Fund Tradeoffs
By Lubos Pastor, Robert F. Stambaugh, and Lucian A. Taylor
Executive Summary

We derive equilibrium tradeoffs among the most salient characteristics of active mutual funds: fund size, expense ratio, turnover, and portfolio liquidity. Our model predicts that funds with larger size, lower expense ratios, and higher turnover should hold more-liquid portfolios. We find strong support for these implications in a sample of 2,789 active U.S. equity mutual funds from 1979 through 2014. We also document a number of other tradeoffs. For example, larger funds are cheaper, funds that trade less are larger and cheaper, and funds that are less active are larger and cheaper.

Our results provide strong evidence of decreasing returns to scale in active management. Unlike the prior literature on this subject, we do not relate fund size to fund performance. Instead, our inference is based on tradeoffs among fund characteristics. For example, our evidence that larger funds tend to trade less and hold more-liquid portfolios is a clear indication of diseconomies of scale.

A fund's scale is typically equated to its size, measured by assets under management (AUM). Our model implies a new concept of scale, captured by AUM times activeness. Our measure of a fund's activeness, implied by the model, combines the fund's turnover with its portfolio liquidity, so that funds are more active if they trade more or hold a less-liquid portfolio. The model implies that smaller funds as well as more-expensive funds should be more active, and we find evidence of both tradeoffs in the data.

We also introduce the concept of portfolio liquidity. We begin with the familiar idea that less-liquid assets are costlier to trade. We extend this idea to portfolios, viewing a portfolio as an asset and thereby considering the cost of trading the portfolio as a whole. We show that a portfolio's liquidity depends not only on the liquidity of its holdings but also on its diversification:

Portfolio Liquidity = Stock Liquidity x Diversification

The first component, stock liquidity, reflects the average market capitalization of the portfolio's holdings. The second component, diversification, has its own intuitive decomposition:

Diversification = Coverage x Balance

Coverage reflects the number of stocks in the portfolio. Portfolios holding more stocks have greater coverage. Balance reflects how the portfolio weights the stocks it holds. Portfolios with weights closer to market-cap weights have greater balance.

Our model predicts tradeoffs between diversification and other fund characteristics. In equilibrium, funds with more-diversified portfolios should be larger and cheaper, they should trade more, and their stock holdings should be less liquid. We find strong empirical support for all these predictions. The components of portfolio liquidity are substitutes: funds holding less-liquid stocks make up for it by

diversifying more, and vice versa. The components of diversification, coverage and balance, are also substitutes: portfolios with lower coverage tend to be better balanced. Both substitution effects are predicted by our model. All of these results point to diseconomies of scale in active management.