

CH 5. Financial Planning: Short Term and Long Term

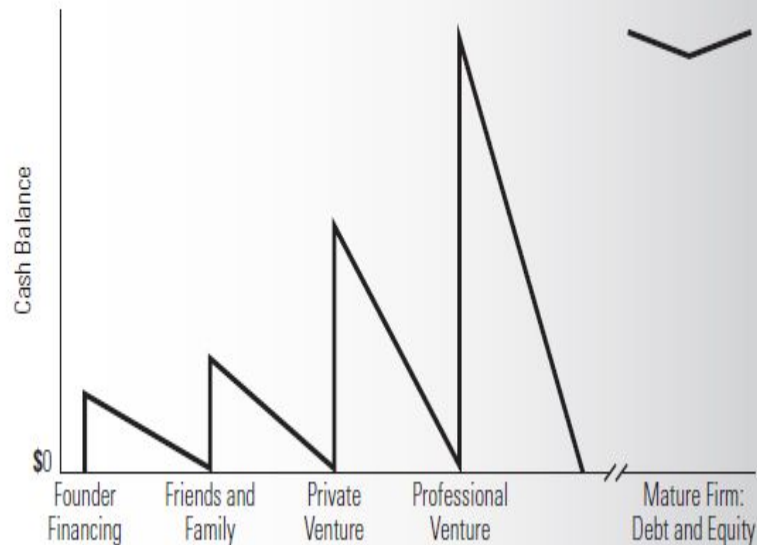
Entrepreneurial Finance

Surviving in the Short Run

early-stage ventures

firms in their development stage, startup stage, survival stage, or just entering their rapid-growth stage

FIGURE 6.2 GRAPHIC PORTRAYAL OF CASH BALANCE VOLATILITY AS A SUCCESSFUL VENTURE PROGRESSES THROUGH ITS LIFE CYCLE



PDC inventories New-Age Paint that it plans to sell shortly after having received the paint. It is currently March 31, 2011, and the sales force has provided the following projected sales:

| | |
|--------|-----------|
| April | \$115,000 |
| May | \$184,000 |
| June | \$138,000 |
| July | \$115,000 |
| August | \$ 92,000 |

TABLE 6.1 PDC COMPANY INITIAL BALANCE SHEET (MARCH 31)

| ASSETS | | LIABILITIES AND EQUITY | |
|---|-----------------------|-------------------------------------|-----------------------|
| Current Assets | | Current Liabilities | |
| Cash | 23,000 | Accounts payable | 38,640 |
| Accounts receivable | 36,800 | Accrued wages | <u>9,775</u> |
| Paint inventory | 110,400 | Total current liabilities | 48,415 |
| Prepaid insurance | <u>4,140</u> | | |
| Total current assets | 174,340 | | |
| Property, plant, and equipment | | | |
| Gross property, plant, and equipment | 85,100 | Owners' Equity | <u>181,585</u> |
| Accumulated depreciation | <u>-29,440</u> | | |
| Net property, plant, and equipment | <u>55,660</u> | | |
| Total assets | <u>230,000</u> | Total liabilities and equity | <u>230,000</u> |

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Our goal is to project PDC's cash balance at the end of each of the next four months and to create a set of projected financial statements congruent to the projections. We break this daunting task down into smaller pieces.

Task 1: Budget PDC's cash and borrowing position for the next four months (through July 31).

Implementation Plan:

- (a) Use the sales forecast to determine the monthly cash collections from the current month's cash sales and collections of receivables on the previous month's credit sales,
- (b) use the inventory policy to determine the inventory expenses and schedule for their payments,
- (c) schedule the wages payments according to the semimonthly pay arrangements,
- (d) put these items together with the other assumptions and determine cash needs before financing, and
- (e) complete the cash budget by determining the necessary borrowing and repayment provisions, including interest payments, ensuring that \$23,000 is available in the checking account.

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TABLE 6.2 PDC COMPANY OPERATING SCHEDULES AND CASH BUDGET

(A) SALES SCHEDULE

| | MARCH | APRIL | MAY | JUNE | JULY | AUGUST | APRIL TO JULY |
|-------------------------------------|--------|----------------|----------------|----------------|----------------|--------|---------------|
| Schedule 1: Sales Forecast | | | | | | | |
| Forecast | 92,000 | 115,000 | 184,000 | 138,000 | 115,000 | 92,000 | 552,000 |
| Credit sales, 40% | 36,800 | 46,000 | 73,600 | 55,200 | 46,000 | | |
| Cash sales, 60% | 55,200 | 69,000 | 110,400 | 82,800 | 69,000 | | |
| Schedule 2: Cash Collections | | | | | | | |
| Cash sales this month | | 69,000 | 110,400 | 82,800 | 69,000 | | |
| 100% of last month's credit sales | | <u>36,800</u> | <u>46,000</u> | <u>73,600</u> | <u>55,200</u> | | |
| Total collections | | <u>105,800</u> | <u>156,400</u> | <u>156,400</u> | <u>124,200</u> | | |

(B) PURCHASES SCHEDULE

| | MARCH | APRIL | MAY | JUNE | JULY | APRIL TO JULY |
|---|----------------|----------------|----------------|----------------|----------------|----------------|
| Schedule 3: Purchases | | | | | | |
| Ending inventory | 110,400 | 149,040 | 123,280 | 110,400 | 97,520 | |
| Cost of goods sold | <u>64,400</u> | <u>80,500</u> | <u>128,800</u> | <u>96,600</u> | <u>80,500</u> | <u>386,400</u> |
| Total needed | 174,800 | 229,540 | 252,080 | 207,000 | 178,020 | |
| Beginning inventory | <u>-97,520</u> | <u>-10,400</u> | <u>-9,040</u> | <u>-23,280</u> | <u>-10,400</u> | |
| Purchases | 77,280 | 119,140 | 103,040 | 83,720 | 67,620 | |
| Schedule 4: Purchase Disbursements | | | | | | |
| 50% of last month's purchases | | 38,640 | 59,570 | 51,520 | 41,860 | |
| 50% of this month's purchases | | <u>59,570</u> | <u>51,520</u> | <u>41,860</u> | <u>33,810</u> | |
| Disbursements for purchases | | <u>98,210</u> | <u>111,090</u> | <u>93,380</u> | <u>75,670</u> | |

(C) WAGES AND COMMISSIONS SCHEDULE

| | MARCH | APRIL | MAY | JUNE | JULY | APRIL TO JULY |
|--|-------|----------------|----------------|----------------|----------------|---------------|
| Schedule 6: Disbursements—Wages and Commissions | | | | | | |
| 50% of last month's expenses | | 9,775 | 11,500 | 16,675 | 13,225 | |
| 50% of this month's expenses | | <u>11,500</u> | <u>16,675</u> | <u>13,225</u> | <u>11,500</u> | |
| Total | | <u>21,275</u> | <u>28,175</u> | <u>29,900</u> | <u>24,725</u> | |
| Cash Budget | | | | | | |
| Beginning cash balance | | 23,000 | 23,000 | 23,000 | 23,000 | |
| Cash receipts: | | | | | | |
| Collections from customers | | <u>105,800</u> | <u>156,400</u> | <u>156,400</u> | <u>124,200</u> | |
| Total cash available for needs before financing | | 128,800 | 179,400 | 179,400 | 147,200 | |
| Cash disbursements: | | | | | | |
| Merchandise | | 98,210 | 111,090 | 93,380 | 75,670 | |
| Wages and commissions | | 21,275 | 28,175 | 29,900 | 24,725 | |
| Miscellaneous expenses | | 5,750 | 9,200 | 6,900 | 5,750 | |
| Rent | | 4,600 | 4,600 | 4,600 | 4,600 | |
| Truck purchase | | <u>6,900</u> | <u>0</u> | <u>0</u> | <u>0</u> | |
| Total disbursements | | 136,735 | 153,065 | 134,780 | 110,745 | |
| Minimum cash balance desired | | <u>23,000</u> | <u>23,000</u> | <u>23,000</u> | <u>23,000</u> | |
| Total cash needed | | <u>159,735</u> | <u>176,065</u> | <u>157,780</u> | <u>133,745</u> | |
| Excess of total cash | | -30,935 | 3,335 | 21,620 | 13,455 | |
| Financing | | | | | | |
| New borrowing | | 30,935 | 0 | 0 | 0 | |
| Repayments | | | 2,871 | 21,199 | 6,865 | |
| Loan balance | | 30,935 | 28,064 | 6,865 | 0 | |
| Interest | | 0 | 464 | 421 | 103 | |
| Total effects of financing | | 30,935 | -3,335 | -21,620 | -6,968 | |
| Cash balance | | 23,000 | 23,000 | 23,000 | 29,487 | |

Surviving in the Short Run

Task 5: Calculate the change in the cash account balance in a spreadsheet that uses only the beginning and ending balance sheets and net income.

Implementation Plan:

- Create a spreadsheet with the balance sheets for March 31 and July 31 as columns;
- find the difference of the values in the columns and adjust the sign to reflect the change in cash flow, placing these signed differences in a third column;
- add the values in the third column to calculate the change in PDC's cash position directly.

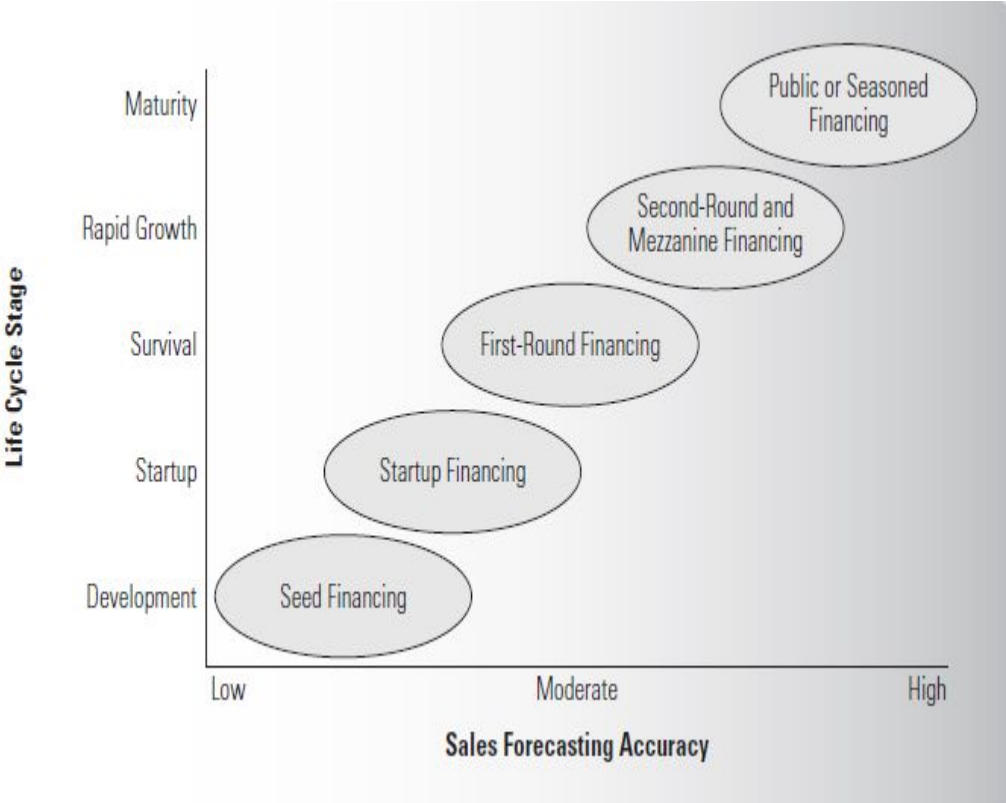
| | MARCH | JULY | CHANGE | |
|---------------------------------------|----------------|----------------|--------------|---------------------------------|
| Current assets | | | | |
| Cash | 23,000 | 29,487 | | |
| Accounts receivable | 36,800 | 46,000 | -9,200 | Use of cash |
| Merchandise inventory | 110,400 | 97,520 | 12,880 | Source of cash |
| Prepaid insurance | <u>4,140</u> | <u>2,300</u> | 1,840 | Source of cash |
| Total current assets | 174,340 | 175,307 | | |
| Plant | | | | |
| Equipment, fixtures, and other | 85,100 | 92,000 | -6,900 | Use of cash |
| Accumulated depreciation | <u>-29,440</u> | <u>-34,040</u> | 4,600 | Source of cash |
| Net property, plant, and equipment | <u>55,660</u> | <u>57,960</u> | | |
| Total assets | <u>230,000</u> | <u>233,267</u> | | |
| Current liabilities | | | | |
| Accounts payable | 38,640 | 33,810 | -4,830 | Use of cash |
| Accrued wages and commissions payable | 9,775 | 11,500 | 1,725 | Source of cash |
| Loan | <u>0</u> | <u>0</u> | 0 | No four-month effect |
| Total current liabilities | 48,415 | 45,310 | | |
| Owners' equity | <u>181,585</u> | <u>187,957</u> | | |
| Total equities | <u>230,000</u> | <u>233,267</u> | 115 | Total balance sheet cash impact |
| | | | 6,372 | Net income – dividends |
| | | | <u>6,487</u> | Accounting four-month cash flow |

Forecasting Sales for Early-Stage Ventures

The HandPilot Company, formed at the end of 2009, is in its startup stage. The venture developed and produces a handheld electronic device, the HandPilot, that controls kitchen appliances (i.e., adjusts settings, as well as turns them on and off) from remote distances. HandPilot’s sales are expected to be \$1 million in 2010, which is about to come to a close. Rapid sales growth is expected over the next five years, and HandPilot wishes to prepare five years of sales forecasts for potential investors. How should the forecasts be made?

| INDUSTRY SALES SCENARIO | PROBABILITY OF OCCURRENCE | × | SALES GROWTH RATE | = | COMPONENTS TO SUM |
|-------------------------|---------------------------|---|----------------------|---|-------------------|
| Optimistic forecast | 0.30 | × | 60% | = | 18.0% |
| Most likely forecast | 0.40 | × | 50% | = | 20.0% |
| Pessimistic forecast | <u>0.30</u> | × | 40% | = | <u>12.0%</u> |
| | 1.00 | | Expected value (Sum) | = | 50.0% |

| FORECAST YEAR | SALES (\$ MILLIONS) | PERCENT CHANGE (SALES GROWTH RATE) |
|---------------|---------------------|------------------------------------|
| 2011 | 5.00 | |
| 2012 | 7.50 | 50% |
| 2013 | 11.25 | 50% |
| 2014 | 16.88 | 50% |
| 2015 | 25.31 | <u>50%</u> |
| | | Average = 50% |



Estimating Sustainable Sales Growth Rates

internally generated funds

net income or profits (after taxes) earned over an accounting period

sustainable sales growth rate

rate at which a firm can grow sales based on the retention of profits in the business

A firm's net income or profit after taxes, also referred to as its **internally generated funds**, can be distributed to owners or reinvested to support growth. The portion retained in the business becomes an increase in retained earnings. The **sustainable sales growth rate** is the rate supported without external equity capital (through the retention of profits). If a firm can scale itself up without changing its strategy and margins, the firm can increase its sales at the growth rate of its book value of equity:⁴

$$\begin{aligned} g &= \frac{\text{Ending Equity} - \text{Beginning Equity}}{\text{Beginning Equity}} \\ &= \frac{\text{Change in Equity}}{\text{Beginning Equity}} \\ &= \frac{\Delta E}{E_{\text{beg}}} \end{aligned} \quad (6.1)$$

where g is the annual percentage growth rate in equity, ΔE is the change in equity during the year, and E_{beg} is the equity at the beginning of the year.

Assuming that the venture does not raise new external equity (or retire existing equity), we see that its equity only changes by earnings retention. The change in equity can be expressed as:

$$\Delta E = \text{Net Income} \times \text{Retention Rate} = \text{NI} \times \text{RR} \quad (6.2)$$

where RR is the proportion of net income retained in the firm. For early-stage ventures, the retention rate will be 100 percent. More mature firms may use some of their income to fund a dividend; the retention rate is one minus the dividend payout percentage, $1 - \text{DPO}\%$.

Dividing both sides of equation 6.2 by the beginning equity gives:

$$\Delta E / E_{\text{beg}} = (\text{NI} / E_{\text{beg}}) \times \text{RR} \quad (6.3)$$

By substituting g in the left side of equation 6.3, we get:

$$g = (\text{NI} / E_{\text{beg}}) \times \text{RR} \quad (6.4)$$

Note that $\text{NI} / E_{\text{beg}}$ is the return on beginning equity. We can use ROE as in Chapter 5's treatment of performance measurement as long as we are careful to consider the venture's equity base prior to any dividend or retention during the current period. For clarity, we emphasize that sustainable growth analysis considers the earnings created by the stock of equity in place throughout the time interval, with no intermediate changes.

For concreteness, assume that the venture started the year with \$10 million in book value of equity. It plans no intermediate equity injections or withdrawals and projects net income of \$2 million for the year. It will pay a \$500,000 (25 percent) dividend at the beginning of the next period and retain \$1,500,000 (75 percent). Assuming it will scale up with the same margins, we see that the venture will grow by:

$$g = (\$2,000,000 / \$10,000,000) \times 0.75 = 0.20 \times 0.75 = 0.15, \text{ or } 15\%$$

The venture's maximum sustainable growth rate is at 100 percent retention, where $g_{\text{max}} = 20$ percent (0.20 times 1).

If the firm projects growth in excess of 20 percent, it must raise external equity capital, have some scaling advantage leading to improved asset efficiency, and have lower incremental variable costs or some other organic change (including increased use of nonequity financing). In Chapter 5, we defined the return on equity (ROE) model as:

$$\text{ROE} = \text{Net Profit Margin} \times \text{Asset Turnover} \times \text{Equity Multiplier}$$

In equation form, this was:

$$\text{ROE} = \frac{\text{NI}}{\text{CE}} = \frac{\text{NI}}{\text{NS}} \times \frac{\text{NS}}{\text{TA}} \times \frac{\text{TA}}{\text{CE}} \quad (6.5)$$

Estimating Sustainable Sales Growth Rates

where NI is net income and NS is net sales for an accounting time period, usually one year; CE is common equity; and TA is total assets. Again, when conducting sustainable growth analysis for a period with no new capital infusions or withdrawals, we want to use beginning-of-period measures. Assuming that all equity is treated as common equity (e.g., “as converted” if the venture has convertible preferred), we can insert equation 6.7 into equation 6.4 as follows:

$$g = \frac{NI}{NS} = \frac{NS}{TA} \times \frac{TA}{CE_{\text{beg}}} \times RR \quad (6.6)$$

A venture’s maximum sustainable growth rate, g_{max} , is its return on beginning equity, which decomposes into the product of net profit margin, asset turnover ratio, and the firm’s equity multiplier ratio. When the venture retains less than 100 percent of the net income, this maximum sustainable growth rate must be adjusted downward to the venture’s projected sustainable growth rate (g) by multiplying g_{max} by the retention ratio (RR).

The GameToy Company has recently introduced a new home video game. GameToy has a projected sales growth rate of 30 percent per year. Sales in the first full year of operation were \$1.6 million. These sales were supported by an investment in assets of \$1 million and produced a net income of \$160,000. Equity at the beginning of last year was \$800,000. Management intends to retain all profits in the venture. Assuming the components of the ROE model scale remain constant with growth, the sustainable sales growth rate from equation 6.6 is:

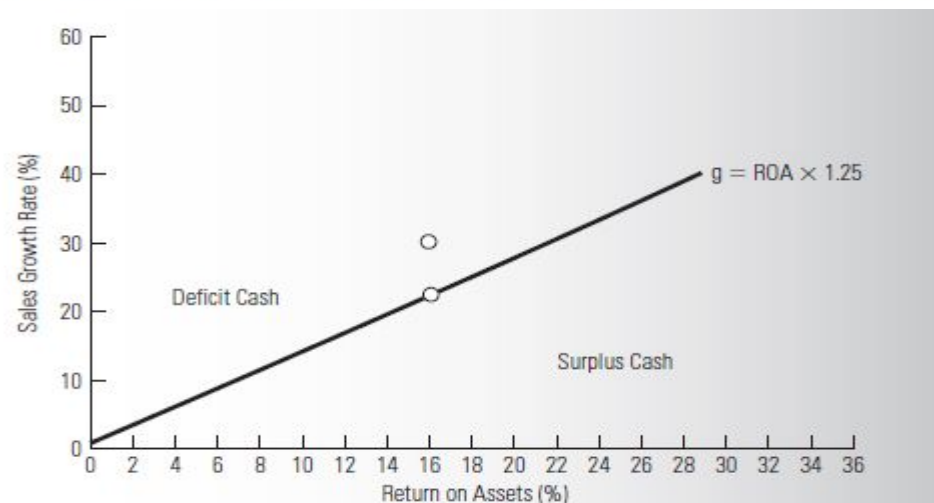
Another way to look at sustainable growth is to separate the firm’s operating performance and financial policy. Recall from Chapter 5 that a firm’s return on assets (ROA) is the product of its net profit margin (NI/NS) and its asset turnover (NS/TA); it measures the firm’s operating performance over a specified time period. The product of the first two components of equation 6.6 [(NI/NS) \times (NS/TA)] provides the ROA measure of operating performance. The product of the financial leverage or equity multiplier component (TA/CE_{beg}) and the retention rate (RR, or 1 – DPO%) reflects the firm’s financial policy (FP). Sustainable growth is:

$$\begin{aligned} g &= \text{Operating Performance} \times \text{Financial Policy, or} \\ g &= \text{ROA} \times \text{FP} \end{aligned} \quad (6.7)$$

To illustrate, we return to the GameToy venture. Recall that the equity multiplier was 1.25 (\$1,000,000/\$800,000), using beginning-of-period equity, and retention is 100 percent. Accordingly, the financial policy factor is 1.25 (i.e., 1.25 \times 1.00), and its sustainable growth rate is:

$$g = \text{ROA} \times (1.25 \times 1.00) = \text{ROA} \times 1.25$$

Sustainable growth varies linearly with the venture’s return on assets as long as the financial policy (financial leverage and retention of profits decisions) remains stable.⁵ Figure 6.6 presents a graphic representation of this linear relationship. When GameToy’s ROA is 16 percent, sustainable growth is 20 percent (0.16 \times 1.25). The solid line depicts sustainable growth at various ROAs. Growth rates above the line, such as the 30 percent target sales growth rate, are not feasible without operating improvements, changes in financial policy, or external equity capital. Owing to market capture considerations, many early-stage ventures will not want to limit growth to the sustainable level.



Estimating Additional Financing Needed to Support Growth

| LIFE CYCLE STAGE | TYPE OF FINANCING | MAJOR SOURCES/PLAYERS |
|--------------------|---------------------------|--------------------------------|
| Survival stage | First-round financing | Business operations |
| | | Venture capitalists |
| | | Suppliers and customers |
| | | Government assistance programs |
| Rapid-growth stage | Second-round financing | Commercial banks |
| | | Business operations |
| | | Mezzanine financing |
| | | Suppliers and customers |
| | Liquidity-stage financing | Commercial banks |
| | | Investment bankers |

financial capital needed (FCN)

funds needed to acquire assets necessary to support a firm's sales growth

spontaneously generated funds

increases in accounts payables and accruals (wages and taxes) that accompany sales increases

additional funds needed (AFN)

gap remaining between the financial capital needed and that funded by spontaneously generated funds and retained earnings

Financial capital needed (FCN) is the additional funding required to support a firm's projected growth. Some of this funding gap will be covered by trade credit and other current liabilities that increase spontaneously with sales. **Spontaneously generated funds** are increases in accounts payables and accruals (wages and taxes) that accompany sales increases. For example, when sales increase, credit purchases from suppliers should also increase, leading to lockstep increases in accounts payable. If the venture is profitable and scaling up without margin changes, its increase in profits, when retained, helps meet a firm's FCN. **Additional funds needed (AFN)** is the gap remaining between the FCN and the capital funded by spontaneously generated funds and retained earnings:

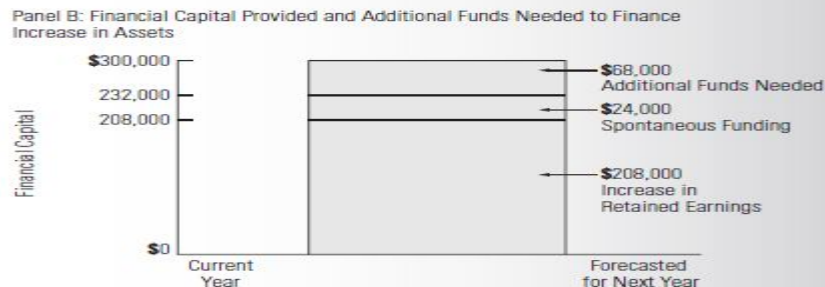
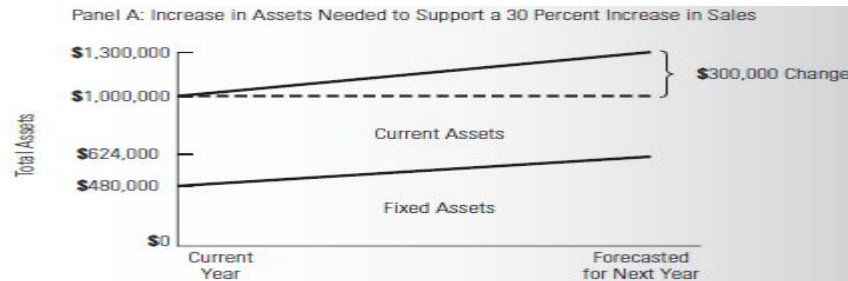
$$\text{AFN} = \text{Required Increase in Assets} - \text{Spontaneously Generated Funds} - \text{Increase in Retained Earnings}$$

In equation form this becomes:

$$\text{AFN} = \frac{\text{TA}_0}{\text{NS}_0}(\Delta\text{NS}) - \frac{\text{AP}_0 + \text{AL}_0}{\text{NS}_0}(\Delta\text{NS}) - (\text{NS}_1) \frac{\text{NI}_0}{\text{NS}_0}(\text{RR}_0) \quad (6.8)$$

where TA is the total assets, NS is the net sales, ΔNS is the change in net sales expected between the current year and next year, AP is the accounts payable, AL is the accrued liabilities, NI is the net income, RR is the retention rate as previously defined, and the subscripts "0" and "1" represent the current year and the forecast for next year, respectively.

PROJECTED BALANCE SHEET CHANGES FOR GAMETOY COMPANY



Forecasting Process

The financial forecasting process used to project financial statements is:

1. Forecasted sales
2. Project the income statement
3. Project the balance sheet
4. Project the statement of cash flows

TABLE 6.7 GAMETOY COMPANY INCOME STATEMENTS (ACTUAL FOR 2010 AND PROJECTED FOR 2011)

| | ACTUAL 2010 | FORECAST BASIS | FORECAST 2011 |
|----------------------------|-------------|-----------------------------------|---------------|
| Sales | \$1,600,000 | $1.3 \times 2008 \text{ sales}$ | \$2,080,000 |
| Cost of goods sold | 960,000 | $0.600 \times 2009 \text{ sales}$ | 1,248,000 |
| Gross profit | 640,000 | | 832,000 |
| Marketing expenses | 160,000 | $0.100 \times 2009 \text{ sales}$ | 208,000 |
| General and administrative | 152,000 | Fixed costs | 152,000 |
| Depreciation | 48,000 | $0.030 \times 2009 \text{ sales}$ | 62,400 |
| EBIT* | 280,000 | | 409,600 |
| Less interest | 13,300 | Initially fixed | 13,300 |
| Earnings before taxes | 266,700 | | 396,300 |
| Less taxes (40% rate) | 106,700 | 40% of EBT | 158,500 |
| Net income | 160,000 | | 237,800 |
| Less cash distributions | 0 | | 0 |
| Added retained earnings | \$ 160,000 | | \$ 237,800 |

*EBIT is earnings before interest and taxes; EBT is earnings before taxes.

TABLE 6.8 GAMETOY COMPANY BALANCE SHEETS (ACTUAL FOR 2010 AND PROJECTED FOR 2011)

| | ACTUAL 2010 | FORECAST BASIS | FORECAST 2011 |
|------------------------------|-------------|-----------------------------------|---------------|
| Cash | \$ 16,000 | $0.01 \times 2011 \text{ sales}$ | \$ 20,800 |
| Accounts receivable | 184,000 | $0.115 \times 2011 \text{ sales}$ | 239,200 |
| Inventories | 320,000 | $0.200 \times 2011 \text{ sales}$ | 416,000 |
| Total current assets | 520,000 | $0.325 \times 2011 \text{ sales}$ | 676,000 |
| Net plant and equipment | 480,000 | $0.300 \times 2011 \text{ sales}$ | 624,000 |
| Total assets | \$1,000,000 | $0.625 \times 2011 \text{ sales}$ | \$1,300,000 |
| Accounts payable | \$ 48,000 | $0.03 \times 2011 \text{ sales}$ | \$ 62,400 |
| Accrued liabilities | 32,000 | $0.02 \times 2011 \text{ sales}$ | 41,600 |
| Bank loan | 120,000 | | 120,000 |
| Total current liabilities | 200,000 | | 224,000 |
| Common equity needed | 800,000 | +237,800* | 1,037,800 |
| Additional funds | 0 | | 38,200** |
| Total liabilities and equity | \$1,000,000 | | \$1,300,000 |

*Increase in retained earnings estimated for 2011 taken from Table 6.7.

**The AFN is a "plug" amount that makes the total assets balance with the total liabilities and equity.

Discussion Questions

1. Provide a description of the financing cash implications associated with a venture's need for additional funds.
2. What is meant by a cash budget? Describe how a cash budget is prepared.
3. Besides the cash budget, what additional financial statements are projected monthly in conjunction with short-term financial planning?
4. Why is it usually easier to forecast sales for seasoned firms in contrast with early-stage ventures?
5. Explain how projected economic scenarios can be used to help forecast a firm's sales growth rate.
6. Identify and describe the four-step process typically used to forecast sales for seasoned firms.
7. What are the three steps typically used to forecast sales for early-stage ventures?
8. Describe the general relationship between the life cycle stage and the ability to accurately forecast sales for a firm.
9. How do venture investors adjust for the belief that entrepreneurs tend to be overly optimistic in their sales forecasts?
10. What is meant by a sustainable sales growth rate?
11. Identify and describe the two equations that can be used to estimate a firm's sustainable growth rate.
12. Describe the basic additional funds needed (AFN) equation.
13. List the major sources of funds typically available to ventures that have successfully entered into their rapid-growth life cycle stage.
14. Explain how the AFN equation can be used to forecast the amount of funds that will be needed over a several-year period.
15. What is the percent-of-sales forecasting method?
16. After forecasting sales, describe how the income statement is projected.
17. Describe how balance sheets are projected once a sales forecast has been made.
1. [Short-Term Financial Planning] The PDC Company was described earlier in this chapter. Refer to the PDC Company's projected monthly operating schedules in Table 6.2. PDC's sales are projected to be \$80,000 in September 2011.
 - A. Prepare PDC's sales schedule, purchases schedule, and wages schedule for August 2011.
 - B. Prepare a cash budget for August 2011 for PDC and describe how the forecast affects the end-of-month cash balance.
2. [Short-Term Financial Planning] The PDC Company was described earlier in this chapter. Refer to the PDC Company's projected monthly operating schedules in Table 6.2. PDC's sales are projected to be \$80,000 in September 2011.
 - A. Prepare PDC's projected income statement for August.
 - B. Prepare PDC's projected balance sheet for August.
 - C. Prepare PDC's projected statement of cash flow for August.
 - D. Compare your balance sheet at the end of August with the balance sheet in Table 6.1 and apply the balance sheet method to determine cash flows over the March–August period.
3. [Short-Term Financial Planning] Rework Problem 1 based on the assumption that, because of an unexpected order, PDC's sales are forecasted to be \$160,000 for September 2011.

MINI CASE: PHARMA BIOTECH CORP

Pharma Biotech Corporation

The Pharma Biotech Corporation spent several years working on developing a DHA product that can be used to provide a fatty-acid supplement to a variety of food products. DHA stands for docosahexaenoic acid, an omega-3 fatty acid found naturally in cold-water fish. The benefits of fatty fish oil have been cited in studies of the brain, the eyes, and the immune system. Unfortunately, it is difficult to consume enough fish to get the benefits of DHA, and most individuals might be concerned about the taste consequences associated with adding fatty fish oil to eggs, ice cream, or chocolate candy. To counter these constraints, Pharma Biotech and several competitors have been able to grow algae and other plants that are rich in DHA. The resulting chemical compounds then are used to enhance a variety of food products.

Pharma Biotech's initial DHA product was designed as an additive to dairy products and yogurt. For example, the venture's DHA product was added to cottage cheese and fruit-flavored yogurts to enhance the health benefits of those products. After the long product development period, Pharma Biotech began operations in 2009. Income statement and balance sheet results for 2010, the first full year of operations, have been prepared.

Pharma Biotech, however, is concerned about forecasting its financial statements for next year because it is uncertain about the amount of additional financing for assets that will be needed as Pharma Biotech Corporation the venture ramps up sales. Pharma Biotech expects to introduce a DHA product that can be added to chocolate candies. Not only will consumers get the satisfaction of the taste of the chocolate candies, but they will also benefit from the DHA enhancement. Because this is anticipated to be a blockbuster new product, sales are anticipated to increase 50 percent next year (2011), even though the new product will come on-line in midyear. An additional 80 percent increase in sales is expected the following year (2012).

PHARMA BIOTECH CORPORATION

INCOME STATEMENT FOR DECEMBER 31, 2010 (THOUSANDS OF DOLLARS)

| | |
|-----------------------------|----------------|
| Sales | 15,000 |
| Operating expenses | <u>-13,000</u> |
| EBIT | 2,000 |
| Interest | <u>-400</u> |
| EBT | 1,600 |
| Taxes (40% rate) | <u>-640</u> |
| Net income | 960 |
| Cash dividends (40% payout) | <u>-384</u> |
| Added retained earnings | <u>576</u> |

PHARMA BIOTECH CORPORATION

BALANCE SHEET AS OF DECEMBER 31, 2010 (THOUSANDS OF DOLLARS)

| | | | |
|--------------------------------|-----------------|------------------------------|-----------------|
| Cash and marketable securities | \$ 1,000 | Accounts payable | \$ 1,600 |
| Accounts receivable | 2,000 | Bank loan | 1,800 |
| Inventories | <u>2,200</u> | Accrued liabilities | <u>1,200</u> |
| Total current assets | 5,200 | Total current liabilities | 4,600 |
| | | Long-term debt | 2,200 |
| | | Common stock | 2,400 |
| Fixed assets, net | <u>6,800</u> | Retained earnings | <u>2,800</u> |
| Total assets | <u>\$12,000</u> | Total liabilities and equity | <u>\$12,000</u> |

Part A

Pharma Biotech is interested in developing an initial "big picture" of the size of financing that might be needed to support its rapid growth objectives for 2011 and 2012.

- Calculate the following financial ratios (as covered in Chapter 5) for Pharma Biotech for 2010: (a) net profit margin, (b) sales-to-total-assets ratio, (c) equity multiplier, and (d) total-debt-to-total-assets. Apply the return on assets and return on equity models. Discuss your observations.
- Estimate Pharma's sustainable sales growth rate based on its 2010 financial statements. [Hint: You need to estimate the beginning of period stockholders' equity based on the information provided.] What financial policy change might Pharma Biotech make to improve its sustainable growth rate? Show your calculations.
- Estimate the additional funds needed (AFN) for 2011, using the formula or equation method presented in the chapter.
- Also, estimate the AFN using the equation method for Pharma Biotech for 2012. What will be the cumulative AFN for the two-year period?

Part B

Pharma Biotech is seeking your assistance in preparing its projected financial statements using the percent-of-sales method. Initial projected financial statements can be prepared by hand using a financial calculator or by constructing spreadsheet-based solutions.

- Prepare a projected income statement for 2011 for Pharma Biotech before obtaining any additional financing. [Hint: For those who need help, follow the projected income statement shown in Table 6.7 for the GameToy Company.]
- Prepare a projected balance sheet for 2011 for Pharma Biotech before obtaining any additional financing. [Hint: For those who need help, follow the projected balance sheet shown in Table 6.8 for the GameToy Company.]
- Based on your projected balance sheet for Pharma Biotech for 2011, what is your estimate of the additional funds needed? Why does the AFN from your initial percent-of-sales projected financial statements differ from the AFN estimated using the formula method in Item C above?
- Prepare a projected statement of cash flows for Pharma Biotech for 2011. [Hint: For those who need help, follow the projected statement of cash flows shown in Table 6.9 for the GameToy Company.]