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Measuring the timing ability and performance of bond mutual funds ☆

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ABSTRACT

This paper evaluates the ability of bond funds to "market time" nine common factors related to bond markets. Timing ability generates nonlinearity in fund returns as a function of common factors, but there are several non-timing-related sources of nonlinearity. Controlling for the non-timing-related nonlinearity is important. Funds' returns are more concave than benchmark returns, and this would appear as poor timing ability in naive models. With controls, the timing coefficients appear neutral to weakly positive. Adjusting for nonlinearity, the performance of many bond funds is significantly negative on an after-cost basis, but significantly positive on a before-cost basis.

1. Introduction

The amount of academic research on bond fund performance is small in comparison to the economic importance of bond funds. Recently, the total net assets of U.S. bond funds has been about one-sixth the amount in equity-style mutual funds and similar to the value of hedge funds. Large amounts of additional fixed-income assets are held in professionally managed portfolios outside of mutual funds, for example, in pension funds, trusts, and insurance company accounts. The turnover of a typical bond mutual fund far exceeds that of a typical equity fund

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(e.g., Moneta, 2008), suggesting active portfolio management. Thus, it is important to understand the performance of bond fund managers.

Blake, Elton, and Gruber (1993), Elton, Gruber, and Blake (EGB, 1995) and Ferson, Henry, and Kisgen (2006) study U.S. bond mutual fund performance, concentrating on the funds' risk-adjusted returns. They find that the average performance is slightly negative after costs, and largely driven by funds' expenses. This might suggest that investors would be better off selecting low-cost passive funds, and EGB draw that conclusion. However, conceptually at least, performance may be decomposed into components, such as timing and selectivity. If investors place value on timing ability, for example, a fund that can mitigate losses in down markets, they would be willing to pay for this insurance with lower average returns. This is one of the first papers to comprehensively study the ability of U.S. bond funds to time their markets.[1]

Timing ability on the part of a fund manager is the ability to use superior information about the future realizations of common factors that affect bond market returns.[2] Selectivity refers to the use of security-specific information. If common factors explain a significant part of the variance of bond returns, consistent with term structure studies such as Litterman and Sheinkman (1991), then a significant fraction of the potential performance of bond funds might be attributed to timing. However, measuring the timing ability of bond funds is a subtle problem.

Traditional models of market timing ability rely on convexity in the relation between the fund's returns and the common factors.[3] This paper looks at timing ability and performance after adjusting for four potential biases. First, there might be a nonlinear relation between economic factors and a fund's benchmark portfolio. Second, interim trading, where the fund rebalances more frequently than the return observation interval, can generate nonlinearity. Third, stale pricing that is correlated with economic factors – "systematic" stale pricing – can generate nonlinearity. Finally, funds' exposures to the factors may vary due to publicly observed conditioning variables. Most of these issues have been treated in studies cited below, but this is the first paper to combine them all and the first to consider systematic stale pricing.

We study monthly returns for more than 1,400 bond funds during 1962–2007 and find that controlling for non-timing-related nonlinearity is important. Funds' returns are typically more concave, in relation to a set of nine bond market factors, than are unmanaged benchmarks. Thus, funds would appear to have poor (negative) market timing ability in naive models. When we introduce the controls for non-timing-related nonlinearities, the overall distribution of the timing coefficients appears neutral to weakly positive. After adjusting for the nonlinearity in funds' returns, the performance of many bond funds is significantly negative on an after-cost basis but significantly positive on a before-cost basis.

The rest of the paper is organized as follows. Section 2 describes the models and methods. Section 3 describes the data. Section 4 presents our empirical results and Section 5 offers some concluding remarks.

2. Models and methods

A traditional view of fund performance separates timing ability from security selection ability, or selectivity. Timing is closely related to asset allocation, where funds rebalance the portfolio among asset classes. Selectivity means picking good securities within the asset classes. Like equity funds, bond funds engage in activities that may be viewed as selectivity or timing. Bond funds may attempt to predict issue-specific supply and demand or changes in credit risks associated with particular bond issues. Funds can also attempt to exploit liquidity differences across individual bonds. These trading activities can be classified as security selection. In addition, managers may adjust the interest rate sensitivity (e.g., duration) of the portfolio to time changes in interest rates. They may vary the allocation to asset classes differing in credit risk or liquidity, and tune the portfolio's exposure to other economic factors. Since these activities relate to anticipating market-wide factors, they can be classified as market timing.

Classical models of market-timing use convexity in the relation between the fund's return and the "market" return to identify timing ability. In these models the manager observes a private signal about the future performance of the market and adjusts the market exposure of the portfolio. If the response is assumed to be a linear function of the signal as modeled by Admati, Bhattacharya, Ross, and Pfleiderer (1986), the portfolio return is a convex quadratic function of the market return as in the regression model of Treynor and Mazuy (1966). If the manager shifts the portfolio weights discretely, as modeled by Merton and Henriksson (1981), the convexity may be modeled with call options. We modify the classical setup to control for nonlinearities that are unrelated to bond fund managers' timing ability.

[1] Brown and Marchshall (2001) develop an active style model and an attribution model for fixed income funds, isolating managers' bets on interest rates and spreads. Comer, Boney, and Kelly (2009) study timing ability in a sample of 84 high quality corporate bond funds, 1994–2003, using variations on Sharpe's (1992) style model. Aragon (2005) studies the timing ability of balanced funds for bond and stock indexes.

[2] We do not explicitly study "market timing" in the sense recently taken to mean trading by investors in a fund to exploit stale prices reflected in the fund's net asset values. But we will see that these issues can affect measures of a fund manager's ability.

[3] The alternative approach is to directly examine managers' portfolio weights and trading decisions to see if they can predict returns and factors (e.g., Grinblatt and Titman, 1989). Comer (2006), Moneta (2008), and Huang and Wang (2008) are early steps in this direction for bond funds. Of course, weight-based approaches cannot capture market timing that occurs between weight reporting intervals, which can be up to six months in length.