chapter 5

Financial Maths

Section 5.1 Compound interest

$F = P(1+i)^t$ ← units of time

Future Value — Present — rate of interest

PROJECT MATHS Text & Tests 6

1. Future value

The future value of a sum of money €P, invested now at i% for t years, is

Future value (F) = €P(1 + i)^t

Interest earned = €P(1 + i)^t − €P

Example 1

Find the future value of €5000 invested at 4% (AER) per annum, compounded annually, for 6 years. Find also the interest earned over the period.

$F = P(1+i)^t$

$P = 5000$

$i = 4\%$

$t = 6$

$F = 5000(1.04)^6 = 6326.6$

$I = F - P = 6326.6 - 5000$

$= €1326.60$

Example 2

An investment bond offers a return of 15% if invested for 4 years. Calculate the AER (annual equivalent rate) for this bond, correct to two places of decimals.

$$F = P(1+i)^t$$

P = let = 100

i = ?

$t = 4$

$F = 100(1.15) = 115$

$$115 = 100(1+i)^4$$

$$1.15 = (1+i)^4$$

$$\sqrt[4]{1.15} = 1+i$$

$$1.03555 = 1+i$$

$$i = 0.0355 \approx 0.0356$$

$$\approx 3.56\%$$