From: Dragos Bozdog <dbozdog@stevens.edu>
Sent: Tuesday, October 11, 2022 8:51 PM
To: Riley Heiman <rheiman@stevens.edu>
Subject: Re: FE 680 Advanced Derivatives - Fall Semester Questions

Hello Riley,

Yes, you need to use convexity adjustment. The payoff of the derivative is equal to 6-year rate minus 2-year rate. So, if the forward bond price equals the expected bond price, then what is the expected yield on the bond with maturity in 6 years and in 2 years?

Regards,
Dragos

From: Riley Heiman <rheiman@stevens.edu>
Sent: Tuesday, October 11, 2022 5:46 PM
To: Dragos Bozdog <dbozdog@stevens.edu>
Subject: RE: FE 680 Advanced Derivatives - Fall Semester Questions

Hi Professor,

I'm working on HW 2, but I'm stuck on problem 4. For this problem do we have to use convexity adjustment?

$$E_T(y_T) = y_0 - \frac{1}{2} y_0^2 \sigma_y^2 T \frac{G''(y_0)}{G'(y_0)} \qquad (30.1)$$

Problem 4

Assume that the risk free-rate yield curve is flat at 5% (with continuous compounding). The payoff from a derivative occurs in 5 years. It is equal to the 6-year rate minus the 2-year rate at this time, applied to a principal of $1 million with both rates being continuously compounded. Calculate the value of the derivative. Assume that the volatility for all rates is 30%.

I would be entirely grateful if you can provide a hint.

Riley Heiman
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