HOMEWORK SHORT-TERM FINANCING

Problem 1:

Costs of Alternative Sources of Short-term Financing. On March 1, 20X1, National Corporation purchased $100,000 worth of inventory on credit with terms of 1/20, net/60. In the past, National has always followed the policy of making payment 1 month (30 days) after the goods are purchased.

A new member of National's staff has indicated that the company she had previously worked for never passed up its cash discounts, and she wonders if that is not a sound policy. She has also pointed out to National that if it does not take advantage of the cash discount, it should wait the entire 60-day period to pay the full bill rather than paying within 30 days.

If National were to take advantage of the discount and pay the bill on March 20 rather than on March 30, the firm would have to borrow the necessary funds for the 10 extra days. National's borrowing terms with a local bank are estimated to be at 9 percent (annual rate), with a 15 percent compensating balance for the term of the loan. Most members of National's staff feel that it makes little sense to take out an 9 percent loan with a compensating balance of 15 percent in order to save 1 percent on its $100,000 by paying the account 10 days earlier than it had planned.

a) Just in terms of true interest cost, would it be to National's advantage to take the 1 percent discount by paying the bill 10 days earlier than usual if to do this it borrowed the necessary amount on the above-mentioned terms?

Sol:

(*a*) The cost of not paying by the twentieth day is $1,000. The company pays on the thirtieth day; thus, it is paying $1,000 to borrow $99,000 for 10 days. The annual interest cost is:

$$\frac{\$1{,}000}{\$99{,}000} \times \frac{360}{10} = 36.36\%$$

It would be necessary to borrow $116,471 from the bank to satisfy the 15 percent compensating balance and pay $99,000 to the suppliers ($99,000 ÷ 0.85). The interest charges for the 10-day period would be

Cost of borrowing = 9% x 116,470.59 = 10,482.35

Usable fund = 99,000

Actual interest rate = 10,482.35 / 99,000 = 10.59%

Number of periods = 360 / 10 days = 36 periods

EAR = [1+ (10.59%/36)]^36 – 1 = 11.15%

It is to National's advantage to borrow from the bank in order to earn the discount.

b) If National ordinarily paid 60 days after purchase (instead of 30 days); would the company benefit by taking the discount if it had to borrow the money on the above-mentioned terms?

Sol:

(*b*) Waiting 40 days past the discount date to pay the bill changes the annual interest cost of the discount to 9.09 percent.

$$\frac{\$1{,}000}{\$99{,}000} \times \frac{360}{40} = 9.09\%$$

The interest rate on the $99,000 would be:

Cost of borrowing = 9% x 116,470.59 = 10,482.35

Usable fund = 99,000

Actual interest rate = 10,482.35 / 99,000 = 10.59%

Number of periods = 360 / 40 days = 9 periods

EAR = [1+ (10.59%/9)]^9 – 1 = 11.10%

It is not in National's best Interest to borrow from the bank in this case.

c) Compare your answers to (a) and (b) and explain what makes the discount more (less) desirable under the conditions stated in (b) than in (a).

Sol:

The reason the borrowing alternative is no longer desirable in (b) is the change in the number of days that the borrowing covers. The $1,000 discount is a fixed charge for the 40-day period; it is unchanged by the number of days that laps between the twentieth day and the day of payment.

Problem 2:

Jackie Corp. turns over its inventory 9 times during the year, and its days sales outstanding was 36 days. Under regular payment policy, the company payables deferral period is 40 days. Jackie's daily operating cash is around $64,000. Assume a 360-day year.

a) Calculate firm's cash conversion period and the amount of resources or minimum cash needed to support its cash conversion cycle.

Sol: Cash conversion period = Inv. Days + A/R days – A/P days
= (360/9) + 36 – 40 days
= 36 days
Cash require = 36 days x (64,000)
= $2,304,000

b) Jackie normally buys inventory on account with credit term of 2/15, net 40. If the company decides to take cash discount, what effect will this have on the cash cycle and the minimum cash required?

Sol: Cash conversion period = 40 + 36 – 15
= 61 days
Cash require = 61 days x (64,000)
= 3,904,000

c) If Jackie decides to take 2 percent cash discount, it has to make short-term bank loan at 15 percent cost and 25 percent compensating balance. How much does it need to pay to suppliers and apply for total loan with commercial bank?

Sol: Implied transaction value from the inventory value per cycle
= Inventory days x daily operating cash
= (360/9) x 64,000 = $2,560,000
With 2% discount, net transaction value to pay = $2,508,800
From 25% compensating balance, the company needs to borrow
= $2,508,800 / (1-25%) = $3,345,066.67

d) Will it be better for Jackie to take 2 percent discount when short-term bank loan costs 15%? Please calculate and compare the opportunity cost rate of foregoing cash discount and the actual interest rate to make decision.

Sol: Effective loan cost $= \left(1+\frac{15\%}{360/25}\right)^{\frac{360}{25}}-1$ **= 16.09%**

Opportunity cost $= \frac{2}{98}\times\frac{360}{(40-15)}$ **= 29.39%**