Quiz Nº7 Solutions
Finance I

1. What is the value of a stock that will pays a $10 dividend next year and will grow by 10% each year, considering a discount rate of 15%? (10 pts)

$$\frac{D}{r-g} = \frac{10}{15\% - 10\%} = 200$$

2. Given a five-year, 8% coupon bond with a face value of $1,000 and coupon paymentsmade annually, determine its values given it is trading at the following yields: 8%,6%, and 10%. Comment on the price and yield relation you observe. What are the percentage changes in value when the yield goes from 8% to 6% and when it goes from8% to 10%?(60 points)

$$V_0 = \sum_{t=1}^{5} \frac{80}{(1.08)^t} + \frac{1000}{(1.08)^5} = 80\left[\frac{1-(1/1.08)^5}{.08}\right] + \frac{1000}{(1.08)^5} = \$1{,}000$$

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$$V_0 = \sum_{t=1}^{5} \frac{80}{(1.10)^t} + \frac{1000}{(1.10)^5} = 80\left[\frac{1-(1/1.10)^5}{.10}\right] + \frac{1000}{(1.10)^5} = \$924.18$$

From 8% to 6%, the percentage change in value is 8.425%; from 8% to 10%, the percentage change in value is –7.582%.

3. Determine the values of a five-year, zero-coupon bond with a face value of $1,000 given it is trading at the following yields: 8%, 6%, and 10%. What are the percentage changes in value when the yield goes from 8% to 6% and when it goes from 8% to10%? (30 points)

$$\frac{C}{(1+r)^t}$$

Case 1: $\frac{1000}{(1+8\%)^5} = 680.58$

Case 2: $\frac{1000}{(1+6\%)^5} = 747.26$

Case 3: $\frac{1000}{(1+8\%)^5} = 620.92$

Percentage change in value $= \frac{747.26}{680.58} - 1 = 9.75\% \text{ and } \frac{620.92}{680.58} - 1 = -8.77\%$

4. People's Bank of China (PBC) decreased the interest rate by 25 basis point (0.25%) last Thursday. How do you think this event should impact the bond and stock markets in China? (Explain each) (10 points, bonus)

The reduction on the interest rate reduces the discount rate (cost of opportunity) for both bonds and stocks, therefore both of their prices should increase.