Part 1: YTM

HW2 流程圖

Input

1. Current Bond Price
2. Bond Par Value
3. Bond Coupon Rate
4. Years to Maturity
5. Payment
6. YTM (猜測值)

→

Calculate

$$PV = \sum_{n=1}^{n} \frac{C}{(1+\frac{r}{m})^n} + \frac{F}{(1+\frac{r}{m})^n}$$

$$C\,\frac{1-(1+\frac{r}{m})^{-n}}{\frac{r}{m}} + \frac{F}{(1+\frac{r}{m})^n}$$

$$PV_{(算)} - PV_{(真實)}$$

→

PV(算)與PV(真實)的差距是否小於千分之一

→ 是

output

YTM

否

If PV(算)較高，將YTM調高；
If PV(算)較低，將YTM調低

Part 2: Spot Rate

Input

1. Current Bond Price (PV)
2. Bond Par Value (FV)
3. Years to Maturity

→

Calculate

$$PV = \frac{FV}{(1+y_t)^t}$$

$$\Rightarrow y_t = \left(\frac{PV}{FV}\right)^{-\frac{1}{t}} - 1$$

→

Output

Spot Rate: y_t

Part 3: Forward Rate

Input

1. Duration (t)
2. Par Value of zero Coupon Bond
3. Price of 1st year zero coupon bond

→

Calculate

$$f_{(t,t+r)} = \left(\frac{P_t}{P_{t+r}}\right)^{\frac{1}{r}} - 1$$

計算各期間 Forward Rate

→

Output

Forward Rate 對照表