

Math 2FM3, Tutorial 10

Nov 24th, 2015

Dollar-Weighted Return For a One-Year Period

- A : balance in the fund at the start of the year;
- B : balance in the fund at the end of the year;
- C_k : net deposit at time t_k .
- i is effective annual rate, then
- $A(1+i)+C_1(1+(1-t_1)i)+\dots+C_n(1+(1-t_n)i)=B$
- $(A+\sum C_k)+i(A+\sum C_k(1-t_k))=B$
- $i=I/(A+\sum C_k(1-t_k))$ and $I=B-(A+\sum C_k)$ is the net amount of interest.

Time-Weighted Return For a One-year Period

- F_k : the value of fund just before the net deposit C_k at time t_k
- $F_j / (F_{j-1} + C_{j-1})$ is the growth factor from t_{j-1} to t_j
- $i = (F_1 / A) * (F_2 / (F_1 + C_1)) * \dots * (F_k / (F_{k-1} + C_{k-1})) * (B / (F_k + C_k)) - 1$

Ex 5.2.3

- On January 1, 2005, an investment account is worth 100,000. On April 1, 2005, the value has increased to 103,000 and 8,000 is withdrawn. On January 1, 2007, the account is worth 103,992. Assuming a dollar-weighted method for 2005 and a time-weighted method for 2006, the effective annual interest rate was equal to x for both 2005 and 2006. Calculate x .

