
Predicting Returns with Financial Ratios

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The author uses data from 1946 to 2000 to compare the ability of three regression models to predict aggregate stock market returns from dividend yields (DY) and two other financial ratios. He uses a base model, a model that unconditionally adjusts for the interdependence of DY and market returns, and a model that makes a conditional adjustment. The author finds that the base model has some predictive power, which is eliminated by the unconditional adjustment. The conditional adjustment reduces the base-model coefficient, but it reduces the standard error more, causing an increase in the predictive power of DY. Predictive models based on earnings-to-price and book-to-market ratios are not as strong as the models based on DY, but the author finds the effect of the unconditional and conditional adjustment to be generally the same as in the DY models.

Earlier studies have used dividend yields (DY), earnings-to-price ratios (E/Ps), and book-to-market ratios (B/Ms) as independent variables in regression models used to predict aggregate stock market returns. The basic model is that returns are a function of a ratio calculated from a previous period. For the regression to be “predictive,” the ratio must be known before the dependent variable (market returns) is calculated. This model violates the regression assumption of independence between the dependent variable and the independent variable (the ratio). Higher returns are caused by price increases, which reduce each of these ratios because price is in the denominator.

One method to correct this problem is the inclusion of a second equation that models the autocorrelation of the independent variable. Because the error terms of the base model and the autocorrelation model are correlated, the coefficient of the base model can be adjusted to correct for the interdependent relationship between the ratio and market returns. Previous research indicates that this unconditional

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adjustment to the base model tends to eliminate any predictive relationship between ratios and stock market returns.

The author proposes an alternative to the unconditional adjustment. Because the autoregressive coefficient cannot be greater than 1.0, he suggests limiting the adjustment to the base model by setting the autoregressive coefficient to about 1.0 (or 0.9999). This method provides for the largest adjustment to the base model given the characteristics of the autoregressive relationship and minimizes the value of the adjusted coefficient. If the adjusted coefficient is significant given this restrictive adjustment, it is also significant if the autoregressive relationship is less than 1.0, which would have made the adjustment to the base model less. This method is referred to as the conditional adjustment to the base model.

The author uses CRSP price and dividend data from January 1946 to December 2000 for the NYSE Index. He uses Compustat financial data from 1963 to 2000 to calculate B/Ms and E/Ps. The author calculates returns on a monthly basis and converts all values to natural logs. He estimates four return variations: nominal value-weighted returns (VWNY), nominal equal-weighted returns (EWNV), excess VWNY, and excess EWNV. The author adjusts the excess returns for the one-month U.S. T-bill rate.

When the author examines the results based on the total sample using the DY as the predictive variable, he finds a smaller decrease in the adjusted coefficient under the conditional adjustment procedure than under the unconditional adjustment procedure. The standard error under the conditional adjustment procedure is also reduced, thereby increasing the predictive power of the conditional adjustment model relative to the unadjusted base model. These results hold for all return definitions.

The author divides the data into two subperiods: 1946–1972 and 1973–2000. He finds that DY predicted excess market returns in the first subperiod and in all four return definitions in the second subperiod. Under these shortened subperiods, the author finds that the unconditional adjustment did not do very well but that the conditional adjustment improved the predictive power of the models. To test the impact of the unusual market conditions in the last half

of the 1990s, he separates the data into two subperiods: 1946–1994 versus 1995–2000. Again, the author finds that the unconditional adjustment performed poorly but that the conditional adjustment improved the predictive powers of the models.

Results based on B/M and E/P were not as promising as the DY results. Based on the total sample, the B/M models were not able to predict either nominal or excess value-weighted returns. Results for nominal and excess equal-weighted returns were similar to DY results, with the unconditional adjustment reducing the predictive power of B/M and the conditional adjustment improving it. Results based on E/P indicated a predictive relationship to nominal market returns, but not for excess returns. The author finds that the impact of the 1995–2000 data was less on conditional-adjusted estimates than on unconditional-adjusted estimates for both the B/M and E/P models.

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