Analytical cyclical price-dividend ratios

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Extended Abstract / Summary

Log-linear approximations of the price-dividend ratios are at the core of recent asset pricing. Log-linear approximations have been often used to study the importance of long-run risks for asset valuation in a momentous strand of literature.

We work out analytical non-linear log price-dividend ratios under the continuous-time Intertemporal Capital Asset Pricing Model proposed by Brennan, Wang, and Xia (2004). They use the affine nature of their setup to analytically recover dividend strip values, which are log-linear in the fundamentals, but fall short of finding stock pricing formulae.

We employ our closed-form results to provide preliminary evidence that is suggestive of vigilance in the use of log-linear approximations only if the fundamental state variables are particularly persistent. Our formulae for the stock price semielasticities fully characterize the endogenous stock return heteroscedasticity that emerges from the homoscedastic fundamentals. The formulae confirm the crucial insight of Mele (2007) that, to induce countercyclical return volatility, risk premia must increase more in bad times than they decrease in good times.