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Are mutual fund investors paying for noise?☆

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ABSTRACT

In this study we identify an implicit noise premium in mutual fund advisory fees. We argue that idiosyncratic volatility makes it difficult for investors to estimate fund performance, resulting in investor disagreement about advisory skills. Since mutual fund shares cannot be sold short, the outcome is higher advisory fees than would be the case if advisory skills were transparent to investors. We find empirical support for this argument, in the form of a positive dependence of advisory fees on idiosyncratic volatilities, which is robust to the inclusion of other fund characteristics known to affect advisory compensation. We show that the dependence of advisory fees on idiosyncratic volatilities improves previous estimations of the fee-performance sensitivity for mutual funds. Our findings also reveal that investor sophistication reduces the dependence of advisory compensation on idiosyncratic volatility, since more sophisticated investors are less inclined to reward advisors for generating noisy returns.

The mutual fund literature documents a puzzling negative fee-performance sensitivity, which implies that poorer performing funds demand higher fees.[1] Several behavioural explanations have been proposed in order to resolve this paradox.[2] We argue that a behavioural explanation may be unnecessary, since the advisory fees charged by mutual funds are positively related to the idiosyncratic volatilities of their returns. We demonstrate that the troublesome negative fee-performance sensitivity documented in the literature is largely resolved by the dependence of advisory fees on idiosyncratic volatilities, together with the mechanical interaction between estimated alphas and idiosyncratic volatilities.[3] This suggests that a change of emphasis in the debate around mutual fund fees may be required. Instead of focussing on the irrationality and unsophistication of investors, who apparently pay higher fees for poorer performance, researchers and policy makers should pay more attention to the confounding effect of idiosyncratic noise and the impact of short sale constraints on price discovery in the mutual fund market.

A positive relationship between advisory fees and idiosyncratic volatilities is counterintuitive, since it suggests that investors pay for the noise in mutual fund returns. To rationalise it, we develop a model for the interaction between a cohort of investors and a mutual fund manager, in which the idiosyncratic noise in the fund's return drives investor disagreement about managerial ability and shares in the fund cannot be sold short. Our analysis reveals that the advisory fee charged by the fund manager is an increasing function of the fund's idiosyncratic volatility. This is reminiscent of Miller's (1977) argument that a greater dispersion of investor opinions drives higher prices for risky assets, in the presence of short-selling constraints. In the setting of our model, some investors overestimate the fund manager's ability, while the remainder underestimate it. Since the pessimists are bound by the short-selling constraint, the advisory fee is effectively determined by the optimists' demand. A higher level of idiosyncratic noise leads to a greater dispersion of investor beliefs about the fund's performance, and thus to more ebullient optimistic assessments. Without the corrective

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[1] See e.g. Malkiel (1995), Gruber (1996), Carhart (1997), Sirri and Tufano (1998), Wermers (2000), Christoffersen and Musto (2002), and Kuhnen (2005).

[2] See e.g. Christoffersen and Musto (2002), and Gil-Bazo and Ruiz-Verdú (2008).

[3] Recall that the standard errors of estimated alphas are proportional to idiosyncratic volatilities. Hence, estimated alphas for funds with high idiosyncratic volatilities tend to be extremely high or extremely low.

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influence of pessimistic short-sellers, the optimists accept a higher fee.

We test this idea empirically, by analysing a sample of actively-managed diversified U.S. equity mutual funds for the period from 1991 to 2013. As predicted, we find that advisory fees do indeed exhibit a positive dependence on idiosyncratic volatilities. The relationship is statistically and economically significant, with a one-standard deviation increase in idiosyncratic volatility corresponding to a 27 basis-point increase in advisory compensation. It is also robust to the inclusion of variables that control for fund and family characteristics, investment objectives, share classes, investor sensitivities, and managerial activeness.

Further theoretical analysis suggests that advisory compensation should not depend on systematic risk. The investors in our model separate their passive and active risky allocations, using the market portfolio to satisfy their appetites for systematic risk, while their allocations to the mutual fund (and hence also its advisory fee) depend only on their beliefs about its active performance. This prediction is supported by empirical tests, which uncover no evidence of a relationship between advisory fees and mutual fund betas, in stark contrast to the strong advisory fee-idiosyncratic volatility relationship. This resonates with recent evidence presented by Barber, Huang, and Odean (2014), who documented that mutual fund flows are strongly dependent on alphas, but insensitive to betas. It also agrees with Golec's (1992) finding that advisory fees for funds without incentive contracts are independent of the systematic risks of their portfolios.

The dependence of advisory fees on idiosyncratic volatilities improves previous estimates of the fee-performance sensitivity for mutual funds. For example, Malkiel (1995), Gruber (1996), Carhart (1997), Sirri and Tufano (1998), Wermers (2000), Christoffersen and Musto (2002), and Kuhnen (2005) have documented a negative fee-performance sensitivity. We show that those estimates are negatively biased, since they do not account for the dependence of both fees and after-fee alphas on idiosyncratic volatilities. When idiosyncratic volatility and its interaction with after-fee performance are included as independent variables, the negative sensitivity of fees to after-fee alphas is substantially reduced, while idiosyncratic volatility and its interaction with after-fee alphas attract significant positive and negative coefficients, respectively.[4] This finding establishes an interesting link between advisory compensation in the mutual fund literature and executive compensation in the corporate finance literature. To wit, initial estimates of the pay-performance sensitivity for company CEOs by Jensen and Murphy (1990) were too low to support the principal-agent model. Aggarwal and Samwick (1999) subsequently demonstrated that those estimates were negatively biased, due to the omission of stock price volatility and its interaction with performance as independent variables.

The extent to which advisors are rewarded for generating idiosyncratic noise should depend on investor sophistication. Since our theoretical model parametrises investor sophistication, we are able to formalise this intuition by demonstrating that the advisory fee paid by a more sophisticated cohort of investors is smaller than the fee paid by a less sophisticated cohort. Using different proxies for investor sophistication, we show that this holds empirically as well. These findings resonate with the evidence in James and Karceski (2006) that flow-performance sensitivities are higher for institutional funds than for retail funds, while their advisory fees are lower. Evans and Fahlenbrach (2012) arrived at a similar conclusion, by studying retail mutual funds that offer separate versions of the same underlying portfolio to their institutional clients.

Our final contribution reconciles our model with existing evidence on the dependence of fees on before-fee performance. Gil-Bazo and Ruiz-Verdú (2009) documented a negative relationship between the total ownership costs of mutual funds and their before-fee alphas. Our theoretical model, by contrast, predicts that advisory fees should not be negatively related to before-fee alphas. Although our empirical tests confirm the results of Gil-Bazo and Ruiz-Verdú (2009), we show that those results are explained by the sensitivity of marketing and distribution costs to before-fee performance.[5] In particular, we uncover no compelling evidence of a negative relationship between advisory fees and before-fee alphas.

In addition to the contributions outlined above, our results are pertinent to the role of managerial activeness as a determinant of advisory compensation. Amihud and Goyenko (2013) documented a negative relationship between the operating expenses of mutual funds and the R^2 statistics from fitting their returns to Carhart's (1997) four-factor model. With reference to Cremers and Petajisto (2009), they argued that low R^2 values (and hence high idiosyncratic volatilities) predict superior performance, since they correspond to high levels of managerial activeness. Seen in that light, the positive dependence of advisory compensation on idiosyncratic volatility may be due to the superior performance of more active advisors, rather than to the role of idiosyncratic noise as a source of investor disagreement, as suggested by our theoretical model. If that were the case, however, then more sophisticated investors (presumably being more aware of the benefits of managerial activeness) would be willing to pay higher advisory fees for high idiosyncratic volatility funds. Our evidence on the moderating effect of investor sophistication on the relationship between advisory fees and idiosyncratic volatilities is inconsistent with this interpretation.

Finally, Cheng, Massa, and Zhang (2013) recently presented a theoretical model in which a mutual fund advisor acquires costly information about mispriced securities. The advisor's search costs were modelled as a function of the fund's before-fee alpha, and were assumed to drive investor disagreement about his skill. Subject to the constraint that shares in the fund cannot be sold short, the authors showed that investor disagreement about the advisor's skill results in a higher advisory fee. They also demonstrated that the advisor's search costs mediate a negative relationship between his fee and the fund's before-fee alpha. While the first result is consistent with the positive dependence of advisory compensation on idiosyncratic noise in our theoretical model, the two models disagree on the relationship between advisory fees and before-fee alphas. Our empirical evidence appears to resolve this dispute in favour of our model, casting doubt on the idea that search costs drive investor disagreement about managerial skills.

The remainder of the article is structured as follows. Section 1 presents our theoretical model.[6] Section 2 describes the data and empirical methodology, and Section 3 presents the empirical analysis. Finally, Section 4 offers some conclusions.

1. A model for mutual fund advisory fees

We consider a financial market comprising a risk-free money-market account, a passive market portfolio, and an actively-managed mutual fund. The risk-free return is zero, while the return of the market portfolio is $r_M \sim \mathcal{N}(\mu_M, \sigma_M^2)$. The before-fee return of the mutual fund is $r_P = \alpha + \beta r_M + \varepsilon$, and the idiosyncratic component $\varepsilon \sim \mathcal{N}(0, \sigma_\varepsilon^2)$ of its return is independent of r_M. Since r_P is normally distributed, it follows that $P(r_P < -1) > 0$. That is to say, an investment in the mutual fund could produce an end-of-period liability. To reduce the likelihood of such an infeasible outcome, we make the mild assumption that $E(r_P) > -1$, which is equivalent to assuming that $1 + \alpha + \beta\mu_M > 0$.

Our analysis focuses on the interaction between the fund manager and a cohort of risk-averse investors. The investors wish to maximise the expected utilities of their terminal wealths, by investing optimally

[4] This is the signature of an omitted variable problem.

[5] It seems that poorly performing funds spend more on marketing and distribution, in an effort to reduce the negative impact of poor performance on flows.

[6] Proofs and derivations can be found in an internet appendix.