

# Reaching for Yield or Playing It Safe? Risk Taking by Bond Mutual Funds\*

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## Abstract

In a low-interest-rate environment, bond mutual funds may have a strong incentive to hold bonds with higher yields compared with their benchmarks (“reaching for yield”) in order to attract more inflows. This paper investigates reaching for yield among corporate bond mutual funds. We find that the main vehicle for reaching for yield is investment-grade bonds. Funds engage in negative reaching for yield (“playing it safe”) with high-yield bonds. Funds reach for yield more when the level and slope of the yield curve are low and when the default spread is narrow. In the cross section, funds that are younger, larger, and that have high expense ratios engage in reaching for yield to a greater extent. We also find that when funds change their portfolios to increase reaching for yield, they experience increased flows, indicating that investors respond positively to this behavior. Funds that engage in reaching for yield generate relatively higher returns, but their superior performance is explained by common risk factors and thus driven mainly by risk-taking rather than skill.

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# Reaching for Yield or Playing It Safe? Risk Taking by Bond Mutual Funds

## Abstract

In a low-interest-rate environment, bond mutual funds may have a strong incentive to hold bonds with higher yields compared with their benchmarks (“reaching for yield”) in order to attract more inflows. This paper investigates reaching for yield among corporate bond mutual funds. We find that the main vehicle for reaching for yield is investment-grade bonds. Funds engage in negative reaching for yield (“playing it safe”) with high-yield bonds. Funds reach for yield more when the level and slope of the yield curve are low and when the default spread is narrow. In the cross section, funds that are younger, larger, and that have high expense ratios engage in reaching for yield to a greater extent. We also find that when funds change their portfolios to increase reaching for yield, they experience increased flows, indicating that investors respond positively to this behavior. Funds that engage in reaching for yield generate relatively higher returns, but their superior performance is explained by common risk factors and thus driven mainly by risk-taking rather than skill.

# 1 Introduction

The sustained run of easy monetary policies implemented by the Federal Reserve following the Great Recession have seen investors flocking to corporate bond mutual funds. Assets under management by corporate bond funds has grown rapidly: Funds' holdings of corporate bonds more than doubled from 2007 to 2013, to over 1.7 trillion dollars.<sup>1</sup> A by-product of the easy monetary policies is "reaching for yield" by these asset managers.<sup>2</sup> As noted by Rajan (2005) and Borio and Zhu (2012) among many others, sustained monetary policies of low interest rates incentivise investors to reach for yield by taking on more risk. Practitioners and industry commentators have also suggested that corporate bond funds are increasingly buying bonds with higher yields than their benchmarks to make their performance look better.<sup>3</sup>

Although reaching for yield can be an intended outcome of the unconventional monetary policies by funnelling investment to riskier projects (Rajan 2013), the agency problems of asset managers can lead to other, unintended outcomes (Stein 2013). As in Feroli et al. (2014), when mutual fund managers have an incentive to boost relative performance, excessive flows to these funds can pose threat to financial stability. In the money market fund industry, asset managers are taking on higher risk by investing in longer-maturity and riskier asset classes even though these funds are regulated to hold only safe, short-term assets (Di Maggio and Kacperczyk 2014). Due to rating-based capital requirements, insurance companies tend to invest in higher-yielding securities in each rating category particularly during low-interest periods, as shown by Becker and Ivashina (2014). Acharya and Naqvi (2015) also show how the incentives of delegated asset managers leads to over-investment in risky assets and underinvestment in safe assets.

In this paper, we examine reaching for yield by U.S. corporate bond mutual funds,

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<sup>1</sup>See Investment Company Institute: 2014 Investment Company Factbook and also Feroli, Kashyap, Schoenholtz, and Shin (2014).

<sup>2</sup>Loosely speaking, reaching for yield refers to preference for risky, supposedly higher-yielding securities. We formally define our measure of reaching for yield in Section 2.3.

<sup>3</sup>For example, see "Bond Funds Get Aggressive", Wall Street Journal, Sep 28 2012 and "A Disappearing Act", Blackrock, May 2014.

one of the largest investors in corporate bond markets.<sup>4</sup> Despite their importance in the market, relatively little research is done on corporate bond funds compared with equity funds (Christoffersen, Musto, and Wermers 2014), let alone the extent to which corporate bond funds reach for yield. We fill the gap in the literature by thoroughly investigating their risk-taking behaviors with a focus on reaching for yield.<sup>5</sup> Our analysis will be also informative to the current debate on the effect of the unconventional monetary policies and incentives of delegated asset managers on the risk taking channel (Borio and Zhu (2012) and Rajan (2013), among others). The market for corporate bond funds offer an particularly interesting research case to study this effect, given the fierce competition in the industry and strong incentives to showcase superior returns.

Our key findings are as follows. Corporate bond funds reach for yield by holding comparatively higher-yield investment-grade bonds when compared with the universe of outstanding corporate bonds. The magnitude of reaching for yield depends on market conditions, and is stronger when the level and slope of the yield curve are low and the default spread is narrow, and thus when aggregate investment opportunities in high-yielding securities are scarcer. We find that young and large funds with high expense ratios engage in reaching for yield to a greater extent. Our evidence also suggests that funds attract more flows when they reach for yield. Specifically, flows respond positively (negatively) to active portfolio adjustments towards a greater (lesser) extent of reaching for yield. The higher yield does not, however, come for free: We find that any superior returns realized by funds that reach for yield can be explained by their betas on common risk factors. The funds that reach for yield funds among the highest-rated investment grade bonds even provide a negative alpha. In other words, funds that reach for yield do not have superior bond picking skill; they merely load on these risk factors, but investors nevertheless direct flows towards these funds.

In contrast to the vast body of literature on portfolio choices made by equity mutual

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<sup>4</sup>According to the Investment Company Institute (ICI), corporate bond funds in aggregate hold over 18% by 2013.

<sup>5</sup>There are a few existing studies on corporate bond funds, e.g., Blake, Elton, and Gruber (1993), Chen, Ferson, and Peters (2010), Cici, Gibson, and Merrick (2011), Cici and Gibson (2012), Chen and Qin (2014), and Goldstein, Jiang, and Ng (2015).

funds, relatively few studies have examined the holdings of corporate bond mutual funds.<sup>6</sup> This is undoubtedly because comprehensive data on mutual funds' corporate bond holdings and corporate bond pricing are not readily available. We employ unique data on the corporate bond holdings of U.S. open-ended bond mutual funds from Morningstar and corporate bond pricing data from Reuters (also known as Bridge/EJV database) to conduct a thorough investigation of reaching for yield by corporate bond funds.

Importantly, we find that mutual funds don't always reach for yield, and not for all types of bonds. In particular, funds only engage in reaching-for-yield in their investment-grade holdings. Specifically, the bonds in these ratings categories that are held by corporate bond mutual funds on average have higher yields than similarly-rated bonds in the corporate bond universe by around 10 basis points per month. In contrast, we find strong negative reaching for yield (which we call "playing it safe") in high-yield (or "junk") bonds. This pattern was particularly strong during the 2008 financial crisis (Figure 1). This evidence shows that corporate bond funds engage in reaching for yield primarily in the investment-grade rating classes.

Next, we examine which macro-level variables and fund characteristics predict the time-series and cross-sectional variation in reaching for yield. In the time series, funds reach for yield to a greater extent when both the level and slope of yield curves are low, consistent with a hypothesis whereby when average premia are low, funds substitute towards relatively higher-yielding bonds to enhance their reported yields. Further, when the default spread is narrow and thus risky bonds are relatively more expensive, funds also reach for yield to a greater extent. Among cross-sectional fund characteristics, we find that young and large funds with high expense ratios display a greater tendency to reach for yield. This evidence suggests that fund-level incentives are related to the funds' preferences to hold relatively higher-yielding bonds.

Having documented the extent to which corporate bond mutual funds reach for yield, we next ask whether this investing behavior results in higher flows from investors. We employ a novel decomposition of changes in reaching for yield into active (caused by

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<sup>6</sup>Cici et al. (2011), Cici and Gibson (2012), and Chen and Qin (2014) are among the few recent examples.

changes in holdings) and passive (caused by bond price movements—when bond prices fall, the yield rises) components. The active component of reaching for yield captures funds’ marginal choice in portfolio holdings of higher-yield bonds, while the passive component captures mechanical changes in the reaching-for-yield measure driven by bond price changes. We find that future fund flows react positively to an increase in active reaching for yield, whereas they react negatively to passive reaching for yield. These results show that funds have strong incentives to actively change portfolio holdings towards higher-yielding bonds. Also, the evidence is consistent with anecdotal evidence that many mutual fund investors consider a fund’s current yield (in addition to past performance) when they decide which funds to invest in.

Lastly, we examine the performance implications of reaching for yield.<sup>7</sup> In Fama-MacBeth regressions of individual mutual fund performance, we find that funds that reach for yield to a greater extent tend to have higher returns. Similarly, in a calendar-time portfolio approach, returns on a portfolio of funds in the highest reaching-for-yield tercile are higher than are those on a portfolio of funds in the lowest reaching-for-yield tercile, by around 10–15 basis points monthly. However, the superior performance achieved by funds that reach for yield is fully explained by higher risk. When we regress returns on a long-short high-minus-low reaching-for-yield portfolios on the bond-level risk factors of Fama and French (1993), the alphas are all indistinguishable from zero or even negative. These results show that superior fund returns generated by reaching for yield are due mainly to taking on more risk, rather than a result of bond-picking skill.

In sum, our empirical results show the extent to which U.S. corporate bond funds engage in reaching for yield and its implications for mutual fund investors. The main vehicle for reaching for yield is investment grade corporate bonds. By contrast, funds play it safe with high-yield bonds, particularly during the 2008 financial crisis. They hunt for higher yields when high-yielding investment opportunities in the fixed income markets

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<sup>7</sup>The literature on mutual fund performance is vast. Studies include Brown and Goetzmann (1995), Ferson and Schadt (1996), Daniel, Grinblatt, Titman, and Wermers (1997), Wermers (2000) Chen, Hong, Huang, and Kubik (2004), Berk and Green (2004), and Kacperczyk, Sialm, and Zheng (2005) among many others.

are scarcer. Funds that reach for yield display higher returns and attract more flows; but, on a risk-adjusted basis, these funds do not exhibit superior bond-picking abilities.

Our paper is closely related to recent studies on investors' preferences for higher-yield securities, particularly in times of easy monetary policies. Becker and Ivashina (2014) are the first to document reaching for yield by insurance companies, by showing that corporate bonds with high yields (relative to their ratings) are purchased to a relatively greater extent by insurance companies, a pattern that is strongest before the 2008 financial crisis. Di Maggio and Kacperczyk (2014) show that money market funds display higher return spreads and higher portfolio concentrations in relatively risky bank obligations when the federal funds rate is low. In recent theoretical work, Acharya and Naqvi (2015) show how incentives of asset managers give rise to positive bubbles in risky assets and negative bubbles in safe assets given easy monetary policies. Hanson and Stein (2015) document evidence for reaching for yield among commercial banks. Hong, Sraer, and Yu (2014) show that when uncertainty regarding future inflation is high, speculative investors have an incentive to hold long-maturity bonds and thus have the effect of pushing the long end of yield curves down. We add to this line of studies by documenting the extent to which corporate bond funds overweight bonds with higher yields in a low-interest-rate environment.

Our paper also adds to the large body of literature on mutual fund incentives and risk-taking behaviors. For example, Brown, Harlow, and Starks (1996), Chevalier and Ellison (1997) and Chen and Pennacchi (2009), among many others, show that risk-taking by funds is driven by incentives. Goetzmann, Ingersoll, Spiegel, and Welch (2007) show how mutual funds can manipulate performance measures. Sensoy (2009) presents evidence that funds use self-designated indices to beat benchmarks and attract more flows. A closely related paper is Huang, Sialm, and Zhang (2011), who use fund-level holdings data by equity mutual funds to show that excess risk-taking by these funds has a negative impact on their performance.<sup>8</sup> Similarly, Kacperczyk and Schnabl (2013) examine risk-taking by money market funds during the financial crisis and show how their risk-taking affected outflows from those funds. Finally, Christoffersen and Simutin (2014) show that

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<sup>8</sup>Cremers and Petajisto (2009), among others, also analyze risk-taking using holdings-level data among equity funds.

increases in the fraction of equity mutual funds' assets that come from Defined Contribution plans are followed by an increase in risk-taking by these funds, but that the increase in risk-taking does not negatively affect risk-adjusted performance (alpha).

This article is organized as follows. Section 2 describes the data, particularly the Morningstar mutual fund holdings database and the Reuter's Fixed Income database. Section 3 presents the main results. Section 4 concludes.

## 2 Data and Variable Construction

### 2.1 Mutual Fund Data

We start with a sample of bond funds from the CRSP Survivor-Bias-Free Mutual Fund Database. We seek to focus on corporate bond funds, so we first limit the sample to funds designated either as corporate bond funds or general funds (style categories I, ICQH, ICQM, ICQY, ICDI, ICDS, or IC in CRSP). In some of our tests, we will further limit the sample further to include only funds that predominantly hold corporate bonds. The CRSP database has data on monthly returns and NAV, as well as quarterly data on flows, turnover, expense ratios, fund age, etc.

We merge these funds with bond holdings data which are obtained from Morningstar spanning the period from 2002 to 2012. The database provides holdings of U.S. open-end taxable fixed-income funds at a quarterly frequency. From the database we obtain information on bond identifiers (bond CUSIP), portfolio weights, amounts held, and market values for each bond held. The database includes both surviving and dead funds.

The holdings data are reported at the fund level, and thus we populate the same holdings data to each share class that belongs to the same fund. Our main analysis is performed at the fund level, so if the same portfolio is held by several share classes, fund-level characteristics (e.g., age) are calculated as the asset-weighted average of these characteristics across all share classes that belong to the fund.



## 2.2 Corporate Bond Data

We next merge these holdings (based on bond CUSIP) with detailed bond characteristics data from the FISD Mergent Database. This database has detailed data on issuers (e.g., type of issuer), and issue characteristics (ratings, covenants, etc).

We further obtain bond pricing and yield data from the Reuters Fixed Income Database. The database contains daily bid quotes provided by major dealers in corporate bond markets. In addition to price data, the database provides terms and conditions and historical amounts outstanding. The database is fairly comprehensive, covering most corporate bonds held by mutual funds in the merged database. It is also used by many major Wall Street firms as a standard database for marking their books. If pricing data from Reuters are missing for a bond, we instead use pricing data from TRACE if available.

The final merged sample consists of 23,767 fund-quarters covering the period from January 2002 through June 2012.

## 2.3 Variable Construction

Our key focus is on the degrees to which corporate bond funds reach for yield. For this purpose, we define our measure of reaching for yield at the fund-quarter level as the value-weighted average (across all corporate bonds held by a fund) of the deviation of the yield for each bond's that the fund holds from the average yield of outstanding bonds in the same rating category. We compare yields in the same rating, since corporate bond funds' investment mandate is typically (although loosely) based on credit ratings. In this sense, our definition of reaching for yield is most similar to that of Becker and Ivashina (2014) who examine insurance companies' tendency to hold higher yielding securities, controlling for the rating notch.

Specifically, we construct a measure of the degree to which a fund reaches for yield by computing the yield deviation of the fund's corporate bond holdings with respect to the weighted average yields of all outstanding corporate bonds available in the FISD, weights being determined by bonds' amounts outstanding. For each fund  $i$ , bond  $j$ , and quarter

$t$  we calculate

$$RFY_{i,t} = \sum_j w_{j,i,t}(y_{j,t} - y_{j,t}^{BM,rating}) \quad (1)$$

where  $w_{j,i,t}$  is bond  $j$ 's market weight in fund  $i$ 's bond holdings,  $y_{j,t}$  is the yield of bond  $j$ , and  $y_{j,t}^{BM}$  is the benchmark yield of bond  $j$  (based on  $j$ 's rating). We calculate the benchmark yield as the weighted average corporate bond yields of the same rating as bond  $j$ , available in the FISD where weights are given by their amounts outstanding.<sup>9</sup>

We further compute a maturity-adjusted reaching-for-yield measure whereby the benchmark yield is matched on both the rating notch and a maturity category (<3 years, 3-5 years, 5-7 years, 7-10 years, and >10 years). This is because the premium that  $RFY_{i,t}$  captures can be a maturity premium (longer-maturity bonds tend to have higher yields, controlling for rating) as opposed to a default or liquidity risk premium. The maturity-adjusted reaching-for-yield measure is constructed as follows:

$$RFY_{i,t}^{maturity-adjusted} = \sum_j w_{j,i,t}(y_{j,t} - y_{j,t}^{BM,rating\&maturity}) \quad (2)$$

where  $y_{j,t}^{BM,rating\&maturity}$  is the benchmark yield of bond  $j$ , constructed using the FISD bonds having the same rating as bond  $j$  as well as being within the same maturity category.

In our later empirical analyses, we also examine how funds change their portfolio holdings to increase or decrease their reaching for yield. For this purpose, we decompose the change in reaching for yield ( $\Delta RFY_{i,t}$ ) into the following components ( $\Delta RFY1_{i,t}$ ,

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<sup>9</sup>The rating for each bond is constructed by applying the rule Barclays applies for inclusion in the bond index: Specifically, before October 2003, we use the Moody's rating if it exists, otherwise we use S&P's rating; between October 2003 and June 2005, we use the minimum of Moody's and S&P's ratings; and after July 2005, we use the median of the Fitch, Moody's, and S&P ratings if all three ratings exist, otherwise we use the minimum rating.

$\Delta RFY2_{i,t}$ , and  $\Delta RFY3_{i,t}$ ):

$$\begin{aligned}
\Delta RFY_{i,t} &\equiv \sum_j \Delta (w_{j,i,t}(y_{j,t} - y_{j,t}^{BM})) \\
&= \underbrace{\sum_j (\Delta w_{j,i,t})(y_{j,t} - y_{j,t}^{BM})}_{\text{Reaching for Higher Yield}} + \underbrace{\sum_j w_{j,i,t} \Delta(y_{j,t} - y_{j,t}^{BM})}_{\text{Poor Returns}} + \underbrace{\sum_j (\Delta w_{j,i,t}) \Delta(y_{j,t} - y_{j,t}^{BM})}_{\text{Doubling Down/Locking-in Gains}} \\
&\equiv \Delta RFY1_{i,t} + \Delta RFY2_{i,t} + \Delta RFY3_{i,t} \tag{3}
\end{aligned}$$

The first component,  $\Delta RFY1_{i,t}$ , captures funds' active change in portfolio holdings towards bonds with relatively high yields ("reaching for higher yield"). The second component,  $\Delta RFY2_{i,t}$ , is the change in reaching for yield driven by mechanical price changes ("poor returns"): If a fund's bonds suffer relatively poorer returns than the benchmark and the fund continues to hold these bonds, the bonds' yield as well as the fund's reaching-for-yield measure mechanically increases, and vice versa. The third component,  $\Delta RFY3_{i,t}$ , is the interaction of yield and holdings changes ("doubling down/locking-in gains"). It is positive when funds act in a contrarian fashion by increasing portfolio weights in bonds that have become less expensive compared with the rating-based benchmark, or reduce the weight in bonds that have become more expensive than the benchmark. It is important to decompose the change in reaching for yield into these components particularly to isolate the  $\Delta RFY2_{i,t}$ : This component is caused mechanically as fund holdings experience negative returns (low returns causes future higher yields). On the other hand,  $\Delta RFY1_{i,t}$  is driven by a fund's active change in risk-taking over the quarter towards bonds with higher or lower yields relative to their benchmarks, irrespective of their returns.

Finally, we calculate measures of the funds' weighted average maturity and weighted average bond ratings, since mutual funds can increase the risk of their holdings by holding longer-maturity bonds (which incur higher interest rate risk) or lower ratings (which incur higher credit risk). The weighted average of maturity is a market-value-weighted average of maturities:

$$WAM_{i,t} = \sum_j w_{j,i,t} TTM_{j,i,t} \tag{4}$$

Similarly, we calculate the weighted average of ratings as

$$WAR_{i,t} = \sum_j w_{j,i,t} rating_{j,i,t} \quad (5)$$

The ratings are measured numerically from 1 (corresponding to C) to 21 (AAA).

## 2.4 Summary Statistics

Table 1 presents summary statistics. We report fund-level characteristics after aggregating share class level characteristics, weighted by assets. In Panel A, the average assets across the fund-quarters in our sample is \$2.2 billion (median \$415 million), average flow is 4%, and average turnover 150%. The mean expense ratio is 0.85% , and our funds have an average age of almost 11 years with an average manager tenure of around 6.6 years.

In Panel B, the average fund-quarter-level reaching for yield is -0.42% (median -0.27%). That is, corporate bond funds on average do not hold higher-yielding securities than the universe of bonds in the same rating category. Rather, they engage in negative reaching for yield on average. In Section 3, we will further investigate the extent to which funds reach for yield (or play it safe) in both the time series and the cross section across various rating categories. Panel B also shows that the maturity-adjusted reaching for yield is -0.25% (median -0.14%), indicating that, on average, corporate bond mutual funds capture a negative maturity yield premium (as the raw reaching for yield is more negative than the maturity-adjusted measure). The negative maturity premium is intuitive as mutual funds may face relatively higher redemption risk compared with other buy-side participants in the bond market.

The average bond rating across funds (value-weighted for each fund's assets) is 12.6 (median 13.7), which corresponds to around BBB (BBB is equivalent to 13 on the numerical rating scale between 1 and 21). The average time-to-maturity is 7.1 years (median also 7.1). The average yield is 6.3% (median 5.9%).

## 3 Empirical Results

### 3.1 Do Bond Mutual Funds Reach for Yield?

We first examine reaching for yield by corporate bond mutual funds across rating classes. That is, to what extent do these funds buy bonds with a higher or lower promised yield compared with the average yield within the same rating class, and does this investing behavior differ across bonds with different category ratings?

To do so, we first construct reaching-for-yield measures at the rating-category level for each fund-quarter by value-weighting the bond-level reaching for yield held by each fund at a certain date within a certain rating class  $r$ , among all bonds that a fund hold that belong to that rating class.<sup>10</sup> Results are presented in Table 2.

In Panel A, we show the extent to which funds reach for yield across rating classes. We find that funds display significant positive reaching for yield particularly among their AA- and AAA-rated securities (columns (6) and (7)). The economic magnitude is also meaningful; these funds hold AA- and AAA-rated bonds that yield around 10-32 basis points more than a rating-matched benchmark. At the same time, these funds display *negative* reaching for yield among junk bonds (rated between C and BB, in columns (1) to (3)). The negative reaching for yield can be described as “playing-it-safe” among junk bonds. In columns (8) and (9), we aggregate these fund-date-rating measures at broader rating levels: High Yield (C-BB) and Investment Grade (BBB-AAA).<sup>11</sup> The results in the two columns show that funds tend to reach for yield with investment grade bonds, while they play it safe with high-yield bonds.

In Panel B, we repeat the analysis using the maturity-adjusted benchmark for the reaching-for-yield measure (Equation (2)). The maturity control reveals an even clearer distinction in reaching for yield across rating categories. Funds reach for yield in all investment grade rating categories, but play it safe with both junk bonds.

The results in Table 2 suggest that the investment-grade border is special as funds

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<sup>10</sup>If a fund does not hold any securities within a certain rating class in a particular quarter, that fund-rating-quarter observation is missing.

<sup>11</sup>We show the time series of reaching for yield across ratings in Figure 1.

reach for yield above this border, but display the opposite behavior below it. To further examine whether there is a discontinuity in reaching for yield exactly at the investment-grade border, we analyze finer splits across rating notches of the reaching-for-yield measure on both sides this boundary. Results are reported in Table 3.

Panel B of Table 3 shows that the large difference in reaching for yield happens exactly at the investment-grade border between BB+ and BBB-. Panel B repeats the analysis using the maturity-adjusted reaching-for-yield measure. Using this measure, the difference in reaching for yield between BB+ and BBB- is further magnified relative to the raw measure, with an even sharper discontinuity at the investment-grade boundary.

In Table 4, we further examine whether this pattern—reaching for yield in investment grade bonds and playing it safe in junk bonds—is related to funds’ investment style. It’s possible that different funds reach for yield in different ways, which the averages across funds in Table 2 may not fully capture. For example, negative reaching for yield could be driven by junk bond funds, while positive reaching for yield could be driven by funds that invest primarily in investment grade bonds. We report the measures of reaching for yield across rating categories for various fund investment styles (Panel A for investment grade funds, Panel B for high yield funds, and Panel C for flex funds). The results in Table 4 show that the reaching for yield pattern shown in Table 2 and 3 appears very strongly especially among high-yield funds (Panel B). For example, the reaching for yield measure for investment grade is 87 basis points among high-yield funds (Panel B), while the same statistic for investment grade funds (Panel A) is -3.3 basis point, which shows that investment grade funds on average do not reach for yield even among investment grade bonds.

The results provided in Table 2 through 4 indicate that funds tend to use investment grade bonds to reach for yield while they play it safe with high yield bonds. Further, we find reaching for yield is the most pronounced among high-yield funds. These results can be interpreted that funds do not want to look too risky when they are classified as high yield funds and they try to make up for reduced risk taking by reaching for yield using investment grade bonds.

### 3.1.1 The Time Series of Reaching for Yield

In the previous section, we document reaching for yield across rating categories. To investigate whether the degrees of reaching for yield changes over time, we plot our measures of reaching for yield across rating classes for our sample period in Figure 1.

Consistent with the results shown in Table 2, reaching for yield measures among investment-grade bonds tend to be positive. Except for the Q2 of 2009, reaching for yield is positive for the most sample period. In addition, there is substantial variation in reaching for yield among investment grade bonds. For example, reaching for yield is high between 2002 and 2004 and also tends to increase from 2009 to 2010, during which period the interest rates are quite low. This pattern in reaching for yield is consistent with the notion that financial institutions prefer higher-yielding securities in a low-interest-rate environment. In later sections, we investigate time variation in reaching for yield in greater depth (Section 3.2.1).

Figure 1 also shows substantial variation in negative reaching for yield (i.e., playing it safe) among junk bonds. For the most sample period, mutual funds hold relatively safer, low-yielding junk bonds, compared to those in the universe of outstanding bonds in the same rating category. Interestingly, over the 2003-2007 period while reaching for yield in investment grade bonds decreases, mutual funds increase holdings in higher-yielding corporate bonds among junk categories. During the period, default rates were quite low, and thus yields on high yield bonds kept decreasing as well. According to Bank of America Merrill Lynch High Yield Index available in the FRED, from the 2003 to 2007 period, yields on junk bonds fell from approximately 9% to 2.41% on June 1, 2007, near a historic low. Given the low yields on high yield bonds and thus scarce investment opportunities in junk territories, mutual funds increased holdings in relatively riskier securities, perhaps as a way to seek higher performance. During the financial crisis period, however, the graph shows that mutual funds switched their holdings into safer junk bonds, suggesting that playing it safe motives become stronger when credit risk is particularly high.

## 3.2 What Drives Reaching for Yield?

Delegated asset managers may be particularly likely to search for higher-yielding securities in times when interest rates are low (Rajan (2005), Borio and Zhu (2012), Rajan (2013), and Feroli et al. (2014)). Similarly, corporate bond funds may have strong incentives to engage in reaching for yield to a greater extent when investment opportunities are scarce in order to deliver sufficient yields to their investors. In addition, funds with certain characteristics may have a stronger incentive to reach for yield, particularly those that are more concerned about performance. In this section, we investigate how the degrees of reaching for yield covary with investment opportunities in fixed income markets represented by term structure variables, and whether individual fund characteristics can predict reaching for yield.

### 3.2.1 Time-Series Evidence

An important dimension of the investment opportunity set for fixed income investors can be summarized by aggregate term structure variables. We thus investigate whether reaching for yield is driven by term structure variables. In particular, we regress the reaching-for-yield measures on the level (1 year Treasury rate) and slope (30 year minus 1 year Treasury rate) of the term structure, *Level* and *Slope*, and the default spread (BBB minus AAA), *Def*. Table 4 reports the results: Columns (1)-(2) report results for the raw reaching-for-yield measure (Equation (1)) and Columns (3)-(4) reports results using the maturity-adjusted reaching for yield (Equation (2)). We control for fund fixed effects in columns (2) and (4) to account for any compositional differences in the set of active mutual funds over time.<sup>12</sup>

We find that mutual funds engage in reaching for yield to a greater extent when aggregate yields are low; this evidence is particularly strong when we use the maturity-adjusted reaching-for-yield measure, *i.e.*, funds particularly take on *non-maturity-related* bond risk premia in times when aggregate yields are low. For example, a one-percent decrease in the level of the term structure (or 1-year Treasury yield) is associated with a 8.2 basis

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<sup>12</sup>Standard errors are two-way clustered at the fund and quarter-levels.



point increase in funds' reaching for yield when the maturity-adjusted reaching for yield measure is employed. The coefficient is highly statistically significant (t-statistic of -6.41). This evidence is consistent with Rajan's (2005) argument that low yields predicate greater risk-taking by financial institutions.<sup>13</sup>

We also find strong evidence that funds are more (less) likely to reach for yield when *Slope*, the maturity premium, is low (high). Specifically, a one-percent decrease in the slope of the term structure (30-minus-1-year Treasury yields) is associated with a 12.8 basis point increase in reaching for yield when the maturity-adjusted measure is employed. One might wonder why maturity-adjusted reaching for yield increases when the term premium is lower. We find that this is consistent with substitution effects. Given scarcer investment opportunities due to smaller term premia, mutual funds also increasingly hold higher credit spread (given the same maturity) corporate bonds.

Finally, we find that funds are significantly more likely to reach for yield (or conversely, more likely to play it safe) when the default spread is narrow. This result thus implies that, when lower-rated corporate bonds become more expensive, corporate bond mutual funds scale up their risk-taking within each rating category by buying the least expensive bonds within each rating class. This result is similar when we use either the maturity-adjusted or the non-adjusted RFY measure.<sup>14</sup>

In sum, the results in Table 5 indicate that funds reach for yield more when the level and slope of the term structure is low and also when the default spread is narrow. We find that these results are consistent with the notion that funds prefer to hold higher-yielding securities when investment opportunities in the fixed income markets in general are scarce.

### 3.2.2 Cross-sectional Evidence

Next, we investigate whether cross-sectional differences in fund characteristics predict the reaching-for-yield motives of corporate bond funds. We specifically consider the following

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<sup>13</sup>This result is also consistent with Greenwood and Hanson (2011) who note that the compensating investment managers based on nominal absolute returns “may encourage risk shifting when interest rates are low.”

<sup>14</sup>In untabulated results, we find that the result that funds are more likely to play it safe when the default spread is high is driven mainly by high-yield funds. This result is to be expected as the high-yield funds are the most highly exposed to changes to this risk premium.

fund characteristics that are known in the literature to be related to mutual funds' risk-taking incentives (e.g., Huang et al. (2011)): Fund age, net assets, and expense ratio. For example, young funds may have stronger incentives to catch up established funds. Holding riskier securities will deliver higher returns, which is economically similar to selling out-of-the-money put options, and young funds might simply take on more risk, betting that no major default events will happen. Larger funds might also reach for yield more if they have difficulty finding attractive investment strategies due to decreasing returns to scale. We also include a dummy variable on whether the fund is broker-sold, as Del Guercio and Reuter (2014) show that less sophisticated investors tend to purchase funds through brokers. We also include fund style dummy variables for investment grade and high yield funds.

Table 6 reports the results, using the raw reaching-for-yield measure (column (1)) and the maturity-adjusted measure (columns (2)). All regressions control for Fund Style-Quarter fixed effects (based on the Lipper fund style category). We find that particularly young funds in the cross-section tend to reach for yield (significant at the 10% level). This result is consistent with the idea that young funds have stronger incentives for higher returns through taking more risk. We further find that larger funds in the cross-section are more likely to reach for yield (column 1), but this result does not hold when we use the maturity-adjusted reaching-for-yield measure (column 2). This shows that larger funds in the cross-section are more likely to capture maturity premia, but not more likely to load on other yield components such as default and illiquidity premia.

Funds that reach for yield (play it safe) also tend to have higher (lower) expense ratios in column (1). This result only weakly suggests that funds' incentives for larger flows lead to more risk taking, since the coefficient on expense ratio is no longer statistically significant in column (2). We also find that investment grade funds tend to reach for yield more, whereas high yield funds tend to engage in negative reaching for yield, consistent with the results presented in Tables 2 through 3. This result is particularly interesting, as funds labeled as safer (investment grade funds) actually engage in more reaching-for-yield, while funds labeled as riskier (junk bond funds) play it safe. However, we do not find evidence that broker-sold funds reach for yield to a greater extent than other funds.

In sum, funds are more likely to reach for yield when aggregate yields and the yield slope is low, as well as when the default spread is narrow. Further, larger and younger funds are more likely to reach for yield, and funds reach for yield to a greater extent as they raise fees. Lastly, funds specializing in high yield bonds tend to reach for yield less, while investment grade funds reach for yield more.

### 3.3 Does reaching for yield attract more flows?

In this section, we investigate whether reaching for yield affects fund flows. Bond funds regularly report the yield-to-maturity of their bond portfolios, so we ask whether investors reward funds as they increase or decrease their yields. Specifically, we employ the decomposition of the change in reaching for yield, as provided in (3):  $\Delta RFY_{i,t} \equiv \Delta RFY1_{i,t} + \Delta RFY2_{i,t} + \Delta RFY3_{i,t}$ . If investors respond to funds' active changes in holdings towards higher-yielding bonds, we expect future fund flows to respond positively to  $\Delta RFY1_{i,t}$ .

In Table 7, we examine the extent to which future fund flows respond to these active or passive changes in reaching for yield by regressing the next quarter's fund flows on the three components in Equation (3). The results show that fund flows respond positively to active changes in reaching for yield ( $\Delta RFY1_{i,t}$ ) in columns (2) through (4). The coefficient estimates on  $\Delta RFY1_{i,t}$  are highly statistically significant with t-statistics higher than 3 across all of the specifications considered. The regressions control for a range of other variables that are known to explain future fund flows (including, e.g., past flows and past returns), and these results are robust to all such controls as well as Fund Style\*Quarter fixed effects. In contrast, when we consider the total change in reaching for yield,  $\Delta RFY_{i,t}$ , without employing the decompositions as in column (1), we find no evidence that flows respond positively to changes in reaching for yield. Overall, the coefficient estimates on  $\Delta RFY1_{i,t}$  in Table 7 indicate that investor flows into mutual funds respond positively to active changes in reaching for yield.

By contrast, the mechanical change in reaching for yield  $\Delta RFY2_{i,t}$  due to bond price changes is strongly negatively related to future fund flows, consistent with the well-known stylized fact that fund flows respond negatively to fund performance. When the bonds

held by funds experience low returns compared with benchmarks, the measure  $\Delta RFY2_{i,t}$  is positive, which in turn predicts lower future flows. The third component, the interaction of holdings changes with changes in yields ( $\Delta RFY3_{i,t}$ ) tends to be positively related to flows, although not statistically significantly so.

The overall results indicate that fund investors tend to respond to changes in reaching for yield; in particular, investors direct more flows towards funds that have actively changed their portfolio towards relatively higher-yield bonds. These results are quite intuitive. Bond funds advertise current yield-to-maturity of their investments. Fund investors will take both past performance and also current yields into account, because the latter might capture future expected returns (other things being equal). High promised yields are particularly attractive if a fund’s risk profile does not look any riskier based on its bond ratings profile, which is precisely what the reaching-for-yield measure captures.

### 3.4 Does reaching for yield result in higher returns?

The previous section showed that funds are rewarded with increased flows when they increase their active reaching for yield. The natural question is whether investors are correct in directing their money towards funds that engage in reaching for yield, and whether reaching for yield is a source of superior returns, potentially attracting continued flows. In this section, we analyze and compare the raw return performance of funds that engage in reaching for yield to a greater extent with those that reach for yield to a lesser extent. In the next section, we then analyze whether any performance differences are due to beta (risk) or alpha (risk-adjusted excess returns).

In Table 8, we begin by performing Fama-MacBeth regressions of monthly returns on the fund’s (lagged) reaching for yield. Because reaching for yield is correlated with the average rating of the bonds in a portfolio (see Table 2), and bond ratings might predict returns independently, in columns (2) and (3) we further control for the weighted average rating of bonds held by funds,  $WAR$  (Equation (5)). In column (3), we additionally control for fund characteristics that might be correlated with returns such as expense ratio, age, total net assets, and flow. In these regressions, we limit the sample to include only

fund-months in which over 75% of the portfolio is held in corporate bonds. We limit the sample this way because we don't want returns on other types of securities these funds may hold to unduly influence the fund-level returns.

The results show that, using the Fama-MacBeth framework, higher reaching for yield does predict higher future performance. When the reaching-for-yield measure alone is included in the regression, the coefficient estimate is not statistically significant, which may be due to the fact that our measure of reaching for yield does not take ratings into account. In column (2), we find that reaching for yield is positively associated with higher fund returns with a t-statistic of 1.76. When we control for other fund characteristics in the regression (column (3)), the coefficient estimate of reaching for yield is statistically significant at 5% level. The economic magnitude is also quite large: A one-percent reaching-for-yield measure for a fund (above the bond-by-bond rating-matched benchmark yield) predicts around a 8bp higher return per month, *i.e.*, around 96bp per year. This result suggests that each unit of reaching for yield corresponds with almost-as-great higher returns on an annual basis.

We next analyze the relation between reaching for yield and returns using the calendar-time portfolio method. At the end of each quarter, we first sort funds into terciles based on the average ratings of bonds that they hold (these groups can be described as high-yield funds, mixed-quality funds, and investment-grade funds, respectively). Within these rating-based terciles, we further sort (*i.e.*, dependent sort) the funds into three terciles based on each fund's reaching-for-yield measure (Equation (1)). Within these three-by-three sorts of funds, we equal-weight the funds into portfolios that we hold for the three months over the following quarter.

Table 9 reports the monthly returns of each of these 3-by-3 portfolios. The right-most column further reports the monthly long-short return difference between the highest reaching-for-yield and lowest reaching-for-yield portfolios across each of the three bond rating terciles. We find that higher reaching for yield is strongly related to future returns. The funds in the highest reaching-for-yield tercile outperform the funds in the lowest tercile by around 11bp-15bp per month, *i.e.*, around 1.2-1.8% on an annualized basis.<sup>15</sup>

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<sup>15</sup>Also note that, as we might expect if lower ratings imply higher risk-and-return, returns are monotonically

Reaching for yield results in higher performance and thus is a relatively easy-to-implement way of enhancing returns to investors. These positive returns are nevertheless raw returns, and not adjusted for potential risk factors (other than ratings). In the next section, we therefore control for common bond risk factors, and analyze whether or not reaching for yield also results in risk-adjusted outperformance.

### 3.5 Is This Alpha or Beta?

The results thus far show that funds may have an incentive to reach for yield due to an incentive to boost performance and attract more flows. Many bond funds claim to be superior bond pickers; and if they pick bonds with high yields (low prices) but with low risk, it is a sign of such skill. That is, higher-yielding bonds are not necessarily riskier than otherwise similar bonds, they may just represent better deals (e.g., because they have been overlooked by other money managers). Thus, it is plausible that at least part of the performance from reaching for yield could be due to such picking of cheaper-but-not-riskier bonds, and thus a sign of skill. But if, on the other hand, the higher returns are simply due to funds loading up on risk factors, these fund managers may not have superior bond-picking skills. Thus, it is an empirical question as to whether reaching for yield is simply an easy way of boosting performance by taking on more risk or a sign of true skill.

To analyze whether the raw outperformance of reaching for yield is due to risk (beta) or superior bond-picking skill (alpha), we take the long-short calendar time portfolios analyzed in the previous section and regress these monthly returns on common bond risk factors. As described in the previous section, these long-short portfolios are first sorted on ratings, and then, within ratings, on the fund's reaching-for-yield measure (Equation (1)). The bond risk factors we consider are a market factor (the CRSP value-weighted stock return minus T-bill rate), a term factor (30-year Treasury minus 1-year Treasury bond return), and a default factor (value-weighted corporate bond return minus T-bill rate).

Table 10 presents the estimation results of the factor loadings and alphas of portfolios.

We find that controlling for common risk factors dramatically reduces the excess returns of

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decreasing in higher ratings as we move downwards in the table, which means that it is important to control for the average rating quality in these regressions.

the long-short strategies formed on the reaching-for-yield measure. For the higher rating portfolio, the alpha is even negative, -0.18% monthly, and statistically significant at the 5% level (column (3)). For the other portfolios, the alphas are economically smaller than the raw excess returns in Table 9 and statistically insignificant from zero (columns (1) and (2)).

This reduction in alphas is due mainly to the loadings on the risk factors considered. The main risk-loading is on the default factor (*Def*), which is to be expected if reaching for yield involves exposure to higher corporate default risk. For the high-rated portfolio in column (3), we find that the portfolio also has exposure to the term factor, while the term factor does not show up in the lower-rating portfolios.

In summary, the higher returns of funds that engage in reaching for yield can thus be explained by common risk factors and, as a result, are not consistent with superior bond-picking skills on the part of these funds.

## 4 Conclusion

In this paper, we first document the extent to which corporate bond funds reach for yield. Funds typically reach for yield among their investment-grade bond holdings, while they play it safe with high-yield (junk) bonds; this pattern is particularly strong in the quarters leading up to the financial crisis, and in the period after 2010. Reaching for yield becomes stronger when both the level and slope of the yield curve are low and the default spread is narrow. Young and large funds with high expense ratios have a stronger tendency to reach for yield.

We then show the implications of reaching for yield for mutual fund investors by examining future flows and performance. After funds actively change their holdings toward higher-yield bonds, they receive more inflows. Funds that engage in reaching for yield generate higher returns, but, after adjusting for common risk factors, there is no evidence that these funds have superior skill.

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zFigure 1

### Reaching for yield across rating classes

This figure shows the average reaching for yield across rating classes over time. The y-axis is the average reaching for yield in percent across funds (within a given rating class). The rating classes are based on Investment Grade (BBB- to AAA) and High Yield (C to BB+).

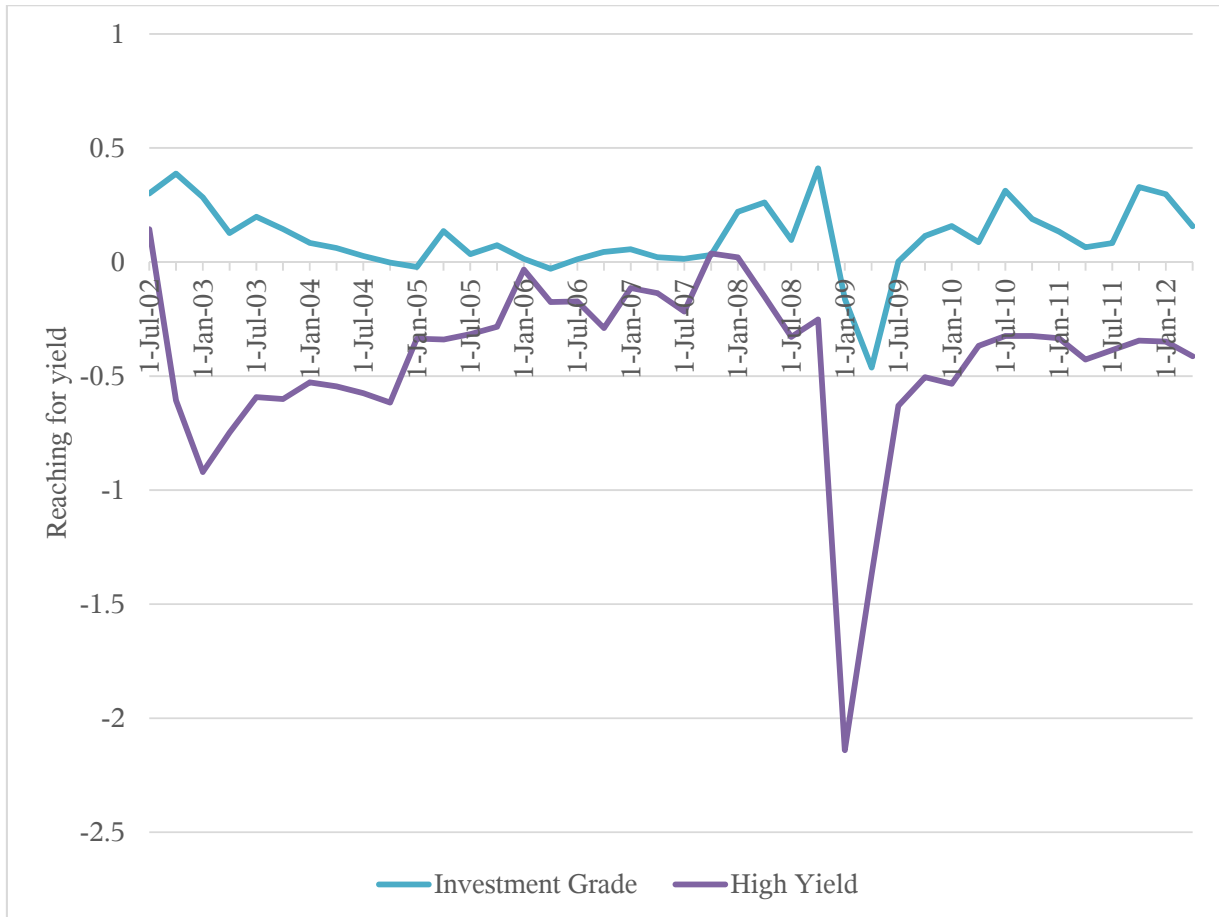


Table 1

**Summary Statistics**

This table reports summary statistics. The sample of mutual funds consists of all bond funds in the CRSP Mutual Funds database categorized as either corporate or general bond funds (in style categories I, ICQH, ICQM, ICQY, ICDI, ICDS, or IC) that at any point during the sample period held more than 50% of its portfolio in securities identifiable as corporate bonds in FISD. The sample period is from January 2002 through June 2012. The observations are at the portfolio-quarter level. If the same portfolio is held by several funds, the portfolio characteristics are calculated as the asset-weighted average across funds. Panel A reports fund characteristics. All of these measures are from CRSP, except “portfolio weight,” which is the fraction of the portfolio’s assets held in corporate bonds identifiable in FISD. Panel B reports reaching for yield as well as the change in reaching-for-yield measures, calculated as follows: The reaching-for-yield measure for a particular *bond*-date is calculated as the bond’s yield less a rating-matched benchmark yield (the value-weighted average yield across all corporate bonds in FISD with the same rating notch [e.g., B+] at that date). To calculate a reaching-for-yield measure at the *portfolio*-quarter level, we then value-weight the reaching for yield across all bonds held by the fund at a particular date. We further compute a maturity-adjusted reaching-for-yield measure whereby the benchmark yield is matched both on the rating notch as well as a maturity category (<3 years, 3-5 years, 5-7 years, 7-10 years, and >10 years). The quarter-to-quarter change in reaching for yield is decomposed into three components (active vs. passive changes) as described in Equation (5). Panel C reports average bond characteristics among the funds: the value-weighted average (across bonds) rating, time-to-maturity, and yield of the bonds held by each fund (as described in Equations (2)-(4)). All variables are winsorized at the 1% level.

## PANEL A: Portfolio characteristics

	mean	sd	p1	p25	p50	p75	p99	N
Return (% , quarterly)	1.4	3.1	-10.3	0.0	1.3	2.7	12.4	23,643
Total net assets (\$million)	2158	5549	2	113	415	1540	40,562	23,767
Flow	0.04	0.20	-0.32	-0.04	0.00	0.05	1.38	22,129
Turnover	1.5	1.6	0.1	0.5	0.9	1.9	8.3	22,964
Expense ratio (%)	0.85	0.35	0.17	0.60	0.81	1.07	1.87	23,099
Fund age (years)	11.3	7.5	0.6	5.7	10.1	15.2	37.6	23,731
Tenure (years)	6.6	4.4	0.7	3.2	5.7	9.1	20.2	15,603
Portfolio weight in corporate bonds (%)	41.8	27.3	1.0	19.9	34.2	65.2	95.6	23,174

*Table 1, continued*

PANEL B: Reaching-for-yield (fund-quarter)

	mean	sd	p1	p25	p50	p75	p99	N
Reaching-for-yield	-0.42	0.88	-3.34	-0.78	-0.27	0.06	1.97	22,857
Reaching-for-yield (maturity-adjusted)	-0.25	0.65	-3.10	-0.42	-0.14	0.02	1.65	22,857

PANEL C: Portfolio bond characteristics

	mean	sd	p1	p25	p50	p75	p99	N
Rating (weighted average)	12.6	3.4	6.1	9.0	13.7	15.2	18.4	22,860
Time-to-Maturity (weighted average, years)	7.1	3.5	0.7	4.8	7.1	9.0	19.7	22,863
Yield (weighted average)	6.3	2.6	1.4	4.7	5.9	7.8	15.7	22,857

Table 2

**Reaching for yield across ratings**

This table reports the average reaching for yield across rating classes. The observations are at the fund-quarter-rating level. The reaching-for-yield measure for each bond is calculated as the bond's yield less a rating-matched benchmark yield (the value-weighted average yield across all corporate bonds in FISC within the same rating notch (e.g., B+) at that date). We calculate the fund-quarter-rating-level reaching for yield by value-weighting the bond-level reaching-for-yield measures across all bonds held by the fund at a particular date within a rating class (we group here across broader rating classes than notches, e.g., we group B-, B, and B+ together). In Panel B, we further consider a maturity-adjusted reaching-for-yield measure whereby the benchmark yield is matched both on the rating notch as well as a maturity category based on each bond's remaining time-to-maturity (<3 years, 3-5 years, 5-7 years, 7-10 years, and >10 years). Standard errors are clustered at the portfolio level. t-stats are presented in parentheses. \*, \*\*, and \*\*\* represent statistical significance at the 10%, 5%, and 1% levels, respectively.

**PANEL A: Average reaching-for-yield across ratings**

	(1) C-CCC	(2) B	(3) BB	(4) BBB	(5) A	(6) AA	(7) AAA	(8) HY (C-BB)	(9) IG (BBB- AAA)
	-1.055*** (-7.73)	-0.401*** (-10.67)	-0.305*** (-13.02)	-0.036 (-1.14)	0.006 (0.19)	0.104*** (3.73)	0.320*** (11.12)	-0.450*** (-13.86)	0.085*** (2.95)
<i>N</i>	11,820	14,236	17,773	21,225	17,956	15,361	11,573	18,320	22,017

**PANEL B: Average reaching-for-yield across ratings (maturity-matched benchmark)**

	(1) C-CCC	(2) B	(3) BB	(4) BBB	(5) A	(6) AA	(7) AAA	(8) HY (C-BB)	(9) IG (BBB- AAA)
	-1.069*** (-9.73)	-0.399*** (-12.12)	-0.241*** (-13.32)	0.112*** (6.01)	0.145*** (9.84)	0.096*** (10.28)	0.081*** (9.75)	-0.384*** (-13.71)	0.183*** (11.01)
<i>N</i>	11,820	14,236	17,773	21,225	17,956	15,361	11,573	18,320	22,017

Table 3

**Reaching for yield around the investment-grade boundary**

This table repeats the analysis from Table 2 across finer rating notches around the investment grade boundary. The observations are at the fund-quarter-rating level. Panel A reports the average reaching for yield across each notch, and Panel B reports the average maturity-adjusted reaching for yield across each notch. Standard errors are clustered at the portfolio level. t-stats are presented in parentheses. \*, \*\*, and \*\*\* represent statistical significance at the 10%, 5%, and 1% levels, respectively.

**PANEL A: Average reaching-for-yield around the investment-grade boundary**

	(1) BB-	(2) BB	(3) BB+	(4) BBB-	(5) BBB	(6) BBB+
	-0.362*** (-13.10)	-0.300*** (-11.99)	-0.259*** (-10.50)	-0.086*** (-2.77)	-0.103*** (-3.03)	-0.110*** (-3.44)
N	14,030	15,247	16,133	19,440	18,429	17,466

**PANEL B: Average reaching-for-yield around the investment-grade boundary (maturity-adjusted)**

	(1) BB-	(2) BB	(3) BB+	(4) BBB-	(5) BBB	(6) BBB+
	-0.296*** (-13.10)	-0.243*** (-11.99)	-0.247*** (-10.50)	0.036* (-2.77)	0.051** (-3.03)	0.070*** (-3.44)
N	14,030	15,247	16,133	19,440	18,429	17,466



Table 4

**Reaching for yield by fund-style**

This table repeats the analysis from Table 2, while further splitting the results by reported fund style (Lipper codes): Investment grade funds (Panel A), High yield funds (Panel B), Flex funds (Panel C). The observations are at the fund-quarter-rating level. Standard errors are clustered at the portfolio level. t-stats are presented in parentheses. \*, \*\*, and \*\*\* represent statistical significance at the 10%, 5%, and 1% levels, respectively.

**PANEL A: Investment grade funds**

	(1) C-CCC	(2) B	(3) BB	(4) BBB	(5) A	(6) AA	(7) AAA	(8) HY (C-BB)	(9) IG (BBB- AAA)
	-0.110*** (-10.96)	-0.067 (-0.32)	-0.251*** (-4.70)	-0.243*** (-9.51)	-0.125*** (-9.71)	0.040*** (3.19)	0.070*** (7.96)	-0.208*** (-5.34)	-0.033*** (-3.18)
<i>N</i>	15,701	5,283	7,390	10,804	14,956	15,304	14,021	11,277	15,665

**PANEL B: High yield funds**

	(1) C-CCC	(2) B	(3) BB	(4) BBB	(5) A	(6) AA	(7) AAA	(8) HY (C-BB)	(9) IG (BBB- AAA)
	-0.693*** (-28.48)	-1.970*** (-33.76)	-0.600*** (-16.73)	-0.255*** (-10.09)	0.846*** (28.01)	1.261*** (16.39)	0.858*** (4.88)	-0.746*** (-27.94)	0.874*** (29.52)
<i>N</i>	5,186	5,019	5,165	5,149	4,399	1,060	192	5,185	4,437

**PANEL C: Flex funds**

	(1) C-CCC	(2) B	(3) BB	(4) BBB	(5) A	(6) AA	(7) AAA	(8) HY (C-BB)	(9) IG (BBB- AAA)
	-0.256*** (-5.21)	-1.571*** (-8.93)	-0.436*** (-5.62)	-0.188*** (-3.87)	0.288*** (6.42)	0.414*** (9.29)	0.283*** (7.06)	-0.448*** (-6.03)	0.349*** (8.78)
<i>N</i>	1,967	1,517	1,680	1,819	1,867	1,590	1,146	1,857	1,912

Table 5

**Reaching for yield: Time series determinants**

This table reports the time-series determinants of reaching for yield among corporate bond funds. The observations are at the fund-quarter level. The dependent variable is reaching for yield for a fund and date, calculated as described in Table 1. The independent variables are as follows: Yield (level) is the one-year Treasury yield; yield (slope) is the difference between the 30-year and one-year Treasury yields; and default spread is the yield difference between BBB- and AAA-rated corporate bonds. Each of these independent variables is averaged over the quarter. Columns (1) and (2) report results using the non-maturity adjusted reaching-for-yield measure, and columns (3) and (4) report results using the maturity-adjusted reaching-for-yield measure. Columns (2) and (4) additionally control for fund fixed effects. Standard errors are two-way clustered at the fund- and quarter-levels. t-stats are presented in parentheses. \*, \*\*, and \*\*\* represent statistical significance at the 10%, 5%, and 1% levels, respectively.

Dependent variable: Reaching-for-yield (fund-quarter)	(1) Non-maturity adjusted		(3) Maturity-adjusted	
	(1)	(2)	(3)	(4)
Yield (level)	-6.0*** (-3.90)	-3.4** (-2.24)	-8.2*** (-6.41)	-6.7*** (-5.03)
Yield (slope)	-15.1*** (-7.47)	-12.9*** (-6.53)	-12.8*** (-6.90)	-11.4*** (-6.05)
Default spread	-39.3*** (-8.77)	-40.2*** (-8.43)	-44.6*** (-9.58)	-45.0*** (-9.37)
Constant	0.494*** (5.48)	0.404*** (4.37)	0.711*** (9.00)	0.657*** (7.63)
Fund Fixed Effects	No	Yes	No	Yes
R <sup>2</sup>	0.075	0.528	0.129	0.465
N	22,857	22,857	22,857	22,857

Table 6

**Reaching for yield: Fund characteristics**

This table reports results on the relationship between reaching for yield and fund characteristics. The observations are at the fund-quarter level. Fund characteristics are from CRSP, and the reaching-for-yield measure is calculated as described in Table 1. Standard errors are clustered at the portfolio level. t-stats are presented in parentheses. \*, \*\*, and \*\*\* represent statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1) Non-maturity- adjusted	(2) Maturity- adjusted
Fund Age (log)	-0.056* (-1.78)	-0.051*** (-3.10)
Total Net Assets (\$million, log)	0.027*** (2.58)	0.007 (1.33)
Expense Ratio (%)	16.265*** (2.63)	2.556 (0.79)
Broker sold (indicator)	0.067 (1.30)	0.004 (0.13)
Fund style: Investment Grade (indicator) [base: Flex funds]	0.014 (0.20)	0.176*** (3.50)
Fund style: High Yield (indicator)	-0.510*** (-7.11)	-0.423*** (-7.59)
Year-Quarter FE	Yes	Yes
R <sup>2</sup>	0.156	0.315
N	20,948	20,948

Table 7

**Reaching for yield and Fund Flows**

This table reports results on the relationship between fund flows and (active or passive) changes in reaching for yield. The observations are at the fund-quarter level. The dependent variable is fund flows. The main independent variables are based on a decomposition of the change in reaching for yield into an active component (“reaching for higher yield”), a passive component (“poor returns”), and an interaction (“doubling down/locking in gains”) as described in Equation (5), all lagged by one quarter. The other independent variables are from CRSP: these variables are lagged by one quarter, except Flow, which is the average flow over the past four quarters, and Return, which is the return over the past four quarters. All regressions control for Fund-Style\*Quarter fixed effects (based on the Lipper style category). Standard errors are clustered at the portfolio level. t-stats are presented in parentheses. \*, \*\*, and \*\*\* represent statistical significance at the 10%, 5%, and 1% levels, respectively.

Dependent variable: Fund Flow (fund-quarter)				
All independent variables are lagged by one quarter				
	(1)	(2)	(3)	(4)
$\Delta$ Reaching-for-yield (total)	0.003 (0.74)			
$\Delta$ Reaching-for-yield 1 (“reaching for higher yield”)		0.085*** (5.77)	0.063*** (3.83)	0.058*** (3.63)
$\Delta$ Reaching-for-yield 2 (“poor returns”)		-0.010** (-2.03)	-0.012** (-2.10)	-0.012** (-2.27)
$\Delta$ Reaching-for-yield 3 (“doubling down”)		0.026 (1.35)	0.013 (0.60)	0.005 (0.23)
Fund Age (log)	-0.053*** (-13.25)	-0.053*** (-13.25)	-0.029*** (-7.94)	-0.030*** (-8.17)
Total Net Assets (\$million, log)	0.002** (2.07)	0.003** (2.14)	0.000 (0.02)	-0.001 (-0.47)
Turnover Ratio	-0.000 (-0.01)	0.000 (0.15)	-0.001 (-0.63)	-0.001 (-0.79)
Expense Ratio (%)	0.505 (0.65)	0.587 (0.75)	-0.252 (-0.33)	0.041 (0.05)
Flow (past year average)			0.155*** (10.00)	0.148*** (9.53)
Return (past year)				0.499*** (9.46)
Fund Style*Quarter fixed effects	Yes	Yes	Yes	Yes
R <sup>2</sup>	0.09	0.094	0.115	0.125
N	20,904	20,904	15,949	15,949

Table 8

**Reaching-for-yield and Returns: Fama-MacBeth**

This table reports results on the relationship between reaching for yield and returns. The observations are at the fund-month level. Panel A reports results for monthly Fama-MacBeth regressions of fund returns on reaching for yield and other fund characteristics. For these return regressions, we limit the sample to fund-quarters that have at least 75% of the portfolio invested in corporate bonds identifiable in FISD. t-stats are presented in parentheses. \*, \*\*, and \*\*\* represent statistical significance at the 10%, 5%, and 1% levels, respectively.

Fama-MacBeth regressions			
Dependent variable: Monthly fund return (%)			
All independent variables are lagged by one quarter			
	(1)	(2)	(3)
Reaching-for-yield	-0.010 (-0.28)	0.068* (1.76)	0.080** (2.09)
Average Bond Rating (value-weighted)		-0.042 (-1.50)	-0.050* (-1.88)
Turnover Ratio			0.016* (1.77)
Expense Ratio (%)			-7.070*** (-4.97)
Fund Age (log)			0.013 (1.48)
Total Net Assets (\$million, log)			0.003 (0.67)
Flow			0.006 (0.18)
Constant	0.595*** (3.42)	1.075** (2.26)	1.201*** (2.68)
R <sup>2</sup>	0.105	0.508	0.546
N	20,882	20,882	19,542

Table 9

**Reaching for yield and Returns: Calendar-time portfolios**

This table reports raw returns for monthly calendar-time portfolios sorted on the reaching-for-yield measure. At the end of every quarter, we sort the mutual funds in our sample into three-by-three portfolios based on two dimensions: 1) the value-weighted average rating of the bonds they hold, and 2) within each rating tercile (*i.e.*, dependent sort), the fund's reaching-for-yield measure as described in Table 1. We equal-weight mutual funds in each portfolio. We hold these portfolios for the next three months, and then re-sort them. The right-most column reports the monthly long-short return difference between the highest reaching-for-yield and lowest reaching-for-yield portfolios. For these return regressions, we limit the sample to fund-quarters that have at least 75% of the portfolio invested in corporate bonds identifiable in FISD. Standard errors are reported in parentheses. \*, \*\*, and \*\*\* represent statistical significance at the 10%, 5%, and 1% levels, respectively.

		<i>Reaching for yield tercile:</i>			<i>High-Low</i>
		<i>1 (Low)</i>	<i>2</i>	<i>3 (High)</i>	
<i>Average bond rating tercile:</i>					
<i>1 (Low)</i>	Mean	0.62**	0.73**	0.73**	0.11*
	Std.Err.	(0.26)	(0.26)	(0.27)	(0.05)
<i>2</i>	Mean	0.54***	0.64***	0.65***	0.11
	Std.Err.	(0.23)	(0.24)	(0.27)	(0.07)
<i>3 (High)</i>	Mean	0.34***	0.55***	0.49***	0.15
	Std.Err.	(0.09)	(0.14)	(0.19)	(0.13)
<i>Average (1-3)</i>	Mean	0.50***	0.64***	0.63***	0.12**
	Std.Err.	(0.18)	(0.20)	(0.22)	(0.06)

Table 10

**Reaching-for-yield and Returns: Alpha or Beta?**

This table reports alphas and betas for monthly long-short calendar-time portfolios sorted on the reaching-for-yield measure. The portfolios are constructed using a three-by-three sort on average ratings and reaching for yield as described in Table 10. Columns (1)-(3) report results for Long-Short portfolios of mutual funds sorted on the reaching-for-yield measure within funds that hold bonds of low, middle, and high average rating quality, respectively. The dependent variables are a market factor ( $R_m - R_f$ ), Term (30-year bond return - 1-year bond return), and Def (Equal-weighted corporate bond return -  $R_f$ ). Standard errors are reported in parentheses. \*, \*\*, and \*\*\* represent statistical significance at the 10%, 5%, and 1% levels, respectively.

Rating tercile: Average rating:	Hi-Lo Reaching-for-yield portfolio returns		
	Low B+	Middle BBB+	High AA-
	(1)	(2)	(3)
$\beta^{\text{Mkt}}$	0.02 (0.02)	-0.00 (0.02)	-0.02 (0.02)
$\beta^{\text{Term}}$	0.00 (0.01)	-0.04** (0.02)	0.17*** (0.02)
$\beta^{\text{Def}}$	0.05* (0.03)	0.21*** (0.04)	0.41*** (0.05)
Alpha	0.06 (0.05)	0.03 (0.07)	-0.18** (0.08)
$R^2$	0.090	0.342	0.658
N	117	117	117