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PORTFOLIO MANAGEMENT

Portfolio Constraints and the Fundamental Law of Active Management

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a Monte Carlo simulation and illustrate their application with equity portfolio examples based on the S&P 500 Index as the benchmark.

The expected value added in an actively managed portfolio depends on both the manager's forecasting skill and the manager's freedom to take appropriate positions in securities that reflect those forecasts. The “fundamental law of active management” gives the maximum expected value added for an actively managed portfolio based on the forecasting ability of the manager and the breadth of application. The fundamental law does not, however, address the impact of portfolio constraints on potential value added. Constraints such as no short sales and limits on security concentration impede the transfer of information into optimal portfolio positions and decrease the expected value added.

We generalize the fundamental law of active management to include a transfer coefficient as well as an information coefficient. The information coefficient measures the strength of the return-forecasting process, or signal, and the transfer coefficient measures the degree to which the signal is transferred into active portfolio weights. The transfer coefficient turns out to be a simple scaling factor in the generalized fundamental law and is an intuitive way to measure the extent to which constraints reduce the expected value of forecasting ability. In an ideal world without any constraints, a well-constructed portfolio has a transfer coefficient of 1.0 and the original form of t er
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of the generalized fundamental law and transfer coefficient to illustrate the impact on

portfolios of not only the long-only constraint but also turnover constraints and multiple constraints.

In addition to the transfer coefficient's ex ante role, the transfer coefficient is also a critical parameter in reconciling realized performance with the realized success of return forecasting. We derive a decomposition of ex post active management performance based on the transfer coefficient and the realized information coefficient. The ex post performance decomposition indicates that only a fraction (the transfer coefficient squared) of the variation in realized performance, or tracking error, is attributable to variation in realized information coefficients. For example, if the portfolio has no constraints and the transfer coefficient is 1.0, variation in realized performance is wholly attributable to the success of the return-prediction process. If the transfer coefficient is 0.3, however, only 9 percent of performance variation is attributable to the success of the signal and the remaining 91 percent is attributable to constraint-induced “noise.” Managers with low transfer coefficients will experience frequent periods when the signal works but performance is poor and periods when performance is good even though the return-forecasting process failed.