

Chapter 3: Asset Classes

Question: How to calculate Annual Equivalent Rate?

The bank offers an advertised rate of 5% compounded quarterly. What is the AER?

Solution

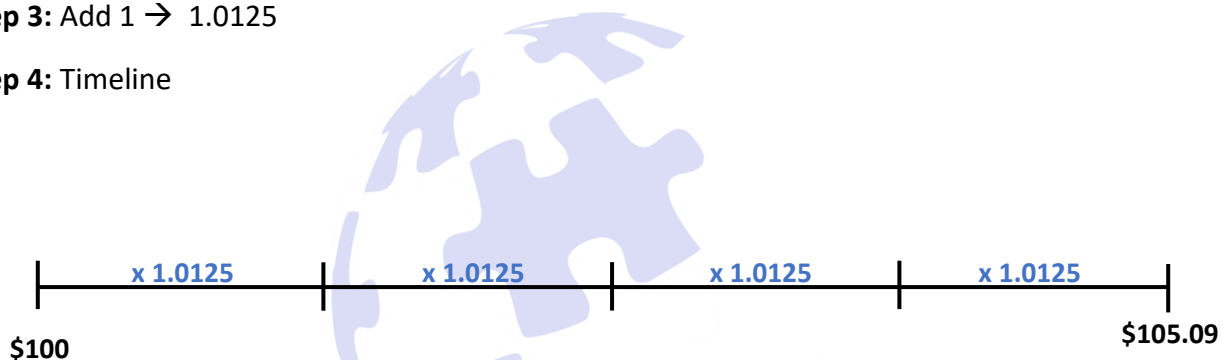
Advertised Rate: 5%

Step 1: Convert to decimals → 0.05

Step 2: Adjust for compounding → $0.05/4 = 0.0125$ frequency

Step 3: Add 1 → 1.0125

Step 4: Timeline



AER = 5.09%

Chapter 3: Asset Classes

Question: How to calculate [Forward Rate](#)?

$$\text{Forward Rate: Spot Rate} \times \left[\frac{1 + R_f \text{ Price}}{1 + R_f \text{ Base}} \right]$$

Example:

Spot AUD : USD = 1.20

R_f USD = 4%

R_f AUD = 7%

$$\begin{aligned} \text{1 year forward AUD : USD} &= 1.20 \times \frac{(1+4\%)}{(1+7\%)} \\ &= 1.20 \times \frac{1.04}{1.07} \\ &= 1.166 \end{aligned}$$

If the question asks 6 months forward then adjust the interest rates.

R_f USD = 4% x 6/12 = 2%

R_f AUD = 7% x 6/12 = 3.5%

$$\begin{aligned} \text{1 year forward AUD : USD} &= 1.20 \times \frac{(1+2\%)}{(1+3.5\%)} \\ &= 1.20 \times \frac{1.02}{1.035} \\ &= 1.182 \end{aligned}$$

Chapter 3: Asset Classes

Question: How to calculate Flat Yield/Running Yield?

$$\text{Flat Yield} = \frac{\text{Annual Coupon}}{\text{Bond Price}}$$

Example:

A bond has a coupon rate of 8% and is currently trading at \$92. It has 4 years to maturity. What is the flat yield?

$$\text{Flat Yield} = \frac{\$8}{\$92} = 8.695\%$$

**While calculating flat yield, years to maturity does NOT matter.*

Chapter 3: Asset Classes

Question: How to calculate approximate Gross Redemption Yield (GRY)?

$$\text{GRY} \approx \frac{\text{Annual Coupon} + \left(\frac{\text{Discount}}{\text{Years to Maturity}} \right)}{\text{Bond Price}}$$

**For Premium bond, subtract instead of adding*

Example:

A bond has a coupon rate of 8% and is currently trading at \$94. It has 4 years to maturity. What is the Gross Redemption Yield?

$$\text{GRY} = \frac{8 + \left(\frac{6}{4} \right)}{94}$$

(100 - 94)

$$\frac{8 + 1.5}{94} = 10.10\%$$

Chapter 5: Economics & Investment Analysis

Question: How to calculate Central Tendencies?

Example:

Yearly Returns: 1%, -6%, 4%, 4%, 9%, 7%

$$\text{Arithmetic Mean} = \frac{1 - 6 + 4 + 4 + 9 + 7}{6} = 3.167\%$$

Mode = 4%

Median = -6%, 1%, **4%, 4%**, 7%, 9%

Median = 4%

Chapter 5: Economics & Investment Analysis

Question: How to calculate Geometric Mean?

The calculation of Geometric Mean is slightly different.

Example:

Calculate the geometric mean of 8%, 3%, -5%

Step 1: Write % in decimals: 0.08, 0.03, -0.05

Step 2: add 1 to the decimals: 1.08, 1.03, 0.95

Step 3: Multiple all of them: (1.08 x 1.03 x 0.95)

Step 4: Take the nth root: (1.08 x 1.03 x 0.95)^{1/3} = 1.0185

Step 5: Subtract 1 and convert to % = **1.85%** → **GEOMETRIC MEAN**