

Principais Fórmulas

1 Aula 12 - Matemática Financeira

$$a_{\overline{n}|} = \frac{1 - (1 + i)^{-n}}{i} = \frac{1 - v^n}{i}$$

$$\ddot{a}_{\overline{n}|} = \frac{(1 + i) \cdot [1 - (1 + i)^{-n}]}{i} = \frac{1 - v^n}{d}$$

$$a_{\infty|} = \frac{1 - d}{d} = \frac{1}{i}$$

$$\ddot{a}_{\infty|} = \frac{1 + i}{i} = \frac{1}{d}$$

$$s_{\overline{n}|} = (1 + i)^n \cdot a_{\overline{n}|} = \frac{(1 + i)^n - 1}{i}$$

2 Aula 13 - Tabelas de Vida

$$e_x = \sum_{t=1}^{\infty} {}_t p_x$$

$$e_{x:\overline{n}|} = \sum_{t=1}^n {}_t p_x$$

$$\dot{e}_x = \int_0^{\infty} {}_t p_x dt$$

$$\dot{e}_{x:\overline{n}|} = \int_0^n {}_t p_x dt$$

$$\dot{e}_{80:\overline{10}|} = \int_0^{10} {}_t p_{80} dt$$

3 Aula 14 - Precificação de Seguros

$$A_{x:\overline{n}|}^1 = \sum_{k=1}^n v^k \cdot P(T_x \in [k-1, k)) = \sum_{k=1}^n v^k \cdot {}_{k-1}p_x \cdot q_{x+k-1}$$

$$D_x = l_x \cdot v^x \qquad d_x = l_x - l_{x+1} \qquad C_x = d_x \cdot v^{x+1}$$

$$N_x = \sum_{k=0}^{\omega-x} D_{x+k} \qquad S_x = \sum_{k=0}^{\omega-x} N_{x+k}$$

$$M_x = \sum_{k=0}^{\omega-x} C_{x+k} \qquad R_x = \sum_{k=0}^{\omega-x} M_{x+k}$$

$$A_x = \frac{M_x}{D_x}$$

$${}_nE_x = \frac{D_{x+n}}{D_x}$$

$${}_n|A_x = {}_nE_x \cdot A_{x+n} = \frac{M_{x+n}}{D_x}$$

$$A_{x:\overline{n}|}^1 = \frac{M_x - M_{x+n}}{D_x}$$

$$A_{x:\overline{n}|}^1 = \frac{M_x - M_{x+n}}{D_x}$$

$$\begin{aligned} VPA &= 100.000 \times A_{36:\overline{3}|}^1 \\ &= 100.000 \times \sum_{k=1}^3 v^k \cdot {}_{k-1}p_x \cdot q_{x+k-1} \end{aligned}$$

$$A_{36:\overline{3}|}^1 = \frac{M_{36} - M_{36+3}}{D_{36}}$$

$$(IA)_x=\sum_{k=0}^{\infty}(k+1)\cdot v^{k+1}\cdot {}_{k|}q_x$$

$$(n+1)A^1_{x:\overline{n}|}=(DA)^1_{x:\overline{n}|}+(IA)^1_{x:\overline{n}|}$$

$$A_x^{(m)}=\sum_{k=0}^{\infty}v^{\frac{k+1}{m}}\frac{{}_k|{}_{\frac{1}{m}}}{\frac{1}{m}}q_x$$

$$A^1_{x:\overline{n}|}^{(m)}=\frac{i}{i^{(m)}}A^1_{x:\overline{n}|}$$

$$\ddot{a}_x=\frac{N_x}{D_x}$$

$$a_x=\frac{N_{x+1}}{D_x}$$

$${}_n|\ddot{a}_x=\frac{N_{x+n}}{D_x}=\ddot{a}_{x+n}\cdot\frac{D_{x+n}}{D_x}$$

$$\ddot{a}_{x:\overline{n}|}=\frac{N_x-N_{x+n}}{D_x}=\ddot{a}_x-{}_n|\ddot{a}_x$$

$$P\times \ddot{a}_{25:\overline{10}|}$$

4 Aula 15 - Reservas

$${}_tV_x=A^1_{x+t:\overline{n-t}|}-P\cdot \ddot{a}_{x+t:\overline{n-t}|}$$

$$P=\frac{A^1_{x:\overline{n}|}}{\ddot{a}_{x:\overline{n}|}}$$

$${}_tV_{60} = A_{60+t:\overline{30-t}|}^1 - P \cdot \ddot{a}_{60+t:\overline{30-t}|}$$

$${}_tV = \frac{p_{x+t}}{1+i} \cdot {}_{t+1}V + A_{x+t:\overline{1}|}^1 - P$$

$$a_t = A_{x+t:\overline{1}|}^1 - P \qquad b_t = \frac{p_{x+t}}{1+i}$$