

## APPENDIX C

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### Net Present Value

The net present value of the **net income** receivable from an investment is equivalent to the **capital value** of that investment and may be obtained from the formula:

$$\text{NPV} = \sum_{t=1}^n \frac{CF_t}{(1+r)^t} = CF_0 + \frac{CF_1}{(1+i)} + \frac{CF_2}{(1+i)^2} + \frac{CF_3}{(1+i)^3} \dots + \frac{CF_n}{(1+i)^n}$$

Where:

$CF_t$  = the cash flow at time  $t$

$CF_0$  = the initial cash flow or outlay

$CF_1, CF_2, CF_3, CF_n$  = net cash flows from the investment

at periods 1, 2, 3, etc. or years 1, 2, 3, etc. up to the final period or year  $n$

$i$  = discount rate or cost of capital

$n$  = number of periods of time (or years)

If  $NPV = 0$ , then  $i$  is the **internal rate of return**. In other words, NPV represents an 'absolute' measure of value, whereas IRR is a 'relative' rate of return.

### Weighted Average Cost of Capital (WACC)

The average cost of capital (whether equity or debt), taking into account the relative proportions of each source of capital. For example, if \$1.5m is provided as equity capital on the basis of an expected dividend yield of 5%, and \$5m is provided as debt capital at an interest rate of 12%, the weighted average cost is:  $[(1.5/6.5) \times 5\%] + [(5/6.5) \times 12\%] = 10.38\%$ . A generalised formula for calculating the weighted cost of capital is:

$$k = \sum w_i k_i$$

Where:  $w_i$  is the weight of the  $i$ th type of capital and  $k_i$  is the cost of the  $i$ th component. If the firm has one class of debt, preference shares and equity,  $k$  would be found as:

$$k = w_b k_b + w_{ps} k_{ps} + w_s k_s$$

This latter equation can be expanded to encompass short-term debt, long-term debt, convertibles, etc. See also **composite rate, gearing**.