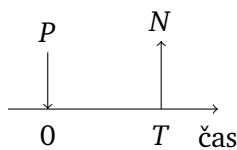


Časovna vrednost denarja



$$N = P \cdot A(0, T)$$

$$P = N \cdot D(0, T)$$

Navadno obrestovanje

$$A(0, T) = 1 + L \cdot T; \quad T \in \mathbb{R}_0^+$$

$$D(0, T) = (1 + L \cdot T)^{-1}; \quad T \in \mathbb{R}_0^+$$

Diskretno obrestno obrestovanje (k-krat na leto)

$$A_k(0, \frac{h}{k}) = (1 + \frac{R_N}{k})^h; \quad h \in \mathbb{N}_0$$

$$D_k(0, \frac{h}{k}) = (1 + \frac{R_N}{k})^{-h}; \quad h \in \mathbb{N}_0$$

$$(1 + R_E) = (1 + \frac{R_N}{k})^k$$

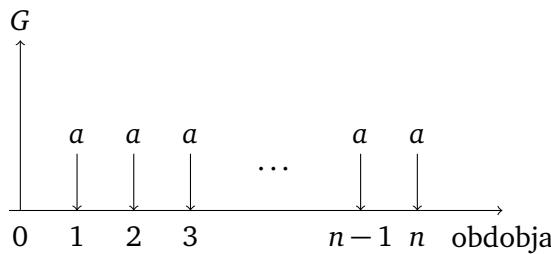
Zvezno obrestno obrestovanje

$$A(0, T) = e^{Y \cdot T} = (1 + R_E)^T; \quad T \in \mathbb{R}_0^+$$

$$D(0, T) = e^{-Y \cdot T} = (1 + R_E)^{-T}; \quad T \in \mathbb{R}_0^+$$

$$(1 + R_E) = e^Y$$

Krediti



$$a = G \cdot \frac{r(1+r)^n}{(1+r)^n - 1}$$

$$R_j = G \cdot \frac{(1+r)^n - (1+r)^j}{(1+r)^n - 1}$$

$$R_{j+1} = R_j(1 + r) - a$$

Terminske obrestne mere

$$t \leq T < U$$

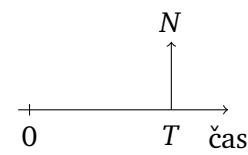
$$A(t, U) = A(t, T) \cdot A(t, T, U)$$

$$L(t, T, U) = \frac{1}{U-T} \cdot \left(\frac{1+(U-t)L(t, U)}{1+(T-t)L(t, T)} - 1 \right)$$

$$Y(t, T, U) = \frac{1}{U-T} \cdot \left((U-t)Y(t, U) - (T-t)Y(t, T) \right)$$

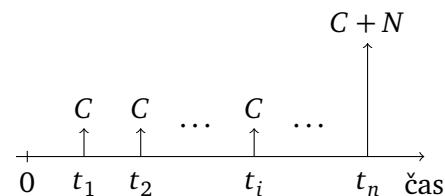
Obveznice

Brezkuponska obveznica



$$P_t^{\text{ZCB}} = N \cdot D(t, T)$$

Kuponska obveznica

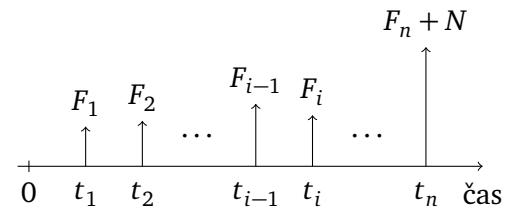


$$t_i - t_{i-1} = \Delta$$

$$P_t^{\text{CB}} = \sum_{t_i > t} C \cdot D(t, t_i) + N \cdot D(t, t_n)$$

$$D_t = \frac{1}{P_t^{\text{CB}}} \left(\sum_{t_i > t} C t_i D(t, t_i) + N t_n D(t, t_n) \right)$$

Obveznica s spremenljivimi kuponi



$$t_i - t_{i-1} = \Delta$$

$$F_i = N \Delta L(t_{i-1}, t_i)$$

$$P_{t_i}^{\text{FL}} = N$$

$$P_t^{\text{FL}} = \frac{1}{1 + (t_i - t)L(t, t_i)} \cdot (N + F_i) \text{ za } t \in (t_{i-1}, t_i)$$

Terminski posli

$$K = (S_0 - I(0, T)) \cdot A(0, T)$$

$$F_t = (S_t - I(t, T)) \cdot A(t, T)$$

$$V_T^{\text{FW}} = S_T - K$$

$$V_t^{\text{FW}} = (F_t - K) \cdot D(t, T)$$

Valutni terminski posli (na enoto tuge valute)

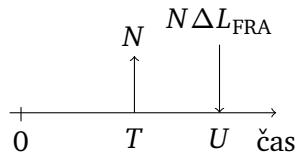
$$1f = S_t d$$

$$K = S_0 \cdot \frac{D^f(0, T)}{D^d(0, T)} = S_0 \cdot D^f(0, T) \cdot A^d(0, T)$$

$$V_T^{\text{FW}} = S_T - K$$

$$V_t^{\text{FW}} = S_t \cdot D^f(t, T) - K \cdot D^d(t, T)$$

Dogovor o terminski obrestni meri



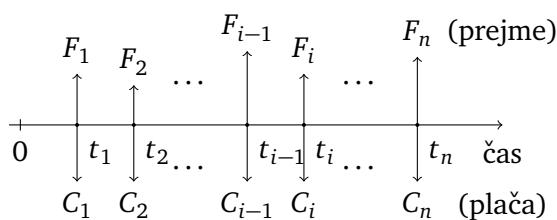
$$U - T = \Delta$$

$$L_{\text{FRA}} = L(0, T, U)$$

$$V_T^{\text{FRA}} = N \Delta (L(T, U) - L_{\text{FRA}}) D(T, U)$$

$$V_t^{\text{FRA}} = N \Delta (L(t, T, U) - L_{\text{FRA}}) D(t, U)$$

Zamenjave obrestnih mer



$$t_i - t_{i-1} = \Delta$$

$$C_i = N \Delta L_{\text{SWAP}}$$

$$F_i = N \Delta L(t_{i-1}, t_i)$$

Zamenjava kot portfelj FRA-jev

$$L_{\text{SWAP}} = \frac{\sum_{i=1}^n L(0, t_{i-1}, t_i) D(0, t_i)}{\sum_{i=1}^n D(0, t_i)}$$

$$V_t^{\text{SWAP}} = N \Delta \sum_{t_i > t} (L(t, t_{i-1}, t_i) - L_{\text{SWAP}}) D(t, t_i)$$

Zamenjava kot portfelj obveznic

$$L_{\text{SWAP}} = \frac{1 - D(0, t_n)}{\Delta \sum_{i=1}^n D(0, t_i)}$$

$$V_t^{\text{SWAP}} = P_t^{\text{FL}} - P_t^{\text{CB}}$$

Opcije

Evropske opcije

$$c_T^E = \max\{S_T - K, 0\}$$

$$p_T^E = \max\{K - S_T, 0\}$$

$$\max\{S_t - KD(t, T) - I(t, T), 0\} \leq c_t^E \leq S_t - I(t, T)$$

$$\max\{KD(t, T) + I(t, T) - S_t, 0\} \leq p_t^E \leq KD(t, T)$$

Paritetna evropske nakupne in prodajne opcije

$$p_t^E + S_t - I(t, T) = c_t^E + KD(t, T)$$

Ameriške opcije

$$c_T^A = \max\{S_T - K, 0\}$$

$$p_T^A = \max\{K - S_T, 0\}$$

$$c_t^E \leq c_t^A \quad \text{in} \quad p_t^E \leq p_t^A$$

Če je $I(t, T) = 0$, velja $c_t^E = c_t^A$.

$$\max\{S_t - KD(t, T) - I(t, T), S_t - K, 0\} \leq c_t^A \leq S_t$$

$$\max\{KD(t, T) + I(t, T) - S_t, K - S_t, 0\} \leq p_t^A \leq K$$

Neenakost za ameriško nakupno in prodajno opcijo

$$c_t^A + KD(t, T) \leq p_t^A + S_t \leq c_t^A + K + I(t, T)$$