Midterm Review

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Formulas:

$$\text{Equal Payment Amortization} \qquad \text{C} = \frac{\text{PVA}}{\text{PVIFA}(r,t)} \tag{1}$$

$$\text{Future Value Interest Factor FVIF(r, t)} = (1+r)^t \tag{2}$$

$$\text{Present Value Interest FactorPVIF(r, t)} = \frac{1}{(1+r)^t} \tag{3}$$

1. (a) $C_{50-months} = \dfrac{\text{PVA}}{\text{PVIFA}(r,t)} = \dfrac{2,139,423}{\text{PVIFA}\,(1.01, 62-12)} = \dfrac{2,139,423}{39.196} = 54,582.5233$ Baht per Month

   Total is $54,582.5233 \times 50 = 2,729,126.167$ Baht

   $C_{62-months} = \dfrac{2,729,126.167}{62} = 44,018.16398$ Baht

   (b) $\text{PVA}_{24-months} = c \times \text{PVIFA}(r,t) = 50,000 \times \text{PVIFA}(1,24)$

   $\text{PVA}_{24-months} = 1,062,169.363$

   $\text{PVA}_{24-months-onward} = 2,139,425 - 1,062,169.363 = 1,077,255.637$

   $1,077,255.637 = 50,000 \times \text{PVIFA}(2,24)$

   $1,077,255.637 = 50,000 \times \dfrac{\left[1 - \dfrac{1}{(1+0.02)^t}\right]}{0.02}$

   $1,077,255.637 = 2,500,000 \times \left[1 - \dfrac{1}{(1.02)^t}\right]$

   $0.4309022548 = 1 - \dfrac{1}{(1.02)^t}$

   $\dfrac{1}{0.5690977452} = (1.02)^t$

   $\log_{1.02}\left(\dfrac{1}{0.5690977452}\right) = \log_{1.02}(1.02)^t$

   $28.46607508 = t$

   Total Months $= 24 + 28.46607508 = 52.46607508$ months

2. (a) $\text{FVIF}_{\text{BBL}} = \text{FVIF}\left(\frac{8.95}{6}, 1 \times 6\right) = 1.0929$

$\text{FVIF}_{\text{SCB}} = \text{FVIF}\left(\frac{9.00}{3}, 1 \times 3\right) = 1.0927$

$\text{FVIF}_{\text{TFB}} = \text{FVIF}\left(\frac{9.05}{2}, 1 \times 2\right) = 1.0925$

Since FVIF_{TFB} has the lowest **Effective Annual Rate**; therefore, it is the cheapest choice to go with.

(b) **Note: Only the first two years**

$$C = \frac{\text{PVA}}{\text{PVIFA}(r,t)} = \frac{1.6 \times 10^6}{\text{PVIFA}\left(\frac{9.00}{3}, 10 \times 3\right)} = \frac{1.6 \times 10^6}{19.60} = 81,630.8149 \text{ Baht per 4 Months}$$

Total for the first two years $= 81,630.8149 \times 3 \times 2 = 489,784.8895$ Baht Let $F = 489,784.8895$

$\because I_0 + I_1 + \cdots + I_n = (B_0 + B_1 + \cdots + B_n) \times r$

$\because B_0 + B_1 + \cdots + B_n = \frac{(B_0 + B_n) \times n}{2}$

$\therefore I_0 + I_1 + \cdots + I_n = \frac{(B_0 + B_n) \times n \times r}{2}$

$\because B_n = B_0 - F$

$\therefore \sum_{x=0}^{n} I_x = \frac{(2B_0 - F) \times n \times r}{2}$

$$\begin{aligned}\sum_{x=0}^{6} I_x &= \frac{(2(1.6 \times 10^6) - 489,784.8895) \times 6 \times \frac{0.09}{3}}{2} \\ &= ((3.2 \times 10^6) - 489,784.8895) \times 0.09 \\ &= 243,919.36\end{aligned}$$

$$\begin{aligned}\sum_{x=0}^{6} P_x &= F - \sum_{x=0}^{6} I_x \\ &= 489,784.8895 - 243,919.36 \\ &= 245,865.5296\end{aligned}$$