

## PERFORMANCE MEASUREMENT AND EVALUATION

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### How Are Derivatives Used? Evidence from the Mutual Fund Industry

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The authors use a relatively large sample of mutual funds to determine the characteristics that control derivative usage and its impact on fund risk and return. The most significant results show that after controlling for a fund's objective, the use of derivatives affects neither risk nor return. A negative relationship is observed between performance in the past period and changes in risk. The relationship weakens with derivative usage.

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The use of derivative securities in a portfolio context evokes various thoughts as to the anticipated outcome. Will overall risk be reduced, consistent with hedging principles? Will transaction costs be reduced, thus enhancing returns? Or as often illustrated by the popular press, will derivatives be used to speculate with the expectation of increasing both risk and return? The authors undertake an extensive study of derivative usage within the mutual fund industry and attempt to identify the impact of usage on portfolio returns.

Using a sample of 679 U.S. equity mutual funds, as classified by Morningstar Inc., the authors gathered returns for the 1992–94 period. Derivative usage by a fund was determined through telephone surveys and backed up by the fund prospectus. Approximately 21 percent of the sample of funds used derivatives. Levels

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of derivative usage were not statistically different for the five categories of funds studied. Approximately 45 percent of the funds tied derivative usage to hedging, and only 9 percent admitted to using derivatives for speculative purposes. Less-exotic derivatives, specifically options and futures contracts, represented the contracts most commonly used by the funds.

The authors find that certain fund characteristics predicted derivative usage. Specifically, a fund's being in a large family of funds as well as having high asset turnover suggest greater derivative usage. Being part of a large family of funds may indicate that a fund has greater access to resources with which to monitor derivative usage than other funds have. The authors also find that within a family of funds, having high asset turnover and low load fees and being categorized as a growth and income fund increase the likelihood of derivative usage.

When comparing the risks of funds that use derivatives with the risks of funds that do not use derivatives, the authors find, surprisingly, no systematic differences after controlling for the funds' objectives. Aggressive growth funds display greater risk than equity income funds, but the use of derivatives does not make the funds either more or less risky than their category counterparts.

If not affecting risk, perhaps derivative usage by funds permits trading at lower transaction costs or allows the inflows and outflows of funds to be more efficiently handled. If so, then funds using derivatives should have higher returns after adjusting for trading costs than the returns of funds that do not use derivatives. The results are similar to those concerning risk: No significant differences are found in performance based on a fund's use of derivatives.

Finally, the authors test for the existence of a relationship that is based on previously reported findings: Managers increase risk in periods after poor performance and decrease risk in periods after good performance. If a relationship exists, the reason could be because of either incentive gaming on the part of managers or the inability of managers to respond promptly to changes in cash flows experienced by the funds. The results indicate support for both

hypotheses, but the negative relationship between previous performance and changes in risk is weaker for those funds that use derivatives than for funds that do not. The weaker results are primarily confined to the category of systematic risk. This finding suggests that managers who use derivatives are able to reduce the impact of performance on risk, possibly through the use of stock index derivatives.

Legislation included in the Taxpayer Relief Act of 1997 facilitates mutual funds' use of derivative securities without risking their pass-through tax status. As a result of this legislation, usage patterns could change, but the impact on risk and return may not be significant.