Corporate Finance

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Question 3

1. Market price of a bond

The market price of a bond, , where; F= Face value, i= Rate to maturity and t= Time to maturity.

= = = $308.31

1. Price of the bond in 3yrs if interest remain constant

Price of bond with zero coupon =

= $790.31

1. Price of the bond in 3yrs if interest rate rise to 10%

Price of bond with zero coupon =

= = $746.22

Question 4

1. Calculate the price of Bond A

Bond value of A, =

= = $97.22

1. Calculate the maturity period of Bond B

Yield to maturity,

1. Calculate the yield to maturity for Bond C

Yield to maturity,

×2

Question 5

1. Calculate modified duration

Modified duration =

Modified duration =

Modified duration = 19.23

1. Modified duration is an effective measure in determining a bond’s sensitivity to changes in interest rate because it takes into account the changes in cash flows and values that can occur from fixed options (Brealey, Myers, Allen, & Mohanty, 2012). This is due to the fact that bond has fixed option and therefore subject to changes in cash flow as a result of changes in interest rates. The changes in the interest rate are also influenced by the prepayments, exercise of put, and call options is a hedging process for the bond (Ross, Westerfield, & Jordan, 2008). The modified duration also gives a specific percentage of approximation for a 100 basis point changes in interest rates. This helps in the calculation of the bond value once the duration is applied.
2. The direction of change of modified duration
3. A decrease in the coupon rate from 8 percent to 4 percent will increase the modified duration because a reduction in coupon rate will mean that there is a reduction in the change of the cash flow, which is removed from the timeline hence increasing the modified duration (Ross, Westerfield, & Jordan, 2008).
4. A change in the maturity of a bond from 15 years to 7 years will result into a reduction in the modified duration below the maturity of the bond. This is because in a vanilla bond, the modified duration is always less than the time to maturity of the bond (Ross, Westerfield, & Jordan, 2008).
5. Convexity is the measure of the curvature of the relationship between bond prices and bond yields, which shows how the duration of a bond changes because of the change in interest rates (Farrell & Reinhart, 1997). Convexity is a risk measurement tool used to measure the market risk levels, which a portfolio of bonds is exposed. In this case, one can assume that the interest rate of a bond is constant throughout the life of a bond and when changes occur on the bond, it is normally evenly (Farrell & Reinhart, 1997).

Duration of a bond to which is exposed to risk is dependent on the convexity which helps in the determination of the percentage in price changes of the bond. At this case, as the convexity increases, the exposure of the bond to risk also increases (Brealey, Myers, Allen, & Mohanty, 2012). Alternatively, as the convexity decreases the exposure to risk of the duration bond also decreases and the bond duration can be hedged.

Question 6

1. Calculate the projected price change for Bond B if the yield to maturity for this bond falls by 75 basis points

Since yield to maturity, bond falls by 75 basis and 1% is equal to 100 basis, therefore, this means the yield to maturity will reduce by

Therefore, the yield to maturity will be

Projected bond price == $93.90

1. In analyzing Bon based on the call, option or maturity provides some drawbacks because call or maturity does not take into consideration the term structure of the interest rate (Farrell & Reinhart, 1997). Therefore, changes in the interest rate might affect the duration of the bond. In the case of a call option in analyzing a bond, volatile interest rates may affect the cash flow of a bond. Therefore, in order to remedy for the shortcomings of call option it is important to consider duration of the bond and convexity within bond A. this will help in remedy of the interest rates changes, which is an important factor in analyzing a bond.

# Reference

Brealey, R., Myers, S., Allen, F., & Mohanty, P. (2012). *Principles of corporate finance.* Tata: McGraw-Hill Education.

Farrell, J., & Reinhart, W. (1997). *Portfolio management: theory and application.* New York: McGraw-Hill.

Ross, S., Westerfield, R., & Jordan, B. (2008). *Fundamentals of corporate finance.* Tata: McGraw-Hill Education.