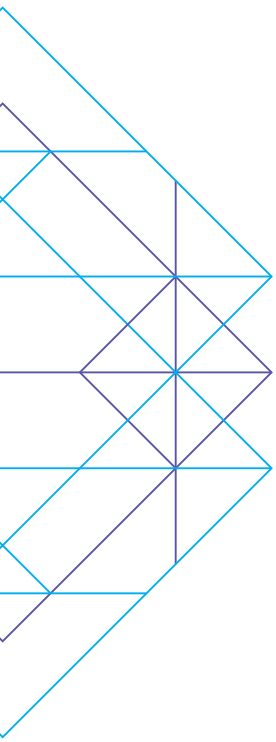
Alternative Thinking I 4Q18

The Illusion of Active Fixed Income Alpha



Executive Summary

Do fixed income (FI) managers generate alpha? In this Alternative Thinking, we take a deep dive into the determinants of excess of benchmark returns for a broad set of popular active FI categories (Global Aggregate, U.S. Aggregate, and Global Unconstrained Bond). Our analysis finds that passive exposures to traditional risk premia – primarily term risk, corporate credit risk, emerging markets risk, and volatility risk – explain a majority of FI manager active returns. There is largely no outperformance at the category level after controlling for exposures to well-known traditional risk premia. The implication for asset owners is clear: traditional discretionary active FI strategies offer little in the way of true alpha.

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Introduction

Fixed income (FI) is typically one of the main holdings in an investor's strategic allocation and represents an important lever to diversify equity risks. As active FI managers have tended to deliver returns in excess of their benchmarks over the past 20 years,[1] some have suggested active investing in FI may somehow be more advantageous than in other asset classes. Reasons cited include a perception of greater inefficiency in FI markets (e.g., non-profit seeking actors), ad hoc benchmark rules, or the myriad levers FI managers can pull to generate returns.

FI managers can potentially take active risk across many dimensions: (i) security selection within government bonds, securitized assets and corporate bonds included in the benchmark, (ii) asset allocation across FI sectors (e.g., duration timing or sector rotation toward or away from the credit/spread risk embedded in corporate bonds or the prepayment risk embedded in asset backed securities), and (iii) out-of-benchmark tilts into riskier high yield corporate bonds, emerging market debt and/or non-agency mortgages. Given the multitude of levers, it can be challenging to understand the determinants of any excess of benchmark performance (or "active returns," hereafter). The aim of this study is to understand the determinants of active returns, with a specific focus on whether FI managers — both in aggregate and individually — have "alpha," which we define as the ability to generate positive active returns after adjusting for passive exposures to traditional risk premia.

We focus on the active performance of FI managers across three broad categories: (i) U.S. Aggregate benchmarked managers (this category includes traditional Core as well as Core Plus managers); (ii) Global Aggregate benchmarked managers; and (iii) Global Unconstrained Bond managers. This last group typically does not have a stated benchmark and instead is benchmarked relative to cash (e.g., LIBOR). We focus on these three categories both because of their preeminence within the active FI manager universe, as well as to achieve parsimony in our analysis. Our analysis covers 445 Core and Core Plus managers, 44 Global Aggregate managers, and 114 Global Unconstrained Bond managers. This sample covers 75%, 40%, and 68% percent of the assets under management across the three categories, respectively, as captured in the eVestment database.[2]

In the following sections, we first summarize active performance for the three categories of active FI managers. We find impressive active returns across categories over the past two decades. Next, we introduce a broad but economically intuitive set of traditional risk premia, including duration, corporate credit, emerging markets, and volatility risks, which we believe managers may harness to generate active returns. If active returns are to be of maximal benefit to an investor's portfolio, they

1 As evidenced by our analysis in Exhibit 1.
2 See notes below Exhibit 1 for details of how we filter the raw data.

should be diversifying to other well-known, and easily accessible, traditional risk premia.[3] Our analysis reveals, consistent with Mattu et al. (2016), traditional risk premia explain the vast majority of active returns across all three manager categories. Despite the initial perception active FI investing is easy, we find the alpha of FI managers is largely "illusory," as active returns are largely a repackaging of traditional risk premia. Having concluded that there is little evidence of alpha across major FI categories as a whole, we ask if there is any evidence of persistent manager skill *within* categories – i.e., are there some managers who are persistently better than others? And if so, do winning managers persistently outperform their peers because they provide greater alpha, or because they take larger exposures to traditional risk premia? Here, too, the evidence is fairly bleak: we see little evidence of persistent manager skill.

3 This is true in general of active management, as investors should be wary of paying active management fees for passive exposures (see Asness et al. 2015). As argued in our 2017 Alternative Thinking, however, passive exposure to traditional risk premia can be particularly nefarious in fixed income, as exposure to higher risk, higher yielding segments of the FI market can make a manager more highly correlated to equities and mitigate the diversification properties of an investment-grade fixed income allocation. Diversification does not eliminate the risk of experiencing investment losses.

Revisiting Manager Outperformance

Before we begin our empirical analysis, some caveats are in order. First, despite our (and data vendors') best-faith attempts to capture returns data from both live and defunct strategies, our sampling criteria, which requires a minimum of five years return history, may tilt our sample toward ex-post successful managers. To the detriment of our thesis, however, this should bias toward finding evidence of alpha and present overly rosy results.[4] Second, our empirical analysis includes explanatory variables that are tradable assets (e.g., corporate credit excess returns or emerging market excess returns), which we assume are costless to access. While this is reasonable for some of the very liquid traditional risk premia we examine (e.g., term risk, emerging currency risk, and volatility risk), it is arguably less appropriate for the riskier spectrum of traditional risk premia such as the credit risk premium embedded in high yield bonds, corporate loans, and emerging hard currency bonds. Thus, it is possible that excess of benchmark performance of active FI managers may be a cost effective way to procure exposure to more expensive traditional risk premia. We say "may," as it will all depend on the fee of the active FI manager relative to the fee for the respective traditional risk premia. All subsequent analysis is on gross of fee returns.

Exhibit 1 reports summary statistics on the distribution of active returns, tracking errors, and information ratios across managers within each of the three FI categories over the last 20 years. Active returns and information ratios are positive within each category. Average active returns range from 0.5% for U.S. Aggregate benchmarked managers to 3.3% for Global Unconstrained Bond, with average information ratios varying between 0.35 and 0.68. The statistical and economic significance of active returns are evident when we visually examine probability histograms for each category. To make inferences easier, we have super-imposed a normal distribution on top of these frequency histograms, with a zero average value and a variance equal to the variance of active returns across managers in that category. This normal distribution is roughly the distribution of active returns we would expect to see in a world in which expected average active returns are zero across managers. It is clear the empirical distributions are shifted to the right, with the majority of FI managers having positive active returns. A t-statistic provides a formal statistical test as to whether average active returns within each category are statistically different from zero. For all three categories, t-statistics are well in excess of two, indicating for each category we can soundly reject the hypothesis that average returns are zero. At first glance the story is clear: active FI managers beat their benchmarks. This is the genesis of the statement that active FI management is easy. Evaluating the veracity of this claim is the focus of the remainder of this paper.

4 Even without our sampling criteria, institutional manager databases like eVestment may be more subject to backfill bias and other voluntary reporting biases than mutual fund databases, which possibly results in overstated average manager performance.

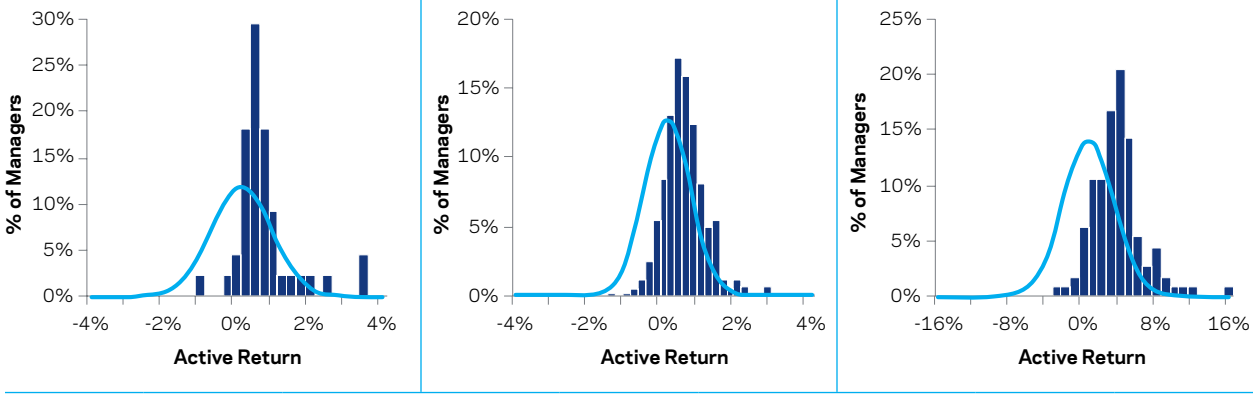
Exhibit 1
Positive and Significant Active Returns Across Categories (November 1997 – June 2018)

Descriptive Sample Statistics Across Managers

	Global Aggregate			U.S. Aggregate			Global Unconstrained		
	Active Return	Tracking Error	Info. Ratio	Active Return	Tracking Error	Info. Ratio	Active Return	Tracking Error	Info. Ratio
Mean	0.6%	1.8%	0.35	0.5%	1.4%	0.37	3.3%	7.2%	0.68
Standard Dev.	0.8%	0.7%	0.34	0.6%	0.7%	0.45	2.8%	7.7%	0.56
10th Percentile	0.0%	0.9%	0.00	-0.2%	0.6%	-0.17	0.0%	2.6%	0.00
90th Percentile	1.8%	2.8%	0.86	1.2%	2.3%	0.83	6.8%	12.5%	1.42

Distribution of Annualized Active Returns Across Managers

Global Aggregate			U.S. Aggregate			Global Unconstrained		
Mean	Standard Dev.	T-stat	Mean	Standard Dev.	T-stat	Mean	Standard Dev.	T-stat
0.61%	0.8%	**4.85**	0.47%	0.6%	**15.83**	3.30%	2.8%	**12.52**



Source: AQR, eVestment. The Global Aggregate and Global Unconstrained categories are as defined by eVestment, the U.S. Aggregate universe is a combination of the Core and Core-Plus categories as defined by eVestment. Each universe is then filtered to only use managers that have returns in USD, use an appropriate benchmark for the universe, and have at least five years of returns. Benchmarks are determined to mirror a category if the strategy's tracking error is less than the strategy's volatility. The inception date of each manager varies. All returns are gross of fees. Active returns are in excess of each manager's preferred benchmarks as provided by eVestment. Data from 11/1/1997 to 6/30/2018. Past performance is not a guarantee of future performance. Please see the final pages of this document for important disclosures.

Traditional Risk Premia

Our premise is positive active returns for FI managers are not necessarily indicative of true alpha. Yes, managers are, in aggregate, beating their benchmarks, but how much of the outperformance is due to skill in security selection or market timing, as opposed to simply passive replication of traditional risk premia? This is an important question for investors, since traditional risk premia are generally available for lower fees than active management, and since exposure to such premia can potentially jeopardize the diversification benefits of fixed income within a strategic allocation (the latter consideration was the focus of our previous Alternative Thinking, *The Illusion of Active Fixed Income Diversification*).

Exhibit 2 lists the eight traditional risk premia used in the remainder of the paper. The factors were chosen to be both broad and economically intuitive. We believe the general economic exposures FI managers can employ include levering up duration/interest rate exposures (proxied by U.S. Term, Global Term, Global Aggregate, and Inflation-Linkers)[5], systematically holding riskier credit (proxied by Corporate Credit, Emerging Market Debt, and Emerging Market Currencies) or selling volatility on rates (which can be done either directly by selling options, or indirectly by overweighting mortgage securities, which are short prepayment optionality, or other negatively convex assets).[6] There may be additional traditional risk premia employed by managers, but we will consider exposure to such premia alpha in our analysis, alongside returns from profitable security selection, sector rotation, etc.

The exhibit also reports basic statistical characteristics for the eight traditional risk premia, as well as their pairwise correlations. All eight risk premia were positively rewarded in this time period, with Sharpe ratios ranging from 0.17 (long emerging currencies vs. USD) to 1.03 (Global Aggregate index returns in excess of cash). Not surprisingly, there is strong commonality between U.S. Term, Global Term, Global Aggregate, and Inflation-Linkers; investment-grade rated bonds all share a strong common global component of risk-free rates. Similarly, we observe strong commonality between "risk" assets such as Corporate Credit, Emerging Market Debt and Emerging Currency premia, all of which exhibit non-trivial correlation to equities. Volatility Risk Premium appears to be a fairly independent risk premium as evidenced by the low correlation with the other risk premia.

5 Parsimony is an important consideration in our choice of risk premia for each category. For example, for U.S. Aggregate and Global Aggregate managers, we capture term premia cleanly using U.S. Treasuries and Global Treasuries, respectively. As the Global Unconstrained category is benchmark-agnostic, we use excess of cash returns on the Global Aggregate index as our proxy for term premia. Global Aggregate index returns are very highly correlated with Global Treasuries, but also contain exposure to global investment-grade corporates and global investment-grade securitized assets, both of which are presumably part of strategic allocations for Global Unconstrained managers. So using Global Aggregate index returns for Global Unconstrained managers parsimoniously captures multiple relevant premia, at the cost of a slightly less clean attribution of active returns into different sources of investment-grade risk. With a similar eye on parsimony, we only include global inflation-linked bonds for the Global Unconstrained category, as only within this highly heterogeneous set of managers do we see material loadings on real interest rate risk.

6 Brooks et al (2019) use FI implied volatility as an explanatory variable in explaining the performance of PIMCO Total Return Fund under Bill Gross.

Exhibit 2
Traditional Risk Premia Proxies

Description of Risk Premia

		Relevant Categories			
Risk Premia	Proxies	Global Aggregate	U.S. Aggregate	Global Unconstrained	Description
Term	U.S. Term		●		Bloomberg Barclays U.S. Treasury excess of cash returns*
Term	Global Term	●			Bloomberg Barclays Global Treasury Hedged excess of cash returns
Term	Global Aggregate			●	Bloomberg Barclays Global Aggregate Hedged excess of cash returns
Term	Inflation-Linkers			●	Bloomberg Barclays Global Aggregate Treasury Inflation-Linked Hedged excess of cash returns
Credit	Corporate Credit	●	●	●	50%/50% Bloomberg Barclays U.S. High Yield Corporate Bond Index return in excess of Duration-Matched Treasuries/ Credit Suisse Leveraged Loan Index in excess of 3m LIBOR
Credit	Emerging Debt	●	●	●	Bloomberg Barclays Emerging Market Debt (hard currency), duration-adjusted excess returns over U.S. Treasuries
Credit	Emerging Currency	●	●	●	Emerging Currencies are an equal-weighted basket of 24 emerging market currencies vs. USD[7]
Volatility	UST Implied Volatility	●	●	●	Delta-hedged straddles on 10y Treasury futures[8]

* "Excess of cash" returns here means excess of 3m Treasury bill return; Source: Bloomberg Barclays, Credit Suisse, AQR.

7 Full list of countries include: China, Venezuela, Chile, Colombia, Israel, Czech Republic, Argentina, Hungary, Brazil, India, Indonesia, South Africa, Russia, Malaysia, South Korea, Mexico, Bulgaria, Turkey, Thailand, Hong Kong, Philippines, Singapore, Poland, Taiwan.

8 To be precise, our implied volatility series is equal-weight 1st, 2nd month 10yr Treasury futures; 20% at-the-money straddles + 40% 35-day out-of-the-money strangles + 40% 25 day out-of-the-money strangles, all excess of cash.

Exhibit 2 (continued)

Traditional Risk Premia Proxies

Risk and Return Statistics (November 1997 to June 2018)

Factors	U.S. Term	Global Term	Global Aggregate	Inflation-Linkers	Corporate Credit	Emerging Debt	Emerging Currency	Volatility
Ann. Return	2.4%	2.7%	2.7%	3.8%	2.4%	3.9%	1.2%	3.9%
Ann. Vol.	4.2%	2.8%	2.7%	4.8%	7.6%	11.3%	6.7%	4.3%
Sharpe Ratio*	0.57	0.95	1.03	0.79	0.32	0.35	0.17	0.90
Skew	-0.01	0.05	-0.13	-0.45	-1.47	-3.44	-0.82	-1.67
Max Drawdown	-8.4%	-4.9%	-4.3%	-10.3%	-37.9%	-33.3%	-23.3%	-13.5%

* 3m Treasury bill return is our proxy for cash returns

Correlations between Risk Premia (November 1997 to June 2018)

	U.S. Term	Global Term	Global Aggregate	Inflation-Linkers	Corporate Credit	Emerging Debt	Emerging Currency	Volatility	S&P 500
U.S. Term	1								
Global Term	0.88	1							
Global Aggregate	0.87	0.95	1						
Inflation-Linkers	0.64	0.66	0.75	1					
Corporate Credit	-0.45	-0.37	-0.16	0.12	1				
Emerging Debt	-0.32	-0.27	-0.10	0.12	0.68	1			
Emerging Currency	-0.06	-0.08	0.06	0.25	0.47	0.58	1		
Volatility	0.11	0.15	0.25	0.26	0.23	0.23	0.12	1	
S&P 500	-0.31	-0.25	-0.11	0.08	0.61	0.66	0.57	0.17	1

Source: AQR; For illustrative purposes only and not representative of any portfolio that AQR currently manages. All returns are gross of fees. Past performance is not a guarantee of future performance. Please see the final pages of this document for description of proxies.

Is There Evidence of Alpha at the **Category** Level?

Across our selected FI categories, managers have on average beaten their benchmarks over the last 20 years. Having defined a set of traditional risk premia, we now ask whether any outperformance remains at the category level once we account for passive exposure to these premia — i.e., do the categories have positive alphas? Linear regression is our tool to decompose manager returns into the components driven by exposure to traditional risk premia, and the component that cannot be explained by traditional risk premia — alpha. The distribution of alphas across managers is our primary object of interest — after adjusting for exposure to traditional risk premia, do we still see outperformance? We additionally run regressions of equal-weighted portfolios across managers within each category onto the same set of explanatory variables to succinctly summarize the risk premia that managers are exposed to in aggregate. The analysis uses non-overlapping quarterly returns data for the period November 1997 through June 2018.[9]

We display results for equal-weighted portfolios in Exhibit 3. Traditional risk premia explain a large portion of the variation in active returns within each category (R^2 statistics, which measure the percentage of variance explained by explanatory factors, range from 61% for Global Aggregate managers to 90% for U.S. Aggregate managers). In particular, active returns on equal-weighted portfolios within each category tend to load strongly on both corporate credit and emerging currency exposure. For each category, alphas are neither economically nor statistically significant.[10] The regression-based attribution below reiterates this point by decomposing active returns into exposures to traditional risk premia and uncorrelated alpha. Across categories, after accounting for exposure to traditional premia, the residual alpha is very close to non-existent (between one and ten basis points annualized across categories). As the title of our paper suggests, positive active returns for many FI managers may only be an illusion of alpha.

9 As FI manager returns tended to exhibit serial correlation over one to three month lags, using quarterly data instead of monthly data helps mitigate its impact in our regression statistics.

10 Note that our regression-based alphas adjust for the average exposure to traditional risk premia. Any ability to profitably time these exposures will show up as alpha in our analysis.

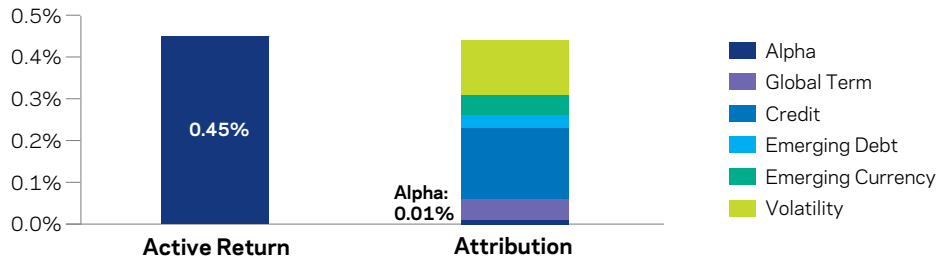
Exhibit 3

Minimal Alpha After Controlling for Traditional Risk Premia

Global Aggregate: Regression Statistics and Active Return Decomposition

	Ann. Alpha	Global Term	Corporate Credit	Emerging Debt	Emerging Currency	Volatility	R^2
Coefficient	0.01%	0.02	**0.07**	0.01	**0.04**	0.03	**61%**
T-Stat	0.03	0.6	4.7	0.6	2.6	1.5	

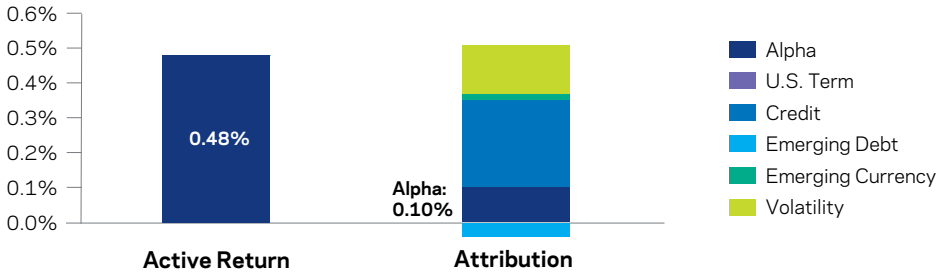
Return Decomposition



U.S. Aggregate: Regression Statistics and Active Return Decomposition

	Ann. Alpha	U.S. Term	Corporate Credit	Emerging Debt	Emerging Currency	Volatility	R^2
Coefficient	0.10%	0.00	**0.10**	-0.01	**0.02**	**0.04**	**90%**
T-Stat	1.10	0.2	14.9	-1.6	2.4	3.6	

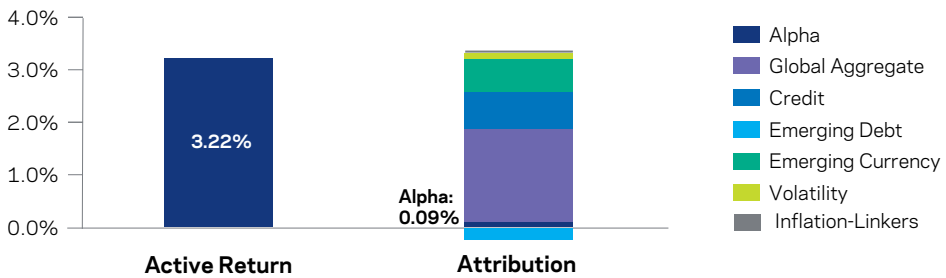
Return Decomposition



Global Unconstrained: Regression Statistics and Active Return Decomposition

	Ann. Alpha	Global Aggregate	Corporate Credit	Emerging Debt	Emerging Currency	Volatility	Inflation-Linkers	R^2
Coefficient	0.09%	**0.65**	**0.29**	-0.05	**0.53**	0.03	0.03	**77%**
T-Stat	0.11	3.7	5.5	-1.2	8.5	0.4	0.2	

Return Decomposition



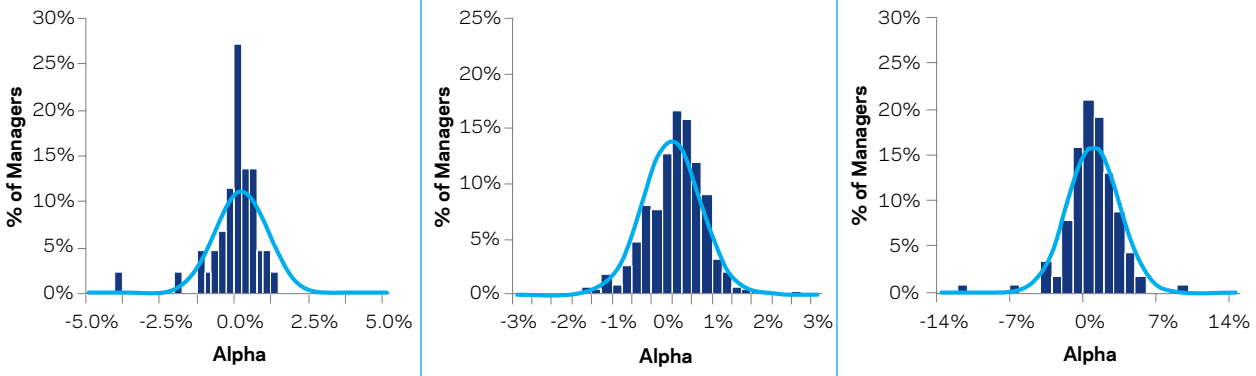
Source: AQR, eVestment; For illustrative purposes only and not representative of any portfolio that AQR currently manages. Definitions for each of the listed traditional risk premia are provided in the disclosures. The universes are equal-weighted averages of the monthly returns of managers within each category. The Global Aggregate and Global Unconstrained categories are as defined by eVestment, the U.S. Aggregate universe is a combination of the Core and Core-Plus categories as defined by eVestment. Each universe is then filtered to only use managers that have returns in USD, use an appropriate benchmark for the universe, and have at least five years of returns. Benchmarks are determined to mirror a category if the strategy's tracking error is less than the strategy's volatility. The inception date of each manager varies. All returns are gross of fees. Active returns are in excess of each manager's preferred benchmarks as provided by eVestment. Data from 11/1/1997 to 6/30/2018. Regressions use non-overlapping quarterly returns data for the period November 1997 through June 2018. Regression intercept is annualized. Past performance is not a guarantee of future performance.

Equal-weighted portfolios are interesting and illustrative, but do we see similar results when we look manager-by-manager? Exhibit 4 reports the distributions of estimated annualized alphas (the intercepts in individual manager regressions of active returns onto traditional risk premia) within each category. Similar to Exhibit 1, we super-impose a normal distribution on the empirical distribution. Unlike Exhibit 1, however, the super-imposed mean-zero normal distribution closely tracks the empirical data. For only one category (U.S. Aggregate) is there any statistical evidence of positive alpha. But while statistically significant, the alpha is economically quite small — only 0.08% annualized before fees. Stated simply, the distribution of alphas we observe within each category is broadly consistent with a world in which the true average alpha across managers is zero, and likely negative net of fees (gross of fees, average alphas within the Global Aggregate and Global Unconstrained categories are negative, at -0.21% and -0.09%, respectively). Again the inference is clear: positive active FI returns are only an illusion of alpha.

Exhibit 4

Alphas Across Managers within Each Category Close to Zero

Global Aggregate			U.S. Aggregate			Global Unconstrained		
Mean	Standard Dev.	T-stat	Mean	Standard Dev.	T-stat	Mean	Standard Dev.	T-stat
-0.21%	0.9%	-1.56	0.08%	0.6%	**2.93**	-0.09%	2.5%	-0.39



Source: AQR, eVestment; For illustrative purposes only and not representative of any portfolio that AQR currently manages. The Global Aggregate and Global Unconstrained categories are as defined by eVestment, the U.S. Aggregate universe is a combination of the Core and Core-Plus categories as defined by eVestment. Each universe is then filtered to only use managers that have returns in USD, use an appropriate benchmark for the universe, and have at least five years of returns. Benchmarks are determined to mirror a category if the strategy's tracking error is less than the strategy's volatility. The inception date of each manager varies. All returns are gross of fees. Active returns are in excess of each manager's preferred benchmarks as provided by eVestment. Data from 11/1/1997 to 6/30/2018. The annualized alphas are obtained by running regressions of each manager's active returns to the selected traditional risk premia for each category. Definitions for each of the listed traditional risk premia are provided in the disclosures. The regressions do not necessarily have common time periods as strategies could start and end at different times. Past performance is not a guarantee of future performance.

So, Is There Evidence of Skill at the **Manager** Level?

The evidence thus far paints a fairly grim picture of the ability of FI managers in major categories to deliver alpha. However, a cursory look at the histograms in Exhibit 4 reveals some managers have generated meaningfully positive alphas. A natural question is whether there is evidence of skill for a subset of managers. Unfortunately, identification of skill is more nuanced than simply spotting outliers, as there will always be some managers with statistically significant positive alpha in any given sample even if all managers truly have zero alpha.

To test for skill we follow Carhart (1997) and assess whether there is any persistence in active returns across managers. Do managers that outperformed over the recent past tend to outperform in subsequent periods? This is a strong definition of skill but one frequently employed in research primarily on equity managers, where most find poor evidence of persistence (e.g. Jones and Wermers, 2011). Our analysis extends this work to the FI universe, which is far less explored in the extant literature.

Although it may seem natural to directly test for persistence in active returns adjusted for traditional risk premia (after all, we want to know if there is persistence in alpha), we first assess whether there is any persistence in unadjusted active returns. If we observe persistence in active returns, we can then assess whether it is attributable to exposure to traditional risk premia or to persistent alpha. This approach avoids estimating rolling (or expanding) factor loadings manager-by-manager, which is likely to be quite noisy, and is also more robust to model misspecification as detailed in Carhart (1997).

At each year end, we sort managers within each category into quintiles based on the relative ranking of their active returns over the prior 36 months. The bottom 20 percent of managers (those with the lowest active returns) go into the bottom quintile, the next 20 percent go into the second quintile, and so on. Within each quintile we form equal-weighted portfolios across managers, and we track the active returns of each of these quintile portfolios over the following 12 months. We repeat the sorting of managers each year, thus yielding a time series of 10 or 20 annual sorts each with 12 subsequent months of returns. We can refer to the bottom quintile portfolio as the "loser" portfolio and the top quintile portfolios as the "winner" portfolio. If there is some degree of persistence in manager skill, we would expect to see average active returns monotonically increasing across quintiles — recent outperformers (winners) should tend to subsequently outperform recent underperformers (losers).

Exhibit 5 reports the performance (average active return, tracking error, information ratio, and t-statistic for the hypothesis average returns are zero) of the five quintile portfolios, as well as for a portfolio that is long the top quintile winners and short the bottom quintile losers (this "winner-loser" portfolio, while not investible — you can't short the losers — is economically interesting). In none of the three categories do we observe any consistent relationship between past performance and subsequent

returns. Indeed, for both Global Aggregate and Global Unconstrained managers, top quintile portfolio managers have tended to subsequently underperform their peers: the winner-loser portfolios have realized negative, albeit statistically insignificant, returns. Within the U.S. Aggregate category, winners have tended to subsequently outperform losers, but the outperformance is small, both economically (0.16% per annum) and statistically (the t-statistic on the winner-loser average return is 0.7, which means we cannot statistically reject the hypothesis the winner-loser active return spread is zero), and the performance across all quintiles of past performance are economically quite similar.

To summarize, contrary to finding persistence in manager performance, we tend to observe mild mean reversion. The implications for investors are: 1) there is little evidence of persistent skill in FI managers, and 2) chasing best-performing managers is unlikely to result in outperformance.[11]

Exhibit 5
No Evidence of Persistence in Manager Performance

		bottom Quintiles *top*					Winner-Loser
		1st	2nd	3rd	4th	5th	
Global Aggregate	Active Ret. (Ann.)	0.83%	0.65%	0.41%	0.32%	0.44%	-0.40%
	Track. Err. (Ann.)	1.7%	1.3%	1.0%	1.2%	1.5%	1.3%
	Info. Ratio	0.48	0.52	0.40	0.27	0.29	-0.31
	T-stat	1.5	1.7	1.2	0.8	0.9	-1.0
U.S. Aggregate	Active Ret. (Ann.)	0.42%	0.48%	0.42%	0.47%	0.58%	0.16%
	Track. Err. (Ann.)	1.2%	0.9%	0.7%	0.7%	0.9%	1.0%
	Info. Ratio	0.35	0.54	0.57	0.71	0.64	0.16
	T-stat	1.6	2.4	2.5	3.2	2.9	0.7
Global Unconstrained	Active Ret. (Ann.)	5.23%	3.17%	2.63%	1.83%	2.66%	-2.56%
	Track. Err. (Ann.)	8.9%	7.7%	6.0%	7.3%	7.0%	7.1%
	Info. Ratio	0.59	0.41	0.44	0.25	0.38	-0.36
	T-stat	1.9	1.3	1.4	0.8	1.2	-1.1

Source: AQR, eVestment; Global Aggregate and Global Unconstrained data is from 12/31/2007-12/31/2017, U.S. Aggregate data is from 12/31/1997-12/31/2017. For illustrative purposes only and not representative of any portfolio that AQR currently manages. Definitions for each of the listed traditional risk premia are provided in the disclosures. The Global Aggregate and Global Unconstrained categories are as defined by eVestment, the U.S. Aggregate universe is a combination of the Core and Core-Plus categories as defined by eVestment. Each universe is then filtered to only use managers that have returns in USD, use an appropriate benchmark for the universe, and have at least five years of returns. Benchmarks are determined to mirror a category if the strategy's tracking error is less than the strategy's volatility. The inception date of each manager varies. All returns are gross of fees. Active returns are in excess of each manager's preferred benchmarks as provided by eVestment. Note: As we wanted to have a minimum of five strategies in each bin for each quintile portfolio in this analysis, the Global Aggregate and Global Unconstrained quintile portfolios begin at the end of Dec 2007 while U.S. Aggregate begins at the end of Dec 1997. Past performance is not a guarantee of future performance.

11 As we don't observe persistence in manager performance, decomposing persistence into the component attributable to exposures to traditional risk premia and the component due to alpha is largely uninteresting, and we do not report these results. When we regress quintile portfolio returns on the traditional risk premia, however, two notable observations emerge. Consistent with results for equity managers we tend to see 1) there is not a statistically significant spread in alpha across quintiles (past winners don't definitively have more skill then past losers), and 2) bottom quintile loser managers tend to have generally lower alphas. Underperforming managers tend to have larger exposures to compensated traditional risk premia, yet, in spite of these exposures, they still tend to underperform their peers.

Conclusion: Implications of Illusory Alpha

Across multiple categories of active FI managers, we detect little evidence of manager skill — either in aggregate or individually. Despite impressive active returns posted by a variety of active FI managers, once we control for well-known traditional risk premia, the residual alpha appears to be negligible. This result has important implications for asset owners.

First, our sample analysis of active FI Managers is entirely gross of fee. While active returns may exceed active fee levels, after controlling for well-known traditional risk premia, the pertinent question is whether active fees are commensurate with the traditional beta exposures and the residual alpha that are provided. Second, as we have argued in an earlier Alternative Thinking, when active returns are strongly correlated to other traditional risk premia, especially those that are "long risk" (e.g., Corporate Credit premium and Emerging Market Credit premium, Volatility risk premium), this threatens to significantly dampen the strategic diversification benefit of allocating to the FI asset class, as well as the benefit of diversification from hiring multiple active managers. Finally, our work on persistence also demonstrates chasing best performing managers is not likely to lead to outperformance.

In previous Alternative Thinking articles, we have highlighted the diversifying potential of a systematic approach within FI investing, which focuses on security selection to generate active returns, in lieu of exposures to traditional risk premia and low-breadth bets such as duration timing or sector rotation. Such a systematic approach has the potential to not only be diversifying to traditional discretionary FI managers, but also to deliver excess of benchmark returns that are not correlated with well-known traditional risk premia, and therefore to preserve the diversifying potential of a fixed income allocation.

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The Bloomberg Barclays Global Treasury Index tracks fixed-rate, local currency government debt of investment-grade countries, including both developed and emerging markets. The index represents the treasury sector of the Global Aggregate Index and contains issues from 37 countries denominated in 24 currencies.

The Bloomberg Barclays Global Aggregate Index is a flagship measure of global investment-grade debt from twenty-four local currency markets. This multi-currency benchmark includes treasury, government-related, corporate and securitized fixed-rate bonds from both developed and emerging markets issuers.

The Bloomberg Barclays US Corporate High Yield Bond Index measures the USD-denominated, high yield, fixed-rate corporate bond market. Securities are classified as high yield if the middle rating of Moody's, Fitch and S&P is Ba1/BB+/BB+ or below. Bonds from issuers with an emerging markets country of risk, based on Barclays EM country definition, are excluded.

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