Introduction to Finance

by George W. Blazenko

Chapter 4 *Corporate Financial Planning*

“For the happiest life, days should be rigorously planned, nights left open to chance.” — Mignon McLaughlin (v. 1915?), U.S. author, editor, Atlantic (Boston, July 1965).

"In preparing for battle I have always found that plans are useless but planning is indispensable." — General Dwight Eisenhower.

In Chapter Four We Learn:

1. **What is short-term financial planning?**
2. **What is a cash budget?**
3. **What are projected financial statements?**
4. **What are the two forces of short-term financial planning that determine whether a firm is able to repay short-term debt or, alternatively, whether it must borrow incrementally?**
5. **What are the principal corporate characteristics that enable a firm to repay short-term debt with an increase in sales?**
6. **What are the principal corporate characteristics that require that a firm borrow incrementally with an increase in sales?**
7. **In what circumstances is net income a useful short-term financial planning measure?**

Chapter Four Contents

(4.1) Introduction

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One of the themes of this E-Finance book is that the operating and financing activities of a firm are inextricably related. One aspect of this relation is that sales growth necessitates incremental invested capital that must be financed. In the short-term, that investment is in the form of trade-capital assets, like, for example, inventories and accounts receivable. If a business does not make these investments, then the SALES they anticipate are in jeopardy. In addition, in the long-term, sales growth also requires depreciable assets and other commercial investments.

There are two reasons that financial planning is important. First, financial planning helps ensure that the returns earned by a firm from its business activity are adequate for financial asset-holders. Because the benchmark for an adequate rate of return is equivalent risk financial assets, financial market returns set the standard for a firm's operating performance. Second, the sale of financial assets is neither instantaneous nor costless. A planned increase in sales which requires an increase in invested capital can be delayed or lost if financing has not been anticipated and plans are not in place for the sale of financial assets. In addition, investors will not seriously consider the financial assets of a firm that has inadequate plans for operating and financing needs. Well-defined plans help assure investors of the professional competency of managers.

In this chapter, we consider two important financial planning tools, cash budgeting and projected financial statements. A cash budget and projected financial statements share a number of important elements. First, both these planning tools begin with a forecast of future sales. Second, both require estimates of parameters and assumptions about financial relations. Third, principal assumptions, which influence the decision to be made, are typically set out at the beginning of the analysis. Last, reasonable variations in parameters and assumptions are typically made to determine the impact of these changes have on financing needs and on corporate financial health.

4.1.1 Cash Budgeting

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In a cash budget, analysts predict future cash inflows and outflows. The cumulative effect of inflows and outflows on a firm's cash balance is forecast and monitored so to ensure surplus cash is invested and that cash deficits are financed efficiently. The interval over which cash flow increments are predicted can be daily, weekly, or monthly. These intervals are relatively short because an important objective of a cash budget is to ensure that funds are available when needed to meet obligations and to maintain solvency. A cash budget is an operational planning tool because it is intimately related to the day-to-day operations of a firm. For smaller firms, start-up firms, growth firms, or firms having cash flow difficulties, a cash budget is an indispensable planning tool. For many small businesses, a cash budget is the *only* financial planning tool.

4.1.2 Projected Financial Statements

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Projected financial statements (also known as *pro-forma* statements) are predictions of a firm's future financial statements. As with a cash budget, the purpose of projected financial statements is to guide operations and to anticipate future financing needs. However, because projected financial statements are for a quarter, a year, or many years hence, they are associated more with long-term planning by a firm. Long-term plans are generally set out in a firm's *business plan*, and therefore, projected statements are an important element of this document. A business plan is often used as supporting material for the sale of a firm's financial assets to private investors.

4.1.3 The Value of Financial Planning

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The true value of financial planning is not in the quantitative amounts arising from a model of a firm's operating and financing activities. These amounts are based on estimates and approximations, which are unlikely to be realized. The value of financial planning is in the process of investigating possible consequences of a firm's activities. In this investigation, a great deal is learned about the characteristics of business investments and opportunities. If a business does not undertake this planning, these lessons are missed. Financial planning is, in its best application, a focal point for organizational decision making. As part of this process, both qualitative and quantitative factors play important roles. Cash budgets and projected financial statements are important elements of this process but they cannot substitute for sound business judgment. Reliance upon financial planning tools mechanically and thoughtlessly prepared is foolhardy. Section (4.2) and (4.3) illustrates an interconnected study of cash budgeting and projected financial statements with an example that we adapt from Higgins (1995).

(4.2) Cash Budgets

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In this section, we use an example to illustrate the construction of a cash budget.

4.2.1 An Example of a Cash Budget

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Poitras Plumbing Supplies is a wholesale distributor of plumbing gear. Treasurer Tara Poitras wants to estimate her company's cash balances for the last three months of this year, 1999. Use

the following information to construct a monthly cash budget for Poitras Plumbing for October through December 1999. Do your results suggest the treasurer should concern herself primarily with choosing where to invest surplus cash or primarily with finding ways to borrow money?

Assumed Facts and Information

Wages are $60,000 per month, paid in cash. Dividends of $20,000 are to be declared and paid in November. An installment on taxes payable, in the amount of $65,000, is due in December. Assume the cash balance is $221,000 as of September 30, 1999. The *minimum* desired cash balance is $100,000. Poitras Plumbing borrows at the end of any month, if necessary, to bring their cash balance back up to $100,000. At least over the upcoming quarter, Tara has no plans to pay down short-term debt that might have accumulated, even if there is cash available beyond the minimum balance. Current short-term borrowing is zero. Tara has approved capital expenditures in the amount of $340,000 to be made on October 1. Poitras Plumbing earns interest on its cash balance at the rate of 12 percent per annum, compounded and paid monthly. Interest on short-term borrowing, in the form of an *operating loan*, is at the rate of 16% per annum, compounded and paid monthly. Operating loans are short-term financing arrangements that allow a firm flexible borrowing up to a maximum established *credit limit*. There are no predefined principal repayment schedules. Repayment is negotiated between the lender and the firm and depends upon the firm's operations and cash flow forecasts. The lender usually reviews the loan, at least annually, after the receipt of financial statements. An operating loan is typically secured by a combination of accounts receivable, inventory, and personal guarantees. Poitras Plumbing does not plan to repay principal on their operating loan over the course of the upcoming quarter. However, monthly interest payments will be made at the rate of 16% per annum, compounded and paid monthly.

Poitras Plumbing makes monthly long-term debt payments of $5,738.84 per month. From October, 1999 through the fourth quarter of 2000, the decomposition of payments into interest and principal is shown in this amortization schedule:

Time Period	Interest	Principal	Payments
October, 1999	$4,000.00	$1,738.84	$5,738.84
November, 1999	3,982.61	1,756.23	5,738.84
December, 1999	3,965.05	1,773.79	5,738.84
First Qtr, 2000	11,788.01	5,428.51	17,216.52
SecondQtr, 2000	11,623.52	5,593.00	17,216.52
ThirdQtr, 2000	11,454.05	5,762.47	17,216.52
Fourth Qtr, 2000	11,279.44	5,937.08	17,216.52

Tara Poitras contacts the marketing department (headed by Sarah Poitras) for sales information. Sarah provides the following information. Realized sales for August and September and forecasted sales for October, November, and December are shown below:

Sales (20% paid in cash, the rest on 30-day credit terms)		
August	(actual)	$140,000
September	(actual)	200,000
October	(forecast)	200,000
November	(forecast)	300,000
December	(forecast)	400,000

Tara also contacts the production and scheduling department (headed by Moe Poitras). Moe provides the following information:

Purchases (all on 60-day terms)	
August (actual)	$130,000
September (actual)	130,000
October (forecast)	195,000
November (forecast)	260,000
December (forecast)	100,000

4.2.2 The Cash Budgeting Exercise

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The cash budget focuses on cash inflows and outflows. You should recognize that sales and purchases do not have immediate cash flow effects. Sales might be made on credit and, therefore, cash is not received until collections are made. Likewise, many purchases are on credit, so cash does not leave the firm until invoices are paid.

Use one of the following three worksheet links to prepare a cash budget for Poitras Plumbing.

Blank Spreadsheet

Template

Solution

If you would like to practice your skill at designing a cash budget "from scratch" use the empty worksheet on the left. In the middle worksheet there is a template for a cash budget in which you can develop the relations between the given cash budget cell items but you use your own spreadsheet formulas. Alternatively, you can simply review the completed cash budget in the worksheet on the right.

In your cash budget, you should find that Poitras Plumbing must borrow $212,529 in October and an extra $5,121 in December. Total incremental short-term borrowing for the fourth quarter of 1999 is the sum of these two amounts: $217,650. You should also find that in November, Poitras Plumbing forecasts a cash balance that is $2,427 above the minimum cash requirement. This is valuable information. Knowing that they will need to do some short-term borrowing over the course of the last quarter of the year, they can schedule a visit with the commercial loan officer in charge of their account at the bank.

(4.3) Projected Financial Statements

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We continue the story of Poitras Plumbing from the preceding section to illustrate the construction of a set of projected financial statements. A cash budget is not required to prepare projected financial statements, but in practice, it makes sense to construct them simultaneously. The

juxtaposition of these two financial planning tools highlights the relation of one to the other.

Additional Assumed Facts and Information

Cost of goods sold consists entirely of purchase costs and is expected to equal 65% of sales. Selling and administrative expenses consist only of wages. Quarterly depreciation equals 3% of the declining balance of net fixed assets. Miscellaneous accruals are not expected to change.

Shown below in the next two exhibits are the income statement and balance sheet for Poitras Plumbing for the nine months ending September 30, 1999. These exhibits are embedded EXCEL worksheets, so you may double-click to edit them. We made space for you to complete the 1999 fourth-quarter projected financial statements. Using the assumptions given above and the cash budget prepared for Poitras Plumbing, finish the projected financial statements.

Note that on the balance sheet, fourth-quarter borrowing is labeled as the "PLUG" figure. With respect to this particular exercise, this value is the principal item of interest. What is the predicted short-term borrowing requirement for the fourth quarter of 1999? In preparing projected financial statements for Poitras Plumbing, you should use as much information as you can from the cash budget; these two planning tools should be consistent with one another.

Poitras Plumbing
Pro-forma Income Statement

	Income Statement for the three months ending Dec 31	Income Statement for the nine months ending Sep 30
Net Sales	?	2,000,000
Cost of Goods Sold	?	1,300,000
Gross Profit	?	700,000
Selling + Admin. Expense	?	540,000
Interest (net)	?	30,000
Depreciation	?	30,000
Net Profit Before Tax	?	100,000
Tax at 33%	?	33,000
Net Profit After Tax	?	67,000

Exhibit 4–1. Income Statement, Poitras Plumbing

In your projected fourth quarter statements, Sales should equal the sum of monthly sales for October, November, and December from the cash budget. Accounts Receivable should equal 80% of sales for December (recall that 80% of sales are on credit and that terms are net 30 days). Accounts Payable should equal purchases for November and December (all purchases are on credit and terms are net 60 days). As a check figure, you should find short-term borrowing required for the fourth quarter to be $217,650. This is the same value as shown on the cash budget, as it should be; two related financial planning tools should arrive at the same result.

Poitras Plumbing Solution: Click on the icon to see projected financial statements for Poitras Plumbing, and to see how these values are calculated.

Poitras Plumbing

Poitras Plumbing
Pro-forma Balance Sheet

	Projected Balance Sheet as of December 31	Balance Sheet as of September 30
Assets		
Cash	?	221,000
Accounts Receivable	?	160,000
Inventory	?	600,000
Total Current Assets	?	981,000
Net Fixed Assets	?	250,000
Total Assets	?	1,231,000
Liabilities + Equity		
Bank Loan	**PLUG**	0
Accounts Payable	?	260,000
Miscellaneous Accruals	?	20,000
Taxes Payable	?	100,000
Current Portion of l.t. Debt	?	22,053
Total Current Liabilities	?	402,053
Long-term Debt	?	377,947
Shareholders' Equity	?	451,000
Total Liabilities + Equity	?	1,231,000

Exhibit 4–2. Balance Sheet, Poitras Plumbing

(4.4) Financial Planning and Growth

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4.4.1 Cash is King in Financial Planning

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Many smaller firms feature a combination of rapid sales growth and owners with weak planning skills. Because growing firms have the greatest need for incremental investment, these firms are prone to liquidity problems unless they engage in financial planning. To meet cash obligations as they come due is not as easy as it might seem. For example, accounting information is not necessarily helpful in liquidity monitoring. Net income measures the increment in shareholder wealth (according to generally accepted accounting principles) arising from a firm's operations. However, net income is not equal to cash flow and cash is required to meet the obligations of a firm. To ensure solvency, we must focus our planning on cash flow and not net income.

Firms with positive and improving net income can, nonetheless, have liquidity problems and liquidity problems are not restricted to firms with poor operating performance. In fact, firms with high sales growth often have the greatest need for incremental investment, and therefore, if cash is not monitored closely, liquidity problems arise. To illustrate that net income and liquidity are not equivalent, we present the following adaptation of a problem that appeared in the April 28, 1956 issue of *Business Week.*

How to go Broke ... While Making a Profit

> As the year starts, Mr. Jones of the ACME Co. is in fine shape. His company makes widgets – just what the consumer wants. They make them for $0.75 each and sell them for $1. By the end of a month, the marketing staff of ACME anticipates unit

sales for the upcoming month and advises the production department so that a one-month supply of inventory sufficient for widget demand in the upcoming month is available. ACME pays its bills promptly, and bills customers 30 days net. Sales are right on target; and the sales manager predicts a steady increase. Mr. Jones feels that this is his lucky year; it begins this way:

Jan. 1: Cash $1,000, inventory $750, receivables $1,000, equity $2,750.

In January, ACME sells 1000 units, ships them at a cost of $750, collects receivables, and produces 1,500 units in anticipation of February sales. Profit for the month is $250. ACME's books look like this:

Feb. 1: Cash $875, inventory $1,125, receivables $1,000, equity $3,000.

In February, sales jump as predicted to 1,500 units. January receivables are collected. February production is 2,000 units in anticipation of March sales. Profit for the month is $375. Mr. Jones feels confident that ACME is doing fine, because net income is rising. ACME's books look like this:

Mar. 1: Cash $375, inventory $1,500, receivables $1,500, equity $3,375.

In March, sales jump as predicted to 2,000 units. The marketing department has a celebration party. February receivables are collected. March production is 2,500 units in anticipation of April sales. Profit for the month is $500. Mr. Jones feels giddy at the success of his firm; net income is rising!

As April 1 arrives, ACME seems to be running itself; Mr. Jones begins to plan for his vacation to the Caribbean. But suddenly, he gets a telephone call from his treasurer: "We're out of cash! The suppliers can't be paid! We need money." The books have finally caught up with ACME.

Apr. 1: Cash $0, inventory $1,875, accounts receivable $2,000, equity $3,875.

Financial Analysis for Acme Co.

The title of the ACME problem in *Business Week* is somewhat misleading. ACME is not going broke; they do, however, have a liquidity problem arising from rapid sales growth. Expansion of their business activity requires incremental investment in trade capital. Because funds from operations are not sufficient to offset incremental investment in accounts receivable and inventory, and ACME does no external financing, the cash balance of ACME falls. What ACME needs is a little financial planning to ensure that cash is on hand when it is needed to pay suppliers. The

following table lists the sources and uses of funds for ACME and a number of key ratios that measure operating performance.

	January	February	March	April
Sales	1000	1500	2000	2500
Cost of Goods Sold	750	1125	1500	1875
Net Income	250	375	500	625
Cash (b.o.p.)	1000	875	375	0
Accounts Receivable (b.o.p.)	1000	1000	1500	2000
Inventory (b.o.p.)	750	1125	1500	1875
Invested Capital	2750	3000	3375	3875
Monthly Inv Cap Turnover	0.36	0.50	0.59	0.65
ROIC by month	0.09	0.13	0.15	0.16

Exhibit 4–3. How to go Broke . . . While Making a Profit

The fact that ACME has funds from operations not quite sufficient to cover incremental investment in trade capital does not imply that ACME should not make these investments. The rate of return on invested capital (ROIC) is increasing over time and it appears it likely would exceed a reasonable financial market determined opportunity cost for Mr. Jones. In other words, without doing a complete financial analysis, we can speculate that incremental investments by Mr. Jones are likely to be positive NPV investments, and therefore, they should be undertaken. These investments, however, are draining cash out of the company.

There are a number of possible solutions to ACME's liquidity problems. First, Mr. Jones might do a little external financing to maintain an adequate cash balance. In the absence of other changes, some external financing is required because, month by month, ACME's free cash flow (see Chapter 2, Section 9) is zero. Further, the composition of trade capital is changing. Inventory and receivables are increasing while cash is decreasing. Maintaining and monitoring ACME's cash balance will ensure that suppliers are paid in a timely manner.

Alternatively, Mr. Jones might work towards reducing ACME's cash conversion cycle (see Chapter 2). The primary reason that ACME is drawing down its cash balance is because it makes immediate payments to suppliers but gives 30 days credit to its customers. This discrepancy requires an increasing investment in accounts receivable as sales increase. Reducing this discrepancy would reduce the rate of growth of trade capital investment. The current cash conversion cycle is 60 days. This value is the sum of the inventory conversion period (30 days) and the accounts receivable collection period (30 days). The accounts payable deferral period is zero because ACME makes immediate payment to suppliers. Because the demand for widgets appears to be buoyant, ACME might try changing its credit terms for customers to, for example, 15 days net. This change frees funds invested in receivables and increases cash. However, before making this credit policy change, ACME should investigate whether the change can be made without an undue adverse effect on sales. Second, by making immediate cash payment to suppliers, ACME is not taking advantage of interest free credit that is generally available from suppliers. For example, if the terms of sale from suppliers are "15 days net," ACME is missing out on an interest free loan for 15 days. This deferral period could reduce the cash conversion cycle by 15 days. Investments in accounts receivable and inventory can be partially financed with accounts payable.

Another possibility for ACME is to simply wait out their cash flow difficulties. Notice from exhibit 4-3 that the rate of growth of ACME's sales is slowing. This decline implies that the need for incremental investment in trade capital is also diminishing. Because Acme's contribution margin remains unchanged, eventually, ACME's cash balance will begin to recover without any direct intervention. You can verify this assertion by extending the spreadsheet in the exhibit by 4 or 5 months, increment sales by (for example) $500 per month, and complete the remainder of the extended spreadsheet.

4.4.2 Trade Capital, Invested Capital, and Liquidity

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Business Week's ACME example highlights a characteristic of firms that are prone to liquidity problems. In the ACME example, as sales rise, incremental investment in trade capital is required immediately. This relation between changes in sales and required incremental trade capital investment is pronounced for ACME because their invested capital is all in the form of trade capital rather than Property, Plant and Equipment. The high fraction of invested capital in trade capital implies that an increase in sales requires an immediate and significant incremental investment. This immediacy underscores the need for ACME to do some cash budgeting to more closely monitor their cash balances and to anticipate financing needs. A high trade capital to invested capital ratio means that the cash balance of ACME is likely to have significant variability, which is more or less directly related to sales variability. This variability also underscores the need for cash budgeting and planning.

(4.5) Financial Planning and Short-Term Debt

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The cash balance of ACME Company Limited from the previous section of this book fell because they apparently refused to maintain an adequate cash balance by selling financial assets. This restrictive approach to short-term financial planning is not common amongst firms. Rather, as long as investments into business activity are positive NPV, in order to prevent illiquidity or insolvency, firms typically maintain adequate levels of cash. Oftentimes, they do this by using short-term debt. Conceptually, one can think of the relation between an adequate (or optimal) cash balance and a firm's revenues as being subsumed in the overall relation between trade capital (a component of which is cash) and revenues. Given that a firm maintains this adequate cash balance, it then accommodates the vagaries of business activity arising, for example, from revenue changes

or unexpected repair and maintenance expenditures (that would otherwise affect their optimal cash balance), by using short-term debt. Given that an adequate cash-balance is maintained, an increase in sales can either increment or decrement short-term borrowing. The flexibility of short-term debt for incremental financing (as the need arises) or for repayment (when funds are available) makes it an indispensable financial planning tool. The object of financial planning in many firms is, then, oftentimes the determination of the level of short-term debt, or equivalently, the change in short-term debt.

Given that a firm maintains an adequate cash balance, an expression for the change in short-term debt to accommodate both operating and financial activities is given as:

$$\begin{bmatrix} change\ in\ short\text{-}term \\ debt\ \ for\ a\ planning\ \ period \end{bmatrix} = \begin{bmatrix} Financial\ \ Definition\ of\ \ Free\ Cash\ Flow \\ Excluding\ \ Repayment\ of\ \ S.T.\ Debt \end{bmatrix} - \begin{bmatrix} Operating\ \ Definition\ of \\ Free\ Cash\ Flow \end{bmatrix}$$

If corporate activities affecting the terms on the right hand side of this equation are predicted, then a prediction of the change in short-term debt is generated on the left-hand side of this equation.

The value of this expression is that it reveals the corporate factors that enhance or detract from a firm's ability to repay short-term debt. For example, other things equal, if a firm's contribution margin per dollar sales is greater, operating free cash flow is greater, and therefore, the change in short-term debt is less likely to be positive. On the other hand, if interest rates are greater, then, other things equal, financial free cash flow (excluding repayment of short-term debt) is greater, and therefore, the change in short-term debt is more likely positive.

As a special case of the above expression, if depreciation approximates maintenance capital expenditures, (and, there are no capital expenditures for the purpose of growth) then,

$$\begin{bmatrix} \text{change in short-term debt} \\ \text{for a planning period when} \\ \text{depreciation equals maintenance} \\ \text{capital expenditure} \end{bmatrix} = dividends + \text{share repurchase} - \text{net income} + \text{change in trade capital.}$$

This expression indicates, for example, that if a firm maintains an adequate cash balance, possibly in the face of sales growth, that the factors that increase net income also reduce the need for incremental short-term borrowing. Consequently, contrary to the ACME example of the previous subsection of this chapter that impugns net income as a financial planning measure, this expression indicates that the corporate factors that increase net income also tend to reduce short-term borrowing. It appears, therefore, that while the ACME case illustrates the adverse cash-balance consequences of poor financial planning, it does not represent realistic corporate liquidity planning and, in fact, net income is a useful financial measure for the purpose of short-term financial planning.

4.5.1 Example of Short-Term Debt Planning

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Today is December 31, 1998. ABC has a contribution margin of 25%. Fixed operating costs are $1,000,000 per annum. ABC's corporate tax rate is 40%. As of December 31, 1998, ABC financed their invested capital with short-term debt and with common equity. ABC has a trade capital to sales ratio of 20%. This ratio is calculated as trade capital at year-end divided by sales for the associated year (for example trade capital at December 31, 1998 divided by 1998-sales). This ratio is not expected to change in the foreseeable future. In 1999 ABC plans $350,000 of capital expenditures for the purpose of growth and $600,000 in maintenance capital expenditures. Depreciation in 1999 is expected to equal maintenance capital expenditure. Capital cost allowance is also expected to equal financial statement depreciation.

ABC is doing some short term financial planning. If ABC requires any financing to accommodate their 1999 sales, they plan to increment (or decrement) their short term borrowing. If ABC borrows additional funds or if they repay any portion of existing short-term debt, they plan to do so on December 31, 1999. ABC expects to pay dividends of $100,000 in 1999. They also expect to repurchase some of their common shares in the amount of $150,000.

On December 31, 1998 ABC has $800,000 of short-term debt on its balance sheet. The interest rate on short-term debt is 10% per annum.

Projected revenues for 1999 are $10,000,000. This amount represents an increase of $1,000,000 compared to 1998 revenues.

Required: What is ABC's incremental short-term borrowing (or repayment) on December 31, 1999?

Solution: First, EBITDA = 0.25*10,000,000 – 1,000,000 = $1,500,000. FFO = 0.6*(1,500,000 – 600,000) + 600,000 = 1,140,000. The change in trade capital is 0.2*1,000,000 = $200,000. Capital expenditure is the sum of growth and maintenance expenditures = 600,000 + 350,000 = 950,000. Therefore, the operating definition of FCF is $1,140,000 – 200,000 – 950,000 = (10,000). The financial definition of FCF excluding short-term debt repayment is after tax interest plus dividends plus repurchase of common shares = 0.6*80,000 + 100,000 + 150,000 = 298,000.

Therefore, the change in short-term debt by the end of the planning period is $298,000 – (-10,000) = 308,000.

(4.6) Incremental Sales and Financial Planning

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Financial planning depends upon the length of a firm's planning horizon because the effect of sales on required incremental investment in business activity also depends upon the planning horizon. An increase in a firm's sales necessitates an immediate incremental investment in trade capital but not necessarily an increase in capital spending on plant, property and equipment. The relations between sales and trade capital and between sales and invested capital underlie the effect that sales growth has on the need for financing in the short and the long run respectively.

4.6.1 Incremental Sales and Short-Term Debt

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ST Financial Planning: 16 Minutes

An increase in sales invariably leads to an incremental investment in trade capital. Without this increase, the incremental sales activity is itself jeopardized. For example, if inventory is not on hand when needed by customers, they may divert their purchases to competitors. If customers do not receive adequate credit terms, they may, again, divert their purchases to competitors. On the other hand, firms can typically accommodate sales increases without an incremental capital expenditure on plant, property, and equipment. Unless a firm is at the limit of its production capacity, sales increases can be handled by existing facilities. In the long run, persistent sales growth requires capital spending to enhance the production and business capacity of a firm.

Over a planning period, whether or not a firm can repay short-term debt or whether incremental short-term borrowing is required is determined by the equation that we developed above. The change in short-term debt for a planning period equals the financial definition of free cash flow excluding repayment of short-term debt minus the operating definition of free cash flow. *Incrementally* the effect of an extra dollar of sales on the ability of a firm to repay short-term debt can be determined by the following expression (presuming that an adequate cash balance is maintained and that over the short-run no additional investment in plant, property, and equipment is required):

$$\textit{effect of incremental sales on the ability to repay short-term debt}$$

$$= (1 - \textit{tax rate}) \times (\textit{Contribution Margin}) - \frac{\textit{Trade Capital}}{\textit{Sales}}.$$

If the firm expects to repay short-term debt over its short-term planning horizon, and if this expression is positive, then an extra dollar of sales increases the ability of the firm to repay short-term debt. On the other hand, if the firm expects to borrow additional funds over its short-term planning horizon, and if the above expression is positive, then an extra dollar of sales reduces the firm's borrowing requirement over the planning horizon.

This expression indicates that corporate profitability and the ratio of trade capital to sales are primary determinants of the effect sales on a firm's ability to repay short-term debt. The first term in this expression (i.e., the product) is the incremental after tax effect of a dollar of sales on operating cash flow. Because this term is positive, this increment increases short-term debt repayment (other things equal). However, the dollar increment to sales also requires an investment in trade capital, which is represented by the trade capital to sales ratio. This increment, other things equal, reduces short-term debt repayment.

The relationship between trade capital usage by a firm and sales is largely determined by the industry in which it operates. In the appendix to chapter 2 of this electronic book, industry averages of trade capital to sales for three hundred industries are given. If you review these ratios you will notice that the median value for a typical industry is about 25%. The range is also quite substantial from negative values to over 100%. Beyond being a measure of working capital utilization by firms for the purpose of liquidity management and financial planning, Richman (1995) argues that the trade capital to sales ratio is also a good measure for tracking the overall effectiveness of time-oriented and process-oriented corporate organizational performance.

The expression above indicates that the net effect of one dollar of sales on a firm's ability to repay short-term debt depends on the after-tax contribution margin versus the ratio of trade capital to

sales. As an example, suppose that a firm has a contribution margin of 20%, a tax rate of 40%, and a trade capital to sales ratio of 15%. In this case, the effect of additional dollar sales on the firm's ability to repay short-term debt is negative (i.e., $0.6\times0.2 - 0.15 = -0.03 < 0$). This calculation implies that for each incremental dollar of sales, the firm's short-term borrowing increases by \$0.03. Equivalently, if the firm is in a position of repaying short-term debt, then for an extra dollar of sales this repayment decreases by \$0.03. This detrimental effect on the firm's ability to repay short-term debt does not imply that firms should avoid sales increases. The firm's after tax rate of return on invested capital actually increases. The implication of this increase is that the incremental trade capital investment necessitated by the expansion of sales activity is likely a positive net-present-value investment and, therefore, it should be undertaken.

As an example, suppose the firm under consideration has annual sales of \$1,000,000 and annual fixed costs of \$50,000. Property, plant and equipment is \$450,000. In this case, trade capital is $0.15\times1{,}000{,}000 = \$150{,}000$, and therefore, invested capital is $\$150{,}000 + \$450{,}000 = \$600{,}000$. After-tax ROIC is:

$$\frac{(1-0.40)\times[0.20\times\$1{,}000{,}000-\$50{,}000]}{\$600{,}000}=15\%$$

Suppose now that this firm's sales increase to \$1,100,000 and that this increase can be accommodated without an increase in plant, property, and equipment. Trade capital is then $0.15\times1{,}100{,}000 = \$165{,}000$, and therefore, invested capital is $\$165{,}000 + \$450{,}000 = \$615{,}000$. After-tax ROIC increases to

$$\frac{(1-0.40)\times[0.20\times\$1{,}100{,}000-\$50{,}000]}{\$615{,}000}=16.6\%$$

This increase in ROIC occurs at the same time that the firm's ability to repay short-term debt falls by $3,000. We figure this way: (1–0.40) ×0.20 × $100,000 – 0.15 × $100,000 = -$3,000.

4.6.2 Sales and Financing in the Long-term

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In the short run, firms can typically accommodate an increase in sales without an incremental expenditure on property, plant and equipment. However, in the long run, persistent sales increases put a firm at the limit of its production capacity. In this case, further sales increases cannot be handled by existing facilities and, therefore, expenditure on property, plant and equipment is necessary. The invested capital turnover ratio reflects the long-run relation between a firm's sales and its total investment in both trade capital and fixed assets.

The relationship between invested capital and sales activity is largely determined by the industry in which you operate. In the appendix to Chapter 2, we show for three hundred industries the average value of this ratio, Sales to Invested Capital. From these data it appears that the median ratio for North American firms is close to 1.5. This value implies that the median *invested capital to sales* ratio is also about 1/1.5 = 0.67. This value suggests that when the annual sales of a firm increases by one dollar, invested capital tends to increase by about $0.67.

Presuming that a firm maintains an adequate cash balance and that incremental investments are required for both trade capital and plant, property, and equipment, the long-run effect of a sales increase on a firm's long-term financing requirements can be determined with the following expression:

$$\textit{incremental effect of an extra dollar of sales on long-term financing requirements}$$

$$= \frac{\textit{Invested Capital}}{\textit{Sales}} - (1 - \textit{tax rate}) \times (\textit{Contribution Margin})$$

This expression indicates that corporate profitability and the ratio of invested capital to sales are primary determinants of the long-run effect of sales on a firm's long-term financing requirements. The product on the right hand side is the incremental after tax effect of a dollar of sales on operating cash flow. Because this term is positive, this increment decreases the financing requirements of the firm (other things equal). However, the dollar increment to sales also requires, in the long run, an investment in both trade capital and property, plant and equipment which is represented by the invested capital to sales ratio.

The net effect of a dollar of sales on a firm's financing requirements depends on the relative magnitude of the after-tax contribution margin versus the ratio of invested capital to sales. For the firm in the above example, the invested capital to sales ratio is \$600,000/\$1,000,000 = 0.60. In this case, the effect of additional dollar sales on the firm's financing requirement is positive (i.e., $0.6 - 0.6 \times 0.2 = 0.48 > 0$). This calculation implies that for each incremental dollar of sales, the firm must sell \$0.48 of financial assets. Like the short run problem examined above, this financing requirement does not mean that the firm should avoid increased sales. Financing is required, but at the same time, the after tax rate of return on invested capital can increase. The implication of this increase is the expansion of sales activity of the firm is likely a positive net present value investment and, therefore, should be undertaken.

Suppose that the sales of the firm under investigation increases from \$1,000,000 to \$1,100,000 and that this increase requires an incremental investment in both trade capital and plant, property and equipment. The new level of invested capital is $0.6 \times \$1{,}100{,}000 = \$660{,}000$. After-tax ROIC increases to

$$\frac{(1-0.40)\times[0.20\times\$1{,}100{,}000-\$50{,}000]}{\$660{,}000}=15.5\%$$

This increase in ROIC occurs at the same time that the firm's financing requirements increase by \$48,000, figured as $[0.6 - (1–0.40) \times 0.20] \times \$100{,}000 = \$48{,}000$. This financing requirement is

a reflection of the investment that is required to expand the firm's business and increases its ROIC. The rate of return on this firm's incremental investment in business activity is

$$\frac{(1-0.40)\times[0.20\times\$100{,}000\,]}{\$60{,}000}=20.0\%$$

Because this rate is high compared to typical financial market rates in 1998, this investment is undoubtedly a positive ***NPV***, and so it should be undertaken.

(4.7) Summary

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Financial planning confers a number of valuable benefits on a firm. First and foremost, financial planning is a prerequisite for strategic planning. Strategic planning cannot take place if a firm is unaware of its performance relative to objective benchmarks. Financial planning allows a firm to monitor its performance and to ensure that a firm earns a return sufficient to compensate financial asset holders for the risk they bear. Second, financial planning is necessary to maintain the liquidity of a firm and to ensure that funds are available when financial obligations come due. Managers often find that to manage the demands of financial asset investors requires as much attention as to manage the real-asset operations of a firm. Financial planning helps firms to anticipate and prepare for financing activities. Firms that approach financial markets in an organized fashion are more likely to make a favorable impression with investors and lenders.

Meeting cash obligations as they come due is not as easy as it might seem. Profitability is not the same as liquidity. Firms with high sales growth and positive and increasing net income often require large incremental investments in trade capital assets. If firms do not anticipate the effect of these investments on their cash balances, they can easily default on obligations before shareholders have the opportunity to bear the fruit of high rates of return on equity.

Because cash budgets and projected financial statements are quantitative in nature, they can give an impression of exactness that does not exist. Analysts who create a cash budget or a set of projected financial statements must remember to highlight the principal assumptions being made. These assumptions should be clearly set out at the beginning of the document presenting the planning analysis. Ratios are a valuable tool for imposing a discipline on your assumptions. If projected financial ratios are out of line with industry averages or recent experience, then assumptions being made are possibly unreasonable. Variation in parameters and assumptions should also be made to determine their impact on financing needs and the financial health of the investigated firm.

(4.8) Suggested Readings

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1. *The Canadian Securities Course.* Toronto: The Canadian Securities Institute, 1995.
2. George W. Gallinger and P. Basil Healey. *Liquidity Analysis and Management*. Reading, Massachusetts: Addison-Wesley, 1987.
3. Diana R. Harrington and Brent D. Wilson. *Corporate Financial Analysis,* Third Edition. Chicago: Irwin, 1989.
4. Erich A. Helfert. *Techniques of Financial Analysis,* eighth ed. Chicago: Irwin, 1994.
5. Robert C. Higgins. *Analysis for Financial Management,* fifth ed. Chicago: Irwin, 1995.
6. Thomas Richman. "Working Capital Productivity," *Harvard Business Review,* 1995 (editorial during the first six months).
7. G.I. White, A.C. Sondhi, D. Fried. *The Analysis and Use of Financial Statements.* New York: John Wiley and Sons, 1994.

(4.9) Problems

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1. ***Cash Budgeting***

   It is now Dec. 31, 199X. ABC Co. Ltd. expects sales in the upcoming year of $2.0, 2.4, or $2.8 million dollars. On the basis of the following assumed facts, prepare a projected income statement and balance sheets for Dec. 31, 19X+1 for each of these possibilities. ABC plans to meet any required financing with additional bank borrowing (short-term debt). For each of the above three sales-scenarios, how much must ABC borrow? (presume that borrowing takes place Jan 1, 19X+1)

Assumed facts:

- Cash = 4 percent of Sales,
- Average A/R collection period is 60 days, based on annual sales and 365 days in a year,
- Accounts payable = 8.33 percent of cost of goods sold,
- Inventory turnover of 8 times per year,
- Bank borrowing = $50,000 now, and ABC can borrow up to $600,000
- Interest is charged on existing debt and on new debt at 10% per annum,
- Long-term bonds outstanding total $300,000
  Coupon rate is 12% per annum paid annually
  Principal reduction payment of $75,000 is due at year-end, 199X+1,
- Common Stock outstanding = $100,000 now (no repurchase or new issues planned),
- Retained Earnings = $200,000,
- Dividends = none expected,
- Cost of goods sold = 60% of sales,
- Income taxes = 40% of before tax profit,
- General and Administrative expenses = $300,000 per annum,
- Net capital expenditures in 199X+1 (at beginning of the year) are expected to be $350,000,
- Net Fixed assets are $500,000 and Depreciation is taken at 10% of net fixed assets.

This problem requires that you resolve circular references in your spreadsheet. In EXCEL, make sure that there is an "x" beside "iteration." in the "calculation" dialog box of "options" in the "tools" menu.

Solution

2. *Cash Budgeting*

We adapt this problem from Higgins (1995).

Mary Kaay, of Mary's Chicken Shalet is attempting to plan a monthly cash-budget for the coming year but is having difficulty determining her expected cash balances due to the seasonality of her sales. She has been able to able to compile the following projections and data for 1992:

Mary's Chicken Shalet

Projected Sales (thousands)				*Beginning Balances: Dec. 31, 1991 (in thousands)*	
Jan.	$210	July	$30	Accounts Receivable	$184
Feb.	175	Aug.	75	Accounts Payable	173
Mar.	160	Sept.	90	Cash	65
Apr.	140	Oct.	125	Inventory	50
May	50	Nov.	165	Equity	471
June	30	Dec.	230	Prop. Plan. Equip.	345

- All collections and all payments are made on a 30-day basis.
- 10.37 percent of all sales are paid in cash.
- Cost of goods sold is 78.23 percent of sales.
- Selling and administrative expenses are 19% of sales (in the same month).
- Purchases are 100 percent of costs of goods sold.

- Rent expense is $24,000 per annum (paid monthly).
- Depreciation expense is for $12,000 for the year.

Use a spreadsheet to prepare a cash budget for 1992. In which month do you find the minimum closing cash balance?

Solution

3. Projected Financial Statements

Working from the information provided in the preceding exercise, prepare a forecasted income statement and balance sheet for Mary's Chicken Shalet.

Solution

4. ***Projected Financial Statements***

Working from the information provided for Mary's Chicken Shalet in the preceding exercise, find invested capital at Dec. 31, 1991 (Invested Capital equals trade capital plus Plant Property and Equipment). Use this result to find the predicted ROIC after depreciation for 1992 (ignore taxes in this problem). What is the predicted ROE (b.o.p.) for 1992?

Solution

5. Short Term Financial Planning

ABC Company has invested capital of $3,500,000, composed of $2,000,000 in net fixed assets and $1,500,000 in trade-capital. Invested capital is financed by $1,000,000 in short-term debt and $2,500,000 in book equity (Book Equity equals the sum of all equity accounts). The rate of interest charged on ABC's short-term debt is 9% per annum. The rate of depreciation that ABC uses for financial statement purposes is 10% (of the beginning net fixed asset balance). Capital cost allowance for ABC is the same as financial statement depreciation. Based on expected dollar sales for the upcoming year, ABC has a degree of operating leverage of 1.5. Break-even sales for the year are $1,200,000 (break-even is in terms of EBITDA before investment income). EBITDA margin based on expected sales for the upcoming year is 20%. Like break-even, this margin is calculated with EBITDA before investment income: see below. ABC's tax rate is 35%. ABC expects to make capital expenditures of $500,000 at the end of the year. Incremental investment into trade-capital at the end of the year is expected to be $350,000. ABC expects to receive $50,000 in dividends from other Canadian corporations. In addition, ABC expects to pay $80,000 in dividends to its own common shareholders.

(a) Find expected EBITDA for ABC for the upcoming year. Find expected dollar sales for the upcoming year.

Solution

(b) ABC plans neither to repurchase nor to sell additional shares. If financing is required (at the end of the year), they plan to increment their short-term borrowing. What amount of incremental short-term borrowing will be required at the end of the year?

Template

Solution

6. ***Short Term Financial Planning***

ABC sells widgets. Projected sales are 1,000,000 units per annum into the future. Product price is $2.8 per unit. Costs of goods sold are 60% of dollar-sales. Administrative expenses are $100,000 per annum. ABC's accounts receivable turnover is 6.5. Inventory turnover is 5.5. Accounts payable turnover is 4.0. ABC's past expenditure into capital assets is $2,225,000 (net of depreciation). ABC has financed its operations (in part) with $1,000,000 in short-term debt with an interest rate of 12% per annum (paid annually). The only other financial asset of ABC is common equity. ABC anticipates no additional expenditures on capital assets or trade capital assets in the foreseeable future. Corporate taxes are 35%. Ignore depreciation and Depreciation for Tax in this problem. ABC pays 50% of its net income as a dividend and retains the remainder. ABC is financed with common shares and short-term debt. ABC's trade capital is inventory plus accounts receivable less accounts payable.

(a) Find the rate of return on equity for ABC.

(b) Decompose ABC's rate of return on equity into the product of net profit margin, asset turnover, and the asset-to-equity ratio. Use *invested capital* as your definition of assets.

(c) ABC is contemplating a change in its product pricing policy that may require changes in its trade-capital investment. If ABC reduces its product price to $2.7 per unit it anticipates an increase in per unit sales to 1,200,000 units per annum. As the result of increase in per annum dollar sales, what will the new level of trade-capital in ABC be? Accounts receivable turnover, inventory turnover, and accounts payable turnover are not expected to change. No capital expenditures are anticipated over the upcoming year.

The remaining parts of this problem relate to the policy change described in (c).

(d) The incremental investment in trade capital that you identified in (c) above must be financed. It might be financed "internally" through higher EBITDA (of course, interest, taxes and dividends must first be paid), through retained earnings, or it might be financed by incremental short-term borrowing. ABC neither repurchases nor sells additional shares over the year. If financing is required ABC will use short-term debt at the end of

the year. Alternatively, if ABC can repay any short-term debt, they will also do so at the end of the year. Can ABC pay down any of its short-term debt?

(e) Find funds from operations, incremental investment in business activity and free cash flow.

(f) Find net payments to shareholders. Find after-tax net payments to debt-holders.

(g) Has operating leverage increased or decreased as a result of the policy change described in (c)?

Template

Solution

7. Short Term Financial Planning

Today is Dec 31, 1995. The marketing department of ABC Company, Ltd. has predicted an increase in revenues for 1996 compared to 1995 because of higher unit sales. Based on this prediction, Roberta Grauer, ABC's financial analyst expects a number of things to occur in 1996. First, she expects that an incremental investment in trade capital will be required. Historically for ABC, the ratio of trade capital to revenues has been 75%. This relation is expected to continue. Second, she expects EBITDA to increase. Roberta is concerned that the incremental after tax cash inflow to ABC arising from this incremental EBITDA may not be sufficient to "finance" the required incremental investment in trade capital and that incremental short term borrowing may be required. To answer this planning question, Roberta has developed a set of projected financial statements for Dec 31, 1996. Based on her analysis, Roberta has determined that incremental short-term borrowing (borrowing will be done on Dec. 31, 1996) will be $125,000.

The following additional information is available:

— Revenue for 1995 was $2,800,000,
— contribution margin per dollar sales is 30%,
— fixed costs per annum are $200,000,
— the interest rate on short term debt is 6%,
— ABC's tax rate is 40%,
— no major capital expenditures are expected in 1996,
— depreciation (which is the same as Depreciation for Tax) for 1996 will be $200,000,
— no share repurchases, share sales, or dividends are expected for 1996.

Invested Capital Balance Sheet: Dec 31, 1995

Trade Capital	$2,100,000	$1,500,000	Short-Term Debt
Net Fixed Assets	$2,000,000	$2,600,000	Equity
Invested Capital	$4,100,000	$4,100,000	Invested Capital

NOTE: "Equity" on the Invested Capital balance sheet represents all of the accounting equity accounts.

Required: What forecast for incremental revenues did Roberta get from the marketing department (i.e., additional revenues in 1996 compared to 1995).

Solution

Solution: 23 Minutes

8. Short Term Financial Planning

Today is Dec 31, 1995. In the upcoming year, ABC expects increased competition for the pasta strainer which it produces (its only product). To offset this competition ABC announced today a reduction in its product price. Nonetheless, the marketing department of ABC company Ltd. has predicted that, as the result of this increased competition, both unit sales and revenues will decrease in 1996. Based on this prediction, Roberta Grauer, ABC's financial analyst expects a number of things to occur in 1996. First, she expects ABC will be able to liquidate some of their trade capital: investment in trade capital is expect to fall from its current level to $2,000,000. Second, she expects EBITDA to decrease. Irrespective of this decrease, with the reduced investment in trade capital Roberta thinks that ABC might be able to pay down some of their short-term debt on Dec. 31, 1996. To investigate this question, Roberta developed a set of projected financial statements for Dec 31, 1996.

The following additional information is available on ABC.

- Unit sales in 1995 were 500,000, in 1996 they are expected to be 312,500,
- contribution margin per unit sale will be $2.8 in 1996,
- the degree of operating leverage (based on 1996 expected sales) will be 1.40
- the interest rate on short term debt is 6.5%,
- ABC's tax rate is 40%,
- capital expenditures in June of 1996 of $275,000,
- depreciation (which is the same as Depreciation for Tax) for 1996 will be $150,000,
- No share sales, repurchases, or dividends.

Invested Capital Balance Sheet: Dec 31, 1995			
Trade Capital	$2,762,500	$4,500,000	Short-Term Debt
Net Fixed Assets	$3,000,000	$1,262,500	Equity
Invested Capital	$5,762,500	$5,762,500	Invested Capital

NOTE: "Equity" represents book value, the sum of all equity accounts.

Required: By how much will ABC be able to reduce their short term debt (at the end of 1996)

Solution

9. Short Term Financial Planning

For December 1998, ABC Company Ltd. has the following year-end accounting balance sheet. December is the fiscal year end for ABC.

Beginning Balance Sheet – ABC Company, Ltd			
Current Assets	?	Accounts Payable	?
Fixed Assets	?	Short-term Debt	$400,000
		Equity	?

Equity on the balance sheet represents the sum of all of the accounting "equity" accounts. Variable expenses are 65% of sales. The interest rate on ABC's short-term debt is 10% per annum. ABC's tax rate is 23%. Ignore depreciation for tax and accounting purposes in this problem. For 1998, ABC's invested capital turnover was 3.0 (using end of period invested capital), their EBITDA margin was 15.0%, and their accounts payable turnover was 14.625. ABC's trade capital is current assets less accounts payable. Fixed costs are $600,000 per annum. In 1999, the EBITDA margin is expected to be 18% (contribution margin and fixed costs are not expected to change).

(a) What were 1998 dollar sales? What are predicted dollar sales for 1999?

(b) In 1999, ABC plans to expand their operations. This expansion is expected to lead to the increase in sales from 1998 to 1999 that you have identified in (a) above. The expansion requires an incremental investment in trade capital of $400,000 and a capital expenditure of $300,000 in plant, property and equipment. Accounts payable turnover is expected to

remain at 14.625. ABC plans to pay $350,000 in dividends to shareholders in 1999. If ABC borrows or repays short-term debt, they will do so at the end of 1999. No new issues of shares or repurchases are expected in 1999.

Will ABC be able to pay down some of their short-term debt or will incremental short-term borrowing be required?

(c) For 1999, find funds from operations, free cash flow, net after corporate tax payments to debt holders, and net payments to shareholders.

(d) If the higher level of sales is sustained year after year indefinitely, what is the rate of return on the incremental investment into business activity for 1999?

(e) In general terms, as the financial analyst for ABC, what would you do to assure the management and shareholders of ABC that the incremental investment discussed above is worthy and should be undertaken. Explain and discuss.

Solution

10. Projected Financial Statements

Other things equal, what effect will the following *independent* changes in the characteristics of a firm have on incremental short term debt financing required by a firm at the end of a planning period (or repayment of short term debt). In an actual firm, using a set of projected financial statements might identify the effect of these changes.

(i) an increase in contribution margin per dollar sales.
(ii) a decrease in accounts receivable turnover.
(iii) an increase in asset turnover.
(iv) an increase in the depreciation charge which a firm uses for financial statement purposes for its existing net fixed assets (capital cost allowances are unchanged).

Note that the above changes are independent, and therefore, separate responses are required for each part of this problem.

Solution

11. Short Term Financial Planning

For December 1994, ABC Co Ltd. has the following year-end accounting balance sheet.

Inventory	?	Accounts Payable	?
Fixed Assets	$425,000	Short-Term Debt	$400,000
		Equity	?

Equity on the balance sheet represents the sum of all of the accounting "equity" accounts. Costs of goods sold are 70% of sales. The interest rate on ABC's short-term debt is 10% per annum. ABC's tax rate is 23%. Ignore depreciation for tax and accounting purposes in this problem. For 1994, ABC's inventory turnover and accounts payable turnover were 2.0 and 4.0 respectively (using Dec 1994 inventory and accounts payable). The EBITDA margin for 1994 was 16%. ABC's trade capital is inventory less accounts payable. General and administrative expenses were $500,000 per annum.

(a) What is invested capital for ABC for year-end 1994.

(b) In 1995, ABC plans to expand their operations. They expect sales to increase by $800,000 and general and administration expenses to increase by $100,000 per annum. The expansion requires an incremental investment into trade capital and a capital expenditure of $370,000 into fixed assets. The ratio of cost of goods sold to sales is expected to remain at 70% of sales. Accounts payable turnover and inventory turnover are expected to remain unchanged. The EBITDA margin may increase or decrease as the result of the expansion. ABC plans to pay $450,000 in dividends to shareholders in 1995. If ABC borrows or repays short-term debt, they will do so at the end of 1995. No new issues of shares or repurchases are expected in 1995.

(c) Will ABC be able to pay down some of their short-term debt or will incremental short-term borrowing be required?

(d) For 1995, find Funds from operations, free cash flow, net after corporate tax payments to debt holders, and net payments to shareholders.

(e) If the higher level of sales and general and administrative expenses are expected to be sustained year after year into the indefinite future, what is the rate of return on the incremental investment into business activity?

(f) Has the operating leverage of ABC increased or decreased as the result of the expansion?

Solution

12. ***Projected Financial Statements.***

Today is Dec 31, 1997. The marketing department of ABC company Ltd. has predicted a decrease in revenues for 1998 compared to 1997 because of lower sales to Asia. Based on this prediction, Roberta Grauer, ABC's financial analyst, expects a number of things to occur in 1998. First, Roberta realizes that funds from operations (FFO) is likely to be less in 1998 compared to 1997. In fact, this inflow might be significantly less because ABC's contribution margin, which is 30%, is relatively great compared to a typical firm in the North American economy. On the other hand, Roberta also recognizes that some of ABC's trade capital will "self" liquidate because of reduced sales. She expects trade capital at the end of 1998 to be $3,000,000 compared to $4,500,000 at the end of 1997. ABC's predicted EBITDA margin for 1998 is 20%. Roberta is confused. She is uncertain whether the extra cash arising from the "self" liquidation of trade capital will be sufficient to offset reduced cash inflows to ABC from reduced sales. If this liquidated trade capital is sufficiently great, ABC will have sufficient funds to repay short-term debt. On the other hand, if the liquidated trade capital is not sufficiently great, incremental short-term borrowing might be required. If any short-term debt is repaid or if any additional borrowing is required, these transactions will occur at the *end* of 1998.

To answer this planning question, Roberta has developed a set of projected financial statements for Dec 31, 1998. Based on her analysis, Roberta has determined that short-term debt at the end of 1998 (after repayment of any portion of short-term debt or incremental borrowing) will be $1,525,000.

The following additional information is also available for ABC.

- predicted sales for 1998 are $2,630,000,
- the interest rate on short term debt is 6%,
- ABC's tax rate is 40%,
- no major capital expenditures are expected in 1998,
- depreciation (which is the same as Depreciation for Tax) for 1998 will be $200,000,
- no share repurchases, share sales, or dividends are expected for 1998.

Invested Capital Balance Sheet: Dec 31, 1997			
Trade Capital	$4,500,000	Short-Term Debt	?
Net Fixed Assets	$2,000,000	Equity	?
Invested Capital	$6,500,000	Invested Capital	$6,500,000

"Equity" on the Invested Capital balance sheet represents all of the accounting equity accounts.

Required: Did ABC borrow additional funds or repay some short-term debt at the end of 1998? What was the amount of ABC's short-term debt at the end of 1997?

Solution

13. Short Term Financial Planning

Today is Dec 31, 1998. Because of decreasing unit demand in the upcoming year, ABC Company Limited expects that it might have to reduce the price of the pasta strainer that it sells. The marketing department of ABC predicts that, as the result of this decreased demand, both unit sales and revenues will decrease in 1999. Based on this prediction, Roberta Grauer, ABC's financial analyst, expects that a number of things will occur in 1999. First, she expects that ABC might be able to reduce their investment in trade capital. Trade capital is expected to decrease from its current level of $5,000,000. Second, she expects EBITDA to decrease. Irrespective of this decrease, with the "self-liquidation" of trade capital, Roberta thinks that ABC might be able to repay some short-term debt on Dec. 31, 1999. To investigate this planning question, Roberta has developed a set of projected financial statements for Dec 31, 1999.

In 1998, ABC had a trade-capital to sales ratio of 0.30 (trade-capital at the end of 1998 divided by 1998-sales). The value of this ratio is not expected to change over the foreseeable future.

The following additional information is also available on ABC.

Based on 1999-projected dollar sales, pricing, and costs, degree of operating leverage (DOL) is expected to be 1.5. The rate of return on invested capital (before tax and before depreciation) is expected to be 20% (calculated with 1999-projected EBITDA and with invested capital at the end of 1998). Also based on 1999-projected sales, invested-capital

turnover is expected to be 1.25 (calculated as 1999-projected sales divided by invested capital at the end of 1998). Also,

-- fixed operating costs in 1999 are predicted to be $1,000,000 (before interest and depreciation),
-- the interest rate on short term debt is 6.5%,
-- ABC's tax rate is 40%,
-- capital expenditures in June of 1999 of $275,000,
-- depreciation (which is the same as Depreciation for Tax) for 1999 will be $150,000,
-- no share sales, repurchases, or dividends.

Invested Capital Balance Sheet: Dec 31, 1998 and Dec 31, 1999

	1998	1999		1998	1999
Trade Capital	$5,000,000		S.T. Debt	$4,500,000	
Net Fixed Assets			"Equity"		
Invested Capital			Invested Capital		

"Equity" on the Invested Capital balance sheet represents all of the accounting equity accounts.

Required:
(a) Find the predicted EBITDA-margin for 1999.
(b) Find ABC's contribution-margin per dollar sales for 1999.
(c) Find predicted sales for 1999.
(d) Will ABC be able to repay short-term debt (at the end of 1999)? If repayment is possible, what is the amount?

Solution

14. Short Term Financial Planning

Today is Dec 31, 1998. Because of increasing unit demand in the upcoming year, ABC Company Limited expects that it might be able to increase the price of the pasta strainer that it sells. The marketing department of ABC predicts that, as the result of this increased demand, both unit sales and revenues will increase in 1999. Based on this prediction, Roberta Grauer, ABC's financial analyst, expects that a number of things will occur in 1999.

First, she expects that ABC will need to increase their investment in trade capital. Trade capital is expected to increase from its current level of $1,000,000. Second, she expects EBITDA to increase. Because of this increase and irrespective of the incremental investment in trade capital and also irrespective of the capital expenditure that they plan for 1999, Roberta thinks that ABC might be able to repay some short-term debt. Based on their planning for 1999, ABC expects to be able to repay some amount of short-term debt at the *beginning* of 1999. Because this repayment is at the beginning of 1999, interest for 1999 will be the interest rate on short-term debt times principal on short-term debt *after* the repayment. In other words, interest for 1999 is the interest rate times short-term debt at the *end* of 1999. To determine the amount of short-term debt that they might be able to repay, Roberta has developed a set of projected financial statements for Dec 31, 1999.

In 1998, ABC had a trade-capital to sales ratio of 0.15 (trade-capital at the end of 1998 divided by 1998-sales). The value of this ratio is not expected to change over the foreseeable future. ABC finances their investment in business activity with common equity and with short-term debt.

The following additional information is also available on ABC.

Based on 1999-projected dollar sales, pricing, and costs, degree of operating leverage (DOL) is expected to be 1.5 and the EBITDA-margin is expected to be 20%. The rate of return on equity (ROE) is expected to be 20%. ROE is calculated as projected net income for 1999 divided by "equity" for the end of 1998. ABC expects to make a capital expenditure (before depreciation) of $100,000 at the beginning of 1999. ABC's depreciation (which is the same as Depreciation for Tax) for 1999 is 6% of net fixed assets at the beginning of 1999 (including the 1999 capital expenditure).

Also, fixed operating costs in 1999 are predicted to be $1,200,000 (before interest and depreciation). ABC's tax rate is 40%. There are no share sales, repurchases, or dividends.

Invested Capital Balance Sheet: Dec 31, 1998 and Dec 31, 1999

	1998	1999		1998	1999
Trade Capital	$1,000,000		S.T. Debt	$800,000	
Net Fixed Assets		5,640,000	"Equity"		
Invested Capital			Invested Capital		

"Equity" on the Invested Capital balance sheet represents all of the accounting equity accounts.

Required:

With predicted DOL and EBITDA-margin determine contribution margin. Then use the predicted EBITDA-margin to determine predicted 1999 sales.Will ABC be able to repay short-term debt? If repayment is possible, what is the amount?

Determine the rate of interest that ABC will pay on its short-term debt for 1999 (recall that interest is paid on the balance of short-term debt *after* the repayment at the beginning of the year).

Solution

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