Practice for Lecture 3: The Clarkson Lumber Case

Question 1. As a new credit official at CIBC, your first assignment is to evaluate T-Gel's request for a $50,000 loan. The bank does not have a previous relationship with T-Gel, nor its owner, Mr. Dandruff, and so you don't know anything about the firm's creditworthiness or the owner's reputation. The firm submitted its balance sheet as of June 30, 2009 for your inspection, but did not submit pro-forma financial statements for the following months. In a letter to the bank, Mr. Dandruff requests the loan and says the funds will be invested in working capital and expresses with confidence that his firm will have no trouble in repaying the loan by the end of the year.

Your senior colleagues give you some additional information. First, this firm would probably be denied credit at any other bank because of its lack of track record. Second, such businesses typically understate their financing needs. So it is common that a few months later, these firms request extensions or additional credit and put the bank (and your job) in a difficult position: if you deny, then the firm becomes financially distressed and the bank may not be able to recover the principal; if you grant, the firm could fail to repay anyway, and you do not recover the original amount nor the extra credit.

T-Gel has no debt. Mr Dandruff says the he always keeps an amount of cash of at least $30,000. Starting on November, the firm will abandon its net 30 day credit policy and will grant credit terms net 65 days. The firm always collects 100% of the accounts. In addition to the balance sheet information submitted, he provides some informal balance sheet projections for the end of December. He estimates that the level of inventory will be 20% higher than in June, that accounts payable will be 15% higher, and that accrued expenses will not change much. Sales are estimated at $60,000 in November, and $54,250 in December, and net profit is estimated at $80,700 for the period July-December. Mr. Dandruff plans to buy new equipment for $39,000 in October (you can assume that depreciation of the old and new equipment is negligible during the period of analysis), and to pay a dividend of $25,000 in August.

Balance Sheet, June 30, 2009

ASSETS	
Cash	30,000
Accounts receivable	75,000
Inventories	84,500
Net Property, plant & equipment	110,500
Total Assets	300,000
LIABILITIES AND EQUITY	
Accounts payable	50,000
Accrued expenses payable	7,450
Common stock	54,050
Retained earnings	188,500
Total liabilities and equity	300,000

a) Are the $50,000 enough to fund T-Gel's operation until December? Use a pro-forma ***balance sheet*** as of December 30 to answer this question. *As part of your answer, clearly show and explain how you reach your conclusion.* Note that you only need forecasts for December to answer the question. Do not attempt to forecast the intermediate months.

b) Suppose now that you decided to grant the loan in early July. At the end of July T-Gel's balance sheet looks as follows.

Balance sheet as of July 30, 2009

ASSETS	
Cash	40,000
Accounts receivable	85,000
Inventories	114,500
Net Property, plant & equipment	110,500
Total Assets	350,000
LIABILITIES AND EQUITY	
Accounts payable	50,000
Accrued expenses payable	7,450
Notes payable to the bank	50,000
Common stock	54,050
Retained earnings	188,500
Total liabilities and equity	350,000

Mr. Dandruff's revised estimates for December differ from those made in June only in that inventories will be 5% higher than in *July* (June estimates were 20% higher than the *June* inventory). All other estimates made in June are still valid.

Will T-Gel be able to repay the loan in December? Use a projected ***Sources and uses of funds statement*** for the period July 30-December 30 to answer this question. Then repeat the exercise using a pro-forma balance sheet for December 30.

Solution to a): Note that so far the loan has NOT been granted yet. We need to estimate T-Gel's accumulated financing needs as of December, and then compare them to the amount requested. Assume the firm keeps cash at its minimum for normal operation ($30,000) and will borrow to meet this requirement if necessary. This assumption is conservative in that it minimizes the financing required by the firm (if want to have more cash need more borrowing). Then estimate T-Gel's financing needs as of December 30 based on the information provided, that is, notes payable to the bank should be your "plug" when you construct the balance sheet.

ASSETS	***June 30***	***Dec 30***	
Cash	30,000	30,000	= minimum cash
Accounts receivable	75,000	114,250	= Nov+Dec sales, 65-day collection period
Inventories	84,500	101,400	= up 20% from June
Net Property, plant & equipment	110,500	149,500	= Net PP&E in June + new equipment
Total Assets	300,000	395,150	
LIABILITIES AND EQUITY			
Accounts payable	50,000	57,500	= up 15% from June
Accrued expenses payable	7,450	7,450	= no change
Notes payable to the bank	**0**	**31,950**	**= plug**
Common stock	54,050	54,050	= no change
Retained earnings	188,500	244,200	RE in June + net profit Jul-Dec – Div.
Total liabilities and equity	300,000	395,150	

For the plug value, assume first that T-Gel does not borrow anything and compute the change in cash with zero borrowing. This gives -$31,950, which added to beginning cash gives -$1,950. To keep the cash at its minimum of $30,000, the firm should borrow $31,950. So if T-Gel maintains cash at its minimum level and borrows from the bank to cover its financing needs, it would owe the bank $31,950 by the end of the year. This financing need of $31,950 is less than the $50,000 requested.

Solution to b): We now use a different strategy to answer a different question. We construct a sources and uses of funds assuming that the loan is received in July and repaid in December (impose zero in notes payable for December). We then forecast the change in cash, and add it to the cash balance at the end of July to obtain cash at the end of December.

Sources and uses of funds, July 30 vs. December 30.

Sources			**Uses**		
CFO	80,700	Net profit	Dividend	25,000	
Increase in AP	7,500	+15% from June	Increase in AR	29,250	Nov+Dic sales-July AR
			Increase in Inv	5,725	+ 5% of inv. in July
			Purchase equipment	39,000	
			Repay loan	50,000	
Total sources	88,200		Total uses	148,975	

So the change in cash is -60,775. With beginning cash of $40,000 in July, ending cash would be -$20,775 at the end of December. So the firm cannot repay the loan!

You can also do this using the balance sheet by amending your previous analysis as follows:

ASSETS	July 30	Dec 30	
Cash	40,000	**-20,775**	**= plug**
Accounts receivable	85,000	114,250	= Nov+Dec sales, 65-day collection period
Inventories	114,500	**120,225**	**= up 5% from July**
Net Property, plant & equipment	110,500	149,500	= Net PP&E in June + new equipment
Total Assets	350,000	363,200	
LIABILITIES AND EQUITY			
Accounts payable	50,000	57,500	= up 15% from June
Accrued expenses payable	7,450	7,450	= no change
Notes payable to the bank	50,000	0	= impose payment of loan
Common stock	54,050	54,050	= no change
Retained earnings	188,500	244,200	RE in June + net profit Jul-Dec – Div.
Total liabilities and equity	350,000	363,200	

Question 2. A company with borrowing costs of 10% per year is evaluating its credit policy towards customers. A typical customer makes a $100 purchase from the firm. The current terms are "net 45 days", which means you have 45 days to pay and there is no discount for early payment. An alternative credit policy would consist of "4/15, net 45 days", which means there is a 4% discount on the invoice amount if you pay within 15 days, and that you have 45 days to pay. The company anticipates that half of the customers would take such a discount.

a) Assuming there are no side benefits/costs of changing the policy, should the company offer the new credit terms?

b) Calculate the financing EAR (effective annual rate) implicit in the new terms of credit.

c) How would your answer change if now the customers that take the discount also increase their (before discount) purchases by 5%?

Solution

a)
Under current policy most customers will pay on day 45:

$$PV = \frac{\$100}{(1+.10)^{45/365}} = \$98.83$$

Under the alternative policy half of the customers take the discount (and will pay on day 15) and half do not (and will pay on day 45):

$$PV = .5x\frac{\$100}{(1+.10)^{45/365}} + .5x\frac{\$96}{(1+.10)^{15/365}} = \$97.23$$

The company should not offer the new credit terms. The discount given is too high.

b)

$$\text{Financing EAR} = \left[1+\frac{4}{96}\right]^{(365/30)} - 1 = 64.3\%$$

c) If the customers that take the discount also increase their purchases by 5% then:

$$PV = .5x\frac{\$100}{(1+.10)^{45/365}} + .5x\frac{.96x\$105}{(1+.10)^{15/365}} = \$99.62$$

So the firm should now offer the new credit terms.

Question 3. A firm's management is considering dropping its policy of no credit. The credit policy under consideration is as follows:

	No credit	Credit
Price per unit	$35	$40
Cost per unit	$25	$32
Quantity sold	2,000	3,000
Probability of payment	100%	85%
Credit period (months)	0	1

Assume that production costs are paid immediately, and that the firm's borrowing costs are 36% per year. The increase in the cost per unit reflects the expense of managing the accounts receivable.

a) Should the firm offer credit to customers?

b) What must the probability of payment be before the firm would adopt the policy?

Solution

Note that there is no discount for early payment under the proposed credit policy, which is basically net 30 days.

a) PV(no credit) = -2,000x25 + 2,000x35 = $20,000

PV(credit) = -3,000x32 + .85x3,000x40/(1 + .36)$^{1/12}$ = $3,420

So the firm should not extend credit.

b) PV(credit) = -3,000x32 + Px3,000x40/(1 + .36)$^{1/12}$ = $20,000

Solving yields P=99.18

What happens here is that when granting credit you sell more, but collection is uncertain: you collect only 85% of your receivables. Furthermore, the increase in the unit cost due expenses related to the management of the account receivables is too large.

Question 4. A firm's customers are cash constrained and can borrow from the bank at 18% per year. The firm is planning to change the terms of credit it offers to its customers from "1/15 net 40" to "2/10 net 50", and management thinks this will not affect the firm's sales or the number of customers. If the firm implements this change in credit policy, what will happen to the firm's Accounts Receivable Period? Carefully explain!

Answer to Question 4:

With "1/15 net 40", EAR = $(1 + 1/99)^{365/25} - 1 = 15.8\% < 18\%$. So, before the change in credit policy, customers forego the discount and pay on day 40, i.e., borrow from the firm at 15.8% instead of from the bank at 18%. The ARP is 40 days. With the new credit policy "2/10 net 50", EAR = $(1 + 2/98)^{365/40} - 1 = 20.2\% > 18\%$. So customers will take the discount and pay on day 10, i.e., borrow from the bank at 18% instead of from the firm at 20.2%. The ARP will drop to 10 days.