Expected Return, Realized Return, and Asset Pricing Tests

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Finance theory indicates that investor decisions are based on expected, rather than actual, returns. Nevertheless, nearly all research into asset-pricing models has been based on actual returns. The author points out that actual returns are not a reasonable proxy for expected returns. He develops an approach for estimating expected returns and applies it to the analysis of returns on Treasury securities. He also addresses implications for analyzing stock returns.

A great deal of research has attempted to identify the factors affecting expected returns and to estimate the sensitivity of returns to those factors. In nearly all cases, actual returns have been used as a proxy for expected returns based on the assumption that the unexpected component of actual returns is independent and has a mean value of zero. If that assumption is correct, actual returns are an unbiased estimate of expected returns. If information surprises, however, are not independent, actual returns are not a satisfactory substitute for expected returns. Elton points out that periods longer than 10 years exist when the risk-free rate has exceeded the average return on the U.S. stock market. In addition, periods longer than 50 years exist when the risk-free rate has exceeded the average annual return on long-term bonds. On the basis of such experiences and other anomalies, he concludes that actual returns are not a reasonable approximation for expected returns.

The prices of Treasury bonds respond primarily to macroeconomic surprises, with very little asset-specific information affecting their prices. That characteristic makes them good candidates for

attempting to identify the effect of information on returns. Previous studies have identified the factors that affect the prices of government bonds. Elton considers the information events that generate differences between expected and actual returns to be a combination of two distributions; one is normally distributed, and the other approximates a jump process. He focuses on controlling for the major events.

The data for the analysis of returns on Treasury securities are from the GovPX database, which provides bid, ask, and closing prices for Treasuries of various maturities. The sample period is July 1, 1991, to December 31, 1997. Data on economic announcements and expectations from Money Market Services are used to estimate the effects of information surprises.

Bond prices adjust to information and to temporary market pressures resulting from inventory adjustments, which introduces random noise. Removing the effects of information surprises from actual returns results in unbiased estimates of expected returns. The information events that Elton controls for include surprises in inflation, durable goods orders, housing starts, and M2 money supply.

The first step in the analysis is to estimate prices of zero-coupon bonds in order to create an actual return series on zero-coupon bonds with maturities from six months to five years. Elton then calculates daily returns from the zero-coupon bond prices. To obtain expected returns, he removes the effects of information surprises from the daily returns. Announcements have minimal impact on returns of one-month bonds but considerably more impact for longer-term bonds. The resulting expected returns demonstrate a generally rising term structure. In addition, removing the effects of information surprises eliminates kurtosis from the distribution of returns.

Although there is considerable reason to believe that the term structure risk premium varies over time, Elton proceeds with some preliminary tests based on a constant term structure premium. He compares the results with estimates of the term premium based on

forward rates. The two estimates are consistent with each other. To assess the appropriateness of assuming constant term premiums, Elton tests whether they are related to the factors that explain changes in the term structure over time. This test is done by performing a factor analysis of the variance/covariance matrix of actual returns, including the effects of information surprises. The results indicate that returns of bonds of different maturities respond to at least two factors and that returns of shorter maturity bonds react to different factors from bonds of longer terms.

Elton also considers whether the factors affecting bond returns overlap with the factors that have been identified for stock returns. The results indicate that none of the bond factors are related to the stock return factors—a result that simplifies the asset allocation decision.

Finally, Elton discusses extending the study to test asset-pricing models of common stock. He presents the results of simulations that show information surprises often cause even a correct asset-pricing model to be rejected when tested on actual returns. Elton notes the difficulty of removing the effects of information surprises from returns of individual stocks and suggests that careful grouping of stocks is one way to mitigate the effects of information surprises. The difficulty is in grouping in such a way that company-specific information surprises are averaged out without averaging out non-zero alphas that are the result of model misspecification.

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