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Estimating Security Price Risk Using Duration and Price Elasticity: Discussion

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DISCUSSION

E. SCHULMAN*: Williams and Pfeifer have attempted to generate an alternative to beta as a measure of risk. That is an ambitious task. Whatever one might say about the Capital Asset Pricing Model, it is elegantly simple. It is internally consistent and generates normative implications in separating specific from systematic risk. It does suffer from measurement problems, such as which or what index to use and how to handle non-synchronous trading and it is probably missing a variable or is misspecified. Nevertheless, it is a hard act to follow.

The authors start with a normal dividend discount model. Later in the paper they explicitly acknowledge that is a *constant* growth rate model and implicitly in Tables 1 and 2, they recognize that the growth rate must be less than the discount rate. However, by equation (8) changes in the growth rate have become the main determinant of changes in duration and by Table 3 the reported values of the growth rate imply that the discount restriction has been overlooked.

The authors then take two logical leaps which complicate the model and certainly need justification if the model is to receive general acceptance. The first is to assume that a security's return is determined by a relationship between the expected risk-free and market rates of return; that looks surprisingly like the Capital Asset Pricing Model. The second leap (used to differentiate their return generating process from the CAPM) is to assume that the expected risk-free and market rates of return are generated by a first order moving average time series model, so that an expected return equals its long run average minus some fraction of the error made in forecasting the last period. I assume that there is a typographical error in equation number 7, as it stands, it says that if results are above average in period t , I should reduce my estimate below average for period $t + 1$.

Finally I have a problem with the empirical test. Algebraically the authors have determined that changes in the growth rate drive changes in duration and price. Indeed that follows directly from the dividend discount model. Growth is their most important variable, yet they utilize a technique that minimizes its size and impact by treating it as a residual; this combined with the lagged relationship of expected market returns generates uncomfortably low values for theta.

In summary, the authors have undertaken a large project, it is not going to be an easy one and more work needs to be done.

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