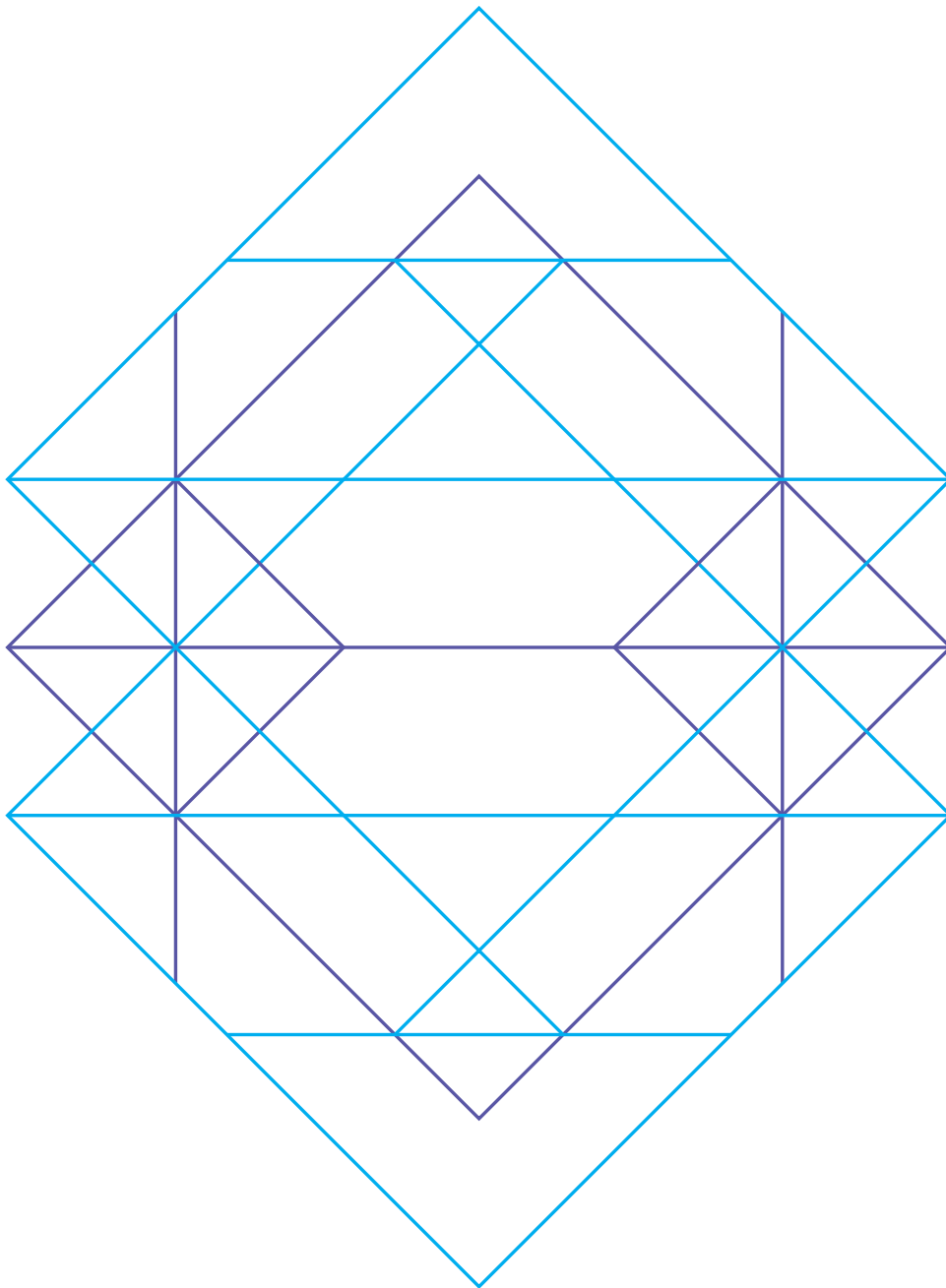




Alternative Thinking | 4Q17

The Illusion of Active Fixed Income Diversification



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Executive Summary

Active fixed income (FI) managers have had a very good run. From 1997-2017, and especially in recent years, the average active FI manager has delivered a markedly higher risk-adjusted active return (information ratio) than the average active U.S. large-cap equity manager. This has prompted some to suggest that active FI management is easy (at least in a relative sense). In this Alternative Thinking we examine a range of popular active FI categories (Global Aggregate, U.S. Core-Plus, and Unconstrained Bond) and find that a persistent overweight to high yield (HY) credit explains the majority of FI manager active returns. In addition to implying that active returns may overstate true manager skill, this has a vital implication for asset owners: active FI strategies may significantly reduce the strategic diversification benefit of FI as an asset class.¹

1 In the appendix we also examine a broad set of high yield managers and find, in contrast with other FI categories, they provide too little exposure to the credit risk premium.

Introduction

Fixed income (FI) is a key building block of most investors' portfolios. The canonical 60/40 portfolio combines exposures to equity markets (60%) and FI markets (40%). While we can debate whether a 60/40 capital allocation is optimal given the differences in volatilities across equity and FI markets, most would agree that some combination of equity and FI is desirable in a strategic asset allocation. With that background, it is useful to consider the role of active FI management in the context of a broader strategic asset allocation.

Ideally, active management should generate active returns that are an enhancement to the overall portfolio. The most obvious way to achieve this is to ensure that the active returns are uncorrelated with traditional market risks present in the investor's portfolio. The primary risk in an investor's portfolio is typically public equity markets (especially true for the 60/40 allocation). The simple question we seek to answer is whether the active returns of FI managers preserve the diversifying potential of an FI allocation.

FI markets are enormous. As of September 30, 2017, the Bloomberg Barclays Global Aggregate Index contained investment grade rated debt amounting to 47 trillion dollars. Inside this "sandbox" rests a variety of bonds issued by governments, government-related entities, corporations, as well as asset-backed securities. In addition to this, there are other parts of the FI market outside of the Global Aggregate, including inflation-linked bonds, tax-exempt municipal bonds, floating rate debt, HY debt, bank loans, and so on. Our purpose here is not to describe all of the

possible ways in which active views can be expressed within FI. Rather, we focus on the stalwart categories of active FI managers: (i) Global Aggregate benchmarked portfolios, (ii) U.S. Aggregate benchmarked portfolios with allowance for out of benchmark exposures (sometimes called "Core-Plus"), and (iii) Unconstrained Bond portfolios generally benchmarked to cash (the so-called "go anywhere" active FI managers).

In the following sections, we first document performance across these three categories of active FI managers and contrast that performance with large cap equity active managers. We then document, consistent with Mattu et al (2016), that the majority of active returns for FI managers can be explained by exposure to credit markets. While many practitioners may have recognized this within an individual category, its pervasiveness across fixed income active management categories, as well as the implication for investor portfolios, does not appear to be fully appreciated. If most active FI returns are as a result of the credit risk premium — which is related to the equity risk premium — the resulting diversification loss can dampen the risk-adjusted performance of an investor's overall portfolio. We show this is indeed the case. Traditional active managers may argue their tilt toward the credit risk premium is tactical, and they are adding value by timing credit spreads. The data, however, suggests this is not a plausible explanation for manager composites. First, credit tilts are consistently positive and do not vary significantly over time. Second, to the extent that there are deviations in credit tilts, they only weakly predict future credit returns.

Manager Outperformance

We study performance information from the eVestment database of institutional managers from 1997-2017. As with all historical analyses of manager returns, there is a concern of survivorship bias and back-filling. In our application, however, survivorship bias concerns are mitigated somewhat as we are not interested in the magnitude as much as the correlation structure of the returns. That said, caution is always advised when interpreting returns from historical data that may have selected “better” managers.²

We extract monthly manager and benchmark returns that belong to the three categories described earlier: Global Aggregate, Core-Plus,

and Unconstrained Bond. To ensure cross-sectional comparability of our analysis, we limit ourselves only to funds within a category that have a benchmark that clearly mirrors the category.³ In addition, we require the base currency to be USD. For Global Aggregate managers, we are able to find 89 USD funds in the database, and we end up with 53 funds that have the Global Aggregate benchmark and sufficient returns data for the analysis.⁴ For Core-Plus, the same filtering criteria yields 115 funds, and for Unconstrained Bond, 27 funds. The funds we end up using represent 70% of the eligible number of funds available on eVestment in these three categories (and 69% of the assets under management).

- 2 Unfortunately, we cannot completely rule out that survivorship bias may account for some of the observed correlation between active returns and credit. Over the last 20 years, HY credit excess returns have been quite positive. Thus, funds with greater HY exposure may have exhibited greater tendency to survive.
- 3 We use “fund” to denote the return streams reported by managers, which may be composites of institutional portfolio returns as well as commingled fund returns.
- 4 We use benchmarks the managers have specified to eVestment. We have repeated all of our analysis using pseudo-benchmarks, the benchmark that most closely tracked the total returns of the respective fund. Inferences are similar with that approach.

Exhibit 1 reports average annualized “active returns” (the difference between fund total returns and benchmark total returns), annualized volatility of active returns (tracking error), and information ratios (the ratio of average annualized active returns to annualized volatility of active returns) for a composite portfolio within each category that equal weights across all available managers at each point in time. We compute statistics over three samples: the full sample 1997–2017, the

last ten years (2008–2017) and the last five years (2013–2017). Returns are all gross of fees. For comparison, we also report similar statistics for an equal weighted portfolio across a set of 365 U.S. large cap equity active funds. Looking at information ratios, risk-adjusted returns have been notably better for the three main active FI categories than the active equity category during the past decade.

Exhibit 1

FI Managers Have Tended to Outperform Their Benchmarks

Monthly Returns, 1997–2017

	1997-2017			2008-2017			2013-2017		
	Active Return	TE	IR	Active Return	TE	IR	Active Return	TE	IR
Global Agg	0.4%	1.2%	0.33	0.8%	1.3%	0.63	0.5%	0.9%	0.55
Core-Plus	0.8%	1.4%	0.62	1.2%	1.8%	0.70	0.9%	0.9%	1.08
Unconstrained	4.5%	4.6%	0.97	6.5%	5.1%	1.27	4.3%	2.9%	1.50
US Large Cap Core Equities	0.7%	1.7%	0.43	0.0%	1.0%	0.02	-0.4%	0.6%	-0.71

Source: AQR, eVestment. All four categories above are defined by eVestment. Composites used in this analysis are equal-weighted averages of the monthly returns of managers within each category. Composites include only the managers in each category that a) have benchmarks that clearly mirror the category, b) have a base currency in USD, and c) have at least one year of returns. The inception date of each manager varies. All returns are gross of fees. Data as of 9/30/2017. Past performance is not a guarantee of future performance. Please see the final pages of this document for important disclosures.

Is active investing in FI easy? Some, including Baz et al (2017), have argued that structural features of the FI market (e.g., OTC trading, refinancing actions of issuers, naïve index reconstitution rules, larger share of participants with non-economic motives, etc.) create more opportunities for active FI managers to add “alpha.” At first glance, Exhibit 1 is consistent with this assertion. But let’s probe a little deeper. **Exhibit 2** displays scatter plots of average fund manager *active* returns against HY credit returns in excess of duration-matched Treasuries (“HY excess returns”).⁵ It is strikingly clear that active returns for all three categories have a very strong correlation with HY excess returns: 0.76 for Global Aggregate, 0.95 for Core-Plus and 0.82 for Unconstrained Bond.

These positive correlations are not caused by just a few highly directional FI managers. As an alternative to examining average (across managers) active returns we can repeat the prior analysis fund-by-fund and look at the distribution of correlations in **Exhibit 2B**. For Global Aggregate funds, the median correlation between active fund

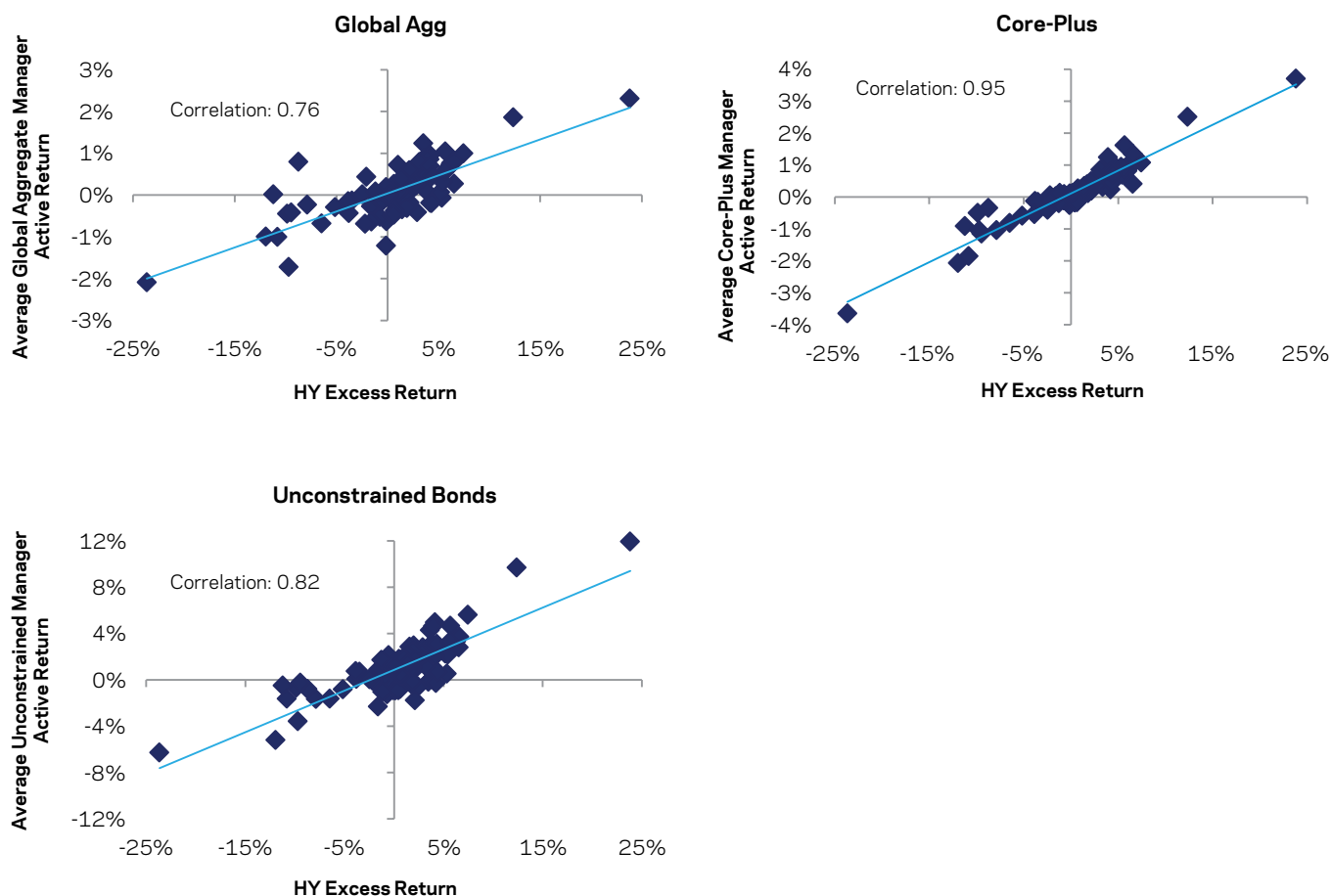
returns and HY excess returns is 0.51, with an interquartile range from 0.26 to 0.72. For Core-Plus funds, the median correlation between active fund returns and HY excess returns is 0.80 with an interquartile range from 0.63 to 0.88. For Unconstrained Bond funds, the median correlation between active fund returns and HY excess returns is 0.79 with an interquartile range from 0.52 to 0.87.

We find remarkably consistent results across categories: a large portion of active FI manager returns can be explained by exposure to credit markets. It is useful to keep in mind that the above analysis is a returns-based (not holdings-based) attribution. It does not necessarily imply that active FI managers are buying HY corporate bonds en-masse. But it does suggest whatever it is they are doing (carry trades, overweighting securitized assets that embed credit risk, etc.) ends up providing the investor with something that resembles – and is highly correlated with – HY exposure. This is hardly comforting for an investment into an asset class that is meant to provide diversification from equity markets.

5 In particular, we use Bank of America Merrill Lynch H0A0 returns in excess of duration-matched Treasuries.

Exhibit 2
Active FI Returns Correlate Strongly with Credit Markets
 Quarterly Returns, 1997-2017

2A: FI Active Returns vs. HY Credit Excess Returns



2B: Distribution of FI Active Returns-HY Correlation

	HY Correlation by Percentile		
	25%	50%	75%
Global Agg	0.26	0.51	0.72
Core-Plus	0.63	0.80	0.88
Unconstrained	0.52	0.79	0.87

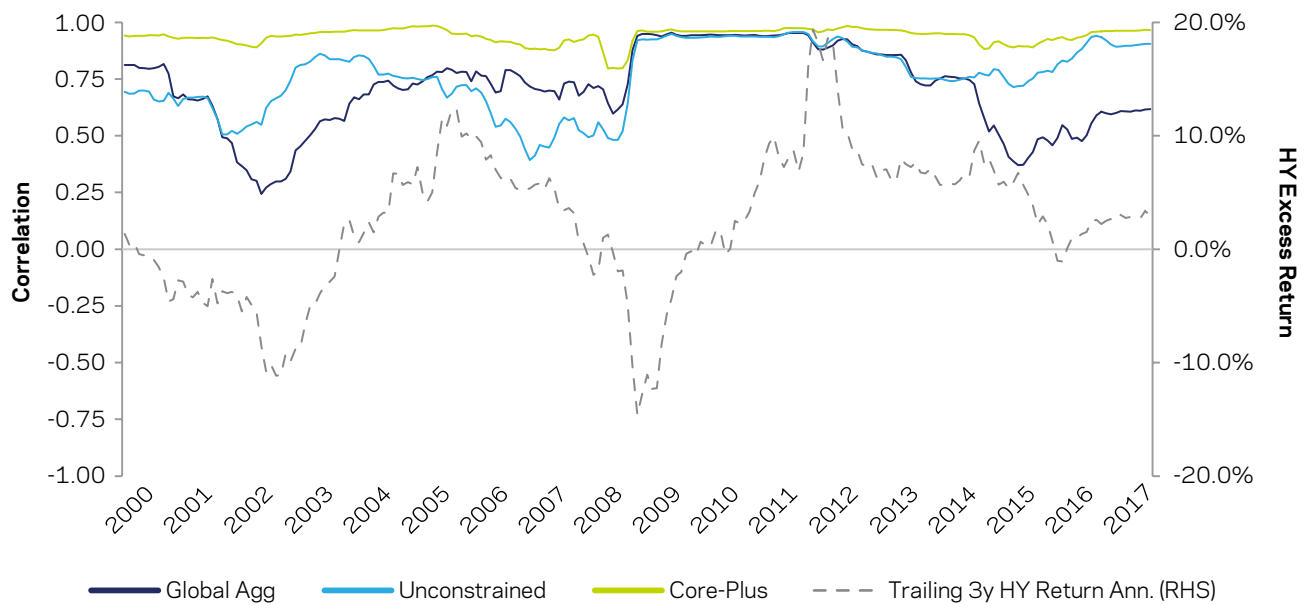
Source: AQR, eVestment. All three categories above are defined by eVestment. Composites used in this analysis are equal-weighted averages of the monthly returns of managers within each category. Composites include only the managers in each category that a) have benchmarks that clearly mirror the category, b) have a base currency in USD, and c) have at least one year of returns. The inception date of each manager varies. All returns are gross of fees. Data as of 9/30/2017. Figure 2A graphs the active (excess of benchmark) returns of each composite against the returns of the Bank of America Merrill Lynch HOA0 Index in excess of duration-matched Treasuries ("HY credit excess"). Figure 2B shows the 25th, 50th, and 75th percentile cutoffs for the full sample correlations between the active returns of the individual managers in each category and the HY credit excess returns. Past performance is not a guarantee of future performance. Please see the final pages of this document for important disclosures.

Perhaps FI Managers Are Timing Credit Spreads Successfully?

A potential justification for the credit exposure embedded in FI manager active returns is that it reflects managers’ “timing” ability. If active FI managers possess the ability to time credit spreads, we should expect (a) to see meaningful variation in their HY exposures over time given the very different credit market conditions that have existed over the last 20 years, and (b) periods of greater HY exposure to coincide with periods of credit market outperformance.

Exhibit 3 displays rolling 36 month correlations between average active returns for a given FI category and contemporaneous credit market excess returns. Across all three FI categories, the rolling correlation is consistently positive. Yes, there is some temporal variation in the extent to which FI active managers are “long” credit markets, but there is scant evidence of any short views.⁶ In as much as managers adjust their exposures to credit, they tend to vary between long and very long.

Exhibit 3
Persistent Correlation of FI Active Returns with HY Credit
 Rolling 3-Year Correlation of Active Returns with HY Excess Returns (3-month overlapping returns)



Source: AQR, eVestment. All three categories above are defined by eVestment. Composites used in this analysis are equal-weighted averages of the monthly returns of managers within each category. Composites include only the managers in each category that a) have benchmarks that clearly mirror the category, b) have a base currency in USD, and c) have at least one year of returns. The inception date of each manager varies. All returns are gross of fees. Data as of 9/30/2017. The chart above graphs the rolling 3-year correlation of each composite with HY credit excess, using overlapping 3-month active returns. The chart also includes the rolling, trailing 3-year HY credit excess return. Past performance is not a guarantee of future performance. Please see the final pages of this document for important disclosures.

6 We have repeated all of this analysis by fund with very similar results (i.e., positive and relatively stable exposure to credit excess returns) so it is not the case that a small number of funds are skewing the average result.

As a more direct test of timing ability, we ask whether managers tend to have larger exposures than average when credit outperforms and smaller exposures than average when credit underperforms. To this end, we compute the median correlation across managers of (a) 36 month rolling betas of active returns to HY excess returns to (b) contemporaneous 36 month HY excess returns. A positive correlation implies that managers have tended to have a positive (negative) “tactical beta” when credit markets outperform (underperform), and is indicative of timing ability. The median

correlations are modest, ranging from 0.09 for unconstrained managers to 0.27 for Core-Plus managers. This suggests positive, but very limited, HY timing ability for FI managers in aggregate.⁷

Overall, we conclude that a significant portion of FI manager active returns comes from being overweight, structurally and permanently, sources of return that are highly correlated with HY credit.⁸ We next discuss the downside of this effective credit overweight to overall strategic allocations, namely a reduction in overall portfolio diversification.

7 An additional test of market timing ability, and one that more easily facilitates statistical inference, is the so-called Treynor-Mazuy (1966) measure, in which we regress active returns on HY excess returns and the square of HY excess returns. A positive coefficient on squared HY excess returns is indicative of market timing ability (intuitively, it indicates active returns tend to be larger, conditional on average exposures, when credit excess returns are larger). Across all categories we find that this coefficient is statistically indistinguishable from zero, validating our conclusion that any HY timing ability is quite modest.

8 While alpha is not the focus of this paper, the structural overweight to credit suggests that average active returns meaningfully overstate the true “alpha” managers are delivering. A thorough analysis of FI manager alpha, incorporating additional factors and accounting for fees and biases, would require a longer paper and is the subject of future research.

So What Is the Loss of Diversification?

Given the strong performance of HY over the last 20 years, the effective structural credit overweight embedded in active returns of Global Aggregate, Core-Plus, and Unconstrained Bond managers has improved the standalone performance of these strategies, but it has reduced their diversifying characteristics. Such diversifying characteristics are a central motivation for holding FI within a strategic asset allocation, as they have historically mitigated equity risk. Given the high correlation between HY and equities, by being overweight credit risk, fixed income managers are inducing positive correlation to equities relative to the benchmark. Indeed, the correlations of active FI returns to U.S. equities (S&P 500) over the full sample are 0.67, 0.73 and 0.63 for Global Aggregate, Core-Plus, and Unconstrained Bond managers, respectively. Correlations to Global Equities are of a similar magnitude.⁹

To get a feel for how correlation with equity risk in FI manager active returns mitigates the diversifying effects of FI within a portfolio,

Exhibit 4 presents two pairs of scatter plots: U.S. Aggregate returns against S&P 500 and Core-Plus returns against S&P 500 (all returns are in excess of cash). Over the full sample, the U.S. Aggregate has tended to provide excellent diversification to equities, realizing a -0.33 correlation with the S&P 500. An equal weighted portfolio of Core-Plus managers, on the other hand, has actually realized a positive correlation to equities over the full sample, +0.05. In other words, the structural effective credit overweight is strong enough to change the sign of the correlation of FI returns to equity returns from negative to slightly positive. This effect is even stronger since 2008 where, according to Exhibit 3, FI managers across categories have tended to have an even higher effective credit exposure. During this time period the correlation of U.S. Aggregate returns to the S&P is -0.22, while an equal weighted portfolio of Core-Plus managers has realized a correlation of +0.33.¹⁰

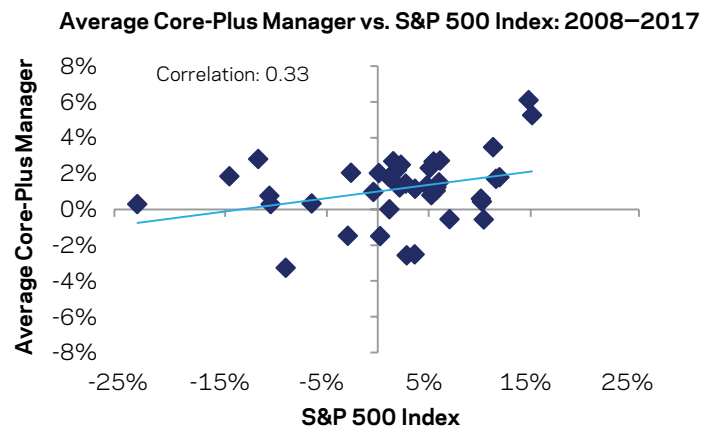
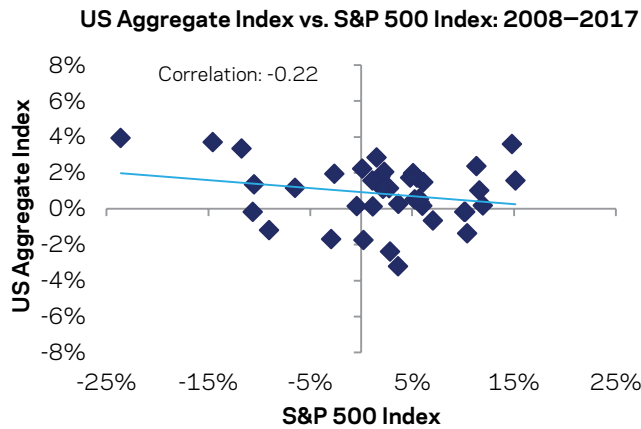
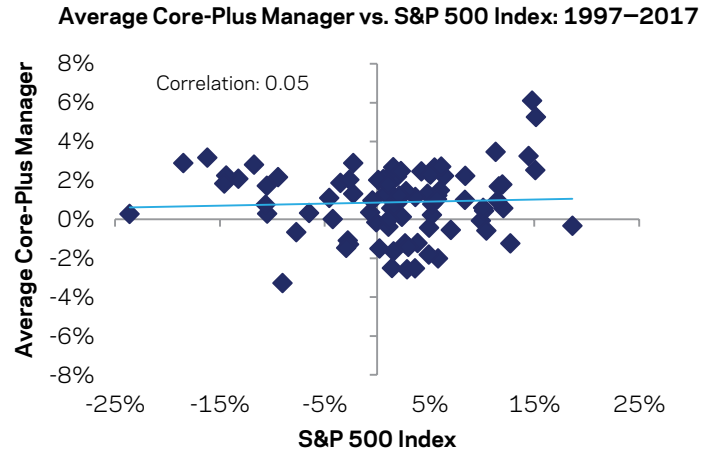
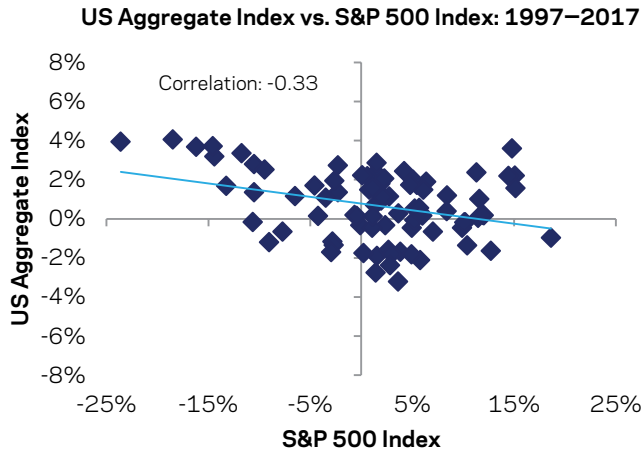
9 Correlations of active returns with MSCI World for Global Aggregate, Core-Plus and Unconstrained Bond managers were 0.64, 0.68 and 0.66 respectively.

10 For brevity we show Core-Plus (vs. U.S. equity) returns throughout this section, but results are broadly similar if we examine Global Aggregate or Unconstrained Bonds, vs. either U.S. or global equities.

Exhibit 4

Persistent Credit Exposure Reduces the Diversifying Benefits of FI

U.S. Aggregate and Average Core-Plus Manager vs. S&P 500 Quarterly Returns



Source: AQR, eVestment. Both categories above are defined by eVestment. Composites used in this analysis are equal-weighted averages of the monthly returns of managers within each category. Composites include only the managers in each category that a) have benchmarks that clearly mirror the category, b) have a base currency in USD, and c) have at least one year of returns. The inception date of each manager varies. All returns are gross of fees. Data as of 9/30/2017. The charts above represent the quarterly returns of each category versus the S&P 500, both over the full sample and over the last ten years. All returns are excess of U.S. 3-month Treasury bills. Past performance is not a guarantee of future performance. Please see the final pages of this document for important disclosures.

Despite the strong performance of credit over the sample, the positive correlation induced by an active effective credit overweight can have undesirable effects in the context of a total portfolio. As a proxy for a typical strategic allocation we use a 60% U.S. Equities/40% U.S. Bonds portfolio. We look at two 60/40 portfolios: “60/40 U.S. Aggregate,” which holds 60% in the S&P 500 and 40% in the U.S. Aggregate index, and “60/40 Core-Plus,” which holds 60% in the S&P 500 and 40% in a portfolio that equal weights across Core-Plus managers. The annualized volatility of 60/40 U.S. Aggregate over the full sample is 9.5%. Holding a portfolio of Core-Plus managers in place of the U.S. Aggregate, annualized volatility rises by 0.6% to 10.1%. Over the last ten years the risk impact has been marginally more pronounced, 60/40 U.S. Aggregate has realized 9.8% annualized volatility, while 60/40 Core-Plus has realized 10.6%.

Not only is the risk level higher on average for 60/40 Core-Plus than for 60/40 U.S. Aggregate, but the less favorable diversification benefit of active FI managers has also tended to rear its head at quite painful times for investors. For example, if we look at the average performance of both 60/40 portfolios during the ten worst equity quarters, 60/40 Core-Plus has lagged 60/40 U.S. Aggregate by an average of 0.4% per quarter. Taking the most extreme quarterly equity market loss as an example, the fourth quarter of 2008 in which U.S. equities returned -24%, U.S. Aggregate returns were +4%, somewhat mitigating the equity drawdown. Core-Plus returns, on the other hand, were effectively flat (+0.3%) due to the underperformance of credit. During the quarter in which it was needed most, active FI diversification was elusive.

Conclusion

We have found across active FI categories, managers choose to be overweight credit or hold exposures that are highly correlated with credit.¹¹ This importantly suggests that average active returns overstate the true "alpha" in active FI management. We also discussed the loss of diversification from including active FI mandates of this type in a broader portfolio. In an earlier Alternative Thinking report, we examined a systematic approach

to FI investing which may offer investors a different way to outperform their benchmarks without employing a "long credit all the time" active tilt.¹² Systematic approaches might allow investors to generate outperformance relative to FI benchmarks that is not correlated to credit or equity markets, which would therefore enhance, rather than detract from, overall portfolio diversification.

11 Our empirical analysis has focused on institutional credit managers, but our other research shows similar structural biases to overweight credit among credit mutual funds, credit hedge funds, and even government bond oriented funds (see Israel-Palhares-Richardson 2017 and Brooks-Moskowitz 2017).

12 See Alternative Thinking 2016 Third Quarter: "Style Investing in Fixed Income."

Appendix: High Yield Managers

Global Aggregate, Core-Plus, and Unconstrained Bond managers have provided active returns that are highly positively correlated with HY credit excess returns. What about HY managers themselves? Do they too demonstrate a persistent credit overweight relative to their benchmark?

We repeat the same analysis as above on the universe of HY managers. In particular, we examine the performance of 167 HY managers (out of a possible 242 in eVestment – the vast majority of exclusions were due to bespoke benchmarks) within the HY universe to assess the extent to which their active returns correlate with HY credit excess returns. In contrast with the other categories, for HY managers the correlation between active returns and HY excess returns is negative. Typical HY managers, while not generating active returns that are dependent on credit beta, are providing notably less “beta” exposure than the benchmark. Indeed, since 1997 the median (across managers) beta of HY manager returns to their stated benchmark is 0.87.

Why are HY managers' active risks defensive, in contrast to other FI managers? HY is by definition the riskiest part of the corporate bond universe, so unlike managers in other categories, HY managers cannot enhance returns by adding persistent out-of-benchmark exposures to other FI sectors. In addition, many HY managers tend to avoid lower rated, high-spread names, driven by the belief that their default risk is not attractively compensated, while actual default events create adverse headline risk on manager holdings.¹³

Whatever the motivation, in the recent period of contracting credit spreads, this beta shortfall has created a meaningful headwind for HY managers, and is a major contributor to HY managers underperforming the benchmark over the last five and ten years (although over the full sample, positive active returns indicate that HY managers have, on average, been able to overcome the beta shortfall). Simply managing their portfolio to a beta of one, would have added 0.61% (0.66%) per annum to the typical HY manager since 2013 (2008).

In the context of a 60/40 portfolio, the HY beta shortfall should reduce overall portfolio risk. Presumably, however, the optimal exposure to HY would have been determined as part of the strategic asset allocation. If managers are consistently delivering betas below one, they are tinkering with the overall desired portfolio risk/return profile. Unlike the other categories we examined above, this has also come at the cost of lower realized returns.

13 While BB issues have realized higher risk-adjusted returns over 1997–2017, B and CCC issues have realized similar levels of risk-adjusted returns.

Exhibit A1

High Yield Manager Performance

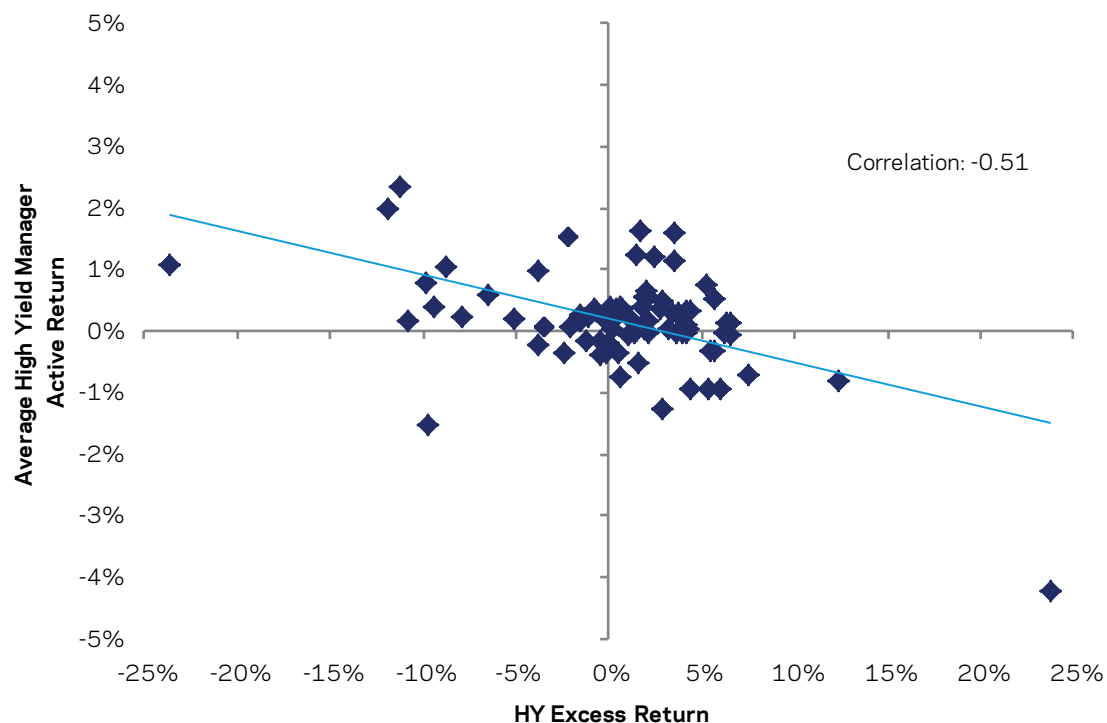
Monthly Returns, 1997-2017

	1997-2017			2008-2017			2013-2017		
	Active Return	TE	IR	Active Return	TE	IR	Active Return	TE	IR
High Yield	0.6%	1.6%	0.40	-0.2%	1.7%	-0.11	0.0%	0.7%	0.05

Exhibit A2

High Yield Manager Returns Negatively Correlated With Credit

FI Active vs. HY Credit Excess, Quarterly Returns, 1997-2017



Source: AQR, eVestment. The High Yield category above is defined by eVestment. The composite used in the above analysis is an equal-weighted average of the monthly returns of managers within the category. The composite includes only the managers in the category that a) have benchmarks that clearly mirror the category, b) have a base currency in USD, and c) have at least one year of returns. The inception date of each manager varies. All returns are gross of fees. Data as of 9/30/2017. Exhibit A1 uses the monthly active returns to compute summary statistics over the three sample periods. Exhibit 2B graphs the quarterly active returns of the composite against the HY excess credit returns. Past performance is not a guarantee of future performance. Please see the final pages of this document for important disclosures.

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