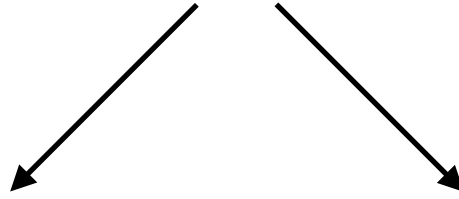


輸入：  
Par value  
Current bond price  
Bond coupon rate  
Years to maturity  
Times per year(annually, semi-annually, quarterly)



計算YTM，公式如下：

$$\text{Yield to Maturity} = \frac{\text{Annual Interest} + \frac{\text{Par Value} - \text{Market Price}}{\text{Number of Years to Maturity}}}{\frac{\text{Par Value} + \text{Market Price}}{2}}$$

YTM

計算spot rate，公式如下：

$$y_t = P_t^{\frac{-1}{t}} - 1$$

Spot rate

公式取自：

ytm->

<https://nccalculators.com/investment/yield-to-maturity-calculator.htm>

Spot rate->

<https://www.trignosource.com/finance/spot%20rate.html>

Forward rate->

老師的pdf

計算forward rate，公式如下：

Forward Rates

- When  $S(i, j)$  equals

$$f(i, j) \triangleq \left[ \frac{(1 + S(j))^j}{(1 + S(i))^i} \right]^{1/(j-i)} - 1$$

- $f(i, j)$  are called the (implied) forward rates.

Forward rate  
(以dataframe儲存)