Esercizi sui regimi - lezione del 5 ottobre 2023

giovedì 5 ottobre 2023 09:12

$W(0)=1100 \quad T=3 \text{ anni} \quad i=2\%$ — Calcolare $W(T)$

RIS $W(3)=1100\left(1+0{,}02*3\right)=1100*1{,}06$

RIC $W(3)=1100\left(1+0{,}02\right)^3=1100*1.02^3$

$T=2 \quad W(T)=1000 \quad i=3{,}1\%$ — calcolare $W(0)$

RIS $W(T)=W(0)(1+iT) \qquad W(0)=\dfrac{W(T)}{1+iT}$

$1000=W(0)(1+0{,}031*2)$

$W(0)=\dfrac{1000}{1+0{,}031*2}=\dfrac{1000}{1.062}$

RIC $W(T)=W(0)(1+i)^T$

$1000=W(0)\,1.031^2 \qquad W(0)=\dfrac{1000}{1.031^2}$

$W(0)=1600 \quad W(T)=1800 \quad T=2{,}5$ — calcolare il tasso di interesse

RIS $1800=1600\left(1+i\,2{,}5\right)$

$\dfrac{1800}{1600}=1+2.5i \Rightarrow 2.5i=\dfrac{1800}{1600}-1$

$i=\left(\dfrac{1800}{1600}-1\right)/2.5=0.05=5\%$

RIC $1800=1600\left(1+i\right)^{2.5}$

$$\frac{1800}{1600} = (1+i)^{2.5} \Rightarrow 1+i = \left(\frac{1800}{1600}\right)^{\frac{1}{2.5}}$$

$$i = \left(\frac{1800}{1600}\right)^{\frac{1}{2.5}} - 1$$

$W(0)=1000 \quad W(T)=1500 \quad i=2.8\%$ ~ o ~

calcolare la durata

RIS $\quad 1500 = 1000(1+0{,}028\,T)$

$$\frac{1500}{1000} = 1 + 0.028\,T$$

$$0{,}028\,T = \frac{1500}{1000} - 1 \Rightarrow T = \left(\frac{1500}{1000} - 1\right)/0.028 = 17{,}8571$$

RIC $\Rightarrow \quad 1500 = 1000(1+0{,}028)^T$

$$\frac{1500}{1000} = 1.028^T \qquad \ln\left(1500/1000\right) = \ln 1.028^T$$

$$= T \ln 1.028$$

$$T = \frac{\ln(1500/1000)}{\ln 1.028} = 14.6826$$