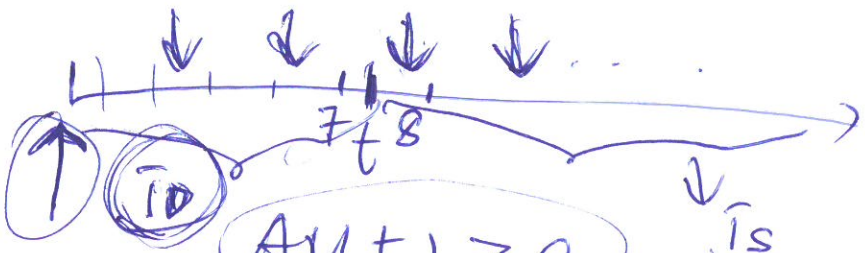
LN 7.2.

Discounted Payback Period

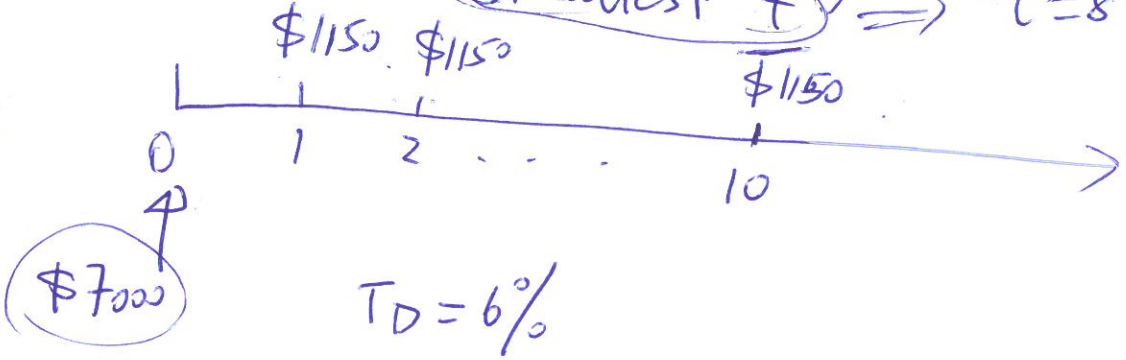
AV(t)



AV(t) ≥ 0

smallest t ⇒ t = 8 yrs.

Ex:



$i_D = 6\%$

$i_S = 3\%$.

① $AV(t) \geq 0$.

$$AV(t) = -7000.(1.06)^t + 1150\, s_{\overline{t}|0.06} \geq 0.$$

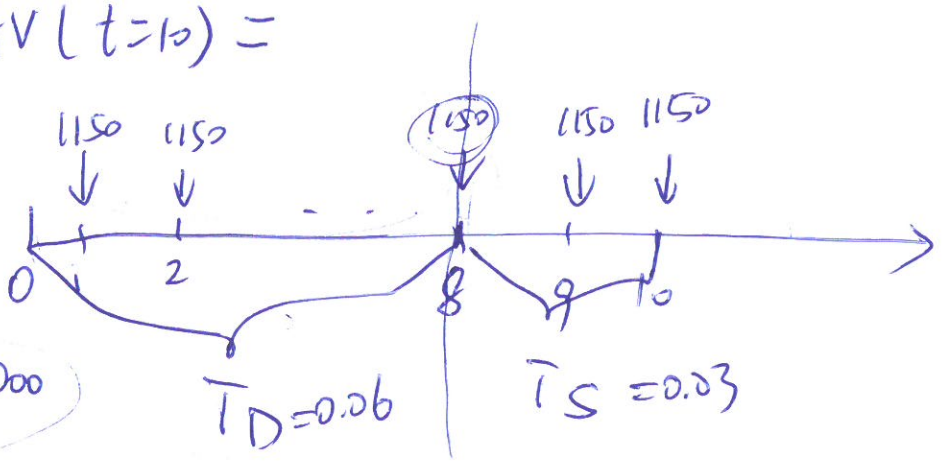
$$-7000.(1.06)^t + 1150.\frac{(1.06)^t - 1}{0.06} \geq 0.$$

$$(1.06)^{-t} = 0.634626.$$

$$\Rightarrow t = \boxed{7.8 \text{ yrs}}.$$

$$\Rightarrow D.P.P. = 8 \text{ yrs}.$$

② $AV(t=10) =$ ②



$$AV(t=10) = -7000 \cdot (1.06)^8 \times (1.03)^2$$

$$+ 1150 \cdot s_{\overline{8}|0.06} \times (1.03)^2 + 1150(1.03)^1 + 1150$$

$$= 25736$$

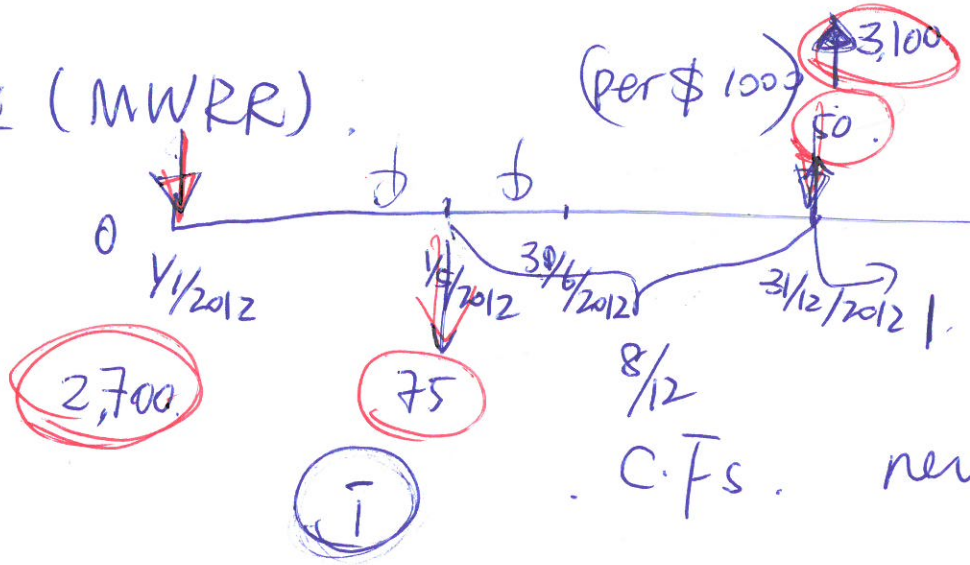
Week 7.

Measuring Investment Performance.

Fund value $\Leftarrow$
1. income CF_S →
2. market value.
3. new money.

- MWRR = IRR
- TWRR

Ex (MWRR)



C.Fs. new money

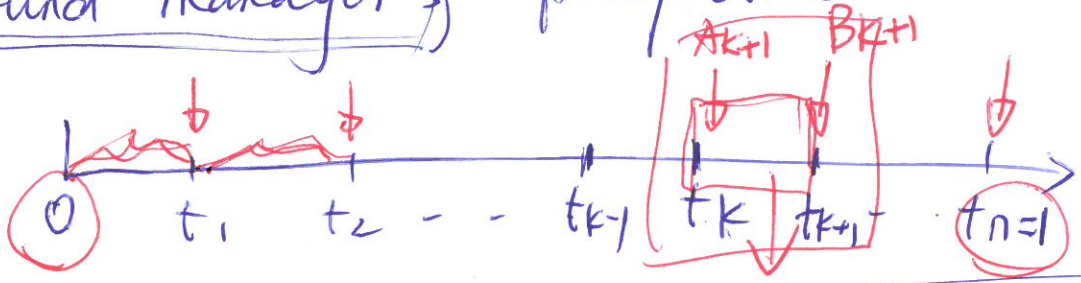
$$3100 = 2700(1+i) - 75(1+i)^{8/12} + 50.$$

$$\Downarrow \text{ Approximation.}$$

$$i \cong 16\%$$

TWR →

fund manager's perspective



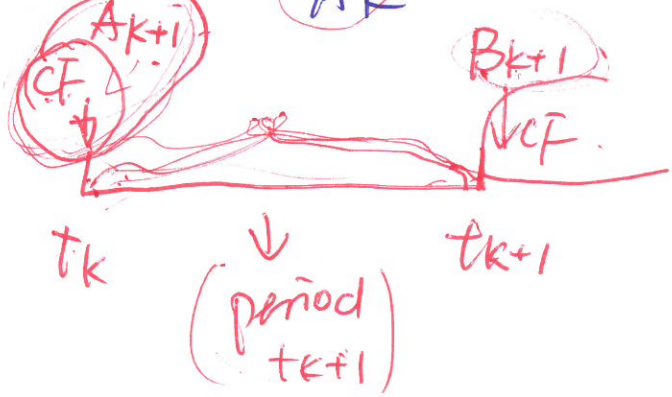
does not include → CF at time t_{k+1}

$$G_{k+1} = 1 + i_{k+1} = \frac{B_{k+1}}{A_{k+1}}$$

B_{k+1} → Fund value at t_{k+1}

A_{k+1} → Fund value at t_k → Including CF at t_k

$$G_k = 1 + i_k = \frac{B_k}{A_k}.$$



$$G = G_1 G_2 \cdots G_n = (1+i_1)(1+i_2)\cdots(1+i_n)$$

$$= (1 + TWRR)$$

$$\Rightarrow \boxed{TWRR} = \prod_{k=1}^{n} (1+i_k) - 1$$

Ex: TWRR.

$$G_k = \frac{B_k}{A_k}$$

① 2700 3000 3100

time points.

-75,000 +50,000

$$G_1 = \frac{B_1}{A_1} = \frac{3000}{2700} = 1.111$$

$$G_2 = \frac{B_2}{A_2} = \frac{3100-50}{3000-75} = 1.043.$$

$$G = G_1 \cdot G_2$$

$$TWRR: G - 1 = 1.111 \times 1.043 - 1 = 15.9\%$$