# Using Analysts' Growth Forecasts to Estimate Shareholder Required Rates of Return

**Robert S. Harris**

*Robert S. Harris is a member of the faculty of the University of North Carolina at Chapel Hill. He is also an Associate Editor of* Financial Management.

## I. Introduction

Shareholder required rates of return play key roles in establishing economic criteria for resource allocation in many corporate and regulatory decisions. Theory dictates that such returns should be forward-looking return requirements that take into account the risk of the specific equity investment.

Estimation of such returns, however, presents numerous and difficult problems. Although theory clearly calls for a forward-looking required return, investigators, lacking a superior alternative, often resort to averages of historical realizations. One primary example is the determination of equity required return as a "least risk" rate plus a risk premium where an equity risk premium is calculated as an average of past differences between equity returns and returns on debt instruments. The historical studies of Ibbotson *et al.* [9] have been used frequently to implement this approach.[1] Use of such historical risk premia assumes that past realizations are a good surrogate for future expectations and that risk premia are roughly constant over time. Additionally, the choice of a time period over which to average data under such a procedure is essentially arbitrary. Carleton and Lakonishok [3] demonstrate empirically some of the problems with such historical premia when they are disaggregated for different time periods or groups of firms.

Recently Brigham, Shome, and Vinson [2] surveyed work on developing *ex ante* equity risk premia with particular emphasis on regulated utilities. They presented their own risk premia estimates, which make use of financial analysts' forecasts as surrogates for investor expectations.

The current paper follows an approach similar to Brigham *et al.* and derives equity required returns and risk premia using publicly available expectational

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[1] Many leading texts in financial management use such historical risk premia to estimate a market return. See for example, Brealey and Myers [1]. Often a market risk premium is adjusted for the observed relative risk of a stock.

**Exhibit 7.** Changes in Equity Risk Premia Over Time — Entries are Coefficient (t-value)

| Regression | Intercept | $i_{20}$ | $\sigma_g$ | $i_c - i_{20}$ | $R^2$ |
|---|---|---|---|---|---|
| A. SP500: Dependent Variable is Equity Risk Premium* | | | | | |
| 1. | 0.140 | −0.632 | | | 0.43 |
| | (8.15)† | (−4.95)† | | | |
| 2. | 0.118 | −0.660 | 0.754 | | 0.58 |
| | (7.10)† | (−5.93)† | (3.32)† | | |
| 3. | 0.069 | −0.235 | | 1.448 | 0.57 |
| | (3.44)† | (−1.76) | | (4.18)† | |
| 4. | 0.030 | −0.177 | 0.855 | 1.645 | 0.79 |
| | (2.17)† | (−2.07)† | (4.68)† | (7.63)† | |
| Regression | Intercept | $i_{20}$ | $\sigma_g$ | $i_u - i_{20}$ | $R^2$ |
| B. SPUT: Dependent Variable is Equity Risk Premium* | | | | | |
| 1. | 0.110 | −0.510 | | | 0.37 |
| | (7.35)† | (−4.41)† | | | |
| 2. | 0.101 | −0.543 | 0.805 | | 0.41 |
| | (6.28)† | (−4.68)† | (1.42) | | |
| 3. | 0.051 | −0.259 | | 1.432 | 0.80 |
| | (5.54)† | (−4.05)† | | (8.87)† | |
| 4. | 0.049 | −0.287 | 0.387 | 1.391 | 0.80 |
| | (5.15)† | (−3.87)† | (0.75) | (8.14)† | |

*All variables are defined in Exhibit 1 and graphed in Exhibit 6. Regressions were estimated for the 36 month period January 1982–December 1984 and were corrected for serial correlation using the Prais-Winsten method. For purposes of this regression variables are expressed in decimal form, *e.g.*, 14% = 0.14.

†Significantly different from zero at 0.05 level using two-tailed test

cause of lower variability over time in the dispersion of FAF for utility stocks as compared to equities in general. The yield spread between utility and government bonds is significantly positively related to utility equity risk premia. And, as in the case of stocks in general, introduction of this spread substantially reduces the independent effect of interest rate levels on equity risk premia.

Given the short time series (36 months), tests for the stability of the relationships found in Exhibit 7 present difficulties. As a check, the relationships were reestimated dividing the data into two 18-month periods. For stocks in general (SP500), coefficients on $\sigma_g$ and $(i_c - i_{20})$ were positive in all regressions and significantly so, except in the case of $(i_c - i_{20})$ for the second 18-month period. The coefficient of $i_{20}$ was significantly negative in both periods. This confirms the general findings for the SP500 in Panel A of Exhibit 7. For utility stocks, results for the subperiods also matched the entire period results. The coefficients of $(i_u - i_{20})$ were significantly positive in both subperiods while those of $\sigma_g$ were insignificantly different from zero. The level of interest rates ($i_{20}$) had a significant negative effect in both subperiods.

In summary, the estimated risk premia change over time and the patterns of such change are directly related to changes in proxies for the risks of equity investments. Risk premia for both stocks in general and utilities are inversely related to the level of government interest rates but positively related to the bond yield spreads which proxy for the incremental risk of investing in equities rather than government bonds. For stocks in general, risk premia also increase over time with increases in the general level of disagreement about future corporate performance.

## VI. Conclusions

Notions of shareholder required rates of return and risk premia are based in theory on investors' expectations about the future. Research has demonstrated the usefulness of financial analysts' forecasts for such expectations. When such forecasts are used to derive equity risk premia, the results are quite encouraging. In addition to meeting the theoretical requirement of using expectational data, the procedure produces estimates of reasonable magnitude that behave as econom-

ic theory would predict. Both over time and across stocks, the risk premia vary directly with the perceived riskiness of equity investment.

The approach offers a straightforward and powerful aid in establishing required rates of return either for corporate investment decisions or in the regulatory arena. Since data are readily available on a wide range of equities, an investigator can analyze various proxy groups (*e.g.*, portfolios of utility stocks) appropriate for a particular decision. An additional advantage of the estimated risk premia is that they allow analysis of changes in equity return requirements over time. Tracking such changes is important for managers facing changing economic climates.

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