

Credit Variables

1. Credit Standards (change in Residual Income due to change in Credit standards)

$$\Delta RI = [\Delta S(1-v) - \Delta S \times bn](1-t) - k \Delta I$$

$$\text{where } \Delta I = ACP_n \times \frac{\Delta S}{360} \times V$$

ΔRI = Change in Residual Income when credit std. are changed.

ΔS = Change in Sales

V = Variable Cost to sales Ratio

$1-v$ = Contribution to sales Ratio (Contribution Margin Ratio)

bn = Bad debt ratio on new sales

t = tax Rate

k = Post-tax cost of capital

ΔI = Increase in Receivables Inv.

ACP_n = Avg. collection Period

Credit Variables

1. Credit Standards (change in Residual Income due to change in Credit standards)

$$\Delta RI = [\Delta S(1-v) - \Delta S \times b \times n](1-t) - k \Delta I$$

where $\Delta I = ACP_n \times \frac{\Delta S}{360} \times V$

$S_0 = 50 \text{ Mn.}$ $\Delta S = 10 \text{ mn}$ $b = 0.08$ $1-v = 0.15$
 $ACP_n = 60 \text{ Days}$ $k = 0.15 = 15\%$ $V = 0.85$

$\Delta I = 60 \times \frac{10}{360} \times 0.85 = 1.4167 \text{ Mn.}$ $t = 40\% = 0.4$

$$\begin{aligned} \Delta RI &= [(10 \times 0.15) - (10 \times 0.08)](1 - 0.4) - (0.15 \times 1.4167) \\ &= [1.5 - 0.8] \times 0.6 - 0.212505 \\ &= 0.42 - 0.212505 \quad \Delta RI = \boxed{0.207495 \text{ Mn.}} \rightarrow \text{Positive, favour.} \end{aligned}$$

2. Credit Period

$$\Delta RI = [\Delta S(1-v) - \Delta S \times b \times n](1-t) - K \Delta I \quad \text{Current sales}$$

where $\Delta I = (ACP_n - ACP_0) \times \frac{S_0}{360} + V \times ACP_n \times \frac{\Delta S}{360}$

$ACP_0 = 45 \text{ Days}$
 $ACP_n = 60 \text{ Days}$
 $V = 0.80$ Current Collection Period
 $K = 0.15$
 $b = 0.05$
 $S_0 = 15 \text{ mn}$
 $\Delta S = 1.5 \text{ mn}$

$$\Delta I = (60 - 45) \times \frac{15}{360} + (0.8 \times 60 \times \frac{1.5}{360}) = 0.825 \text{ mn}$$

$$\Delta RI = [(1.5 \times 0.20) - (1.5 \times 0.05)] \times 0.55 - (0.15 \times 0.825)$$

$$\boxed{I = 0}$$

1/10, net 30 Total credit Period = 30D

IV - Disc. $S_0 = 12\text{mm}$ $ACP_0 = 24\text{days}$ $V = 0.8$

$k = 0.15$ $\Delta S = 12\text{mm}$ $ACP_n = 16\text{days}$ $V = 0.2$

$P_0 = 0.3$ $d_0 = 0.01$ $d_n = 0.02$

$P_n = 0.7$

$\Delta DIS = P_n (S_0 + \Delta S) d_n - P_0 S_0 d_0$

$= (0.7 \times (12 + 1.2) \times 0.02) - (0.3 \times 0.01 \times 12)$

$\Delta DIS = 0.1488\text{mm}$

$\Delta I = \frac{S_0}{360} \times (ACP_0 - ACP_n) - (V \times \frac{\Delta S}{360} \times ACP_n)$

$0.224 = \frac{12}{360} \times (24 - 16) - (0.8 \times \frac{1.2}{360} \times 16)$

1/10, net 30 Total credit Period = 30D

IV - Disc. $S_0 = 12 \text{ mn}$ $ACP_0 = 24 \text{ days}$ $V = 0.8$

$k = 0.15$ $\Delta S = 12 \text{ mn}$ $ACP_n = 16 \text{ days}$ $V = 0.2$

$P_0 = 0.3$ $d_0 = 0.01$ $d_n = 0.02$

$P_n = 0.7$

$\Delta DIS = P_n (S_0 + \Delta S) d_n - P_0 S_0 d_0$

$= (0.7 \times (12 + 12) \times 0.02) - (0.3 \times 12 \times 0.01)$

$\Delta DIS = 0.1488 \text{ mn}$

$\Delta I = \frac{S_0}{360} \times (ACP_0 - ACP_n) - (V \times \frac{\Delta S}{360} \times ACP_n)$

$\Delta RI = 0.0792 \text{ mn}$

4. Collection Efforts

$$\Delta RI_1 = [\Delta SC(1-v) - \Delta BD](1-t) - K\Delta I$$

where, $\Delta BD = b_n(S_0 + \Delta S) - b_0S_0$

$$\Delta I = (ACP_n - ACP_0) \times \frac{S_0}{360} + \left(V \times \frac{\Delta S}{360} \times ACP_n \right)$$

ΔBD = Change in Bad debts cost/collection

b_n = New bad debts proportion

b_0 = Existing proportion

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4. Collection Efforts

$$\Delta RI = [\Delta S(1-v) - \Delta BD](1-t) - k\Delta I$$

where, $\Delta BD = b_n(S_0 + \Delta S) - b_0S_0$

$$\Delta I = (ACP_n - ACP_0) \times \frac{S_0}{360} + (V \times \frac{\Delta S}{360} \times ACP_n)$$

$S_0 = 50mn$ $ACP_0 = 25days$ $V = 0.75$ $k = 0.15$ $b_0 = 0.04$
 $\Delta S = 6mn$ $ACP_n = 40days$ $1-v = 0.25$ $t = 0.3$ $b_n = 0.06$

$$\Delta BD = (0.06 \times 56) - (0.04 \times 50) = 1.36mn$$

$$\Delta I = (40 - 25) \times \frac{50}{360} + (0.75 \times \frac{6}{360} \times 40)$$

$$= 2.083 + 0.5 = 2.583mn$$

$$\Delta RI = [(6 \times 0.25) - 1.36](1 - 0.3) - (0.15 \times 2.583)$$

$$= 0.098 - 0.38745 = -0.28945mn$$