Institutional Shares	0,1178	0,534051***	1,190800	80%
Active Bond Mutual Fund	PNC Funds: PNC Bond Fund; Class I Shares	-0,00571	0,598555***	1,019900	87%
Active Bond Mutual Fund	PNC Funds: PNC Total Return Advantage Fund; Class I Shares	0,0213	0,74119***	1,544800	89%
Passive ETF	PowerShares Exchange-Traded Fund Trust II: PowerShares Preferred Portfolio	-0,1792	1,364772***	4,691900	23%
Active Bond Mutual Fund	Preferred Group of Mutual Funds: Preferred Fixed Income Fund	-0,000313	0,795881***	1,289200	94%
Active Bond Mutual Fund	Principal Bond Fund, Inc: Class A Shares	-0,0743	0,710496***	1,195500	95%
Active Bond Mutual Fund	Principal Funds, Inc: Income Fund; Class A Shares	0,0565**	0,74012***	1,217000	93%
Active Bond Mutual Fund	Principal Funds, Inc: Preferred Securities Fund; Institutional Class Shares	-0,0265	1,264142***	3,081500	42%
Active Bond Mutual Fund	Principal Investors Fund, Inc: High Quality Long-Term Bond Fund; Class J Shares	-0,2203**	1,001015***	1,732300	95%
Active Bond Mutual Fund	Principal Variable Contracts Funds, Inc: Income Account; Class 1 Shares	0,1301***	0,657536***	1,062200	92%
Passive ETF	ProShares Trust: ProShares Ultra Investment Grade Corporate	-0,2945***	2,602886***	3,153400	95%
Active Bond Mutual Fund	Putnam Income Fund; Class A Shares	0,0486	0,726215***	1,762200	42%
Active Bond Mutual Fund	Putnam Variable Trust: Putnam VT Income Fund; Class IA Shares	0,1342	0,743826***	2,207000	27%
Active Bond Mutual Fund	Quaker Investment Trust: Quaker Fixed Income Fund; Class A Shares	-0,1434**	0,449931***	0,868500	67%
Active Bond Mutual Fund	RidgeWorth Funds: Conservative Allocation Strategy Fund; Class B Shares	0,0936	0,528967***	1,436700	53%
Active Bond Mutual Fund	RidgeWorth Funds: Corporate Bond Fund; Class I Shares	0,1093	0,684194***	1,326300	66%
Active Bond Mutual Fund	RidgeWorth Funds: Total Return Bond Fund; Class I Shares	0,0797	0,516508***	0,996200	67%
Active Bond Mutual Fund	Russell Investment Company: Diversified Bond Fund; Class S Shares	-0,0636**	0,714335***	1,055300	94%
Active Bond Mutual Fund	Russell Investment Company: Multistrategy Bond Fund; Class S Shares	-0,00775	0,702151***	1,005600	90%
Active Bond Mutual Fund	Russell Investment Company: Russell Investment Grade Bond Fund; Class I Shares	0,053	0,600804***	1,064400	84%
Active Bond Mutual Fund	Russell Investment Company: Russell Strategic Bond Fund; Class I Shares	0,0749**	0,629552***	1,146200	80%
Active Bond Mutual Fund	Russell Investment Funds: Core Bond Fund	0,0713	0,609682***	1,056300	80%
Active Bond Mutual Fund	Sanford C Bernstein Fund II, Inc: Bernstein Intermediate Duration Institutional Portfolio	0,0405*	0,663264***	1,118700	88%
Active Bond Mutual Fund	Saturna Investment Trust: Sextant Bond Income Fund	-0,0295	0,789178***	1,423300	77%
Active Bond Mutual Fund	Schroder Series Trust: Schroder Broad Tax-Aware Value Bond Fund; Investor Class Shares	0,0736	1,033273***	1,467300	62%
Passive ETF	Schwab Strategic Trust: Schwab US Aggregate Bond ETF	-0,0137	0,623241***	0,809100	74%
Active Bond Mutual Fund	Schwartz Investment Trust: Ave Maria Bond Fund	0,1045**	0,420229***	0,941500	49%
Active Bond Mutual Fund	Scout Funds: Scout Core Bond Fund; Institutional Share Class	0,0494	0,712507***	1,484000	57%
Active Bond Mutual Fund	Seasons Series Trust: Diversified Fixed Income Portfolio; Class 3 Shares	-0,0197	0,579107***	0,998600	80%
Active Bond Mutual Fund	Securian Funds Trust: Advantus Bond Fund; Class 1 Shares	0,1139*	0,457306***	1,050400	53%
Active Bond Mutual Fund	Seligman Core Fixed Income Fund, Inc: Class A Shares	-0,0823	0,58688***	1,302200	84%
Active Bond Mutual Fund	Sentinel Group Funds, Inc: Sentinel Bond Fund; Class A Shares	-0,00934	0,763115***	1,309000	90%
Active Bond Mutual Fund	Sentinel Variable Products Trust: Sentinel Variable Products Bond Fund	0,014	0,562884***	0,997600	76%
Passive ETF	SPDR Series Trust: SPDR Barclays Issuer Scored Corporate Bond ETF	-0,0146	0,921478***	1,060500	97%
Passive ETF	SPDR Series Trust: SPDR BofA Merrill Lynch Crossover Corporate Bond ETF	0,0797	0,918545***	1,153400	77%
Passive ETF	SPDR Series Trust: SPDR Wells Fargo Preferred Stock ETF	0,1889	0,778621***	1,709600	26%
Active Bond Mutual Fund	SSgA Funds: SSgA Bond Market Fund; Institutional Class Shares	-0,0477	0,51705***	1,202200	59%
Active Bond Mutual Fund	STAAR Investment Trust: Short Term Bond Fund	-0,1002**	0,245149***	0,631700	37%
Active Bond Mutual Fund	State Farm Mutual Fund Trust: State Farm Bond Fund; Legacy Class A Shares	0,0212	0,580258***	1,070900	74%
Active Bond Mutual Fund	State Street Research Institutional Funds: State Street Research Core Fixed Income Fund; Class IV Shares	-0,1081**	0,715379***	1,295500	96%
Active Bond Mutual Fund	Sterling Capital Funds: Sterling Capital Corporate Fund; Institutional Class Shares	0,00959	0,793389***	0,966900	86%
Active Bond Mutual Fund	Sterling Capital Funds: Sterling Capital Securitized Opportunities Fund; Institutional Class Shares	0,0705*	0,411202***	0,587500	62%
Active Bond Mutual Fund	Sterling Capital Funds: Sterling Capital Total Return Bond Fund; Institutional Class Shares	0,0787	0,622441***	1,084500	82%
Active Bond Mutual Fund	STI Classic Funds: High Quality Bond Fund; Class I Shares	-0,1036**	0,604615***	0,719600	94%
Active Bond Mutual Fund	Strategic Partners Mutual Funds, Inc: Strategic Partners Bond Fund; Class M Shares	-0,0746	0,721221***	1,236000	92%
Active Bond Mutual Fund	Strategic Partners Style Specific Funds: Strategic Partners Total Return Bond Fund; Class B Shares	-0,0634	0,695394***	1,085400	91%
Active Bond Mutual Fund	Strong Income Funds, Inc: Strong Corporate Income Fund; Investor Class Shares	-0,0497	0,7806***	1,366800	98%
Active Bond Mutual Fund	Summit Mutual Funds, Inc: Apex Bond Fund; Class I Shares	-0,1378	0,718206***	1,506400	79%
Active Bond Mutual Fund	SunAmerica Income Funds: SunAmerica Core Bond Fund; Class A Shares	-0,0656	0,725553***	1,173800	95%
Active Bond Mutual Fund	SunAmerica Series Trust: Corporate Bond Portfolio; Class 3 Shares	-0,0298	0,980202***	1,771300	73%

Active Bond Mutual Fund	T Rowe Price Corporate Income Fund, Inc	0,00928	1,005919***	1,636300	95%
Active Bond Mutual Fund	T Rowe Price New Income Fund, Inc	0,0527	0,588192***	0,992200	88%
Active Bond Mutual Fund	Tamarack Funds Trust: Tamarack Quality Fixed Income Fund; Class I Shares	-0,1397*	0,437216***	1,154300	59%
Active Bond Mutual Fund	Target Portfolio Trust: Target Total Return Bond Portfolio; Class T Shares	0,1173*	0,642282***	1,264900	75%
Active Bond Mutual Fund	TCW Funds, Inc: TCW Core Fixed Income Fund; Class I Shares	0,1153**	0,530839***	0,976800	74%
Active Bond Mutual Fund	Thrivent Mutual Funds: Thrivent Income Fund; Class A Shares	-0,00454	0,830106***	1,410100	87%
Active Bond Mutual Fund	Thrivent Series Fund, Inc: Thrivent Income Portfolio	0,0252	0,891242***	1,486500	86%
Active Bond Mutual Fund	Timothy Plan: Timothy Plan Fixed-Income Fund; Class A Shares	-0,0407	0,597875***	1,090100	75%
Active Bond Mutual Fund	Touchstone Funds Group Trust: Touchstone Pitcairn Taxable Bond Fund; Class A Shares	-0,0487	0,859385***	1,231500	94%
Active Bond Mutual Fund	Transamerica Funds: Transamerica Bond; Class I2 Shares	0,06	1,229603***	2,444000	69%
Active Bond Mutual Fund	Transamerica Funds: Transamerica Flexible Income; Class A Shares	0,0289	0,70188***	1,426000	60%
Active Bond Mutual Fund	Transamerica Investors, Inc: Transamerica Premier Bond Fund; Investor Shares	0,0249	0,816436***	1,610800	73%
Active Bond Mutual Fund	Transamerica Series Trust: Transamerica JPMorgan Core Bond VP; Initial Class Shares	0,1172*	0,451894***	0,874200	64%
Active Bond Mutual Fund	Tributary Funds, Inc: Tributary Income Fund; Institutional Class Shares	0,0325	0,519068***	0,942500	76%
Active Bond Mutual Fund	Trust for Professional Managers: PMC Core Fixed Income Fund	0,1029	0,556287***	1,048400	76%
Active Bond Mutual Fund	UBS Funds: UBS Core Plus Bond Fund; Class P Shares	-0,041	0,52776***	1,095900	64%
Active Bond Mutual Fund	USAA Mutual Funds Trust: Income Fund; Fund Class Shares	0,0384	0,644619***	1,106100	85%
Active Bond Mutual Fund	VALIC Company I: Capital Conservation Fund	0,0281	0,551061***	0,995100	81%
Active Bond Mutual Fund	VALIC Company II: Core Bond Fund	0,0376	0,654229***	1,118100	91%
Passive Bond Mutual Fund	Vanguard Bond Index Funds: Vanguard Long-Term Bond Index Fund; Institutional Plus Class Shares	0,000485	0,860749***	1,928800	25%
Active Bond Mutual Fund	Vanguard Fixed Income Securities Funds: Vanguard Long-Term Investment-Grade Fund; Investor Shares	-0,06	1,536025***	2,704200	81%
Passive Bond Mutual Fund	Vanguard Scottsdale Funds: Vanguard Long-Term Corporate Bond Index Fund; Admiral Class Shares	-0,001721	1,871874***	2,367200	79%
Passive ETF	Vanguard Scottsdale Funds: Vanguard Long-Term Corporate Bond Index Fund; ETF Class Shares	-0,1687**	1,888375***	2,285200	88%
Passive Bond Mutual Fund	Vanguard Scottsdale Funds: Vanguard Long-Term Corporate Bond Index Fund; Institutional Class Shares	-0,001536*	1,917787***	2,297900	88%
Passive Bond Mutual Fund	Vanguard Variable Insurance Fund: Total Bond Market Index Portfolio; Investor Share Class	0,003945***	0,021027	1,036200	-1%
Active Bond Mutual Fund	Virtus Institutional Trust: Virtus Institutional Bond Fund; Class X Shares	0,0621	0,626634***	1,383200	71%
Active Bond Mutual Fund	Virtus Opportunities Trust: Virtus Core Bond Fund; Class A Shares	-0,0564	0,570921***	1,324800	74%
Active Bond Mutual Fund	Waddell & Reed Advisors Funds: Waddell & Reed Advisors Bond Fund; Class A Shares	0,0043	0,538054***	0,976900	76%
Active Bond Mutual Fund	Wasatch Funds Trust: Wasatch-1st Source Income Fund; Investor Class Shares	0,0042	0,361349***	0,699500	68%
Active Bond Mutual Fund	WB Capital Mutual Funds, Inc: WB Capital Bond Fund	0,0266	0,533816***	1,171900	82%
Active Bond Mutual Fund	Wells Fargo Funds Trust: Income Fund; Class A Shares	-0,116*	0,742035***	1,320300	93%
Active Bond Mutual Fund	Wells Fargo Funds Trust: Wells Fargo Advantage Corporate Bond Fund; Investor Class Shares	0,0876	1,010567***	1,447800	92%
Active Bond Mutual Fund	WesMark Funds: WesMark Government Bond Fund	0,0259	0,294343***	0,710700	43%
Active Bond Mutual Fund	Wilmington Funds: Wilmington Broad Market Bond Fund; Institutional Class	0,0132	0,584871***	1,011500	84%
Active Bond Mutual Fund	World Funds, Inc: CSI Fixed Income Fund	-0,3719***	0,715678***	1,459700	90%
Active Bond Mutual Fund	Wright Managed Income Trust: Wright Total Return Bond Fund	0,00419	0,573285***	1,073300	84%

Annex 9 – Inputs for the cross-correlation analysis

Fund Classification	Fund Name	TE	Adjusted R ²	Alpha (Equation 1)	Alpha (Equation 2)
Active Mutual Fund	AARP Funds: AARP Income Fund	1,1142	62	0,0036	0,0036
Active Mutual Fund	GuideStone Funds: Extended-Duration Bond Fund; Investor Class Shares	2,6200	93	0,0008	0,0009
Active Mutual Fund	AIM Investment Securities Funds (Invesco Investment Securities Funds): Invesco Income Fund; Class A Shares	1,9149	82	0,0000	0,0000
Active Mutual Fund	AXP Income Series, Inc: RiverSource Selective Fund; Class A Shares	1,0673	95	0,0003	0,0004
Active Mutual Fund	Advance Capital I, Inc: Retirement Income Fund; Retail Class Shares	1,4636	84	0,0004	0,0003
Active Mutual Fund	Nationwide Mutual Funds: Nationwide Core Plus Bond Fund; Institutional Class Shares	1,1566	85	0,0012	0,0013
Active Mutual Fund	Advisors' Inner Circle Fund: Sirach Bond Portfolio; Institutional Class Shares	1,2237	94	0,0002	0,0006
Active Mutual Fund	Dunham Funds: Dunham Corporate/Government Bond Fund; Class N Shares	0,9394	74	0,0014	0,0014
Active Mutual Fund	Advisors Series Trust: PIA Moderate Duration Bond Fund; Advisor Class Shares	1,0155	57	0,0020	0,0024
Active Mutual Fund	Advisors Series Trust: PIA BBB Bond Fund; Managed Account Completion Shares	1,6767	93	0,0009	0,0009
Active Mutual Fund	PNC Funds: PNC Total Return Advantage Fund; Class I Shares	1,5227	87	0,0021	0,0023
Active Mutual Fund	Allegiant Funds: Allegiant Total Return Advantage Fund; Class B Shares	1,4938	86	0,0014	0,0015
Active Mutual Fund	Allegiant Funds: Allegiant Bond Fund; Class B Shares	1,2264	86	0,0018	0,0018
Active Mutual Fund	PNC Funds: PNC Bond Fund; Class I Shares	1,0112	84	0,0010	0,0012
Active Mutual Fund	AllianceBernstein Bond Fund, Inc: AllianceBernstein Corporate Bond Portfolio; Class A Shares	1,6469	69	0,0044	0,0037
Active Mutual Fund	AllianceBernstein Portfolios: AllianceBernstein Conservative Wealth Strategy; Class A Shares	1,7591	33	0,0013	-0,0002
Active Mutual Fund	American Century Investment Trust: American Century-Mason Street Select Bond Fund; A Class Shares	1,3295	77	0,0027	0,0028
Active Mutual Fund	American Century Investment Trust: Diversified Bond Fund; Institutional Class Shares	0,9585	70	0,0016	0,0020
Active Mutual Fund	AmSouth Funds: AmSouth High Quality Bond Fund; Class A Shares	1,2379	89	-0,0003	0,0009
Active Mutual Fund	GPS Funds I: GuideMark Core Fixed Income Fund; Service Share Class	1,1168	85	0,0007	0,0007
Active Mutual Fund	Sterling Capital Funds: Sterling Capital Total Return Bond Fund; Institutional Class Shares	1,0725	81	0,0018	0,0021
Active Mutual Fund	BBH Trust: BBH Limited Duration Fund; Class N Shares	0,7908	57	0,0014	0,0015
Active Mutual Fund	Sanford C Bernstein Fund II, Inc: Bernstein Intermediate Duration Institutional Portfolio	1,1035	87	0,0015	0,0015
Active Mutual Fund	Bishop Street Funds: High Grade Income Fund; Class I Shares	1,1758	66	0,0012	0,0018
Active Mutual Fund	BlackRock Bond Fund, Inc: BlackRock Bond Fund; Institutional Shares	1,0150	92	0,0019	0,0018
Active Mutual Fund	Bond Fund of America; A	1,1790	82	0,0010	0,0009
Active Mutual Fund	CCMI Funds: CCMi Bond Fund	1,4589	94	-0,0008	-0,0001
Active Mutual Fund	City National Rochdale Funds: City National Rochdale Full Maturity Fixed Income Fund; Institutional Class Shs	0,9992	73	0,0017	0,0020
Active Mutual Fund	Calvert Fund: Calvert Income Fund; Class A Shares	1,2543	71	0,0012	0,0010
Active Mutual Fund	Calvert Social Investment Fund: Calvert Bond Portfolio; Class A Shares	0,9972	71	0,0016	0,0018
Passive Mutual Fund	Capstone Social Ethics & Religious Values Fund: Bond Fund; Class A Shares	1,7663	96	-0,0023	-0,0011
Active Mutual Fund	Columbia Fixed Income Securities Fund, Inc: Class Z Shares	1,1478	95	0,0002	0,0005
Active Mutual Fund	Columbia Funds Trust III: Columbia Contrarian Income Fund; Class A Shares	0,9696	88	0,0002	0,0016
Active Mutual Fund	Columbia Funds Institutional Trust: CMG Core Bond Fund	1,1499	81	0,0023	0,0025
Active Mutual Fund	COUNTRY Mutual Funds Trust: COUNTRY Bond Fund; Class Y Shares	0,9496	68	0,0021	0,0024
Active Mutual Fund	Wasatch Funds Trust: Wasatch-1st Source Income Fund; Investor Class Shares	0,6933	64	0,0011	0,0014
Active Mutual Fund	Credit Suisse Institutional Fund, Inc: Investment Grade Fixed Income Portfolio	1,1439	86	0,0011	0,0010
Active Mutual Fund	Credit Suisse Institutional Fixed Income Fund, Inc	1,0920	93	0,0022	0,0015
Active Mutual Fund	Croft Funds Corporation: Croft Income Fund	0,9642	62	0,0015	0,0014
Active Mutual Fund	DWS Portfolio Trust: DWS Core Plus Income Fund; Class AARP Shares	1,1142	96	0,0015	0,0017
Active Mutual Fund	Deutsche Portfolio Trust: Deutsche Core Plus Income Fund; Class S Shares	1,2092	61	0,0003	0,0003
Passive Mutual Fund	Deutsche Institutional Funds: Deutsche US Bond Index Fund; Institutional Class Shares	0,9866	67	0,0014	0,0019
Active Mutual Fund	Delaware Group Income Funds: Delaware Corporate Bond Fund; Class A Shares	1,6980	92	0,0016	0,0014
Active Mutual Fund	Delaware Group Income Funds: Delaware Extended Duration Bond Fund; Institutional Class Shares	2,6088	89	0,0016	0,0017
Active Mutual Fund	Dodge & Cox Funds: Dodge & Cox Income Fund	0,9973	84	0,0019	0,0018
Active Mutual Fund	Domini Social Investment Trust: Domini Social Bond Fund; Investor Shares	0,8713	62	0,0011	0,0015
Active Mutual Fund	Dreyfus A Bonds Plus, Inc	1,1327	90	0,0015	0,0015
Active Mutual Fund	Dreyfus Premier Fixed Income Funds: Dreyfus Premier Corporate Bond Fund; Class A Shares	1,3461	83	0,0018	0,0003
Active Mutual Fund	Endowments Trust: Bond Portfolio	1,4871	85	0,0011	0,0011
Active Mutual Fund	Enterprise Group of Funds, Inc: Enterprise Total Return Fund; Class A Shares	1,2359	94	0,0007	0,0001
Active Mutual Fund	EquiTrust Series Fund, Inc: High Grade Bond Portfolio; Traditional Shares Class B	1,0664	81	0,0015	0,0016
Active Mutual Fund	Evergreen Fixed Income Trust: Evergreen Core Plus Bond Fund; Class B Shares	1,2924	75	0,0006	0,0000
Active Mutual Fund	Columbia Funds Series Trust I: Columbia Bond Fund; Class Z Shares	1,0300	79	0,0014	0,0017
Active Mutual Fund	Excelsior Funds, Inc: Core Bond Fund; Retirement Shares	0,7856	86	0,0034	0,0027
Active Mutual Fund	Excelsior Funds Trust: Excelsior Total Return Bond Fund; Institutional Shares	1,4429	96	0,0008	0,0012
Active Mutual Fund	FDP Series Inc: Franklin Templeton Total Return FDP Fund; Investor C Shares	1,2567	79	0,0004	0,0002
Active Mutual Fund	FPA New Income, Inc	0,3507	2	0,0022	0,0023
Active Mutual Fund	Federated Investment Series Funds, Inc: Federated Bond Fund; Class F Shares	1,5099	85	0,0017	0,0013
Active Mutual Fund	Fifth Third Funds: Fifth Third Total Return Bond Fund; Institutional Shares	1,2141	53	0,0016	0,0018
Active Mutual Fund	Fifth Third Funds: Fifth Third Bond Fund; Advisor Shares	1,0836	92	0,0009	0,0013
Active Mutual Fund	Financial Investors Trust: Aristata Quality Bond Fund	1,3989	90	-0,0021	-0,0013
Active Mutual Fund	Nuveen Investment Funds, Inc: Nuveen Core Plus Bond Fund; Class A Shares	1,3256	71	0,0009	0,0006
Active Mutual Fund	Nuveen Investment Funds, Inc: Nuveen Strategic Income Fund; Class I Shares	1,9080	63	0,0014	0,0007
Active Mutual Fund	Tributary Funds, Inc: Tributary Income Fund; Institutional Class Shares	0,9290	74	0,0014	0,0017
Active Mutual Fund	First Investors Income Funds: Investment Grade Fund; Class A Shares	1,4712	94	0,0005	0,0005
Active Mutual Fund	Forum Funds: Investors Bond Fund	1,1366	69	0,0017	0,0017
Active Mutual Fund	Franklin Global Trust: Franklin Templeton Core Plus Fixed Income Fund	1,2871	88	0,0030	0,0032
Active Mutual Fund	Scout Funds: Scout Core Bond Fund; Institutional Share Class	1,4757	56	0,0015	0,0013
Active Mutual Fund	Goldman Sachs Trust: Goldman Sachs Investment Grade Credit Fund; Separate Acct Institutional Shares	1,4511	91	0,0010	0,0010
Active Mutual Fund	Harris Insight Funds Trust: Harris Insight Bond Fund; N Shares	1,1343	94	0,0007	0,0008
Active Mutual Fund	Hallmark Investment Series Trust: Hallmark Total Return Bond; Class I Shares	1,5432	18	0,0022	0,0026
Active Mutual Fund	Advisors' Inner Circle Fund II: Hancock Horizon Core Bond Fund; Institutional Class Shares	0,8788	78	0,0012	0,0015
Active Mutual Fund	John Hancock Variable Insurance Trust: Core Bond Trust; NAV Shares	0,9895	70	0,0016	0,0018
Active Mutual Fund	John Hancock Sovereign Bond Fund: John Hancock Bond Fund; Class A Shares	1,2583	76	0,0020	0,0018
Active Mutual Fund	Hartford Mutual Funds, Inc: Hartford Total Return Bond Fund; Class Y Shares	1,0292	86	0,0015	0,0015
Active Mutual Fund	Hartford Mutual Funds, Inc: Hartford Unconstrained Bond Fund; Class A Shares	1,2832	74	0,0010	0,0006
Active Mutual Fund	HighMark Funds: HighMark Bond Fund; Class B Shares	1,0255	86	0,0014	0,0016

Active Bond Mutual Fund	Nationwide Mutual Funds: Nationwide HighMark Bond Fund; Institutional Service Class Shares	0,9662	0,88	0,000531	0,000733
Active Bond Mutual Fund	ICON Funds: ICON Bond Fund; Class I Shares	1,3202	0,77	0,000310	0,000315
Active Bond Mutual Fund	Ivy Funds: Ivy Bond Fund; Class A Shares	1,0475	0,91	-0,001493	-0,001612
Active Bond Mutual Fund	John Hancock Funds II: Investment Quality Bond Fund; Class NAV Shares	1,2110	0,88	0,000405	0,000598
Active Bond Mutual Fund	LKCM Funds: LKCM Aquinas Fixed Income Fund	1,2173	0,76	0,000606	0,000842
Active Bond Mutual Fund	Lebenthal Funds, Inc: Lebenthal Taxable Municipal Bond Fund	1,7551	0,90	-0,001246	-0,000333
Active Bond Mutual Fund	Legg Mason Partners Income Trust: Western Asset Corporate Bond Fund; Class B Shares	2,6095	0,86	-0,002689	-0,00329
Active Bond Mutual Fund	Legg Mason Income Trust, Inc: Legg Mason Investment Grade Income Portfolio; Primary Class Shares	3,4000	0,79	-0,002103	-0,00232
Active Bond Mutual Fund	Loomis Sayles Funds II: Natixis Loomis Sayles Investment Grade Bond Fund; Class Y Shares	1,8806	0,74	0,001220	0,000568
Active Bond Mutual Fund	Loomis Sayles Funds I: Loomis Sayles Bond Fund; Institutional Class	2,3968	0,58	0,001661	0,000221
Active Bond Mutual Fund	Lord Abbett Investment Trust: Lord Abbett Income Fund; Class A Shares	1,6297	0,79	0,000169	-0,00024
Active Bond Mutual Fund	MFS Series Trust IX: MFS Bond Fund; Class A Shares	1,4381	0,88	0,000555	0,000291
Active Bond Mutual Fund	MFS Series Trust IX: MFS Research Bond Fund; Class I Shares	1,1226	0,90	0,000517	0,000552
Active Bond Mutual Fund	Wilmington Funds: Wilmington Broad Market Bond Fund; Institutional Class	1,0115	0,84	0,000132	0,000376
Active Bond Mutual Fund	MTB Group of Funds: MTB Income Fund; Class B Shares	1,1364	0,83	-0,000522	-0,000304
Active Bond Mutual Fund	Madison Funds: Madison High Quality Bond Fund; Class Y Shares	0,6727	0,64	0,000166	0,000431
Active Bond Mutual Fund	AMG Funds III: AMG Managers Bond Fund; Service Class Shares	1,8587	0,86	-0,000008	-0,000509
Active Bond Mutual Fund	Managers Trust II: Total Return Bond Fund	1,2058	0,96	-0,001339	-0,000589
Active Bond Mutual Fund	AMG Funds II: AMG GW&K Enhanced Core Bond Fund; Institutional Shares	1,5477	0,83	0,000229	-0,000315
Active Bond Mutual Fund	Managers Trust II: Managers AMG GW&K Fixed Income Fund; Class B Shares	1,8128	0,83	-0,000189	-0,000555
Active Bond Mutual Fund	Maxim Series Fund, Inc: Maxim Federated Bond Portfolio	1,2686	0,93	-0,001632	-0,000986
Active Bond Mutual Fund	Great West Fund, Inc: Great West Loomis Sayles Bond Fund; Initial Class Shares	2,6099	0,58	0,003053	0,001916
Active Bond Mutual Fund	McMorgan Funds: McMorgan Fixed Income Fund; McMorgan Funds Shares	1,3896	0,96	-0,001028	-0,000779
Active Bond Mutual Fund	PNC Funds, Inc: Total Return Bond Fund; Institutional Shares	1,1908	0,80	0,001178	0,001377
Active Bond Mutual Fund	Morgan Stanley Institutional Fund Trust: Core Plus Fixed Income Portfolio; Class I Shares	1,1287	0,54	0,000509	0,000349
Active Bond Mutual Fund	Morgan Stanley Institutional Fund Trust: Long Duration Fixed Income Portfolio; Class I Shares	3,0009	0,53	0,002032	0,002139
Active Bond Mutual Fund	Morgan Stanley Institutional Fund Trust: Corporate Bond Portfolio; Class I Shares	1,2589	0,56	0,000324	0,00026
Active Bond Mutual Fund	Morgan Stanley Income Trust: Class B Shares	1,8407	0,93	-0,002060	-0,002166
Active Bond Mutual Fund	Munder Series Trust: Munder Bond Fund; Class Y Shares	1,0823	0,83	-0,000400	-0,000175
Active Bond Mutual Fund	Mutual of America Institutional Funds, Inc: Bond Fund	0,9281	0,67	0,000605	0,000952
Active Bond Mutual Fund	JP Morgan Mutual Fund Select Group: JPMorgan Bond Fund II; Select Shares	1,4578	0,93	-0,001777	-0,001924
Active Bond Mutual Fund	Nationwide Mutual Funds: Nationwide Bond Fund; Institutional Service Class Shares	1,0793	0,80	0,000673	0,000874
Active Bond Mutual Fund	Nationwide Mutual Funds: Nationwide Enhanced Income Fund; Institutional Class Shares	0,2232	0,44	0,000137	0,000144
Active Bond Mutual Fund	Neuberger Berman Income Funds: Neuberger Berman Core Bond Fund; Institutional Class Shares	1,1075	0,83	0,000328	0,000343
Active Bond Mutual Fund	New Covenant Funds: New Covenant Income Fund	1,0955	0,63	-0,000662	-0,000639
Active Bond Mutual Fund	Northern Funds: Fixed Income Fund	0,9786	0,77	0,000352	0,000577
Active Bond Mutual Fund	Northern Funds: Core Bond Fund	0,9885	0,78	0,000467	0,000775
Active Bond Mutual Fund	Northern Institutional Funds: Bond Portfolio; Class A Shares	1,0407	0,74	0,001377	0,001606
Active Bond Mutual Fund	Saturna Investment Trust: Sextant Bond Income Fund	1,4233	0,77	-0,000295	0,000321
Active Bond Mutual Fund	Old Westbury Funds, Inc: Old Westbury Fixed Income Fund	0,8682	0,47	0,000434	0,000939
Active Bond Mutual Fund	1838 Investment Advisors Funds: 1838 Fixed Income Fund	1,0811	0,95	-0,000825	-0,001068
Active Bond Mutual Fund	Oppenheimer Integrity Funds: Oppenheimer Core Bond Fund; Class A Shares	2,1822	0,31	-0,001771	-0,002267
Active Bond Mutual Fund	Pacific Capital Funds: High Grade Core Fixed Income Fund; Class B Shares	1,2408	0,67	-0,000350	0,000266
Active Bond Mutual Fund	Aberdeen Funds: Aberdeen Core Fixed Income Fund; Institutional Class Shares	1,1025	0,69	0,000695	0,001133
Active Bond Mutual Fund	Pacific Life Funds: PL Managed Bond Fund; Class A Shares	1,5288	0,65	0,001543	0,00178
Active Bond Mutual Fund	Parnassus Income Funds: Parnassus Fixed Income Fund	0,8822	0,62	0,000682	0,000964
Active Bond Mutual Fund	Permanent Portfolio Family of Funds, Inc: Versatile Bond Portfolio	0,8793	0,17	0,000305	0,000139
Active Bond Mutual Fund	Phoenix Insight Funds Trust: Phoenix Insight Bond Fund; Class I Shares	1,0437	0,93	-0,000898	-0,001146
Active Bond Mutual Fund	Virtus Institutional Trust: Virtus Institutional Bond Fund; Class X Shares	1,3832	0,71	0,000621	0,000625
Active Bond Mutual Fund	Virtus Opportunities Trust: Virtus Core Bond Fund; Class A Shares	1,3248	0,74	-0,000564	-0,00042
Active Bond Mutual Fund	PIMCO Funds: PIMCO Investment Grade Corporate Bond Fund; Institutional Class Shares	1,6004	0,86	0,001422	0,001259
Active Bond Mutual Fund	PIMCO Funds: PIMCO Extended Duration Fund; Institutional Class Shares	6,1272	0,18	0,002110	0,005258
Active Bond Mutual Fund	PIMCO Funds: PIMCO Long Duration Total Return Fund; Institutional Class Shares	2,6154	0,66	0,000832	0,001606
Active Bond Mutual Fund	Pioneer Bond Fund; Class A Shares	1,0011	0,85	0,001036	0,001001
Active Bond Mutual Fund	Preferred Group of Mutual Funds: Preferred Fixed Income Fund	1,2892	0,94	-0,000003	-0,000274
Active Bond Mutual Fund	T Rowe Price Corporate Income Fund, Inc	1,6363	0,95	0,000093	-0,000109
Active Bond Mutual Fund	Principal Investors Fund, Inc: High Quality Long-Term Bond Fund; Class B Shares	1,7332	0,95	-0,002203	-0,001192
Active Bond Mutual Fund	Principal Funds, Inc: Preferred Securities Fund; Institutional Class Shares	3,0815	0,42	-0,000265	-0,001738
Active Bond Mutual Fund	Principal Funds, Inc: Income Fund; Class A Shares	1,2170	0,93	0,000565	0,000477
Active Bond Mutual Fund	Principal Bond Fund, Inc: Class A Shares	1,1955	0,95	-0,000743	-0,000563
Active Bond Mutual Fund	Putnam Income Fund; Class A Shares	1,7622	0,42	0,000486	0,000269
Active Bond Mutual Fund	Quaker Investment Trust: Quaker Fixed Income Fund; Class A Shares	0,8685	0,67	-0,001434	-0,001715
Active Bond Mutual Fund	Columbia Funds Series Trust II: Columbia Diversified Bond Fund; Class A Shares	1,0917	0,75	0,000769	0,000739
Active Bond Mutual Fund	T Rowe Price New Income Fund, Inc	0,9922	0,88	0,000527	0,000697
Active Bond Mutual Fund	Russell Investment Company: Russell Investment Grade Bond Fund; Class I Shares	1,0644	0,84	0,000530	0,000703
Active Bond Mutual Fund	Russell Investment Company: Russell Strategic Bond Fund; Class I Shares	1,1462	0,80	0,000749	0,000741
Active Bond Mutual Fund	Russell Investment Company: Multistrategy Bond Fund; Class S Shares	1,0056	0,90	-0,000078	-0,000374
Active Bond Mutual Fund	Russell Investment Company: Diversified Bond Fund; Class S Shares	1,0553	0,94	-0,000636	-0,000676
Active Bond Mutual Fund	STI Classic Funds: High Quality Bond Fund; Class I Shares	0,7196	0,94	-0,001036	-0,001177
Active Bond Mutual Fund	RidgeWorth Funds: Conservative Allocation Strategy Fund; Class B Shares	1,4367	0,53	0,000936	0,000854
Active Bond Mutual Fund	RidgeWorth Funds: Corporate Bond Fund; Class I Shares	1,3263	0,66	0,001093	0,000971
Active Bond Mutual Fund	RidgeWorth Funds: Total Return Bond Fund; Class I Shares	0,9962	0,67	0,000797	0,001214
Active Bond Mutual Fund	SSgA Funds: SSgA Bond Market Fund; Institutional Class Shares	1,2022	0,59	-0,000477	-0,000348
Active Bond Mutual Fund	Schwartz Investment Trust: Ave Maria Bond Fund	0,9415	0,49	0,001045	0,000641
Active Bond Mutual Fund	Guggenheim Funds Trust: Guggenheim Investment Grade Bond Fund; Class A Shares	1,0256	0,64	0,000205	0,000263

Active Bond Mutual Fund	Seligman Core Fixed Income Fund, Inc; Class A Shares	1,3022	0,84	-0,000823	-0,000621
Active Bond Mutual Fund	Sentinel Group Funds, Inc: Sentinel Bond Fund; Class A Shares	1,3090	0,90	-0,000093	-0,0000817
Active Bond Mutual Fund	STAAR Investment Trust: Short Term Bond Fund	0,6317	0,37	-0,001002	-0,000819
Active Bond Mutual Fund	State Farm Mutual Fund Trust: State Farm Bond Fund; Legacy Class A Shares	1,0709	0,74	0,000212	0,000634
Active Bond Mutual Fund	State Street Research Institutional Funds: State Street Research Core Fixed Income Fund; Class IV Shares	1,2955	0,96	-0,001081	-0,001026
Active Bond Mutual Fund	Strategic Partners Mutual Funds, Inc: Strategic Partners Bond Fund; Class M Shares	1,2360	0,92	-0,000746	-0,000921
Active Bond Mutual Fund	Strong Income Funds, Inc: Strong Corporate Income Fund; Investor Class Shares	1,3668	0,98	-0,000497	-0,0000605
Active Bond Mutual Fund	Strategic Partners Style Specific Funds: Strategic Partners Total Return Bond Fund; Class B Shares	1,0854	0,91	-0,000634	-0,001144
Active Bond Mutual Fund	Summit Mutual Funds, Inc: Apex Bond Fund; Class I Shares	1,5064	0,79	-0,001378	-0,001454
Active Bond Mutual Fund	SunAmerica Income Funds: SunAmerica Core Bond Fund; Class A Shares	1,1738	0,95	-0,000656	-0,000597
Active Bond Mutual Fund	TCW Funds, Inc: TCW Core Fixed Income Fund; Class I Shares	0,9768	0,74	0,001153	0,001411
Active Bond Mutual Fund	Tamarack Funds Trust: Tamarack Quality Fixed Income Fund; Class I Shares	1,1543	0,59	-0,001397	-0,001088
Active Bond Mutual Fund	Target Portfolio Trust: Target Total Return Bond Portfolio; Class T Shares	1,2649	0,75	0,001173	0,001362
Active Bond Mutual Fund	Thrivent Mutual Funds: Thrivent Income Fund; Class A Shares	1,4101	0,87	-0,000045	-0,000319
Active Bond Mutual Fund	Timothy Plan: Timothy Plan Fixed-Income Fund; Class A Shares	1,0901	0,75	-0,000407	-0,0000123
Active Bond Mutual Fund	Touchstone Funds Group Trust: Touchstone Pitcairn Taxable Bond Fund; Class A Shares	1,2315	0,94	-0,000487	-0,000543
Active Bond Mutual Fund	Transamerica Investors, Inc: Transamerica Premier Bond Fund; Investor Shares	1,6108	0,73	0,000249	-0,002337
Active Bond Mutual Fund	Transamerica Funds: Transamerica Flexible Income; Class A Shares	1,4260	0,60	0,000289	-0,000185
Active Bond Mutual Fund	Transamerica Funds: Transamerica Bond; Class I2 Shares	2,4440	0,69	0,000600	-0,000341
Active Bond Mutual Fund	UBS Funds: UBS Core Plus Bond Fund; Class P Shares	1,0959	0,64	-0,000410	-0,000279
Active Bond Mutual Fund	USAA Mutual Funds Trust: Income Fund; Fund Class Shares	1,1061	0,85	0,000384	0,000497
Active Bond Mutual Fund	VALIC Company I: Capital Conservation Fund	0,9951	0,81	0,000281	0,00038
Active Bond Mutual Fund	VALIC Company II: Core Bond Fund	1,1181	0,91	0,000376	0,000369
Active Bond Mutual Fund	AIM Investment Securities Funds (Invesco Investment Securities Funds): Invesco Corporate Bond Fund; CI A Shs	1,5825	0,93	0,000027	-0,000219
Active Bond Mutual Fund	Vanguard Fixed Income Securities Funds: Vanguard Long-Term Investment-Grade Fund; Investor Shares	2,7042	0,81	-0,000600	0,0000896
Active Bond Mutual Fund	WB Capital Mutual Funds, Inc: WB Capital Bond Fund	1,1719	0,82	0,000266	0,000439
Active Bond Mutual Fund	Waddell & Reed Advisors Funds: Waddell & Reed Advisors Bond Fund; Class A Shares	0,9769	0,76	0,000043	0,000395
Active Bond Mutual Fund	Wells Fargo Funds Trust: Income Fund; Class A Shares	1,3203	0,93	-0,001160	-0,0000838
Active Bond Mutual Fund	Wells Fargo Funds Trust: Wells Fargo Advantage Corporate Bond Fund; Investor Class Shares	1,4478	0,92	0,000876	0,000737
Active Bond Mutual Fund	WesMark Funds: WesMark Government Bond Fund	0,7107	0,43	0,000259	0,000566
Active Bond Mutual Fund	World Funds, Inc: CSI Fixed Income Fund	1,4597	0,90	-0,003719	-0,001924
Active Bond Mutual Fund	Wright Managed Income Trust: Wright Total Return Bond Fund	1,0733	0,84	0,000042	0,000305
Active Bond Mutual Fund	BlackRock Funds II: BlackRock Investment Grade Bond Portfolio; BlackRock Shares	2,3484	0,57	0,000979	0,001674
Active Bond Mutual Fund	Northern Lights Fund Trust: Pacific Financial Strategic Conservative Fund; Institutional Class Shares	0,8458	0,44	-0,000411	-0,000322
Active Bond Mutual Fund	Trust for Professional Managers: PMC Core Fixed Income Fund	1,0484	0,76	0,001029	0,001127
Active Bond Mutual Fund	Hartford Series Fund, Inc: American Funds Bond HLS Fund; Class IB	1,3789	0,84	-0,001133	-0,00129
Active Bond Mutual Fund	JPMorgan Trust I: JPMorgan Total Return Fund; Select Class Shares	1,1519	0,77	0,000519	0,000481
Active Bond Mutual Fund	Principal Variable Contracts Funds, Inc: Income Account; Class 1 Shares	1,0622	0,92	0,001301	0,001297
Active Bond Mutual Fund	Ohio National Fund, Inc: Bond Portfolio	1,4536	0,91	-0,000496	-0,00045
Active Bond Mutual Fund	Metropolitan Series Fund, Inc: BlackRock Bond Income Portfolio; Class A Shares	1,0069	0,76	0,000689	0,000947
Active Bond Mutual Fund	Thrivent Series Fund, Inc: Thrivent Income Portfolio	1,4865	0,86	0,000252	0,0000276
Active Bond Mutual Fund	AIM Variable Insurance Funds (Invesco Variable Insurance Funds): Invesco VI Diversified Income Fd; Srs I Shs	1,5680	0,81	-0,000581	-0,000478
Active Bond Mutual Fund	Lincoln Variable Insurance Products Trust: LVIP Delaware Bond Fund; Standard Class Shares	1,0721	0,86	0,000717	0,000887
Active Bond Mutual Fund	BlackRock Variable Series Funds, Inc: BlackRock Total Return VI Fund; Class I Common Stock Shares	1,2545	0,66	0,000418	0,000672
Active Bond Mutual Fund	BlackRock Series Fund, Inc: BlackRock Total Return Portfolio	1,1417	0,73	0,000611	0,000873
Active Bond Mutual Fund	MainStay VP Funds Trust: MainStay VP Bond Portfolio; Initial Class Shares	1,0187	0,62	0,000168	0,000434
Active Bond Mutual Fund	Northwestern Mutual Series Fund, Inc: Select Bond Portfolio	0,9075	0,80	0,000532	0,000781
Active Bond Mutual Fund	Oppenheimer Variable Account Funds: Oppenheimer Core Bond Fund/VA; Non-Service Shares	2,6867	0,18	-0,002037	-0,001746
Active Bond Mutual Fund	Penn Series Funds, Inc: Quality Bond Fund	0,9588	0,61	0,000605	0,001118
Active Bond Mutual Fund	Putnam Variable Trust: Putnam VT Income Fund; Class IA Shares	2,2070	0,27	0,001342	0,001605
Active Bond Mutual Fund	Pioneer Variable Contracts Trust: Pioneer Bond VCT Portfolio; Class I Shares	0,8850	0,88	0,001445	0,001406
Active Bond Mutual Fund	Deutsche Variable Series I: Deutsche Bond VIP; Class A Shares	1,2696	0,52	-0,000659	-0,000415
Active Bond Mutual Fund	Ivy Funds Variable Insurance Portfolios: Ivy Funds VIP Bond	0,9361	0,77	0,000147	0,000415
Active Bond Mutual Fund	Transamerica Series Trust: Transamerica JPMorgan Core Bond VP; Initial Class Shares	0,8742	0,64	0,001172	0,001502
Active Bond Mutual Fund	Dreyfus Variable Investment Fund: Quality Bond Portfolio; Initial Shares	1,0872	0,87	-0,000173	-0,0000262
Active Bond Mutual Fund	First Investors Life Series Funds: Investment Grade Fund	1,3491	0,94	0,000256	0,000292
Active Bond Mutual Fund	AllianceBernstein Variable Products Series Fund, Inc: AllianceBernstein VPS Intermediate Bond Port; CI A Sh	1,1928	0,83	0,000355	0,000472
Active Bond Mutual Fund	EquiTrust Variable Insurance Series Fund: High Grade Bond Portfolio; Initial Class Shares	1,0225	0,72	0,003496	0,003476
Active Bond Mutual Fund	OneAmerica Funds, Inc: OneAmerica Investment Grade Bond Portfolio; Class O Shares	1,3048	0,62	0,000241	0,000539
Active Bond Mutual Fund	American Funds Insurance Series: Bond Fund; Class 2 Shares	1,1196	0,83	-0,000545	-0,000416
Active Bond Mutual Fund	Russell Investment Funds: Core Bond Fund	1,0563	0,80	0,000713	0,000848
Active Bond Mutual Fund	Morgan Stanley Variable Investment Series: Income Plus Portfolio; Class Y Shares	1,6803	0,91	-0,000018	-0,000424
Active Bond Mutual Fund	MFS Variable Insurance Trust: MFS Research Bond Series; Service Class Shares	1,0294	0,92	0,000352	0,00038
Active Bond Mutual Fund	MFS Variable Insurance Trust II: MFS Bond Portfolio; Service Class Shares	1,4933	0,83	0,000422	0,000168
Active Bond Mutual Fund	Calvert Variable Series, Inc: Calvert VP Income Portfolio	1,5407	0,65	-0,000224	0,0000723
Active Bond Mutual Fund	SunAmerica Series Trust: Corporate Bond Portfolio; Class 3 Shares	1,7713	0,73	-0,000298	-0,000528
Active Bond Mutual Fund	Seasons Series Trust: Diversified Fixed Income Portfolio; Class 3 Shares	0,9986	0,80	-0,000197	0,000003
Active Bond Mutual Fund	Sentinel Variable Products Trust: Sentinel Variable Products Bond Fund	0,9976	0,76	0,000140	0,000166
Active Bond Mutual Fund	Nationwide Variable Insurance Trust: American Funds NVIT Bond Fund; Class II Shares	1,1161	0,82	-0,000846	-0,00073
Active Bond Mutual Fund	ING Investors Trust: ING Bond Portfolio	1,3465	0,80	-0,000636	-0,000554
Active Bond Mutual Fund	Advanced Series Trust: AST Investment Grade Bond Portfolio	1,4537	0,65	0,001361	0,001797
Active Bond Mutual Fund	Met Investors Series Trust: JPMorgan Core Bond Portfolio; Class B Shares	1,0977	0,79	-0,000638	-0,000473
Active Bond Mutual Fund	Nationwide Variable Insurance Trust: NVIT Core Plus Bond Fund; Class Y Shares	1,0866	0,87	0,000759	0,000586
Active Bond Mutual Fund	Payden & Rygel Investment Group: Payden Corporate Bond Fund; Investor Class Shares	1,2977	0,87	0,000207	-0,000242
Active Bond Mutual Fund	CIGNA Funds Group: TimesSquare Core Plus Bond Fund; Institutional Class	1,2270	0,96	0,001176	0,001176

Active Bond Mutual Fund	Loomis Sayles Funds II: Natixis Loomis Sayles Investment Grade Bond Fund; Class J Shares	2,2384	0,80	0,001362	0,001126
Active Bond Mutual Fund	Coventry Group: Signal Income Fund; Class I Shares	0,9243	0,91	-0,001222	-0,000868
Active Bond Mutual Fund	Eaton Vance Special Investment Trust: Eaton Vance Investment Grade Income Fund; Class I Shares	0,9868	0,71	0,000841	0,001024
Active Bond Mutual Fund	Nuveen Investment Trust V: Nuveen Preferred Securities Fund; Class I Shares	4,0192	0,37	-0,000571	-0,001847
Active Bond Mutual Fund	MML Series Investment Fund II: MML Managed Bond Fund; Service Class Shares	0,8013	0,87	-0,000079	0,0000867
Active Bond Mutual Fund	Cohen & Steers Preferred Securities and Income Fund, Inc; Class I Shares	1,4537	0,47	0,003327	0,00202
Active Bond Mutual Fund	Fidelity Salem Street Trust: Fidelity Advisor Corporate Bond Fund; Class A Shares	1,1960	0,95	-0,000052	-0,0000935
Active Bond Mutual Fund	Fidelity Salem Street Trust: Fidelity Corporate Bond Fund	1,1962	0,96	0,000219	0,00018
Active Bond Mutual Fund	HC Capital Trust: US Corporate Fixed Income Securities Portfolio; HC Strategic Class Shares	1,2050	0,92	-0,000746	-0,000613
Active Bond Mutual Fund	BlackRock Funds III: BlackRock CoreAlpha Bond Fund; Institutional Shares	0,8441	0,79	0,000084	0,000368
Active Bond Mutual Fund	First Trust Series Fund: First Trust Preferred Securities and Income Fund; Class A Shares	1,2269	0,34	0,001783	0,001121
Active Bond Mutual Fund	Sterling Capital Funds: Sterling Capital Corporate Fund; Institutional Class Shares	0,9669	0,86	0,000096	0,000158
Active Bond Mutual Fund	Sterling Capital Funds: Sterling Capital Securitized Opportunities Fund; Institutional Class Shares	0,5875	0,62	0,000705	0,000889
Active Bond Mutual Fund	Manning & Napier Fund, Inc: Core Plus Bond Series; Class S Shares	1,1743	0,52	-0,000673	-0,000878
Active Bond Mutual Fund	Aston Funds: ASTON/DoubleLine Core Plus Fixed Income Fund; Class I Shares	0,8496	0,72	0,001157	0,001261
Active Bond Mutual Fund	Schroder Series Trust: Schroder Broad Tax-Aware Value Bond Fund; Investor Class Shares	1,4673	0,62	0,000736	0,001251
Active Bond Mutual Fund	Guggenheim Funds Trust: Guggenheim Total Return Bond Fund; Institutional Class Shares	0,7685	0,74	0,002333	0,002277
Active Bond Mutual Fund	Guggenheim Funds Trust: Guggenheim Total Return Bond Fund; Class A Shares	0,7716	0,74	0,002047	0,001984
Active Bond Mutual Fund	BNY Mellon Funds Trust: BNY Mellon Corporate Bond Fund; Class M Shares	0,8503	0,94	0,000526	0,000499
Active Bond Mutual Fund	Securian Funds Trust: Advantus Bond Fund; Class 1 Shares	1,0504	0,53	0,001139	0,001261
Active Bond Mutual Fund	AllianceBernstein Corporate Shares: AllianceBernstein Corporate Income Shares	1,1714	0,99	-0,000090	-0,000032
Passive Bond Mutual Fund	Capstone Social Ethics & Religious Values Fund: Bond Fund; Class A Shares	1,7593	0,96	-0,003165	-0,001961
Passive Bond Mutual Fund	Deutsche Institutional Funds: Deutsche US Bond Index Fund; Institutional Class Shares	0,9927	0,70	0,000407	0,000877
Passive Bond Mutual Fund	Loomis Sayles Funds I: Loomis Sayles Benchmark Core Bond Fund; Institutional Shares	1,2381	0,96	-0,000888	-0,000726
Passive Bond Mutual Fund	Nationwide Mutual Funds: Nationwide Bond Index Fund; Institutional Class Shares	0,9803	0,72	0,000375	0,000767
Passive Bond Mutual Fund	Vanguard Variable Insurance Fund: Total Bond Market Index Portfolio; Investor Share Class	1,0362	-0,01	0,003945	0,004392
Passive Bond Mutual Fund	Metropolitan Series Fund, Inc: Barclays Aggregate Bond Index Portfolio; Class B Shares	0,9584	0,68	0,000044	0,00034
Passive Bond Mutual Fund	Nationwide Variable Insurance Trust: NVIT Bond Index Fund; Class Y Shares	0,9391	0,70	0,000294	0,000595
Passive Bond Mutual Fund	Lincoln Variable Insurance Products Trust: LVIP SSgA Bond Index Fund; Service Class Shares	0,9387	0,65	0,000030	0,000321
Passive Bond Mutual Fund	John Hancock Variable Insurance Trust: Total Bond Market Trust A; Series NAV Shares	1,0863	0,54	0,002239	0,002434
Passive Bond Mutual Fund	Nationwide Mutual Funds: Nationwide Bond Index Fund; Class C Shares	0,9159	0,65	-0,000158	0,00011
Passive Bond Mutual Fund	Metropolitan Series Fund, Inc: Barclays Aggregate Bond Index Portfolio; Class G Shares	0,8320	0,73	-0,000443	0,0000603
Passive Bond Mutual Fund	Vanguard Scottsdale Funds: Vanguard Long-Term Corporate Bond Index Fund; Institutional Class Shares	2,2979	0,88	-0,001536	-0,00118
Passive Bond Mutual Fund	Eagle Series Trust: Eagle Investment Grade Bond Fund; Class A Shares	2,3161	0,88	-0,001456	-0,001155
Passive Bond Mutual Fund	Vanguard Scottsdale Funds: Vanguard Long-Term Corporate Bond Index Fund; Admiral Class Shares	2,3672	0,79	-0,001721	-0,000162
Passive Bond Mutual Fund	Vanguard Bond Index Funds: Vanguard Long-Term Bond Index Fund; Institutional Plus Class Shares	1,9288	0,25	0,000485	-0,00131
Passive ETF	iShares Trust: iShares iBoxx \$ Investment Grade Corporate Bond ETF	1,9034	0,93	-0,000540	-0,000526
Passive ETF	PowerShares Exchange-Traded Fund Trust II: PowerShares Preferred Portfolio	4,6919	0,23	-0,001792	-0,002876
Passive ETF	Claymore Exchange-Traded Fund Trust: Guggenheim Enhanced Core Bond ETF	1,0990	0,60	0,000741	0,001271
Passive ETF	SPDR Series Trust: SPDR Wells Fargo Preferred Stock ETF	1,7096	0,26	0,001889	0,000734
Passive ETF	Vanguard Scottsdale Funds: Vanguard Long-Term Corporate Bond Index Fund; ETF Class Shares	2,2852	0,88	-0,001687	-0,001291
Passive ETF	iShares Trust: iShares 10+ Year Credit Bond ETF	2,1639	0,90	-0,001796	-0,00175
Passive ETF	Claymore Exchange-Traded Fund Trust: Guggenheim BulletShares 2016 Corporate Bond ETF	0,7408	0,39	0,001007	0,000617
Passive ETF	SPDR Series Trust: SPDR Barclays Issuer Scored Corporate Bond ETF	1,0605	0,97	-0,000146	0,0000316
Passive ETF	ProShares Trust: ProShares Ultra Investment Grade Corporate	3,1534	0,95	-0,002945	-0,003441
Passive ETF	Market Vectors ETF Trust: Market Vectors-Investment Grade Floating Rate ETF	0,4459	0,04	0,000339	0,0000585
Passive ETF	Schwab Strategic Trust: Schwab US Aggregate Bond ETF	0,8091	0,74	-0,000137	0,000205
Passive ETF	iShares Trust: iShares Aaa - A Rated Corporate Bond ETF	1,0677	0,97	-0,000464	-0,000341
Passive ETF	iShares Trust: iShares B - Ca Rated Corporate Bond ETF	1,9288	0,25	0,000485	-0,00131
Passive ETF	SPDR Series Trust: SPDR BofA Merrill Lynch Crossover Corporate Bond ETF	1,1534	0,77	0,000797	-0,000202