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Explaining inertia in closed-end fund prices

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Abstract

It is well known that closed-end fund prices display significant short-run inertia (under-reaction to movements in net asset value per share). This paper shows that price inertia seems to be absent from bond funds, and reports tests of alternative explanations of the phenomenon for US stock funds. The results are consistent with the hypothesis that reported net asset values have some degree of staleness. An alternative hypothesis that price inertia is caused by transaction costs is not supported by the data.
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The prices of closed-end funds tend to under-react initially to changes in their net asset value per share (NAV), creating a negative correlation at weekly or monthly frequencies between contemporaneous NAV returns and the premium (the ratio of price to NAV) (Bodurtha et al., 1995; Frankel and Schmukler, 2000; Klibanoff et al., 1998; Pontiff, 1995). Since premia tend to be mean-reverting, however, this under-reaction disappears in the long run. In the case of funds that hold foreign assets, this initial price inertia has sometimes been attributed to an asymmetry of information between local investors in the country where the fund is invested, who determine the NAV of the fund, and the holders of the fund's shares (e.g., Frankel and Schmukler, 2000). The argument is that locals get the information earlier and so NAVs react more quickly than prices. This theory cannot explain, however, why the phenomenon is equally prevalent in closed-end funds that invest in the domestic market.

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Pontiff (1995, p. 345) suggests that price inertia "might be attributable to 'stale' net asset values. If the securities in the fund's portfolio are not actively traded and the fund's stock is actively traded, then the price of the fund's stock would reflect the expected NAV of the portfolio when the securities held in the portfolio are traded." In the present paper we test this hypothesis by investigating whether variables that are likely to be correlated with the true NAV help to predict the reported NAV, as should be the case if the reported NAV is 'stale.'

An alternative explanation of price inertia might be related to transaction costs and market-maker price-setting behavior. Assume that demand for fund shares is a declining function of the premium. Assume further that market-makers adjust prices in response to order flows and pay no attention to NAV movements. In that case prices will adjust to NAV changes only if NAV changes result in a buy-sell imbalance. In general, this will happen, because demand is a function of the premium, and the premium changes if the NAV moves and the price does not. Transaction costs could, however, interfere with this process.

Suppose that in each period the absolute value of the net movement of funds into and out of the market, averaged over all investors, is a fraction α of the total value of the market. Consequently, a fraction α of total funds can react instantaneously to changes in the perceived underlying value of the securities, ignoring transaction costs (assuming for simplicity that transaction costs are the same for all securities). For the remaining fraction $1 - \alpha$ of total funds, however, rearrangement of portfolios requires both a buy and a sell transaction, so underlying values have to move by more than transaction costs to induce a switch and to generate order flows. If NAV movements are small enough relative to transaction costs, this will induce short-run inertia in closed-end fund prices, although this inertia will disappear in the long run. This theory implies that the degree of price inertia will be inversely correlated with the magnitude of NAV returns.

1. Results

Denote the NAV returns to fund j over period $t - 1$ to t by R_{jt}, and the returns to the fund's stock price by SPR_{jt}. Let

$$Y_{jt} = \ln(SP_{jt}/\text{NAV}_{jt}), \tag{1}$$

where SP is the fund's stock price and NAV is its net asset value. Thus Y_{jt} is the end-of-period premium on fund j. Suppose that we regress the stock price return on current and lagged NAV returns, the lagged stock price return and the lagged premium:

$$SPR_{jt} = a + \sum_{k=0}^{6} b_k R_{jt-k} + c\,SPR_{jt-1} + g\,Y_{jt-1} + e_{jt}, \tag{2}$$

where e_{jt} is a random error term. The terms in SPR_{jt-1} and Y_{jt-1} are included to control respectively for autocorrelation in stock price returns and premium mean-reversion, which implies higher stock price returns for a given NAV return for funds on lower premia (Thompson, 1978). With no price inertia, we expect a coefficient of one on the current NAV return and of zero on all the lagged NAV returns. Price inertia, if it exists, will depress the coefficient of the current NAV return below one, and push the coefficients of some of the lagged NAV returns above zero.

We use a panel of monthly data on 59 domestic closed-end funds belonging to the main investment styles identified in CDA/Wiesenberger. The main investment styles and number of funds are: Corporate and High Yield (22 funds), Multi-Sector Bond (9 funds), Growth and Income (17 funds), and Growth (11 funds). End-of-month price and NAV are from Bloomberg Financial