Fragile Attraction: Bond Fund Yield and Investor Flows*

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Abstract

We uncover a dynamic link between bond fund yield and investor flows. We find that bond funds with higher SEC yield attract more flows, after controlling for past fund returns and Morningstar ratings. However, this investor preference for bond fund yield is unstable, fluctuating with financial market conditions. Monetary policy tightening tends to weaken or reverse the relation. Spikes in credit spreads and stock and Treasury bond market volatilities lead to runs on high SEC yield funds, with heavy investor redemptions coinciding with sharp fund losses. These findings point to increased financial fragility following prolonged periods of accommodative monetary policy.

JEL: G10, G11, G12, G23

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1 Introduction

Open-end bond funds have grown dramatically, especially after the global financial crisis. According to the Investment Company Institute, bond funds received net cash inflows of $1.38 trillion from 2010 to 2022, doubling their total net assets from $2.20 trillion in 2009 to $4.49 trillion in 2022. As a result, bond funds have become an increasingly important player in the fixed-income markets, whose footprint can have a significant impact on bond markets and credit intermediation. Of particular concern among academic researchers and policy makers is the risk of abrupt shifts of bond fund flows during periods of market stress, which can increase fragility in bond markets. Indeed, a number of recent studies point to large investor redemptions of bond funds in March 2020 as a source of excessive volatility in corporate and Treasury bond markets during the Covid-19 crisis (e.g., Hespeler and Suntheim, 2020; Falato, Goldstein, and Hortaçsu, 2021; Jiang, Li, Sun, and Wang, 2022; Ma, Xiao, and Zeng, 2022). They highlight the importance of understanding the drivers of bond fund flows.

In this study, we examine how bond fund yield, a widely reported but understudied mutual fund attribute, drives bond fund flows. A mutual fund's yield is one of the most frequently featured fund attributes in fund quotations, marketing materials and regulatory disclosures. It typically appears at the top of a fund information page along with other crucial fund characteristics such as the Net Asset Value (NAV), returns, fund fees, etc.[1] Given the regulatory and industry attention, it is only natural to ask how mutual fund investors respond to the information of fund yield. However, despite a large body of literature on how investors respond to other fund attributes, especially fund returns or abnormal returns, much less is understood on how fund yield influences investor behavior.[2]

In our empirical analyses, we focus on the 30-day SEC yield, which is regulated and standardized

[1] See, e.g., the *Wall Street Journal*, Morningstar, Google Finance, Yahoo Finance, N-CSR forms, and mutual fund companies' websites, such as `https://www.pimco.com/en-us/investments/mutual-funds/total-return-fund/inst`.

[2] The literature examines how fund flows relate to fund characteristics such as past performance (e.g., Gruber, 1996; Sirri and Tufano, 1998), fund fees and expenses (Barber, Odean, and Zheng, 2005), taxes (Bergstresser and Poterba, 2002; Starks, Yong, and Zheng, 2006), search costs and advertising (Reuter and Zitzewitz, 2006; Huang, Wei, and Yan, 2007), and fund corporate governance (Bergstresser, Chalmers, and Tufano, 2008; Nanda, Wang, and Zheng, 2009; Christoffersen, Evans, and Musto, 2013). In the later part of the introduction, we provide a more detailed review of the literature on mutual fund flow-performance relationship.

by the Securities and Exchange Commission. It is defined as follows:

$$\text{SEC Yield} = 2\left[\left(\frac{\text{Coupon} - \text{Accrued Expenses}}{\text{Shares} \times \text{Price}} + 1\right)^{6} - 1\right],$$

where *Coupon* is the fund's dividends and interest income collected in the past 30 days, *Accrued Expenses* the fund's accrued expenses in the past 30 days, *Shares* the average daily number of outstanding shares that were entitled to distributions, and *Price* the maximum public offering price per share on the last day of the period. In essence, the SEC yield captures the ability of a bond fund to generate coupon income net of expenses based on its asset holdings. Because such coupon income streams in a diversified bond portfolio tend to be stable, the SEC yield, though backward-looking in construction, has predictive power for a bond fund's income-producing ability. Therefore, it stands to reason that bond fund investors may view high bond fund yield as a desirable attribute.

Our empirical tests use a comprehensive sample of actively managed bond funds (fixed-income funds excluding money market funds and municipal bond funds) from 1993 to 2023. We find that bond funds with higher SEC yield tend to attract more investor flows, after controlling for past fund returns and Morningstar ratings. This investor preference for bond fund yield is both economically meaningful and statistically significant. In terms of magnitudes, a one-standard-deviation increase in the SEC yield predicts a 0.17% increase in investor flows in the next month, which amounts to roughly $1 million per month for an average fund with a net asset of $572 million in our sample. This effect is quantitatively stronger than that of a one-standard-deviation increase in the annual fund return, after we control for the effect of investor preferences for higher total fund return. It is robust to the inclusion of fund style×month fixed effects, which absorb the variation in investor flows across different styles of bond funds through time; it is strong in both institutional and retail share classes; it is robust to using monthly returns in the past year separately, instead of annual returns, to allow for the possibility that investors may focus on different horizons, and robust to controlling for the non-linearity in the flow-performance relationship.

The evidence on investor preference for bond fund yield resonates with the literature on reaching for yield by institutional investors, which will be reviewed in greater detail. However, the primary focus of our study is on the dynamics of investor preferences for bond fund yield. We are especially

interested in the forces that lead flows into high yield bond funds to reverse. This is because such shifts in bond fund flows, if abrupt in changes in the direction and substantial in magnitudes, can have important implications for the fragility of bond markets.

We start by examining how changes in interest rates induced by shifts in monetary policy influence investor behavior of bond funds. Because movements in interest rates can be driven by many macroeconomic variables (e.g., Mankiw, 2022), we resort to a high-frequency identification, studying how investor preference for bond fund yield depends on changes in 10-year Treasury yield over a two-day window around the Federal Open Market Committee (FOMC) meetings. Because of the requirement of daily bond fund flows, our sample period is from July 2008 to June 2023 for this analysis. Our results show that investor preference for bond fund yield depends critically on the stance of the monetary policy. In particular, following a decrease in interest rates around the FOMC meetings, investor flows into high yield bond funds increase in the subsequent five to twenty days. Strikingly, when monetary policy tightens, the relation between bond fund yield and investor flows changes sign, which reverses investor inflows to outflows from high yield bond funds. This result provides initial evidence on the importance of monetary policy stance in driving investor preference for bond fund yield.

Our second set of analyses examines more broadly how changes in financial market conditions impact bond fund investor behavior. To gain intuition, we note a close connection between a bond fund's yield and its carry. According to Koijen, Moskowitz, Pedersen, and Vrugt (2018), an asset's carry is its expected return under the assumption of no price changes. In the case of a bond fund, its yield captures its expected return arising from its coupon stream; assuming no price changes, the yield is closely related to the carry on a bond fund. It is well-known that carry strategies are prone to crash risk, driven by sudden shocks to asset markets (e.g., Brunnermeier, Nagel, and Pedersen, 2008). Do bond funds with high SEC yield exhibit similar behavior?

A simple plot of the monthly return difference between bond funds with high and low SEC yield shows crashes of high yield bond funds during three episodes of crises in our sample period: the Long-Term Capital Management (LTCM) meltdown, the bankruptcy of Lehman Brothers (Global Financial Crisis), and the Covid-19 crisis. Measuring risk in terms of maximum drawdown (MDD), bond funds in the top yield decile experience an MDD exceeding 30% during the global financial crisis, as compared with a 5% MDD for bond funds in the bottom yield decile. Further analyses

show that when the credit spread and volatility indexes in the stock and Treasury bond markets (the Chicago Board Option Exchange Volatility Index, VIX, and the Merrill Lynch Option Volatility Estimate, MOVE, respectively) spike, high yield bond funds experience sharp losses, even after we exclude the three crisis episodes. Therefore, high yield bond funds tend to provide investors with steady income steams, but volatile capital gains with the risk of sharp losses. "Picking up nickels in front of a steamroller" appears to be a common feature of high yield bond funds and carry strategies.

The important question relevant for financial stability is how bond fund investors behave during financial market turbulence. Do they hold on to their bond fund investments despite steep losses on their capital or do they unwind their positions in panic? Our analyses show that spikes in the credit spread and volatility indexes of the stock and Treasury bond markets lead to heavy investor redemptions from high SEC yield funds. During the crisis episodes, outflows from high yield bond funds further intensify, but the adverse effects of widening credit spread and elevated asset market volatilities on outflows from high yield bond funds are strong even after we exclude the crisis episodes. In a nutshell, financial market turbulence leads to investor runs on high yield bond funds, when heavy investor redemptions coincide with sharp fund losses.

These results shed fresh light on the effect of highly accommodative monetary policy on the risk accumulated in the bond fund sector. Since the global financial crisis, monetary policy easing not only depresses the level of interest rates but suppresses credit spreads and volatilities in asset markets. Our results show that such compression in credit spreads and asset market volatilities is associated with capital gains of high yield bond funds; if credit spreads and asset market volatilities are maintained within a narrow range, the asset value of high yield bond funds tends to be relatively stable. This favorable effect on the fund value, coupled with their steady cash flows, renders high yield bond funds particularly appealing for investors. As a result, the growth of the bond fund sector tends to tilt towards funds with higher yield in our sample period, especially after the global financial crisis. When the stance of the monetary policy changes, however, widening credit spreads and ascending asset market volatilities unleash the downside risk of these funds. The tendency of investor runs under these circumstances may expose the fragility in the bond fund sector, which could threaten bond market stability.

To better understand the link between bond fund yield and investor behavior, we decompose

bond fund yield into three components: fund yield driven by the credit risk of its asset holdings, fund yield driven by its assets' effective duration, and a residual component unexplained by the credit risk and duration of its assets. We find that approximately half of the cross-sectional variation in bond fund yield is driven by credit risk, and less than 5% by duration risk. The residual component of fund yield can be related to the liquidity and optionality of its assets. As an initial exploration, we find that bond funds with higher residual yield tend to over-weight mortgage-backed securities and to a lesser extent asset-backed securities, which have embedded short positions in call options. In terms of the predictive power for fund flows, we find that the credit risk and residual components drive investor preference for bond fund yield. Interestingly, in our sample period, bond fund yield driven by its asset duration has a negative predictive power for bond fund flows. This result may be explained by the finding that the premium for fund duration risk is meager and statistically weak, but carries a substantial amount of risk when bond market volatility is elevated in our sample period. Perhaps as a result, bond fund yield driven by credit risk and the residual component mostly drive investor preferences for bond fund yield.

To the best of our knowledge, this study is one of the first that focus on the dynamic relation between bond fund yield, as captured by the SEC yield, and investor flows. By emphasizing an often neglected mutual fund attribute, it extends the literature on the mutual fund flow-performance relationship that focuses on return-based mutual fund performance measures (see, e.g., Ippolito, 1992, Brown, Harlow, and Starks, 1996, Chevalier and Ellison, 1997, Sirri and Tufano, 1998, Lynch and Musto, 2003, Huang, Wei, and Yan, 2007, Chen, Goldstein, and Jiang, 2010, Christoffersen, Musto, and Wermers, 2014, Berk and Van Binsbergen, 2016, Barber, Huang, and Odean, 2016, and Ben-David, Li, Rossi, and Song, 2022 for studies on equity funds; Zhao, 2005, Feroli, Kashyap, Schoenholtz, and Shin, 2014, Chen and Qin, 2017, and Goldstein, Jiang, and Ng, 2017 for analyses of bond funds; Hong, Lu, and Pan, 2024 for amplified performance-chasing induced by FinTech platforms for equity funds, bond funds, and mixed funds).

There is a follow-up literature on how the mutual fund flow-performance relationship affects the investment behavior of mutual fund managers (see, e.g., Brown, Harlow, and Starks, 1996; Chevalier and Ellison, 1997; Basak, Pavlova, and Shapiro, 2007). Our contribution to the literature is to show how investor preference for bond fund yield influences the asset allocation decisions of bond fund managers, based on the discontinuity between investment-grade and junk bonds classification. Our

additional finding that bond funds with high SEC yield tend to hold less cash is also of interest, because Goldstein, Jiang, and Ng (2017) shows that bond funds with less cash holdings tend to be more vulnerable to investor runs.

Our study also contributes to the literature that studies the tendency of institutional investors to reach for yield in a low interest rate environment (e.g., Becker and Ivashina, 2015 on insurance companies; Hanson and Stein, 2015 on commercial banks; Di Maggio and Kacperczyk, 2017 on money market funds; Lu, Pritsker, Zlate, Anadu, and Bohn, 2019 on pension funds; Choi and Kronlund, 2018, Chen, Cohen, and Gurun, 2021, and Jiang, Ou, and Zhu, 2021 on bond funds; and Campbell and Sigalov, 2022 on endowments and sovereign wealth funds). Our contribution to this literature is two-fold. First, instead of studying the behavior of agents in a low interest rate environment, our study centers on the behavior of principals, which shapes the incentives faced by institutional managers in a delegated asset management framework. Second, our primary interest is in the dynamic forces that lead investor preferences for bond fund yield to change, which drive the reversal of bond fund flows. The resulting insights shed light on the implications of bond fund expansion for financial stability.

Finally, there is a small but growing literature that studies how monetary policy transmits to asset markets through mutual fund flows (e.g., Jiang and Sun, 2020 and Daniel, Garlappi, and Xiao, 2021). Our addition to this literature is to examine not just interest rate changes, but changes in asset market volatilities, which interact with bond fund yield to have a large impact on bond fund flows. To illustrate, the monetary policy tightening cycle initiated in early 2022 not only leads to large increases in interest rates, but elevated volatilities in the Treasury market as reflected in the MOVE index. Based on our results, both jumps lead to the abrupt reversal of inflows of bond funds to outflows. Therefore, our paper reinforces the message of Stein (2012) on the importance of considering the financial stability consequences of monetary policy.

The rest of the paper is organized as follows. Section 2 explains the construction of the sample and summary statistics. Section 3 presents our baseline results on the relation between bond fund yield and investor flows, and studies how monetary policy tightening shifts the relation. Section 4 studies investor flows during periods of market turbulence. Section 5 decomposes the SEC yield into credit risk-driven, duration-driven and residual components. Section 6 studies the asset allocation decisions of high yield bond funds. Section 7 concludes.

2 Sample Construction and Summary Statistics

Our sample of bond funds consists of the intersection of the CRSP Survivor-Bias-Free US Mutual Fund Database and Morningstar. We select all actively managed fixed-income funds in the database, excluding money market funds due to their cash-like nature[3] and municipal bond funds because of the special tax treatment of municipal bonds. We drop index funds by using the CRSP index fund indicator. Our core sample includes 1,599 unique bond funds with 5,035 share classes, covering the period from January 1992 to June 2023.[4] Because we use past one year of data to measure performance, our statistical tests start from January 1993.

Figure 1 shows the dramatic expansion of bond funds in our sample period. At the beginning of 1993, there were 140 bond funds with around $86 billion under management;[5] toward the end of June 2023, there were 3,565 funds managing more than $3.3 trillion of assets. The exponential growth of bond funds coincides with a secular decline in the level of interest rates. For instance, the 10-year Treasury rate dived by seven tenths from 6.35% in 1993 to 1.5% in 2021, and then rose to 3.5% amid the Fed's rate hike from 2022.

Figure 2 shows the composition of the bond fund sector across major Morningstar category classifications. In Panel A, we classify major bond fund styles into two groups, low and high yield bond funds, based on their asset-weighted average fund yield in each style category. High yield bond fund styles include high yield bond, emerging markets bond, long-term bond, multisector bond, emerging-markets local-currency bond, nontraditional bond, corporate bond, long government, intermediate core-plus bond, intermediate core bond, and world bond, as defined by Morningstar. Low yield styles include world bond-USD hedged, bank loan, short-term bond, inflation-protected bond, intermediate government, ultrashort bond, short government, global bond, target maturity, global bond-USD hedged, and miscellaneous fixed income. We then aggregate the total net assets of each group of bond funds from January 1993 to June 2023. Panel A shows that in our sample period, the total net assets of low yield bond funds increased from $37 billions to $1 trillion, at a compound annual growth rate (CAGR) of 11.42%. The growth of high yield bond funds was even more striking, as total net assets jumped from $49 billions to $2.38 trillions, at a CAGR of 13.58%.

[3] Moreover, the seven-day money market fund yield is equivalent to the annualized seven-day money market fund total return.

[4] Prior to 1992, the coverage of yield information on bond funds by Morningstar is rather incomplete.

[5] We use mutual fund share classes as the unit of count for most empirical analyses, unless otherwise specified.

As a result of the difference in growth rates, the fraction of bond fund assets managed by high yield style bond funds increased from 57% to 70% over our sample period.

Panel B of Figure 2 presents the distribution of bond funds across investment styles (Morningstar category classifications) at the end of June 2023. It shows that the intermediate core-plus bond funds enjoy the highest popularity among bond fund investors (29.7% of all bond fund assets), followed by the intermediate core bond funds (23.7%), short-term bond funds (12.1%), multisector bond funds (7.5%), and high yield bond funds (7.2%). Together the top five categories of bond funds represent more than 80% of total bond fund assets.

Table 1 shows the summary statistics of the key variables used in this study. The average monthly flow for these bond funds is 0.57% per month; these flows are highly volatile, with a standard deviation of 7.55%. The average monthly bond fund return is 0.29%, with a standard deviation of 1.53% per month. Bond fund return has fat tails and is left-skewed. The average SEC yield is 3.46%. The average bond fund in our sample has more than $570 million of assets under management, is about 11 years old, charges an expense ratio of 0.91%, and has a 23% chance of charging a rear-end load.

3 Bond Fund Yield and Investor Flows

To examine the relation between bond fund yield and investor flows, we extend the conventional flow-performance regression by including the bond fund yield variable, as follows:

$$Flow_{i,t+1} = \alpha + \beta \times Yield_{i,t} + \gamma \times Return_{i,t} + \lambda \times Controls_{i,t} + \epsilon_{i,t+1}, \tag{3.1}$$

where $Flow_{i,t+1}$ is the proportional flow for fund i during month $t+1$; $Yield_{i,t}$ is fund i's SEC yield or style-adjusted SEC yield observable at the end of month t; and $Return_{i,t}$ is past one-year return ending in month t, measured as the sum of fund i's monthly returns from $t-11$ to t. The control variables include Morningstar *Rating Scale* (1 to 5), *Past Flow*, the log of fund *Total Net Assets*, the log of fund *Age* in years, the *Expense Ratio* and *Rear-end Load*. In these regressions, we include style fixed effects and month fixed effects, or style×month fixed effects, and cluster standard errors by fund.

3.1 Attraction of Bond Fund Yield: Baseline Results

Panel A of Table 2 shows the regression results, which indicate a strong relation between investor flows and fund yield. Column 1 shows that a bond fund with a higher SEC yield tends to receive more inflows from investors, after controlling for total fund returns and other fund characteristics. In terms of magnitudes, the slope coefficient for the SEC yield is 0.078, which shows that a one-standard-deviation increase in the SEC yield predicts a 0.17% (2.15×0.078%) increase in investor flows in the next month, representing one-third of the average monthly fund flow. As a comparison, the slope coefficient for the past one-year return is 0.086, where a one-standard-deviation increase predicts a 0.13% (1.53×0.086%) increase in investor flows in the following month, which is weaker than that of the SEC yield. We note that mutual fund yield is a component of total fund return. The incremental effect of fund yield on investor flows shows that mutual fund investors indeed pay special and extra attention to the yield component of a fund's return.

In the fixed-income universe, there is substantial variation in the yield across different asset classes. In other words, bond funds have large differences in the yield across investment styles. Do the preceding results simply capture the differences in the yield across fund styles? To address this question, we proceed in two ways. First, we compute a style-adjusted excess SEC yield, which subtracts the average fund yield in a given fund style from a particular bond fund's yield. Column 3 presents the results based on the style-adjusted yield, which indicates similar effects: bond funds with higher yield compared with their peers in the same style group enjoy higher inflows. In terms of magnitudes, a one-standard-deviation increase in the style-adjusted yield predicts a 0.067% (0.009×7.456%) increase in investor flows in the following month. Second, we include style×month fixed effects in the regressions, which absorb all the variations in flows across fund styles through time. Columns 2 and 4 show the results, which deliver a similar message.[6] The effects of fund-level variation in yield on investor flows remain large and statistically significant. A comparison of the regression coefficients across Columns 1–2 and Columns 3–4 indicates that style-level variation is a relatively small contributor to the total effect of bond fund yield on fund flows. In the remainder of the paper, we focus largely on the SEC yield, instead of the style-adjusted SEC yield.

[6] With style×month fixed effects, singleton observations (i.e., only one observation in a style-month group) are automatically dropped. Therefore, the total numbers of observations used in Columns 2 and 4 are slightly less than those in Columns 1 and 3 with style fixed effects and month fixed effects.

To understand further the relation between bond fund yield and investor flows, we segregate institutional and retail fund shares and re-estimate Equation 3.1 separately for each group. The idea behind this analysis is that institutions and individuals can differ in their investment objectives and sophistication, which can lead to a different relation between fund yield and investor flows. As compared with adding an interaction term between yield and an investor type indicator in Equation 3.1, the advantage of this separate regression approach lies in its flexibility that allows the relation between other fund characteristics and flows to vary with investor types. The results in Panel B of Table 2 show that both retail investors and institutions tend to prefer bond funds with high SEC yield; in terms of magnitudes, the effect of the SEC yield is similar for both investor types.

Before leaving this subsection, it is worth noting that the relation between fund yield and flows is fairly robust. In Table A.1 of the Internet Appendix, we drop bond funds with total net assets below $5 million; the results are largely intact. In Table A.2, we control for alternative specifications of the flow-performance relations. First, instead of using past 12-month return, we include each of the 12 monthly returns in the past year to allow for the possibility that mutual fund investors may attach different importance to fund returns measured in different horizons. Second, in addition to past annual return, we include an interaction between past annual return and a negative annual return dummy to control for non-linearity in the flow-performance relationship. The predictive power of bond fund yield for investor flows is robust.

3.2 Why Is Higher Bond Fund Yield Attractive?

What is behind the investor preference for bond fund yield? To address this question, we note that although the SEC yield is backward-looking, based on the fund's income in the past month, the cash flows from the bond holdings can be quite stable over time. As a result, a bond fund's SEC yield can have strong predictive power for the fund's future income streams, which makes the fund attractive for dividend- or income-oriented investors. We refer to this hypothesis as the stable income hypothesis. Alternatively, certain managers of bond funds may achieve higher yield by identifying underpriced bonds with abnormally high yield, therefore generating positive fund alphas. We label this hypothesis as the skilled manager hypothesis.

To distinguish between the two hypotheses, we use a portfolio approach, which is easy to inter-

pret for bond fund investors. At each quarter end from January 1993 to June 2023, we sort bond funds into ten deciles based on the fund SEC yield.[7] For each decile portfolio formed in quarter t, we compute its average fund yield and return in the subsequent quarter $t+1$. Table 3 reports the results. The first two rows show the equal- and value-weighted average SEC yield for each portfolio, indicating a sizable yield spread between the top and bottom deciles. For instance, the equal-weighted (value-weighted) average SEC yield for decile 1 is 2% (1.98%) per year, but reaches 7.84% (7.71%) for decile 10. The difference of 5.84% (5.73%) per year is economically large and statistically strong.

How persistent is the difference in yield between deciles 1 and 10? Figure 3 plots the average yield for bond funds in the top and bottom deciles during the 12 months following portfolio formation. Panels A and B show a fairly stable gap in the SEC yield between bond funds in deciles 1 and 10 throughout the next year on both equal- and value-weighted bases. By investing in high yield bond funds, investors achieve *persistently* higher and stable income flows, which can render those funds more attractive.

Table 3 also shows the average returns and alphas of the bond fund portfolios. The results indicate that the average bond fund return increases with fund yield. For funds in decile 1, the average equal-weighted portfolio return is 2.88% per year, while funds in decile 10 deliver an average equal-weighted return of 6%. The return difference between the top and bottom deciles is 3.12%, which is smaller than the yield spread between the two. Using value-weighted portfolio returns, we find a similar pattern: higher yield bond funds deliver higher returns, although the return spread is less than one half of the yield spread between the top and bottom decile portfolios. These results indicate that the higher income flows of high yield bond funds drive their higher total returns.

To understand the nature of the higher returns on bond funds with higher yield, we perform standard mutual fund performance evaluation. In particular, we compute fund alphas by controlling for standard risk factors: the stock and bond market returns (R_{Stock} and R_{Bond}), both in excess of the risk-free rate (see, e.g., Friend, Westerfield, and Granito, 1978 and Goldstein, Jiang, and Ng, 2017), and two prominent bond market risk factors proposed by Fama and French (1993), the interest rate risk captured by the term premium (R_{Term}) and the default risk reflected in the

[7] For robustness, we also use style-adjusted SEC yield to construct portfolios and have similar results, reported in Table A.3 of the Internet Appendix.

default premium ($R_{Default}$). We run time-series regressions of portfolio returns on this four-factor model and estimate the regression intercepts or alphas. The last two rows of Table 3 show that after adjusting for risk factors, the difference in alpha between the top and bottom decile portfolios shrinks from 3.12% to 0.72% per year on an equal-weighted basis, and from 2.4% to 0.12% per year on a value-weighted basis, both statistically indifferent from zero.

In summary, the results in this subsection provide support to the hypothesis that high yield bond funds tend to reward their investors with high and stable income flows, which contribute to their higher total returns. However, there is no evidence supporting the notion that the high yield bond funds have special investment skills, which generate higher alpha.

3.3 Stance of Monetary Policy: A High-Frequency Identification

The preceding finding that the stable income flows from high yield bond funds tend to be a source of attraction for bond fund investors suggests that the strength of the attraction may depend on the interest rate environment in the economy. For instance, when interest rate is low, investor preferences for high income flows can be strong; in an environment with rising interest rates, such preferences may be attenuated or even reversed. Indeed, a number of recent studies show that the stance of the monetary policy can be an important driver of investor portfolio choice of income-generating assets including income funds (e.g., Jiang and Sun, 2020 and Daniel, Garlappi, and Xiao, 2021). Due to data limitations, however, these studies examine low-frequency movements in fund flows in association with low-frequency interest rate movements, which may be prone to the influence of confounding macroeconomic factors.

In this subsection, we contribute to the literature by using a high-frequency approach to identify the effects of changes in the stance of monetary policy on investor preferences for bond fund yield. In particular, we focus on a short window surrounding the Federal Open Market Committee (FOMC) meetings, which provide a natural experiment to sharpen our study of how interest rate drives bond fund flows. For this analysis, we use daily bond fund flows from July 2008 to June 2023 due to data availability. To measure the change in interest rate, we use the two-day change in 10-year Treasury note yield from one day before the conclusion of the FOMC meeting to one day after (ΔI); we also create an indicator, *Rate Increase*, that equals one if the interest rate change around FOMC

is positive and zero otherwise. To measure investor responses, we use the cumulative 5-, 10- and 20-day investor flows of bond funds starting from the FOMC conclusion day. The bond fund yield is measured at the month end preceding the FOMC meeting.

Table 4 shows the results. Our focus is on the difference-in-differences estimate, which is captured by the coefficient for the interaction of the change in interest rate and bond fund yield. In Columns 1–3, the positive and significant coefficient on the SEC yield indicates that when the 10-year Treasury note yield decreases or remains constant during a two-day window around the FOMC meetings (*Rate Increase* $= 0$), investor flows into high yield bond funds increase in the subsequent five to twenty days. In contrast, the coefficient for the interaction of SEC yield and the *Rate Increase* dummy is negative and statistically significant, with a greater magnitude comparing to the coefficient for SEC yield alone. This indicates that when monetary policy tightens, the relation between bond fund yield and investor flows substantially weakens or is reversed, leading to investor flows out of high yield bond funds.

In Columns 4–6, we use the interaction of fund SEC yield and a continuous measure of changes in interest rate around the FOMC meetings (ΔI, normalized to zero mean and unit variance) and find a similar pattern. The coefficient for the interaction is negative and statistically significant in the subsequent five to twenty days, which indicates larger flows into high yield bond funds when the 10-year Treasury note yield decreases around the FOMC meetings. The effect is also economically meaningful. For instance, the estimates in Column 4 show that a one-standard-deviation decrease in the 10-year Treasury yield increases the tendency by 1.5 times for bond fund investors to shift into high yield bond funds in the subsequent five days ($(-1) \times (-0.006) = 0.006$, which is a 1.5-fold increase relative to the slope coefficient for SEC yield). On the other hand, a sharp tightening of monetary policy leading to large increases in the 10-year Treasury yield may reverse the tendency of bond fund investors to reach for high yield bond funds. The results also show that the effects are stronger for flows measured over a longer time interval. Together, these results provide initial evidence on the dynamic investor preference for bond fund yield, influenced by the changing stance of the monetary policy.

4 Investor Flows during Financial Market Turbulence

The stable income hypothesis put forth in the preceding section emphasizes the desirable attribute of high yield bond funds for their investors. We now move to study the dynamics of investor preferences for bond fund yield, with a focus on the forces that expose the weaknesses of high yield bond funds and lead investor flows into these funds to reverse. Such shifts in bond fund flows, if abrupt in changes in the direction and substantial in magnitudes, can have important implications for the fragility of bond markets. Building on the evidence for the stance of monetary policy to influence investor preferences for bond fund yield, we examine in this section more broadly how investor preferences for bond fund yield fluctuate with financial market conditions.

To gain intuition, we note that a bond fund's yield is closely related to its carry (Koijen, Moskowitz, Pedersen, and Vrugt, 2018). Carry strategies tend to provide investors with attractive and apparently stable income flows, but sudden shifts in financial market conditions can lead to crashes in carry strategies and widespread unwinding of carry trades (Brunnermeier, Nagel, and Pedersen, 2008). Do high yield bond funds exhibit similar patterns during financial market turbulence? Do crashes in high yield bond funds induce investors to run for the exits? We address these questions in the following two subsections.

4.1 Crashes of High Yield Bond Funds When Market Is Turbulent

We start our analyses by examining the time-series properties of the performance of high yield bond funds. Figure 4 plots the monthly return differences between bond funds with high and low SEC yield (the top and bottom deciles in Table 3) over time. Panel A shows three prominent episodes of crashes of high yield bond funds in our sample period, which coincide with three systemic financial crises. The first crash took place in August 1998, when the Russian debt default led to the collapse of the giant hedge fund, Long-Term Capital Management (LTCM), disrupting the financial markets; the second one following the bankruptcy of Lehman Brothers in September 2008, sending ripples across the financial system; the third one in March 2020, which marked the onset of the Covid-19 pandemic, triggering market panics and fears of another recession.

During the first episode, bond funds with high SEC yield underperformed their peers with low yield by 15.2% on an equal-weighted basis and by 12.4% on a value-weighted basis. During

the second episode, they underperformed by 28.5% in a three-month window from September to November 2008 on the equal-weighted basis and by 24.8% on the value-weighted basis. In the third episode, high yield bond funds underperformed their low yield peers by 11.2% on both equal-weighted and value-weighted basis. These negative returns are extraordinarily large, considering that the standard deviation of monthly returns for bond funds is only 1.53% in the full sample period.

To further quantify the downside risk, we compute the maximum drawdown (MDD) for the bond fund portfolios. MDD is the maximum observed loss from a peak to a trough for a portfolio, before a new peak is attained. It is a key indicator of downside risk, with large MDDs implying larger left-tail risk. Panel B of Figure 4 plots the maximum drawdowns for bond funds in the top and bottom yield deciles over time, on the equal- and value-weighted basis, respectively.

The results show that high yield bond funds experienced substantially larger drawdowns than low yield bond funds during periods of financial market turbulence. For instance, during the global financial crisis in late 2008, bond funds in the top yield decile experienced an MDD exceeding 30%, as compared with a 5% MDD for bond funds in the bottom yield decile. During the most recent monetary policy tightening starting in early 2022, bond funds in the top yield decile experienced an MDD of 15%, compared to a 5% MDD for bond funds in the bottom decile. Overall, these results illustrate the tendency for high yield bond funds to crash when financial market conditions deteriorate.

To test for the impact of shocks to financial markets on high yield bond funds, we use three proxies for financial market shocks: the credit spread, which is the yield spread between Moody's seasoned Baa corporate bonds and Aaa corporate bonds; the CBOE's VIX index of stock market volatility; and the MOVE index of Treasury bond market volatility. We compute the monthly change in credit spread (Δ*Credit Spread*) and monthly change in the logarithm of VIX and MOVE ($\Delta\,VIX$ and $\Delta MOVE$) for our analyses. Since the financial crises have disproportionately large influence on the performance of high yield bond funds, we create an indicator variable $Crisis$ that equals one for observations in August 1998 (LTCM meltdown), September to November of 2008 (Lehman Brothers bankruptcy) and March 2020 (Covid-19 pandemic), and zero otherwise.

To examine the performance of high yield bond funds during financial market turbulence, we interact market shocks variables with bond fund yield in the preceding month, using the following

regression:

$$Return_{i,t+1} = \alpha + \beta_0 \times Yield_{i,t} + \beta_1 \times Yield_{i,t} \times Shocks_{t+1} + \gamma \times Return_{i,t} + \lambda \times Controls_{i,t} + \epsilon_{i,t+1}. \quad (4.2)$$

All the market shocks variables (except for the *Crisis* dummy) are normalized to zero mean and unit variance to make the regression coefficients comparable.

We focus on the coefficients for the interaction of SEC yield and market shocks variables. The results are reported in Table 5. Columns 1–3 show that when credit spread and volatilities in the stock and Treasury bond markets (the VIX and MOVE indexes) spike, high yield bond funds experience sharp losses, and the results stay robust in Column 4 when we exclude the three crisis episodes in our sample period. In line with Figure 4, Column 5 depicts the crashes of high yield bond funds across the three crisis episodes. Moving to Column 6 where we include all market shocks and crisis indicators, each variable demonstrates incremental predictive ability for losses of high yield bond funds amidst market turbulence.

In terms of magnitudes, Column 1 indicates that a one-standard-deviation increase in credit spread (Δ*Credit Spread*) reduces the slope coefficient for the SEC yield from 0.065 to -0.067 ($-0.132 + 0.065$). Consequently, a one-standard-deviation increase in the SEC yield leads to a 0.14% ($-0.067 \times 2.15\%$) decline in fund performance the following month, representing half of the average monthly fund return of 0.29%. Column 2 indicates that a one-standard-deviation increase in stock market volatility ($\Delta\, VIX$) changes the SEC yield coefficient from 0.056 to -0.138, implying that a one-standard-deviation increase in the SEC yield leads to a 0.30% lower fund performance in the next month. Column 3 demonstrates a similar effect with elevated bond market volatility, showing a reversion in the relationship between SEC yield and fund performance. Column 5 shows that high yield bond funds experience the most extreme losses during systemic financial events. In normal times (when $Crisis = 0$), a one-standard-deviation increase in SEC yield predicts a 0.21% increase in fund performance. However, during the three crisis episodes, the relationship reverses, with the SEC yield coefficient changing from 0.099 to -1.749, indicating that bond funds with a one-standard-deviation higher SEC yield lose 3.76% of asset value the following month.

Overall, these results suggest that high yield bond funds, despite providing apparently steady income flows over an extended period, tend to generate sharp losses during rare, systemic financial

events such as the global financial crisis or the pandemic. Even excluding the impact of these systemic events, high yield bond funds have negative exposures to fluctuations in asset market volatilities, experiencing large capital losses when volatilities spike.

4.2 Investor Runs during Market Turbulence

Given the steep losses of high yield bond funds during financial market turbulence, the important question relevant for financial stability is how bond fund investors behave in these market conditions. One hypothesis is that bond fund investors may focus exclusively on the cash flows from bond fund assets, despite the sharp capital losses. In this scenario, their investments in high yield bond funds are stable. This hypothesis is referred to as the sticky money hypothesis. Alternatively, the large capital losses of high yield bond funds may expose to their investors the weaknesses of these funds. Since spikes in the stock and bond market volatilities tend to accompany declines in the liquidity of these markets (Bao, Pan, and Wang, 2011), the decision of one investor's redemption may negatively impact the payoff of remaining shareholders, which is a key insight of Chen, Goldstein, and Jiang (2010) and Goldstein, Jiang, and Ng (2017). The coordination failure among investors may lead to runs on the high yield bond funds during market stress periods. This hypothesis is labeled as the investor run hypothesis.

To distinguish between the two hypotheses, we test how investor flows of high yield bond funds depend on financial market conditions, using the following regression:

$$Flow_{i,t+1} = \alpha + \beta_0 \times Yield_{i,t} + \beta_1 \times Yield_{i,t} \times Shocks_{t+1} + \gamma \times Return_{i,t} + \lambda \times Controls_{i,t} + \epsilon_{i,t+1}. \quad (4.3)$$

All market shocks variables (except for the *Crisis* dummy) are normalized to zero mean and unit variance to make the regression coefficients comparable.

We focus on the coefficients for the interaction of SEC yield and market shocks variables. The results, as reported in Table 6, show that when abrupt shocks hit the financial market, investors tend to stampede away from high yield bond funds, instead of reaching for yield.[8] For instance, Columns 1–3 indicate that spikes in the credit spread and volatility indexes of the stock and Treasury bond markets lead to heavy investor redemptions from high yield funds. In terms of magnitudes, a

[8] Results in this section are robust to controlling for interest rate changes during the same period.

one-standard-deviation increase in stock and bond market volatilities (ΔVIX and $\Delta MOVE$), or a two-standard-deviation increase in credit spread (Δ*Credit Spread*), would revert the coefficient for SEC yield from positive to negative, resulting in investor outflows from high yield bond funds. During the crisis episodes (Column 5), outflows from high yield bond funds further intensify. The magnitude of the outflows during these periods is six times greater than the magnitude of inflows to high yield bond funds in normal times ($-0.613 + 0.088 = -0.525$, which is six times greater than the slope coefficient of 0.088 for SEC yield alone). Notably, the adverse effects of widening credit spread and elevated asset market volatilities on outflows from high yield bond funds are strong even after we exclude the crisis episodes (Column 4) and control for crisis indicators (Column 6). These results suggest that financial market turbulence leads to investor runs on high yield bond funds, when heavy investor redemptions coincide with sharp fund losses.

4.3 Discussions on the Implications for Financial Stability

The results in this section provide fresh insights into the explosive growth of the bond fund sector, especially after the global financial crisis. As reviewed in the introduction, many previous studies have pointed out the effects of extraordinarily low interest rates after the 2008–2009 crisis, leading investors to reach for yield. A less well-understood effect of the new toolkit of monetary policy, such as quantitative easing and forward guidance, is the resulting stable financial market conditions including compressed credit spread and subdued asset market volatilities (Bernanke, 2022).

As shown in our regression results, when credit spread and asset market volatilities are low, high yield bond funds are characterized with stable fund asset values. This feature can make the high income flows from these funds particularly attractive. As a result, the expansion of the bond fund sector is not only large in scale, but also structurally leaning towards higher yield funds, which is consistent with Panel A of Figure 2.

However, when monetary policy tightens, widening credit spread and elevated asset market volatilities tend to expose the downside risks of these funds. The tendency of investor runs under these circumstances may lead to fire sales in the asset markets, which could threaten financial stability given the scale of the bond fund sector.

5 Decomposing Bond Fund Yield

Our return-based analyses provide evidence that high yield bond funds tend to crash during systemic financial crises, and that they have large, negative exposures to the fluctuations of asset market volatilities. These results paint a picture suggesting that the investment strategies of high yield bond funds resemble those of selling volatilities, which generate apparently stable income flows, but are subject to large losses when volatilities spike. In this section, we deepen our understanding of bond fund yield by linking it to the characteristics of bond fund portfolio composition.

Specifically, we decompose a bond fund's yield based on two primary risk characteristics of its bond holdings: the credit risk and effective duration. In each month, we run a cross-sectional regression of the SEC yield on the fund's average credit rating and the logarithm of its effective duration, both normalized to zero mean and unit variance. Panel A of Table 7 reports the Fama-Macbeth coefficients. It shows that the coefficient for credit risk is over three times greater than that for effective duration, indicating that credit risk exerts a more significant influence on fund yield. The regression R^2 in the first two columns shows that approximately half (49.7%) of the cross-sectional variation in bond fund yield is driven by credit risk, and less than 5% by duration risk.

Based on these cross-sectional regressions, we decompose a bond fund's yield into three components: fund yield driven by the credit risk of its asset holdings, fund yield driven by its assets' effective duration, and a residual component (the intercept plus error term) unexplained by the credit risk and duration of its assets. The residual component of fund yield can be related to the liquidity and optionality of its assets. As an initial exploration, Panel B of Table 7 shows that bond funds with higher residual yield tend to over-weight mortgage-backed securities and to a lesser extent asset-backed securities, which have embedded short positions in call options.

To assess the relation between the decomposed components of bond fund yield and investor preferences, we regress monthly bond fund flows and returns on the three yield components, all normalized to zero mean and unit variance. Panel A of Table 8 shows that the credit risk component ($\widehat{SEC}^{Credit}$) and residual component ($\widehat{SEC}^{Resid}$) drive investor preferences for bond fund yield. Interestingly, in our sample period, the asset duration component of bond fund yield ($\widehat{SEC}^{Duration}$) is *negatively* associated with investor flows. This result may be explained by the finding that the

premium for fund duration risk is meager and statistically weak, but carries a substantial amount of risk when bond market volatility is elevated in our sample period. Regarding fund performance, Panel B indicates that the credit risk and residual components of bond fund yield have strong associations with future fund returns, whereas the asset duration component shows no correlation.

Earlier we have shown that investor preference for high yield bond funds reverse abruptly during crisis or market turbulence periods. Which component of bond fund yield experiences the most reversion? To shed light on this, we re-examine investor flows and fund performance during financial market turbulence in relation to each yield component.

Table 9 reports the results. Consistent with the baseline results in Table 8, Panel A shows that the credit risk and residual components of bond fund yield ($\widehat{SEC}^{Credit}$ and $\widehat{SEC}^{Resid}$) positively predict future investor flows, whereas the asset duration component ($\widehat{SEC}^{Duration}$) is negatively associated with fund flows. Nonetheless, when the stock and bond market volatilities spike or during the crisis episodes (Columns 2-4), the negative coefficients for the interaction terms indicate investor runs on all three components of bond fund yield in periods of financial market turbulence. On the other hand, when credit spread spikes (Column 1), we find evidence of investor runs on the credit risk and residual components of bond fund yield, but not on the asset duration component. In line with investor runs on high yield bond funds, Panel B shows that all three components of fund yield are associated with steep financial losses amidst market turbulence, as suggested by the negative coefficients for the interaction terms.

6 A Note on the Asset Allocation of High Yield Bond Funds

To further understand the investment strategies of bond funds, we examine their asset allocation decisions in relation to fund yield. Specifically, we study the unconditional relation between fund yield and the allocation of fund assets across bonds with different credit ratings. We are especially interested in the allocation to BBB-rated bonds, which offer the highest yield within investment grade bonds, in comparison with allocation to above-BBB bonds. While BB-rated (or below) bonds offer even higher yield, they fall under non-investment grade bonds. For bond funds seeking to enhance yield without overexposure to non-investment grade bonds, BBB-rated bonds have a special appeal. We conduct this analysis at the level of individual funds, instead of share classes,

because a fund's asset allocations are identical across share classes.

The results, as shown in Table 10, indicate that a 1% increase in the SEC yield is associated with a 0.315% decline in cash holdings and a 3.536% decline in allocation of fund assets to bonds rated above BBB, yet a 0.936% increase in allocation of fund assets to BBB-rated bonds. A 1% increase in the SEC yield is also associated with a 2.75% increase in allocation to bonds rated below BBB (non-investment grade bonds).[9] These results show that high yield bond funds tend to have higher allocations to bonds with higher credit risk to enhance yield. Interestingly, we find that BBB-rated bonds, which offer the highest yield within investment grade bonds, play a particularly important role in driving the asset allocation of high yield bond funds. This result resonates with the findings of Becker and Ivashina (2015) in the context of insurance companies.

7 Conclusion

In the mid 1980s, the rapid decline in interest rates witnessed a boom in the bond fund sector. Stunned by the growth of bond funds, investigative journalists like Allan Sloan and Laura R. Walbert surveyed leading bond fund managers on how they computed and quoted bond fund yield, which appeared prominently in fund advertising materials.[10] Their analysis reveals substantial discretion on the part of fund managers and the resulting large discrepancy in the formulae for bond fund yield. This inconsistency sets the stage for the SEC to step in, standardizing and regulating how bond fund yield is calculated.

In this study, we use the SEC yield to examine the dynamic link between bond fund yield and investor flows. We find that bond funds with higher SEC yield tend to attract more investor flows, after controlling for past fund returns and Morningstar ratings. This finding resonates with the literature on reaching for yield; however, our primary focus is on the dynamics of investor preferences for bond fund yield. In particular, we are interested in the forces that lead investor flows into high yield bond funds to reverse.

We find that investor preference for bond fund yield depends critically on the stance of the monetary policy. Following a decrease in interest rates around the FOMC meetings, investor flows

[9] There is a residual bond category, namely unrated bonds, held by bond funds. Because their magnitude is small, we do not include them in the analysis.

[10] See "The Game is Getting Out of Hand," by Allan Sloan and Laura R. Walbert, *Forbes Magazine* (March 24, 1986): 30–34.

into high yield bond funds increase in the subsequent five to twenty days. When monetary policy tightens, the relation between bond fund yield and investor flows changes sign, which reverses investor inflows to outflows from high yield bond funds. This result provides initial evidence on the importance of the monetary policy stance in driving investor preference for bond fund yield.

Further analyses show that high yield bond funds are hit hard during financial market turbulence. When the credit spread and volatilities in the stock and Treasury bond markets spike, or during the three episodes of crises in our sample period (LTCM meltdown, global financial crisis, Covid-19 crisis), high yield bond funds experience sharp losses and investor runs. The resulting liquidation of fund assets could exert further stress on the bond markets, threatening financial stability.

Our results highlight the importance of incorporating financial stability concerns into monetary policy considerations. As shown in our study, the prolonged low rate, low volatility environment maintained by accommodative monetary policy contributes to a boom in bond funds, with a tilt towards those with higher SEC yield. When the stance of monetary policy shifts, however, the contraction of bond funds in scale and composition may lead to abrupt adverse effects on bond markets. As pointed out by Kashyap and Stein (2023), "policy may in some cases need to trade off the benefits of supporting the economy now against the possibility that an unwinding of financial-market sentiment could lead to worse outcomes in the future" (p. 71).

An interesting avenue for future research is to monitor the risk built up in the bond fund sector and to quantify the impact of investor runs on high yield bond funds on bond markets, especially the corporate bond markets. In an important study, Bretscher, Schmid, Sen, and Sharma (2024) show that the demand for high yield bonds is relatively inelastic. As a result, the price impact of negative demand shocks is larger for high yield bonds than investment-grade bonds. The interaction between investor runs on high yield bond funds and the return dynamics in the corporate bond market is an interesting topic for further research.

References

Bao, J., J. Pan, and J. Wang, 2011, "The Illiquidity of Corporate Bonds," *Journal of Finance*, 66(3), 911–946.

Barber, B., T. Odean, and L. Zheng, 2005, "Out of Sight, Out of Mind: The Effects of Expenses on Mutual Fund Flows," *Journal of Business*, 78(6), 2095–2120.

Barber, B. M., X. Huang, and T. Odean, 2016, "Which factors matter to investors? Evidence from mutual fund flows," *Review of Financial Studies*, 29(10), 2600–2642.

Basak, S., A. Pavlova, and A. Shapiro, 2007, "Optimal Asset Allocation and Risk Shifting in Money Management," *Review of Financial Studies*, 20(5), 1583—1621.

Becker, B., and V. Ivashina, 2015, "Reaching for yield in the bond market," *Journal of Finance*, 70(5), 1863–1902.

Ben-David, I., J. Li, A. Rossi, and Y. Song, 2022, "What Do Mutual Fund Investors Really Care About?," *Review of Financial Studies*, 35(14), 1723–1774.

Bergstresser, D., J. M. Chalmers, and P. Tufano, 2008, "Assessing the costs and benefits of brokers in the mutual fund industry," *Review of Financial Studies*, 22(10), 4129–4156.

Bergstresser, D., and J. Poterba, 2002, "Do after-tax returns affect mutual fund inflows?," *Journal of Financial Economics*, 63(3), 381–414.

Berk, J. B., and J. H. Van Binsbergen, 2016, "Assessing asset pricing models using revealed preference," *Journal of Financial Economics*, 119(1), 1–23.

Bernanke, B. S., 2022, *21st century monetary policy: The Federal Reserve from the great inflation to COVID-19*. WW Norton & Company.

Bretscher, L., L. Schmid, I. Sen, and V. Sharma, 2024, "Institutional Corporate Bond Pricing," Working paper, Swiss Finance Institute.

Brown, K. C., W. V. Harlow, and L. T. Starks, 1996, "Of tournaments and temptations: An analysis of managerial incentives in the mutual fund industry," *Journal of Finance*, 51(1), 85–110.

Brunnermeier, M. K., S. Nagel, and L. H. Pedersen, 2008, "Carry Trades and Currency Crashes," *NBER Macroeconomics Annual*, 23(1), 313–348.

Campbell, J. Y., and R. Sigalov, 2022, "Portfolio choice with sustainable spending: A model of reaching for yield," *Journal of Financial Economics*, 143, 188–206.

Chen, H., L. Cohen, and U. Gurun, 2021, "Don't take their word for it: The misclassification of bond mutual funds," *Journal of Finance*, 76, 1699–1730.

Chen, Q., I. Goldstein, and W. Jiang, 2010, "Payoff complementarities and financial fragility: Evidence from mutual fund outflows," *Journal of Financial Economics*, 97(2), 239–262.

Chen, Y., and N. Qin, 2017, "The behavior of investor flows in corporate bond mutual funds," *Management Science*, 63(5), 1365–1381.

Chevalier, J., and G. Ellison, 1997, "Risk taking by mutual funds as a response to incentives," *Journal of Political Economy*, 105(6), 1167–1200.

Choi, J., and M. Kronlund, 2018, "Reaching for yield in corporate bond mutual funds," *Review of Financial Studies*, 31(5), 1930–1965.

Christoffersen, S. E., R. Evans, and D. K. Musto, 2013, "What do consumers' fund flows maximize? Evidence from their brokers' incentives," *Journal of Finance*, 68(1), 201–235.

Christoffersen, S. E., D. K. Musto, and R. Wermers, 2014, "Investor flows to asset managers: Causes and consequences," *Annual Review of Financial Economics*, 6(1), 289–310.

Daniel, K., L. Garlappi, and K. Xiao, 2021, "Monetary policy and reaching for income," *Journal of Finance*, 76(3), 1145–1193.

Di Maggio, M., and M. Kacperczyk, 2017, "The unintended consequences of the zero lower bound policy," *Journal of Financial Economics*, 123(1), 59–80.

Falato, A., I. Goldstein, and A. Hortaçsu, 2021, "Financial fragility in the COVID-19 crisis: The case of investment funds in corporate bond markets," *Journal of Monetary Economics*, 123, 35–52.

Fama, E. F., and K. R. French, 1993, "Common risk factors in the returns on stocks and bonds," *Journal of Financial Economics*, 33(1), 3–56.

Feroli, M., A. K. Kashyap, K. L. Schoenholtz, and H. S. Shin, 2014, "Market tantrums and monetary policy," *Chicago Booth Research Paper No. 14-09*.

Friend, I., R. Westerfield, and M. Granito, 1978, "New evidence on the capital asset pricing model," *Journal of Finance*, 33(3), 903–917.

Goldstein, I., H. Jiang, and D. T. Ng, 2017, "Investor flows and fragility in corporate bond funds," *Journal of Financial Economics*, 126(3), 592–613.

Gruber, M. J., 1996, "Another Puzzle: The Growth in Activity Managed Mutual Funds," *Journal of Finance*, 51(3), 783–810.

Hanson, S. G., and J. C. Stein, 2015, "Monetary policy and long-term real rates," *Journal of Financial Economics*, 115(3), 429–448.

Hespeler, F., and F. Suntheim, 2020, *The behavior of fixed-income funds during COVID-19 market turmoil*.

Hong, C. Y., X. Lu, and J. Pan, 2024, "Fintech Platforms and Mutual Fund Distribution," *Management Science*, forthcoming.

Huang, J., K. D. Wei, and H. Yan, 2007, "Participation costs and the sensitivity of fund flows to past performance," *Journal of Finance*, 62(3), 1273–1311.

Ippolito, R. A., 1992, "Consumer reaction to measures of poor quality: Evidence from the mutual fund industry," *Journal of Law and Economics*, 35(1), 45–70.

Jiang, H., Y. Li, Z. Sun, and A. Wang, 2022, "Does mutual fund illiquidity introduce fragility into asset prices? Evidence from the corporate bond market," *Journal of Financial Economics*, 143(1), 277–302.

Jiang, H., and Z. Sun, 2020, "Reaching for dividends," *Journal of Monetary Economics*, 115, 321–338.

Jiang, W., J. Ou, and Z. Zhu, 2021, "Mutual Fund Holdings of Credit Default Swaps: Liquidity, Yield, and Risk Taking," *Journal of Finance*, 76, 537–586.

Kashyap, A. K., and J. C. Stein, 2023, "Monetary Policy When the Central Bank Shapes Financial-Market Sentiment," *Journal of Economic Perspectives*, 37, 53–76.

Koijen, R. S., T. J. Moskowitz, L. H. Pedersen, and E. B. Vrugt, 2018, "Carry," *Journal of Financial Economics*, 127(2), 197–225.

Lu, L., M. Pritsker, A. Zlate, K. Anadu, and J. Bohn, 2019, "Reach for yield by U.S. public pension funds," Finance and Economics Discussion Series 2019-048, Washington: Board of Governors of the Federal Reserve System.

Lynch, A. W., and D. K. Musto, 2003, "How investors interpret past fund returns," *Journal of Finance*, 58(5), 2033–2058.

Ma, Y., K. Xiao, and Y. Zeng, 2022, "Mutual fund liquidity transformation and reverse flight to liquidity," *Review of Financial Studies*, 35(10), 4674–4711.

Mankiw, N. G., 2022, "Government Debt and Capital Accumulation in an Era of Low Interest Rates," *Brookings Papers on Economic Activity*, 219, 231.

Nanda, V., Z. J. Wang, and L. Zheng, 2009, "The ABCs of mutual funds: On the introduction of multiple share classes," *Journal of Financial Intermediation*, 18(3), 329–361.

Reuter, J., and E. Zitzewitz, 2006, "Do ads influence editors? Advertising and bias in the financial media," *Quarterly Journal of Economics*, 121(1), 197–227.

Sirri, E. R., and P. Tufano, 1998, "Costly search and mutual fund flows," *Journal of Finance*, 53(5), 1589–1622.

Starks, L. T., L. Yong, and L. Zheng, 2006, "Tax-Loss Selling and the January Effect: Evidence from Municipal Bond Closed-End Funds," *Journal of Finance*, 61(6), 3049–3067.

Stein, J. C., 2012, "Monetary policy as financial stability regulation," *Quarterly Journal of Economics*, 127(1), 57–95.

Zhao, X., 2005, "Determinants of flows into retail bond funds," *Financial Analysts Journal*, 61(4), 47–59.

Figure 1: Growth of Bond Funds

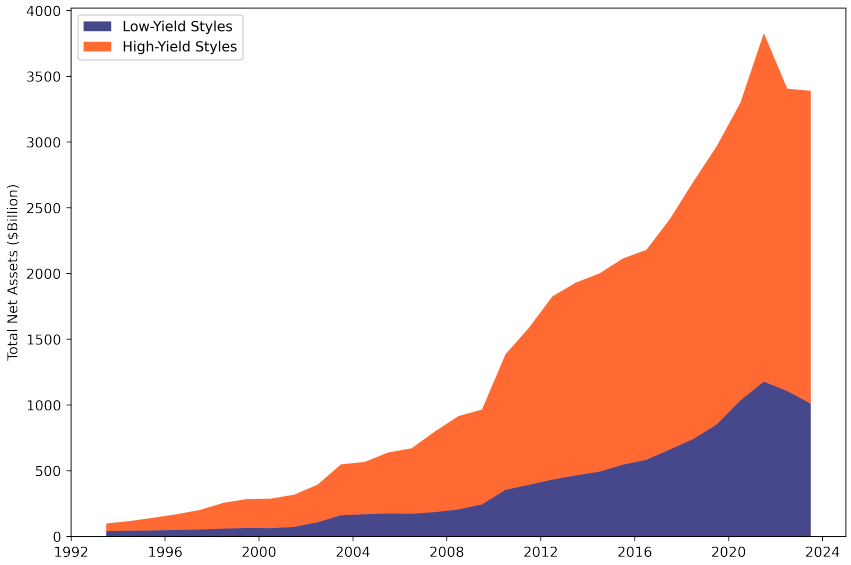
This figure reports the growth of actively managed bond funds from January 1993 to June 2023. The left panel shows the total assets under management in $billion and interest rate (10-year Treasury yield) over time. The right panel shows the number of bond funds (at the unit of share classes). Our sample excludes municipal bond funds and money market funds.



Figure 2: Major Bond Fund Styles based on Morningstar Categories

This figure shows the composition of the bond fund sector across major Morningstar category classifications. In Panel A, we classify major bond fund styles into two groups, low and high yield styles, based on their asset-weighted average fund yield in each style. High yield bond fund styles include high yield bond, emerging markets bond, long-term bond, multisector bond, emerging-markets local-currency bond, nontraditional bond, corporate bond, long government, intermediate core-plus bond, intermediate core bond, and world bond. Low yield styles include world bond-USD hedged, bank loan, short-term bond, inflation-protected bond, intermediate government, ultrashort bond, short government, global bond, target maturity, global bond-USD hedged, and miscellaneous fixed income. We plot the total net assets from January 1993 to June 2023 for each group of bond funds. Panel B shows the proportional distribution of top 10 bond fund styles based on assets under management at the end of June 2023. Our sample excludes municipal bond funds and money market funds.

Panel A: High and low yield bond funds



Panel B: Top 10 bond fund styles

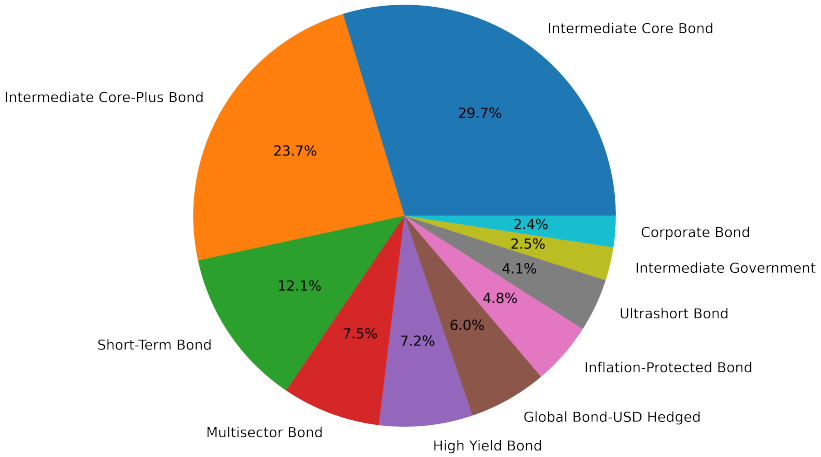
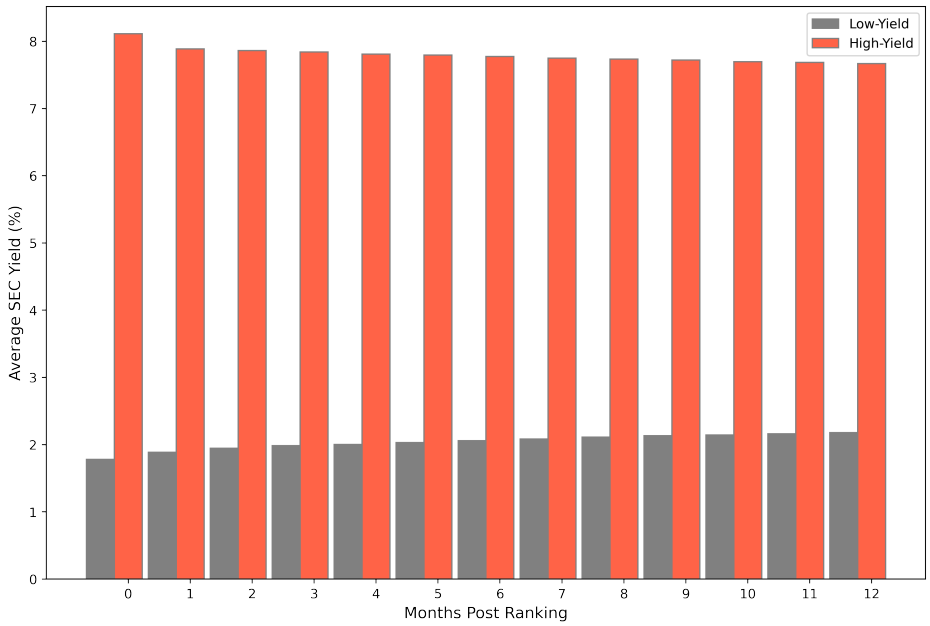


Figure 3: Average Bond Fund Yield after Portfolio Formation

This figure shows the average yield of high and low yield bond funds during the 12 months post portfolio formation. At the end of each quarter from January 1993 to June 2023, we group bond funds into decile portfolios based on their SEC yield. High yield funds refer to those in decile 10 and low yield funds in decile 1. Panel A plots the equal-weighted average SEC yield of high and low yield funds with holding periods expanding from 1 month to 12 months post portfolio formation, and Panel B plots the value-weighted average.

Panel A: Equal-weighted average yield



Panel B: Value-weighted average yield

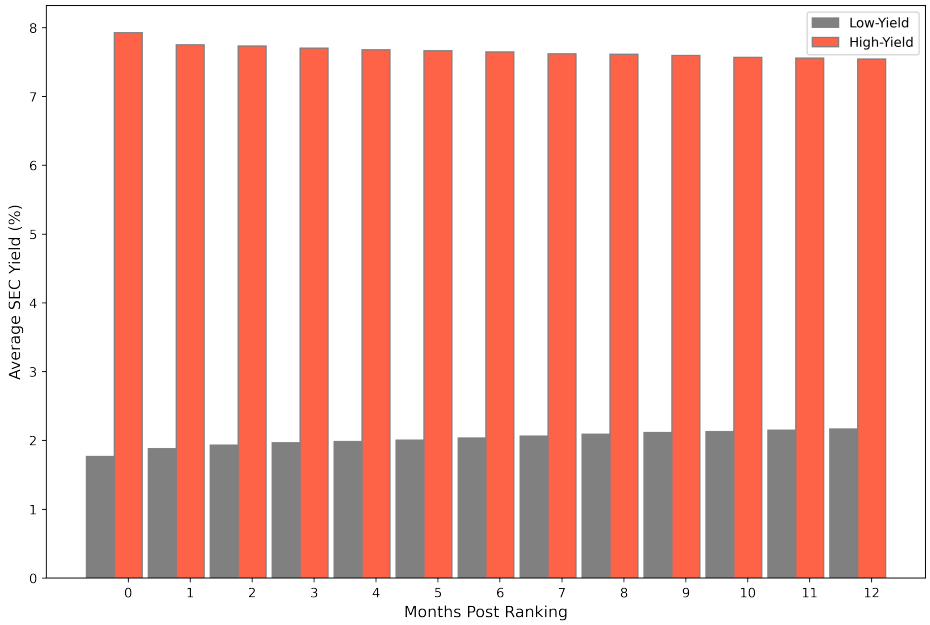
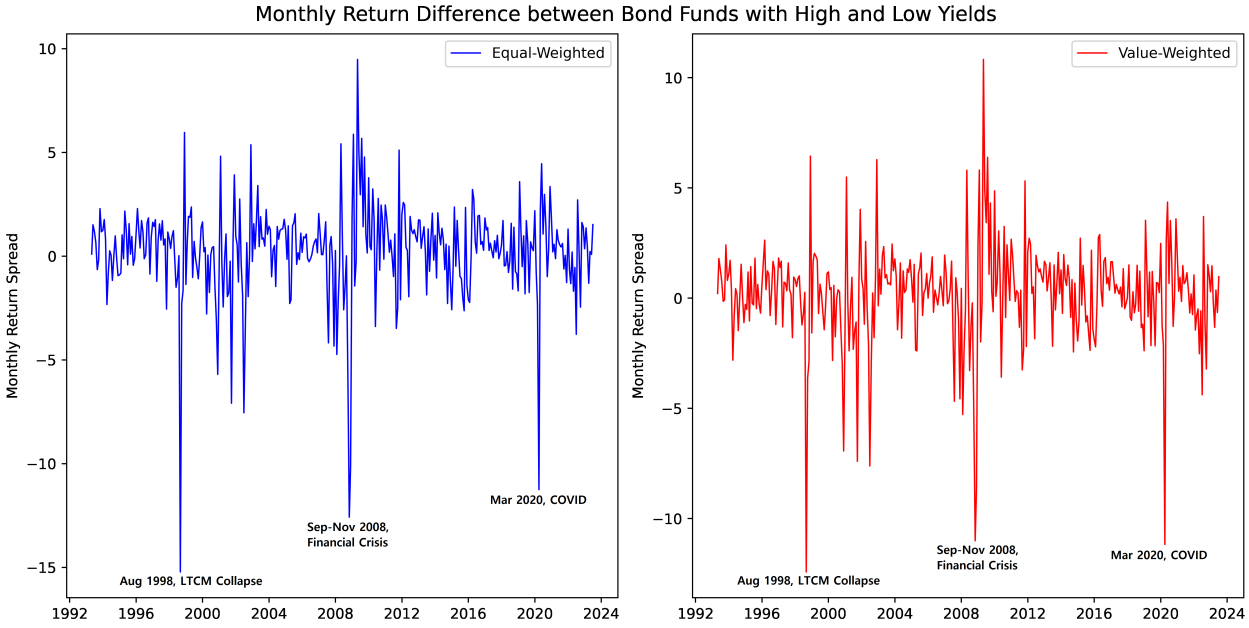


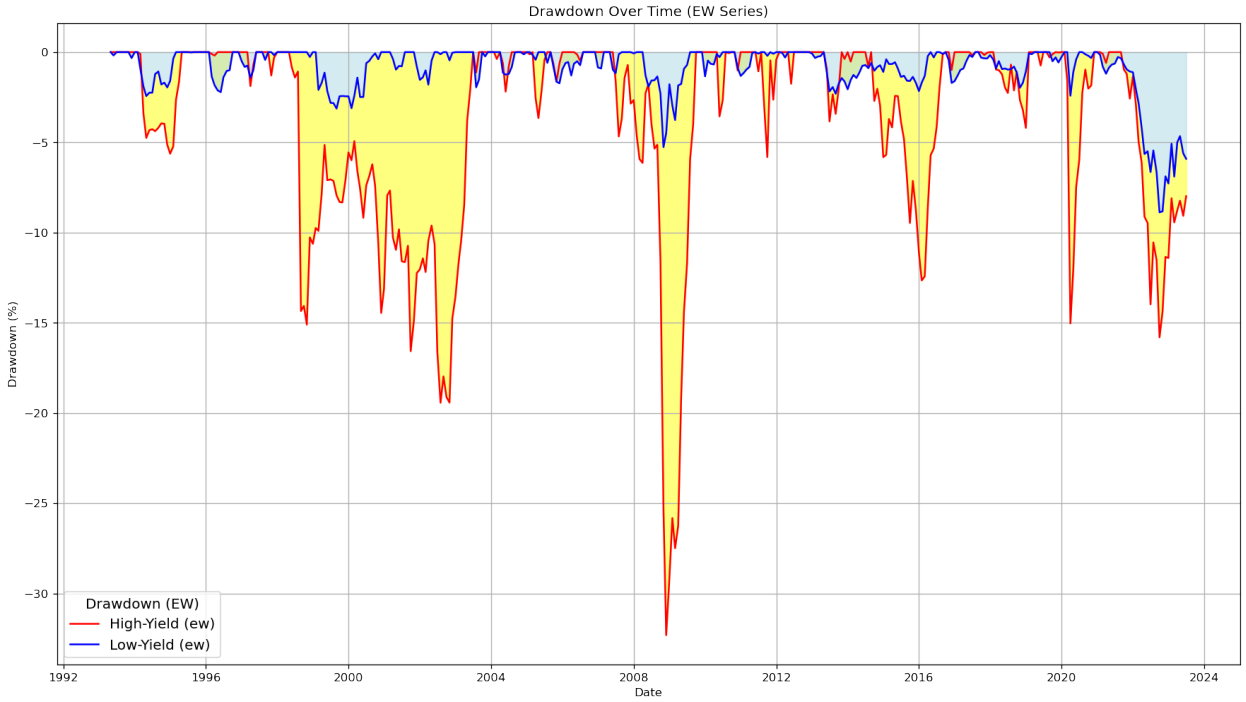
Figure 4: Performance Difference between Bond Funds with High and Low Yield

This figure shows the difference in monthly returns between bond funds with high and low yield during April 1993 to June 2023. At the end of each quarter from January 1993 to June 2023, we group bond funds into decile portfolios based on their SEC yield. High (low) yield funds refer to those in decile 10 (1). Panel A plots the equal-weighted (value-weighted) monthly return spread between bond funds with high and low yield. Panel B plots the drawdowns of equal-weighted (value-weighted) cumulative returns of high yield and low yield bond funds over time.

Panel A: Monthly return spread



Panel B: Maximum drawdown over time



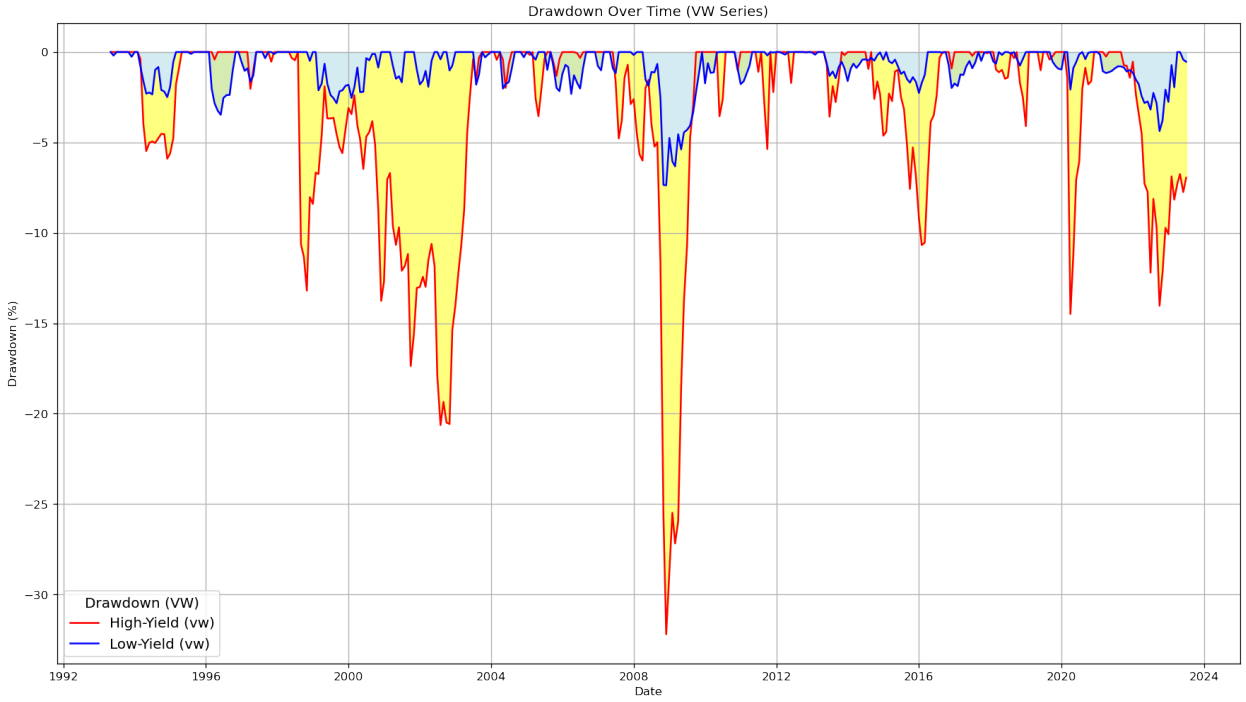


Table 1: Summary Statistics

This table shows the summary statistics of bond fund characteristics and time-series interest rate and market shocks variables. Panel A reports fund characteristic variables including monthly proportional fund flows, monthly fund returns, the SEC yield, Morningstar rating (from 1 to 5 with higher rating indicating stronger funds rated by Morningstar), total net assets (TNA), fund age (the number of years since the fund inception), expense ratio, and rear-end loads. The style-adjusted SEC yield is the difference between a bond fund's SEC yield and the average SEC yield of the fund's peers as grouped by the Morningstar category classification. The three components of SEC yield are the predicted yield based on credit risk $\widehat{SEC}^{Credit}$, the predicted yield based on effective duration $\widehat{SEC}^{Duration}$, and the residual yield (the intercept plus error term) $\widehat{SEC}^{Resid}$. Except for fund rating, TNA, age and rear load, other variables are in percent. All fund characteristics are winsorized at the top and bottom 1%. Panel B reports summary statistics of time-series interest rate and market shocks variables. The interest rate change $\Delta I(FOMC)$ is the change in the 10-year Treasury note yield in percent from day $t-1$ to day $t+1$ around the FOMC conclusion date t. Credit spread is the yield spread between Moody's seasoned Baa corporate bonds and Aaa corporate bonds. VIX and MOVE are the volatility indexes of the stock and Treasury bond markets, respectively. We compute monthly changes in credit spread (Δ*Credit Spread*) and monthly changes in the logarithms of VIX and MOVE (ΔVIX and $\Delta MOVE$). Our sample covers 5,035 unique bond funds at the unit of share classes from January 1993 to June 2023. Municipal bond funds and money market funds are excluded.

Panel A: Bond fund characteristic variables

	N	Mean	Std Dev	P25	P50	P75	Skewness	Kurtosis
Flow	667,169	0.57	7.55	-1.78	-0.17	1.65	2.26	13.23
Return	667,547	0.29	1.53	-0.30	0.28	1	-0.38	2.75
SEC Yield	524,811	3.46	2.15	1.82	3.11	4.82	0.74	0.31
Style-Adjusted SEC Yield	524,811	0.000	0.009	-0.005	0.000	0.005	-0.006	1.83
$\widehat{SEC}^{Credit}$	474,802	3.05	1.47	1.98	2.69	3.77	1.16	1.11
$\widehat{SEC}^{Duration}$	474,802	1.01	0.73	0.43	1.00	1.50	0.24	-0.43
$\widehat{SEC}^{Resid}$	474,802	-0.64	2.12	-2	-1	1	0.72	-0.16
MS Rating	667,610	2.69	1.40	2	3	4	-0.41	-0.50
TNA	667,610	572.47	1609.13	13.37	73.82	335.45	4.94	26.93
log(TNA)	667,610	4.15	2.40	2.59	4.30	5.82	-0.29	-0.13
Age	667,610	11.18	7.80	5.08	9.25	15.50	1.07	0.80
log(Age)	667,404	2.15	0.77	1.63	2.22	2.74	-0.37	-0.51
Expense	667,249	0.91	0.46	0.59	0.83	1.16	0.62	-0.27
Rear Load	667,610	0.23	0.42	0	0	0	1.27	-0.38

Panel B: Time-series variables

	N	Mean	Std Dev	P25	P50	P75	Skewness	Kurtosis
ΔI (FOMC)	126	-0.01	0.10	-0.07	-0.01	0.05	-0.38	1.70
ΔCredit Spread	366	0.0007	0.11	-0.04	-0.01	0.04	1.58	20.83
ΔVIX	366	0.0002	0.20	-0.13	-0.01	0.10	0.48	1.23
ΔMOVE	366	0.0004	0.15	-0.09	-0.01	0.08	0.69	2.20

Table 2: Bond Fund Yield and Investor Flows

This table shows the results for the relation between investor flows and bond fund yield. The dependent variable is monthly proportional bond fund flows, and the explanatory variables are lagged by one month. *Style-Adjusted SEC Yield* is the difference between a bond fund's SEC yield and the average SEC yield of the fund's peers as grouped by the Morningstar category classifications. *12-Month Return* is the sum of monthly returns in the past 12 months. Other variables are defined in Table 1. Panel A includes all share classes and Panel B separates retail and institutional share classes. Columns 1 and 3 use style fixed effects and month fixed effects; Columns 2 and 4 use style×month fixed effects. Standard errors are clustered by fund. All independent variables are winsorized at the top and bottom 1%. *, **, and *** indicate significance at the 0.1, 0.05, and 0.01 levels, respectively.

Panel A: Full sample

	(1)	(2)	(3)	(4)
SEC Yield	0.078***	0.061***		
	(5.86)	(3.89)		
Style-Adjusted SEC Yield			7.456***	7.287***
			(4.34)	(4.21)
12-Month Return	0.086***	0.208***	0.084***	0.208***
	(20.32)	(23.91)	(19.96)	(23.92)
Rating Scale	0.353***	0.296***	0.354***	0.295***
	(22.93)	(19.11)	(22.97)	(19.08)
Past Flow	0.192***	0.179***	0.192***	0.179***
	(38.47)	(36.80)	(38.48)	(36.80)
Log(TNA)	-0.150***	-0.151***	-0.150***	-0.152***
	(-16.14)	(-16.09)	(-16.16)	(-16.11)
Log(Age)	-1.074***	-1.079***	-1.076***	-1.078***
	(-37.10)	(-37.11)	(-37.12)	(-37.07)
Expense Ratio	-0.903***	-0.880***	-0.903***	-0.874***
	(-17.80)	(-17.19)	(-17.69)	(-17.04)
Rear Load	-0.042	-0.047	-0.043	-0.047
	(-0.88)	(-0.98)	(-0.91)	(-0.97)
Style FE	Y		Y	
Month FE	Y		Y	
Style×Month FE		Y		Y
Observations	481,042	480,973	481,042	480,973
Adj. R^2	8.6%	10.7%	8.6%	10.7%

Panel B: Retail versus institutional investors

	Retail Investors		Institutional Investors	
	(1)	(2)	(3)	(4)
SEC Yield	0.071***	0.069***	0.094***	0.051*
	(4.50)	(3.76)	(4.11)	(1.87)
12-Month Return	0.089***	0.182***	0.084***	0.252***
	(18.93)	(18.79)	(10.79)	(15.69)
Rating Scale	0.350***	0.296***	0.376***	0.314***
	(17.29)	(14.50)	(15.93)	(13.16)
Past Flow	0.218***	0.199***	0.167***	0.157***
	(27.73)	(25.92)	(26.83)	(25.81)
Log(TNA)	-0.096***	-0.094***	-0.220***	-0.216***
	(-7.69)	(-7.36)	(-15.05)	(-14.84)
Log(Age)	-1.001***	-1.017***	-1.188***	-1.168***
	(-29.16)	(-29.11)	(-24.12)	(-23.83)
Expense Ratio	-0.766***	-0.746***	-1.250***	-1.162***
	(-13.04)	(-12.46)	(-11.10)	(-10.24)
Rear Load	-0.053	-0.045	-0.136	-0.167*
	(-0.98)	(-0.82)	(-1.50)	(-1.87)
Style FE	Y		Y	
Month FE	Y		Y	
Style×Month FE		Y		Y
Observations	281,253	281,150	199,778	199,297
Adj. R^2	10.8%	13.8%	6.5%	8.2%

Table 3: Bond Fund Yield and Future Fund Performance

This table reports the average yield and performance of bond fund portfolios formed on the fund SEC yield. At the end of each quarter t from 1993Q1 to 2023Q2, we form 10 portfolios of bond funds based on their SEC yield. We report the average equal- and value-weighted SEC yield, return, and risk-adjusted alpha for each bond fund portfolio in the following quarter $t+1$, and rebalance the portfolios at the end of quarter $t+1$. Portfolio alphas are estimated from time-series regressions of portfolio returns on a four-factor model with a stock market factor (R_{Stock}) and three bond market factors (R_{Bond}, R_{Term}, and $R_{Default}$). R_{Stock} is the excess return on the CRSP value-weighted market portfolio. R_{Bond} is the excess return on the Vanguard total bond market index fund return (ticker "VBMFX"). R_{Term} is the difference in returns between the Vanguard long-term Treasury index fund (ticker "VUSTX") and short-term Federal fund (ticker "VSGBX"). $R_{Default}$ is the difference in returns between the Vanguard high-yield corporate bond fund (ticker "VWEHX") and long-term Treasury index fund (ticker "VUSTX"). We report the annualized portfolio returns and alphas by multiplying the monthly average by 12. *, **, and *** indicate significance at the 0.1, 0.05, and 0.01 levels, respectively.

	Low	2	3	4	5	6	7	8	9	High	High–Low
Avg. EW Yield	2.00	2.81	3.21	3.54	3.85	4.18	4.61	5.33	6.48	7.84	5.84***
											(57.90)
Avg. VW Yield	1.98	2.82	3.21	3.55	3.85	4.20	4.61	5.27	6.50	7.71	5.73***
											(58.22)
Avg. EW Return	2.88	3.12	3.60	3.84	3.96	4.32	4.68	4.92	5.88	6.00	3.12**
											(2.13)
Avg. VW Return	3.48	3.48	3.96	3.96	4.32	4.56	4.80	5.28	5.88	5.88	2.40*
											(1.68)
Avg. EW Alpha	-0.84	-0.6	-0.48	-0.36	-0.48	-0.24	-0.36	-0.6	0	-0.12	0.72
											(1.09)
Avg. VW Alpha	-0.24	-0.24	0.12	-0.12	0	0.12	0	-0.12	-0.12	-0.12	0.12
											(0.17)

Table 4: Bond Fund Flows around FOMC Meetings

This table shows how changes in interest rates around the FOMC meetings influence the relation between bond fund yield and flows. The dependent variables are the 5-, 10- and 20-day proportional bond fund flows, defined as the cumulative dollar flows of a bond fund from day t when the FOMC meeting concludes to day $t+k$ (k =4, 9, or 19), deflated by the fund's TNA during the month end preceding the FOMC meeting. The interest rate change ΔI is the change in the 10-year Treasury note yield in percent from day $t-1$ to day $t+1$, normalized to zero mean and unit variance. *Rate Increase* is a dummy variable that equals one if the 10-year Treasury note yield increases around the FOMC meeting, and zero otherwise. Other independent variables follow the definitions in Table 2 and are lagged by one month. Because of the requirement of daily bond fund flows, the sample period is from July 2008 to June 2023 for this analysis. Because the daily fund flows are available at the fund level, we aggregate the fund characteristic variables to the fund level. We use style fixed effects and month fixed effects. Standard errors are clustered by fund. All independent variables are winsorized at the top and bottom 1%. *, **, and *** indicate significance at the 0.1, 0.05, and 0.01 levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	5-day flow	10-day flow	20-day flow	5-day flow	10-day flow	20-day flow
SEC Yield×Rate Increase	-0.009*	-0.030***	-0.069***			
	(-1.81)	(-3.29)	(-4.10)			
SEC Yield×ΔI				-0.006**	-0.020***	-0.036***
				(-2.51)	(-4.39)	(-4.63)
SEC Yield	0.009	0.023*	0.053**	0.004	0.007	0.017
	(1.35)	(1.79)	(2.16)	(0.68)	(0.58)	(0.75)
1-Month Return	0.022***	0.031***	0.032*	0.022***	0.031***	0.031
	(4.42)	(3.09)	(1.65)	(4.42)	(3.10)	(1.61)
Rating Scale	0.061***	0.126***	0.258***	0.061***	0.127***	0.259***
	(8.00)	(8.29)	(9.20)	(8.02)	(8.31)	(9.23)
Past Flow	0.058***	0.115***	0.221***	0.058***	0.115***	0.221***
	(23.70)	(24.81)	(25.93)	(23.70)	(24.82)	(25.93)
Log(TNA)	0.028***	0.049***	0.080***	0.029***	0.049***	0.081***
	(4.58)	(3.90)	(3.52)	(4.59)	(3.93)	(3.55)
Log(Age)	-0.200***	-0.416***	-0.876***	-0.201***	-0.417***	-0.878***
	(-12.71)	(-13.37)	(-15.19)	(-12.72)	(-13.39)	(-15.21)
Expense Ratio	-0.061*	-0.133*	-0.276**	-0.061*	-0.132*	-0.275**
	(-1.67)	(-1.82)	(-2.07)	(-1.66)	(-1.81)	(-2.07)
Style FE	Y	Y	Y	Y	Y	Y
Month FE	Y	Y	Y	Y	Y	Y
Observations	62,457	62,457	62,457	62,457	62,457	62,457
Adj. R^2	10.6%	10.9%	12.2%	10.6%	10.9%	12.2%

Table 5: Bond Fund Performance during Financial Market Turbulence

This table shows the results for the relation between bond fund yield and fund performance during financial market turbulence. The dependent variable is monthly fund returns. Credit spread is the yield spread between Moody's seasoned Baa corporate bonds and Aaa corporate bonds. VIX and MOVE are the volatility indexes of the stock and Treasury bond markets, respectively. We measure monthly changes in credit spread (Δ*Credit Spread*) and monthly changes in the logarithms of VIX and MOVE (ΔVIX and $\Delta MOVE$) from month $t-1$ to t. The *Crisis* indicator equals one for observations in August 1998 (LTCM meltdown), September to November of 2008 (Lehman Brothers bankruptcy) and March 2020 (Covid), and zero otherwise. Δ*Credit Spread*, ΔVIX, and $\Delta MOVE$ are normalized to zero mean and unit variance to make the coefficients comparable. Other explanatory variables follow the definitions in Table 2 and are lagged by one month. Column 4 excludes observations from the three crisis periods while all other columns include the whole sample. We use style fixed effects and month fixed effects. Standard errors are clustered by fund. All independent variables are winsorized at the top and bottom 1%. *, **, and *** indicate significance at the 0.1, 0.05, and 0.01 levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
SEC Yield×ΔCredit Spread	-0.132***			-0.084***		-0.084***
	(-65.00)			(-64.11)		(-61.84)
SEC Yield×ΔVIX		-0.194***		-0.146***		-0.156***
		(-67.01)		(-56.34)		(-59.75)
SEC Yield×ΔMOVE			-0.108***	-0.054***		-0.031***
			(-58.09)	(-31.07)		(-18.76)
SEC Yield×Crisis					-1.848***	-1.155***
					(-51.06)	(-34.29)
SEC Yield	0.065***	0.056***	0.066***	0.057***	0.099***	0.073***
	(30.08)	(27.42)	(29.74)	(27.08)	(36.06)	(34.47)
12-Month Return	-0.000	0.011***	0.005***	0.000	-0.007***	0.003***
	(-0.78)	(17.01)	(8.96)	(0.74)	(-9.66)	(4.61)
Rating Scale	0.002	-0.002	-0.001	0.006***	0.004**	0.003**
	(0.99)	(-1.21)	(-0.91)	(4.16)	(2.52)	(2.04)
Past Flow	-0.001**	0.001***	0.001***	-0.000	0.000	-0.000
	(-2.00)	(3.69)	(4.05)	(-1.42)	(1.37)	(-0.15)
Log(Total Net Assets)	-0.004***	-0.004***	-0.004***	-0.003***	-0.003***	-0.003***
	(-5.49)	(-5.88)	(-6.11)	(-5.07)	(-4.14)	(-4.35)
Log(Age)	0.006**	0.010***	0.010***	0.005**	0.009***	0.006***
	(2.43)	(4.37)	(4.18)	(2.08)	(3.51)	(2.85)
Expense Ratio	-0.033***	-0.032***	-0.028***	-0.024***	-0.027***	-0.035***
	(-6.50)	(-6.54)	(-5.34)	(-4.77)	(-4.59)	(-6.87)
Rear Load	-0.003	-0.002	-0.002	0.003	0.003	0.001
	(-0.57)	(-0.51)	(-0.38)	(0.70)	(0.47)	(0.31)
Style FE	Y	Y	Y	Y	Y	Y
Month FE	Y	Y	Y	Y	Y	Y
Observations	481,042	481,042	481,042	475,103	481,042	481,042
Adj. R^2	55.8%	57.7%	54.3%	58.4%	57.8%	62.1%

Table 6: Investor Flows during Financial Market Turbulence

This table shows the results for the relation between bond fund yield and investor flows during financial market turbulence. The dependent variable is monthly proportional bond fund flows. Credit spread is the yield spread between Moody's seasoned Baa corporate bonds and Aaa corporate bonds. VIX and MOVE are the volatility indexes of the stock and Treasury bond markets, respectively. We measure monthly changes in credit spread (Δ*Credit Spread*) and monthly changes in the logarithms of VIX and MOVE (ΔVIX and $\Delta MOVE$) from month $t-1$ to t. The *Crisis* indicator equals one for observations in August 1998 (LTCM meltdown), September to November of 2008 (Lehman Brothers bankruptcy) and March 2020 (Covid), and zero otherwise. Δ*Credit Spread*, ΔVIX, and $\Delta MOVE$ are normalized to zero mean and unit variance to make the coefficients comparable. Other explanatory variables follow the definitions in Table 2 and are lagged by one month. Column 4 excludes observations from the three crisis periods while all other columns include the whole sample. We use style fixed effects and month fixed effects. Standard errors are clustered by fund. All independent variables are winsorized at the top and bottom 1%. *, **, and *** indicate significance at the 0.1, 0.05, and 0.01 levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
SEC Yield×ΔCredit Spread	-0.039***			-0.033***		-0.030***
	(-6.19)			(-5.00)		(-4.54)
SEC Yield×ΔVIX		-0.133***		-0.104***		-0.112***
		(-17.46)		(-13.44)		(-14.60)
SEC Yield×ΔMOVE			-0.087***	-0.047***		-0.032***
			(-13.18)	(-7.38)		(-5.18)
SEC Yield×Crisis					-0.613***	-0.255***
					(-8.95)	(-3.55)
SEC Yield	0.077***	0.069***	0.075***	0.063***	0.088***	0.072***
	(5.76)	(5.18)	(5.63)	(4.71)	(6.55)	(5.41)
12-Month Return	0.085***	0.092***	0.088***	0.090***	0.083***	0.090***
	(20.22)	(21.59)	(20.92)	(21.28)	(19.72)	(21.31)
Rating Scale	0.353***	0.352***	0.352***	0.358***	0.354***	0.353***
	(22.97)	(22.91)	(22.92)	(23.21)	(23.02)	(22.98)
Past Flow	0.192***	0.192***	0.192***	0.190***	0.192***	0.192***
	(38.37)	(38.53)	(38.57)	(37.88)	(38.43)	(38.46)
Log(TNA)	-0.150***	-0.150***	-0.150***	-0.145***	-0.150***	-0.150***
	(-16.12)	(-16.12)	(-16.15)	(-15.58)	(-16.09)	(-16.09)
Log(Age)	-1.075***	-1.074***	-1.074***	-1.091***	-1.074***	-1.075***
	(-37.12)	(-37.10)	(-37.12)	(-37.62)	(-37.08)	(-37.12)
Expense Ratio	-0.904***	-0.906***	-0.903***	-0.929***	-0.903***	-0.907***
	(-17.84)	(-17.87)	(-17.81)	(-18.34)	(-17.79)	(-17.89)
Rear Load	-0.042	-0.041	-0.041	-0.052	-0.040	-0.040
	(-0.87)	(-0.87)	(-0.86)	(-1.10)	(-0.84)	(-0.85)
Style FE	Y	Y	Y	Y	Y	Y
Month FE	Y	Y	Y	Y	Y	Y
Observations	481,042	481,042	481,042	475,103	481,042	481,042
Adj. R-squared	8.6%	8.8%	8.7%	8.8%	8.7%	8.8%

Table 7: Decomposing Bond Fund Yield

This table decomposes bond fund SEC yield based on credit risk and effective duration. Panel A reports results of Fama-MacBeth cross-sectional regressions of fund SEC yield on credit rating and the logarithm of effective duration, both normalized to zero mean and unit variance. Panel B reports results of panel regressions of the residual component of SEC yield (the intercept plus error term) on the fund's percent of asset invested in asset-backed securities and mortgage-backed securities, during the period of January 2010 to June 2023 due to data availability. All dependent and independent variables are from the same month. We use style fixed effects and month fixed effects. Standard errors are clustered by fund. All independent variables are winsorized at the top and bottom 1%. *, **, and *** indicate significance at the 0.1, 0.05, and 0.01 levels, respectively.

Panel A: Determinants of the SEC yield

	(1)	(2)	(3)
Credit Risk	1.206***		1.199***
	(35.35)		(35.16)
Effective Duration		0.339***	0.275***
		(16.65)	(14.57)
N. Months	366	366	366
R^2	49.7%	4.2%	53%

Panel B: Determinants of the residual SEC yield

	(4)	(5)	(6)
% Asset-Backed Securities	0.002**		0.002*
	(2.26)		(1.65)
% Mortgage-Backed Securities		0.003***	0.003***
		(3.75)	(3.46)
Style FE	Y	Y	Y
Month FE	Y	Y	Y
Observations	367,688	367,688	367,688
Adj. R^2	64.9%	64.9%	64.9%

Table 8: Decomposed Bond Fund Yield and Investor Preference

This table shows the results for the relation between decomposed components of bond fund yield, investor flows and fund performance. The dependent variable is monthly proportional bond fund flows in Panel A and monthly fund returns in Panel B, and the explanatory variables are lagged by one month. Using monthly estimates from cross-sectional regressions of fund SEC yield on credit rating and the logarithm of effective duration, we decompose the SEC yield into three components: the credit risk component $\widehat{SEC}^{Credit}$, the asset duration component $\widehat{SEC}^{Duration}$, and the residual yield (intercept plus error term) $\widehat{SEC}^{Resid}$. Other explanatory variables follow the definitions in Table 2. We use style fixed effects and month fixed effects. Standard errors are clustered by fund. All independent variables are winsorized at the top and bottom 1%. *, **, and *** indicate significance at the 0.1, 0.05, and 0.01 levels, respectively.

Panel A: Investor flows

	(1)	(2)	(3)	(4)
$\widehat{SEC}^{Credit}$	0.240***			0.256***
	(6.10)			(6.39)
$\widehat{SEC}^{Duration}$		-0.249***		-0.228***
		(-4.77)		(-4.37)
$\widehat{SEC}^{Resid}$			0.075**	0.105***
			(2.27)	(3.12)
12-Month Return	0.084***	0.082***	0.082***	0.084***
	(18.83)	(18.44)	(18.47)	(18.95)
Rating Scale	0.367***	0.376***	0.372***	0.368***
	(22.73)	(23.28)	(22.94)	(22.81)
Past Flow	0.192***	0.192***	0.192***	0.192***
	(37.62)	(37.62)	(37.64)	(37.61)
Log(Total Net Assets)	-0.149***	-0.149***	-0.149***	-0.151***
	(-15.56)	(-15.61)	(-15.55)	(-15.77)
Log(Age)	-1.077***	-1.081***	-1.083***	-1.069***
	(-35.64)	(-35.66)	(-35.70)	(-35.36)
Expense Ratio	-0.963***	-0.937***	-0.914***	-0.935***
	(-18.21)	(-17.84)	(-17.17)	(-17.47)
Rear Load	-0.046	-0.051	-0.050	-0.042
	(-0.94)	(-1.05)	(-1.02)	(-0.86)
Style FE	Y	Y	Y	Y
Month FE	Y	Y	Y	Y
Observations	437,995	437,995	437,995	437,995
Adj. R^2	8.7%	8.7%	8.7%	8.8%

Panel B: Fund performance

	(1)	(2)	(3)	(4)
$\widehat{SEC}^{Credit}$	0.243***			0.262***
	(37.05)			(40.11)
$\widehat{SEC}^{Duration}$		-0.010		0.010
		(-1.31)		(1.46)
$\widehat{SEC}^{Resid}$			0.052***	0.093***
			(10.42)	(16.98)
12-Month Return	0.001**	-0.000	-0.000	0.002***
	(2.29)	(-0.48)	(-0.23)	(2.99)
Rating Scale	-0.001	0.005***	0.004**	-0.003*
	(-0.46)	(3.14)	(2.57)	(-1.69)
Past Flow	0.001**	0.001**	0.001**	0.001**
	(2.05)	(2.25)	(2.33)	(2.16)
Log(Total Net Assets)	-0.003***	-0.002***	-0.003***	-0.004***
	(-3.66)	(-2.84)	(-3.55)	(-4.90)
Log(Age)	0.007***	-0.001	0.001	0.011***
	(2.72)	(-0.32)	(0.35)	(4.12)
Expense Ratio	-0.083***	-0.055***	-0.040***	-0.057***
	(-14.19)	(-10.26)	(-7.04)	(-9.09)
Rear Load	-0.007	-0.013**	-0.011**	-0.004
	(-1.18)	(-2.39)	(-2.14)	(-0.63)
Style FE	Y	Y	Y	Y
Month FE	Y	Y	Y	Y
Observations	437,995	437,995	437,995	437,995
Adj. R^2	53.9%	53.6%	53.6%	53.9%

Table 9: Decomposed Bond Fund Yield during Financial Market Turbulence

This table shows the results for the relation between the decomposed components of bond fund yield, investor flows, and fund performance during financial market turbulence. The dependent variable is monthly proportional bond fund flows in Panel A and monthly fund returns in Panel B, and the explanatory variables are lagged by one month. Market shocks variables are defined in Table 5. The decomposed components of SEC yield are defined in Table 8. Δ*Credit Spread*, ΔVIX, and $\Delta MOVE$ are normalized to zero mean and unit variance to make the coefficients comparable. Other explanatory variables follow the definitions in Table 2. We use style fixed effects and month fixed effects. Standard errors are clustered by fund. All independent variables are winsorized at the top and bottom 1%. *, **, and *** indicate significance at the 0.1, 0.05, and 0.01 levels, respectively.

Panel A: Investor flows

	(1)	(2)	(3)	(4)	(5)
$\widehat{SEC}^{Credit}$ × ΔCredit Spread	-0.033***				-0.027***
	(-3.85)				(-2.91)
$\widehat{SEC}^{Duration}$ × ΔCredit Spread	0.088*				0.123***
	(1.94)				(2.58)
$\widehat{SEC}^{Resid}$ × ΔCredit Spread	-0.061***				-0.049***
	(-5.79)				(-4.40)
$\widehat{SEC}^{Credit}$ × ΔVIX		-0.197***			-0.175***
		(-16.55)			(-14.96)
$\widehat{SEC}^{Duration}$ × ΔVIX		-0.073**			-0.060*
		(-2.29)			(-1.81)
$\widehat{SEC}^{Resid}$ × ΔVIX		-0.062***			-0.043***
		(-6.75)			(-4.08)
$\widehat{SEC}^{Credit}$ × ΔMOVE			-0.120***		-0.036***
			(-12.19)		(-4.16)
$\widehat{SEC}^{Duration}$ × ΔMOVE			-0.072**		-0.037
			(-2.14)		(-1.02)
$\widehat{SEC}^{Resid}$ × ΔMOVE			-0.046***		-0.027**
			(-5.12)		(-2.57)
$\widehat{SEC}^{Credit}$ × Crisis				-0.664***	-0.194*
				(-7.03)	(-1.92)
$\widehat{SEC}^{Duration}$ × Crisis				-0.262	-0.678
				(-0.61)	(-1.48)
$\widehat{SEC}^{Resid}$ × Crisis				-0.654***	-0.331***
				(-5.68)	(-2.69)
$\widehat{SEC}^{Credit}$	0.171***	0.114***	0.146***	0.186***	0.114***
	(6.27)	(4.25)	(5.43)	(6.85)	(4.25)
$\widehat{SEC}^{Duration}$	-0.313***	-0.316***	-0.318***	-0.305***	-0.312***
	(-4.39)	(-4.44)	(-4.47)	(-4.26)	(-4.36)
$\widehat{SEC}^{Resid}$	0.051***	0.045***	0.048***	0.060***	0.051***
	(3.20)	(2.83)	(3.02)	(3.72)	(3.21)
Controls	Y	Y	Y	Y	Y
Style FE	Y	Y	Y	Y	Y
Month FE	Y	Y	Y	Y	Y
Observations	437,995	437,995	437,995	437,995	437,995
Adj. R^2	8.8%	8.9%	8.8%	8.8%	9.0%

Panel B: Fund performance

	(1)	(2)	(3)	(4)	(5)
$\widehat{SEC}^{Credit}$ × ΔCredit Spread	-0.180***				-0.107***
	(-68.34)				(-61.71)
$\widehat{SEC}^{Duration}$ × ΔCredit Spread	-0.092***				-0.060***
	(-8.31)				(-7.29)
$\widehat{SEC}^{Resid}$ × ΔCredit Spread	-0.080***				-0.055***
	(-23.32)				(-22.40)
$\widehat{SEC}^{Credit}$ × ΔVIX		-0.279***			-0.241***
		(-90.53)			(-85.72)
$\widehat{SEC}^{Duration}$ × ΔVIX		-0.343***			-0.159***
		(-29.97)			(-15.14)
$\widehat{SEC}^{Resid}$ × ΔVIX		-0.089***			-0.059***
		(-23.56)			(-16.96)
$\widehat{SEC}^{Credit}$ × ΔMOVE			-0.122***		-0.007***
			(-73.93)		(-4.52)
$\widehat{SEC}^{Duration}$ × ΔMOVE			-0.527***		-0.447***
			(-57.93)		(-58.84)
$\widehat{SEC}^{Resid}$ × ΔMOVE			-0.067***		-0.037***
			(-23.09)		(-15.92)
$\widehat{SEC}^{Credit}$ × Crisis				-2.603***	-1.619***
				(-62.18)	(-39.77)
$\widehat{SEC}^{Duration}$ × Crisis				-1.735***	-0.345**
				(-10.08)	(-2.11)
$\widehat{SEC}^{Resid}$ × Crisis				-1.022***	-0.641***
				(-19.55)	(-13.08)
$\widehat{SEC}^{Credit}$	0.163***	0.094***	0.150***	0.225***	0.124***
	(39.76)	(28.85)	(38.10)	(48.30)	(39.65)
$\widehat{SEC}^{Duration}$	0.011	0.020**	0.009	0.041***	0.019**
	(1.26)	(2.29)	(1.08)	(3.74)	(2.32)
$\widehat{SEC}^{Resid}$	0.044***	0.038***	0.043***	0.060***	0.049***
	(18.55)	(16.80)	(17.91)	(20.63)	(21.59)
Controls	Y	Y	Y	Y	Y
Style FE	Y	Y	Y	Y	Y
Month FE	Y	Y	Y	Y	Y
Observations	437,995	437,995	437,995	437,995	437,995
Adj. R^2	57.2%	59.8%	56.0%	59.6%	65.1%

Table 10: Bond Fund Yield and Asset Allocations

This table reports the relation between a bond fund's yield and the allocation of fund assets across cash and bonds with different credit ratings. The dependent variables are the percent of fund assets invested in cash, above-BBB bonds, BBB-rated bonds, and BB-rated (or below) bonds, respectively. Because a fund's asset allocations are identical across share classes, we conduct this analysis at the fund level and aggregate the characteristic variables to the fund level. All explanatory variables follow the definitions in Table 2. We use style×month fixed effects. Standard errors are clustered by fund. All independent variables are winsorized at the top and bottom 1%. *, **, and *** indicate significance at the 0.1, 0.05, and 0.01 levels, respectively.

	(1)	(2)	(3)	(4)
	Cash	Investment Grade: Above BBB	Investment Grade: BBB	Non-Investment Grade: Below BBB
SEC Yield	-0.315***	-3.536***	0.936***	2.750***
	(-5.35)	(-10.39)	(4.72)	(10.71)
12-Month Return	-0.019	-0.374***	0.109**	0.246***
	(-1.08)	(-6.04)	(2.42)	(5.19)
Rating Scale	0.108*	-1.099***	0.841***	0.048
	(1.79)	(-5.48)	(5.15)	(0.33)
Log(TNA)	0.000	0.321*	-0.485***	0.090
	(0.01)	(1.75)	(-3.30)	(0.85)
Log(Age)	-0.602***	1.133**	-0.397	-0.131
	(-4.19)	(2.03)	(-0.86)	(-0.39)
Expense Ratio	-0.064	-9.452***	2.670***	6.067***
	(-0.21)	(-7.87)	(2.72)	(7.73)
Rear Load	0.325	-1.571*	-0.128	1.038
	(1.37)	(-1.90)	(-0.17)	(1.37)
Style×Month FE	Y	Y	Y	Y
Observations	31,475	31,475	31,475	31,475
Adj. R^2	11.0%	87.3%	65.7%	94.0%

Internet Appendix

Table A.1: Bond Fund Yield and Investor Flows: Dropping Small Funds

This table shows the results for the relation between investor flows and bond fund yield, while dropping bond funds whose maximum total net assets are below $5 million during our sample period. The dependent variable is monthly proportional bond fund flows, and the explanatory variables are lagged by one month. *Style-Adjusted SEC Yield* is the difference between a bond fund's SEC yield and the average SEC yield of the fund's peers as grouped by the Morningstar category classifications. *12-Month Return* is the sum of monthly returns in the past 12 months. Other explanatory variables are defined in Table 2. Columns 1 and 3 use style fixed effects and month fixed effects; Columns 2 and 4 use style×month fixed effects. Standard errors are clustered by fund. All independent variables are winsorized at the top and bottom 1%. *, **, and *** indicate significance at the 0.1, 0.05, and 0.01 levels, respectively.

	(1)	(2)	(3)	(4)
SEC Yield	0.073***	0.058***		
	(5.38)	(3.65)		
Style-Adjusted SEC Yield			7.217***	7.016***
			(4.15)	(3.99)
12-Month Return	0.083***	0.205***	0.081***	0.205***
	(19.28)	(23.13)	(18.95)	(23.14)
Rating Scale	0.361***	0.302***	0.362***	0.301***
	(22.89)	(19.05)	(22.91)	(19.01)
Past Flow	0.201***	0.187***	0.201***	0.187***
	(38.02)	(36.37)	(38.03)	(36.37)
Log(TNA)	-0.161***	-0.161***	-0.162***	-0.161***
	(-15.70)	(-15.50)	(-15.73)	(-15.51)
Log(Age)	-1.058***	-1.062***	-1.059***	-1.062***
	(-35.98)	(-36.05)	(-35.99)	(-36.01)
Expense Ratio	-0.932***	-0.912***	-0.931***	-0.906***
	(-17.99)	(-17.44)	(-17.88)	(-17.29)
Rear Load	-0.023	-0.026	-0.024	-0.026
	(-0.46)	(-0.53)	(-0.48)	(-0.52)
Style FE	Y		Y	
Month FE	Y		Y	
Style×Month FE		Y		Y
Observations	458,306	458,237	458,306	458,237
Adj. R^2	9.2%	11.5%	9.2%	11.5%

Table A.2: Bond Fund Yield and Investor Flows: Alternative Specifications

This table shows the results for the relation between investor flows and bond fund yield using alternative regression specifications. The dependent variable is monthly proportional bond fund flows, and the explanatory variables are lagged by one month. *Style-Adjusted SEC Yield* is the difference between a bond fund's SEC yield and the average SEC yield of the fund's peers as grouped by the Morningstar category classifications. *12-Month Return* is the sum of monthly returns in the past 12 months. Other explanatory variables are defined in Table 2. In Panel A, we include each of the 12 monthly returns in the past year to allow for the possibility that investors might attach different importance to fund returns measured in different horizons. In Panel B, we include the 12-month return (the sum of monthly returns in the past 12 months) and an interaction term between 12-month return and a negative return dummy to control for the nonlinear flow-performance relations. Columns 1 and 3 use style fixed effects and month fixed effects; Columns 2 and 4 use style×month fixed effects. Standard errors are clustered by fund. All independent variables are winsorized at the top and bottom 1%. *, **, and *** indicate significance at the 0.1, 0.05, and 0.01 levels, respectively.

Panel A: Flexible coefficients of past monthly returns

	(1)	(2)	(3)	(4)
SEC Yield	0.074***	0.063***		
	(5.52)	(4.01)		
Style-Adjusted SEC Yield			7.543***	7.659***
			(4.39)	(4.43)
Control Variables	Y	Y	Y	Y
Style FE	Y		Y	
Month FE	Y		Y	
Style×Month FE		Y		Y
Observations	481,042	480,973	481,042	480,973
Adj. R^2	8.6%	10.7%	8.6%	10.7%

Panel B: Nonlinear flow-performance relations

	(1)	(2)	(3)	(4)
SEC Yield	0.072***	0.050***		
	(5.36)	(3.21)		
Style-Adjusted SEC Yield			6.215***	6.013***
			(3.61)	(3.47)
Control Variables	Y	Y	Y	Y
Style FE	Y		Y	
Month FE	Y		Y	
Style×Month FE		Y		Y
Observations	481,042	480,973	481,042	480,973
Adj. R^2	8.7%	10.8%	8.7%	10.8%

Table A.3: Style-Adjusted Bond Fund Yield and Future Fund Performance

This table reports the average yield and performance of bond fund portfolios formed on style-adjusted SEC yield. At the end of each quarter t from 1993Q1 to 2023Q2, we form 10 portfolios of bond funds based on their style-adjusted SEC yield. We report the average equal- and value-weighted SEC yield, return, and risk-adjusted alpha for each bond fund portfolio in the following quarter $t+1$, and rebalance the portfolios at the end of quarter $t+1$. Portfolio alphas are estimated from time-series regressions of portfolio returns on a four-factor model with a stock market factor (R_{Stock}) and three bond market factors (R_{Bond}, R_{Term}, and $R_{Default}$). R_{Stock} is the excess return on the CRSP value-weighted market portfolio. R_{Bond} is the excess return on the Vanguard total bond market index fund return (ticker "VBMFX"). R_{Term} is the difference in returns between the Vanguard long-term Treasury index fund (ticker "VUSTX") and short-term Federal fund (ticker "VSGBX"). $R_{Default}$ is the difference in returns between the Vanguard high-yield corporate bond fund (ticker "VWEHX") and long-term Treasury index fund (ticker "VUSTX"). We report the annualized portfolio returns and alphas by multiplying the monthly average by 12. *, **, and *** indicate significance at the 0.1, 0.05, and 0.01 levels, respectively.

	Low	2	3	4	5	6	7	8	9	High	High–Low
Avg. EW Yield	2.98	3.55	3.75	3.91	4.11	4.31	4.50	4.85	5.31	6.50	3.52***
											(38.92)
Avg. VW Yield	2.96	3.70	3.82	3.94	4.21	4.35	4.51	4.73	5.23	6.25	3.28***
											(37.45)
Avg. EW Return	3.72	3.84	4.08	4.20	4.32	4.32	4.68	4.56	4.56	4.92	1.20**
											(2.22)
Avg. VW Return	4.32	3.84	4.44	3.84	4.56	4.56	4.92	4.80	4.68	4.80	0.48
											(0.86)
Avg. EW Alpha	-0.84	-0.72	-0.48	-0.36	-0.24	-0.24	0	-0.24	-0.48	-0.48	0.36
											(1.02)
Avg. VW Alpha	-0.36	-0.6	-0.12	-0.72	0	0.12	0.24	0.24	-0.12	-0.6	-0.24
											(-0.48)