

# **EA-1 SEMINAR**

## **SECTION 6**

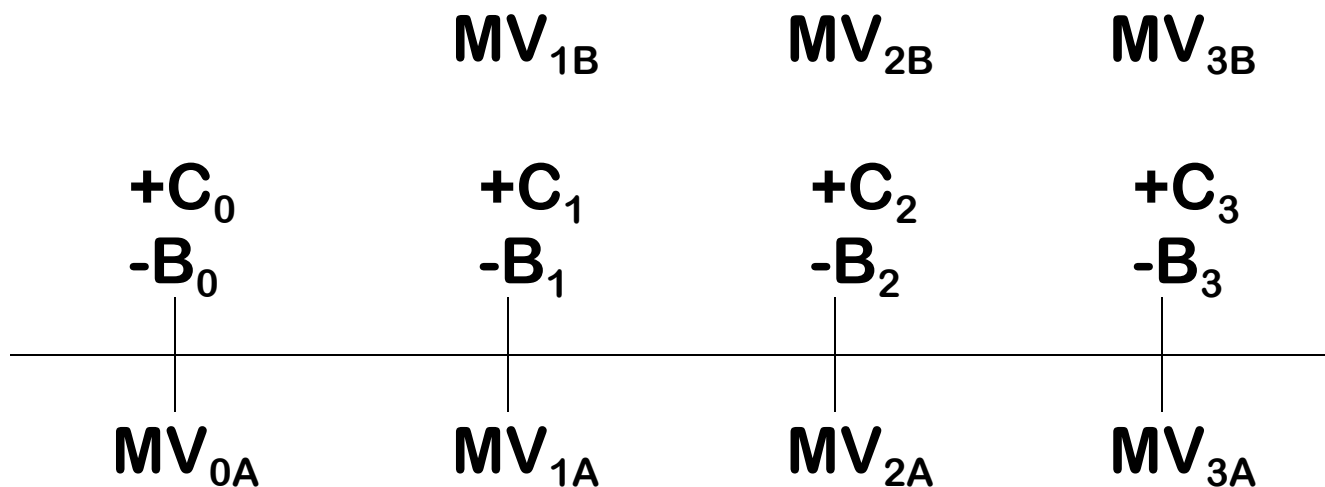
### **INVESTMENT YIELDS**

## TIME - WEIGHTED RETURN

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To calculate time-weighted return, must have market values at each cash flow date, both before and after cash flow.

Example assumes three year time period:



Time-weighted formula uses ratios of market values between cash flows:

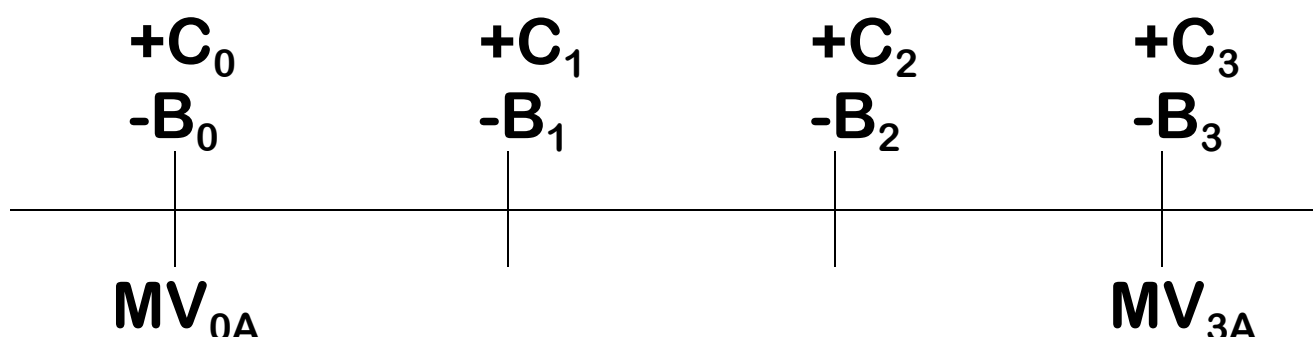
$$(1+i)^3 = \frac{MV_{1B}}{MV_{0A}} \times \frac{MV_{2B}}{MV_{1A}} \times \frac{MV_{3B}}{MV_{2A}}$$

# DOLLAR-WEIGHTED RETURN

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To calculate dollar-weighted return, only need beginning and ending market values.

Example assumes three year time period:



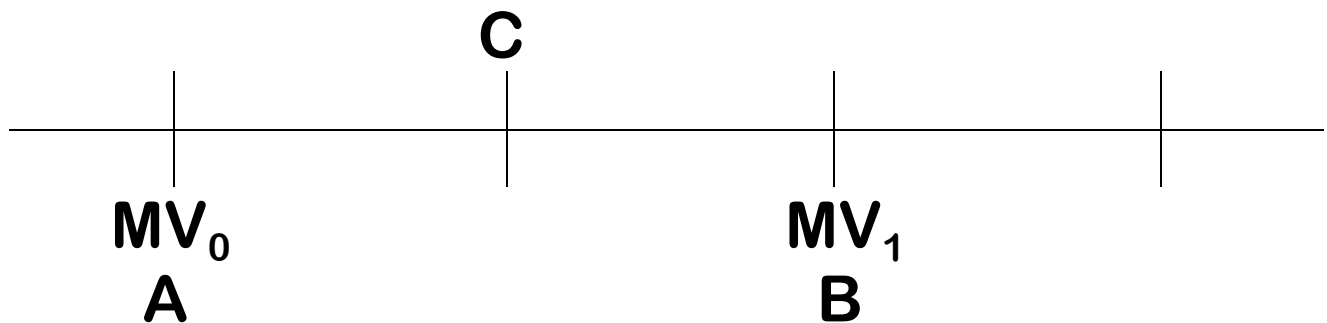
Use typical formula for dollar-weighted:

$$MV_{3A} = MV_{0A} (1+i)^3 + (C_1 - B_1)(1+i)^2 + (C_2 - B_2)(1+i)^1 + (C_3 - B_3)(1+i)^0$$

# DOLLAR-WEIGHTED RETURN

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Assume uniform distribution of cash flows during year → single net cash flow of C at mid-year:



$$B = A + C + I$$

$$\begin{aligned} B &= A(1+i) + C(1+i/2) \\ &= A + iA + C + iC/2 \end{aligned}$$

$$i(A+C/2) = B - A - C$$

$$i = \frac{I}{\frac{A+C}{2}} = \frac{I}{\frac{2A + B-A-I}{2}} = \frac{I}{\frac{A+B-I}{2}}$$