

FINANCIAL PLANNING AND CONTROL (CHAPTER 16)

The information derived from financial statement analysis can be used to establish future operating goals (financial planning) and to determine how to meet established goals (financial control).

Developing *pro forma* (forecasted) financial statements is an important part of the planning and control processes.

- **Sales Forecasts**—probably the most important part of financial planning is the sales forecast; this forecast generally is based on the trend in sales in recent periods, perhaps the last five to 10 years; inaccurate sales forecasts can have serious repercussions—if the firm is too optimistic, such assets as inventory will be built up too much, but if the firm is too conservative, it might miss valuable opportunities in the market because demand cannot be met with existing production capabilities.
- **Projected (Pro Forma) Financial Statements**—projected financial statements help the firm determine the amount that is needed to finance expected future activities; the information from these statements indicates how much financing will be generated by the firm *internally* and how much must be generated *externally* (called additional funds needed) by borrowing or by selling stock; following are the steps necessary to construct a pro forma balance sheet and a pro forma income statement, which must be completed to determine the additional funds needed (AFN):
 - *Step 1:* Forecast next period's income statement—estimate the percentage growth (increase or decrease) in sales, cost of goods sold, and other revenues and expenses, and then change the current values by the estimates; one of the easiest ways to approach this task is to apply a single growth rate, such as 8 percent, to all revenue and expense categories that change when production changes; to be more accurate, however, each category should be examined individually to determine the impact of any forecasted change; a projected income statement might be as simple as the following:

Most Recent and Projected Income Statements (million of dollars, except per share data)

	Most Recent Results	Forecast Basis ^a	Initial Forecast
Net sales	\$ 500.0	x 1.08	\$ 540.0
Cost of goods sold (80% of sales)	(400.0)	x 1.08	(432.0)
Gross profit	\$ 100.0		\$ 108.0
Fixed operating costs except depreciation	(35.0)	x 1.08	(37.8)
Depreciation	(20.0)	x 1.08	(21.6)
Earnings before interest and taxes (EBIT)	\$ 45.0		48.6
Less interest	(12.0)		(12.0) ^b
Earnings before taxes (EBT)	\$ 33.0		\$ 36.6
Taxes (40%)	(13.2)		(14.6)
Net Income	<u>\$ 19.8</u>		<u>\$ 22.0</u>

Common dividends	<u>(10.0)</u>	<u>(10.0)^b</u>
Addition to retained earnings	<u>\$ 9.8</u>	<u>\$ 12.0</u>
Earnings per share	\$1.98	\$2.20
Dividends per share	\$1.00	\$1.00
Number of common shares (millions)	10.00	10.00

^a $\times 1.08$ indicates “times $(1 + g)$ ”; used for items that grow proportionally with sales.

^b Indicates a figure carried over—that is, remains unchanged—for the preliminary, or initial, forecast, because, at this point, we do not know whether additional funds are needed.

According to this forecast, the firm expects to grow by 8 percent next year. Notice that, in addition to the variable revenues and expenses, the fixed costs and depreciation amounts are increased by 8. This assumes the firm is currently operating at *full capacity*; if the firm is not operating at full capacity, the forecasted amounts for fixed costs and depreciation either would be about the same as the most recent figures (if the amount of existing plant and equipment is sufficient to satisfy the increased production) or would change by a percent different than 8 percent (if there is some free capacity, but not enough to meet all new production requirements).

- *Step 2: Forecast next period’s balance sheet*—some accounts on the balance sheet, such as inventories, receivables, payables, and other operating accounts, change “spontaneously” as production changes (movements in these accounts generally result from day-to-day business activities), while other accounts, such as long-term financing arrangements (bonds and equity), remain constant until management makes decisions to raise new funds (movements in these accounts require specific decisions and actions to be made). To determine the estimated amounts in each balance sheet account, change the amount (balance) of each account that you expect to be directly affected by any change in operating activities. In the current example, all of the current assets and all of the current liabilities except notes payable should increase by 8 percent next year—notes payable is not a “spontaneous,” or operating, account in the sense that the firm must make a deliberate, or conscious, decision to apply for such loans. Payables do, however, represent spontaneous financing because the amount in payables increases or decreases as the firm increases or decreases production (demand for products) rather than as the result of a deliberate application for funds. Also, because the firm in our example currently operates at full capacity, plant and equipment will have to increase to satisfy the expected sales increase. As a result, the pro forma balance sheet for the firm might look something like this:

Most Recent and Projected Balance Sheets (million of dollars)

	Most Recent Balances	Forecast Basis^a	Initial Forecast
Cash	\$ 15.0	x 1.08	\$ 16.2
Accounts receivable	60.0	x 1.08	64.8
Inventories	<u>90.0</u>	x 1.08	<u>97.2</u>
Total current assets	\$165.0		\$178.2
Net plant and equipment	<u>120.0</u>	x 1.08	<u>129.6</u>
Total Assets	<u>\$285.0</u>		<u>\$307.8</u>
Accounts payable	\$ 20.0	x 1.08	\$ 21.6
Accruals	15.0	x 1.08	16.2
Notes payable	<u>13.0</u>		<u>13.0^b</u>
Total current liabilities	\$ 48.0		\$ 50.8
Long-term bonds	<u>100.0</u>		<u>100.0^b</u>
Total liabilities	\$148.0		\$150.8
Common stock	46.0		46.0 ^b
Retained earnings	<u>91.0</u>	+\$12.0 ^d	<u>103.0</u>
Total owners' equity	\$137.0		\$149.0
Total Liabilities and Equity	<u>\$285.0</u>		<u>\$299.8</u>
Additional funds needed (AFN)			<u>\$ 8.0^c</u>

^a x 1.08 indicates “times (1 + g)” ; used for items that grow proportionally with sales.

^b Indicates a figure carried over for the initial forecast. These amounts might be changed after if it is determined that external, rather than spontaneous (internal), funds are needed to finance the growth.

^c The “Additional funds needed (AFN)” is computed by subtracting the amount of total liabilities and equity from the amount of total assets. AFN represents the amount of external funds the firm needs to support its forecasted growth. (There is a rounding difference in the final AFN result.)

^d The \$12.0 million represents the “Addition to retained earnings” from the Projected Income Statement given earlier.

The pro forma balance sheet indicates that, if the firm does not raise additional funds by borrowing from the bank, issuing new bonds, or issuing new stock, it will be \$8 million dollars short of the financing that is needed to achieve its growth projections. Clearly, if the firm finances the \$8 million by issuing new stocks and bonds, there will be an impact on the income statement and the amount by which retained earnings is expected to change because interest will increase due increased debt and the total amount of dividends paid will increase due to an increased number of shares outstanding (assuming the dividend per share does not change). As a result, the firm actually requires more than \$8 million in financing to achieve its goals. To determine the total amount of financing needed, repeat the two steps described here, each time recognizing the effects on the income statement and the balance sheet, until the amount of additional funds needed is zero. In this case, the total amount of additional financing needed to achieve the expected growth would be about \$8.5 million rather than \$8 million if the firm raises the additional funds by borrowing \$1.3 million from

the bank at 7 percent interest, issuing \$1.7 million of 10 percent bonds, and issuing \$5.5 million of new common stock.

- *Step 3:* Raising the additional funds needed—how the additional funds needed (\$8.5 million) are raised depends on the firm's preference for, and its ability to handle, additional debt relative to equity—its combination of debt and equity—and the type of debt that is preferred; perhaps the firm decides to raise the funds as described earlier or perhaps it prefers to issue a greater amount of bonds than equity.
- *Step 4:* Financing feedbacks—because decisions to raise more funds via new debt issues and new stock issues affect the expected total amount of interest and dividends paid by the firm, which, in turn, affects the amount of income that is expected to be added to retained earnings, the process of constructing pro forma statements is iterative—that is, you must repeat the steps described here to construct financial statements until the amount of additional funds needed equals zero; financing feedbacks indicate the overall effects of raising the additional funds needed, AFN.
- Other Considerations in Forecasting—some factors that make the forecasting process more complex include:
 - Excess capacity—if the firm has excess capacity, it might not have to add more plant and equipment (i.e., build) to reach its growth expectations, or it might have to increase plant and equipment by some percent less than the growth rate. To determine the level of sales current plant capacity can handle, use the following equation:

$$\text{Full capacity sales} = \frac{\text{Current sales level}}{\left(\frac{\text{Percent of capacity used to}}{\text{generate current sales level}} \right)}$$

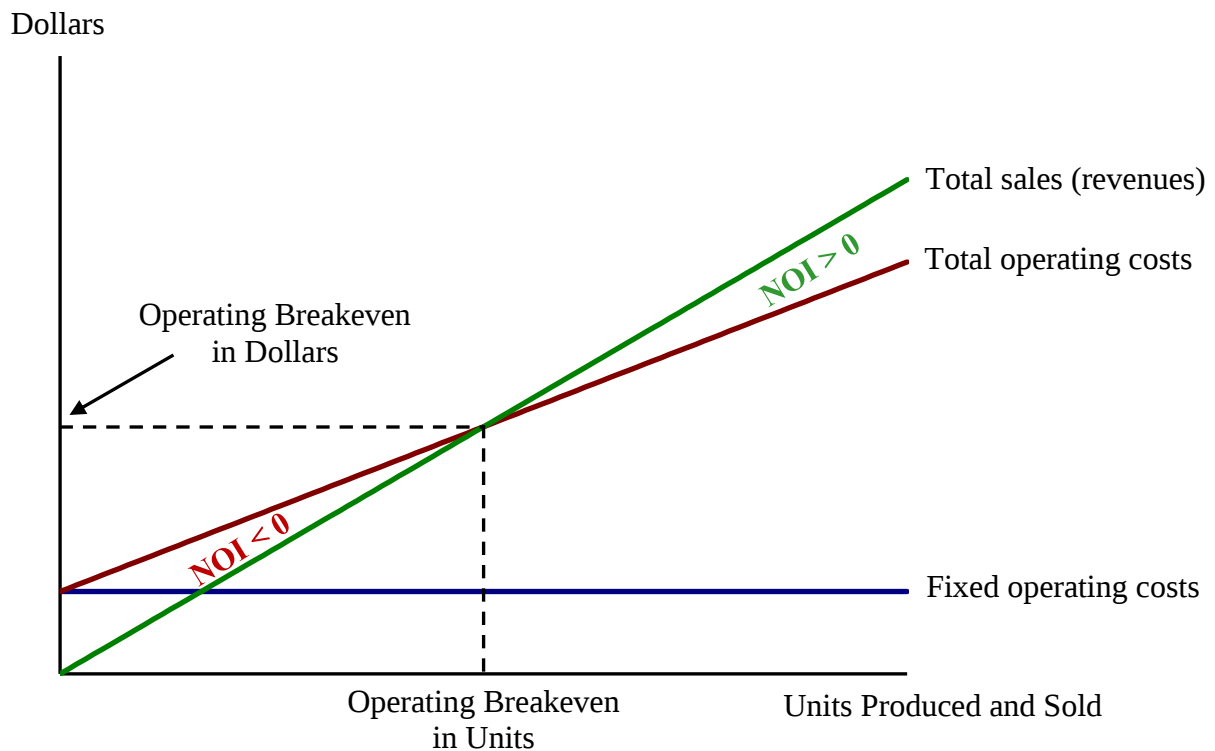
Example: If the firm in our example was operating at 90 percent capacity rather than full capacity, the level of sales it could generate with existing assets would be:

$$\text{Full capacity sales} = \frac{\$500}{0.90} = \$555.6$$

In this situation, the firm would not need to add additional fixed assets to support its forecasted 8 percent growth next year. In fact, it would not need to raise additional external funds, because the funds generated internally (spontaneously) would be sufficient to support the forecasted growth.

- Economies of scale—due to economies of scale, the variable cost ratio might change with changes in production activity—for example, if the firm increases its production significantly, its variable cost ratio might decrease from 80 percent, which is its current level, to much less than 80 percent.

- Lumpy assets—assets generally are not completely divisible (that is, the asset cannot be purchased in small dollar amounts, such as \$1 or \$5), and some assets might have to be purchased in large increments rather than the smaller amounts the firm would prefer to purchase to meet its growth expectations; “lumpy assets” must be purchased in discrete increments, say, \$15 million per addition, which means we cannot simply increase assets by a growth rate like 8 percent.
- Financial Control--Budgeting and Leverage—proper planning and control helps ensure the firm meets its expectations, and, when results fall short of expectations, helps management determine the reasons.
- Operating breakeven analysis—operating breakeven is defined as the level of operations where the net operating income, NOI, which is the same as earnings before interest and taxes, EBIT, equals zero—that is, total operating costs, both fixed and variable, are *just* covered by sales revenues
- Breakeven graph—graphically the operating breakeven point, designated Q_{OpBE} in sales units and S_{OpBE} in sales dollars, is identified as the point where the line labeled “Total Sales” intersects the line labeled “Total Operating Costs,” which is where $EBIT = 0$:



- Breakeven computation—mathematically, the operating breakeven is:

$$\text{Operating breakeven point in units sold} = Q_{\text{OpBE}} = \frac{\text{Total fixed operating costs}}{\left(\text{Sales price per unit} \right) - \left(\text{Variable operating cost per unit} \right)}$$

$$\text{Operating breakeven point in sales dollars} = S_{\text{OpBE}} = \frac{\text{Total fixed operating costs}}{1 - \text{Variable cost ratio}} = \frac{\text{Total fixed operating costs}}{1 - \left(\frac{\text{Total variable operating costs}}{\text{Sales}} \right)}$$

- Using operating breakeven analysis—can provide information that helps make the following decisions:

- Determine the level of sales a new product must achieve to make a profit.
- Indicate the impact of general growth on the cost structure of the firm.
- Show how modernization to improve efficiency affects fixed and variable costs, thus profitability of operations.

- Operating Leverage—in business, leverage refers to the existence of fixed costs; the presence of leverage means that a change in sales will result in a larger change in operating income (EBIT), net income, or both; operating leverage exists if fixed operating costs, such as depreciation, are present; the degree of operating leverage (DOL) is defined as the percent change in net operating income, NOI, that results from a particular percent change in sales; mathematically, DOL is:

$$\text{DOL} = \frac{\text{Sales} - \text{Total variable costs}}{\text{Sales} - \left(\frac{\text{Total variable}}{\text{operating costs}} \right) - \left(\frac{\text{Total fixed}}{\text{operating costs}} \right)} = \frac{\text{Gross profit}}{\text{EBIT}}$$

Example: Applying this equation to the forecasted income statement at the beginning of these notes, we find the firm's DOL is:

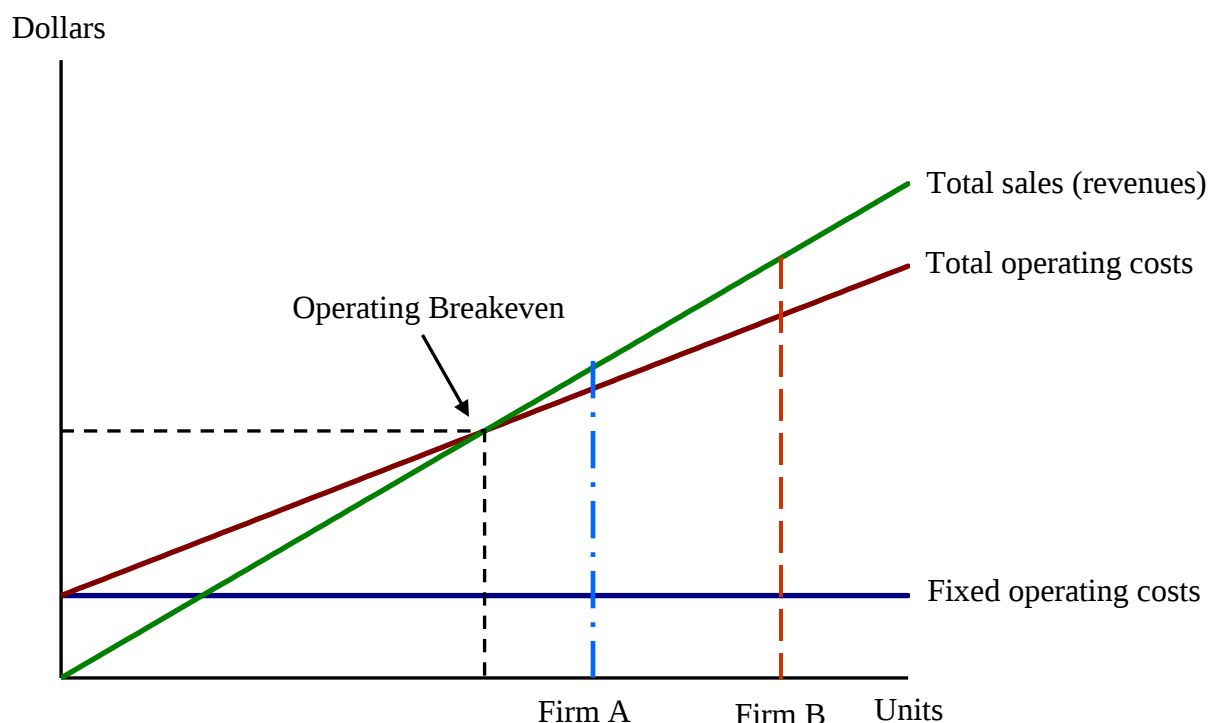
$$\text{DOL} = \frac{\$540.0 - \$432.0}{\$540.0 - \$432.0 - (\$37.8 + \$21.6)} = \frac{\$108.0}{\$48.6} = 2.22\times$$

Consequently, a 1 percent difference in forecasted sales will result in a 2.22 percent difference in forecasted EBIT. Consider what would happen if forecasted sales turn out to be 10 percent less than expected. Following is the income statement for this situation:

	Original Forecast	If Sales are –10% of Forecast	Percent Difference
Net sales	\$540.0	\$486.0	–10.0%
Cost of goods sold	(432.0)	(388.8)	–10.0
Gross profit	\$108.00	\$ 97.2	–10.0
Fixed operating costs, including depreciation	(59.4)	(59.4)	0.0
Earnings before interest and taxes (EBIT)	\$ 48.6	\$ 37.8	–22.2

As you can see, if actual sales turn out to be 10 percent lower than the original sales forecast, EBIT will be 22.2% lower than forecasted. That is, $\Delta \text{EBIT} = \text{DOL} \times (-10\%) = 2.22 \times (-10\%) = -22.2\%$.

- Operating leverage and operating breakeven—generally, the higher a firm’s DOL, the greater the risk associated with its operations; also, the closer a firm operates to its operating breakeven point, the riskier its operations are considered; thus, all else equal, firms with higher DOLs operate closer to their breakeven points.

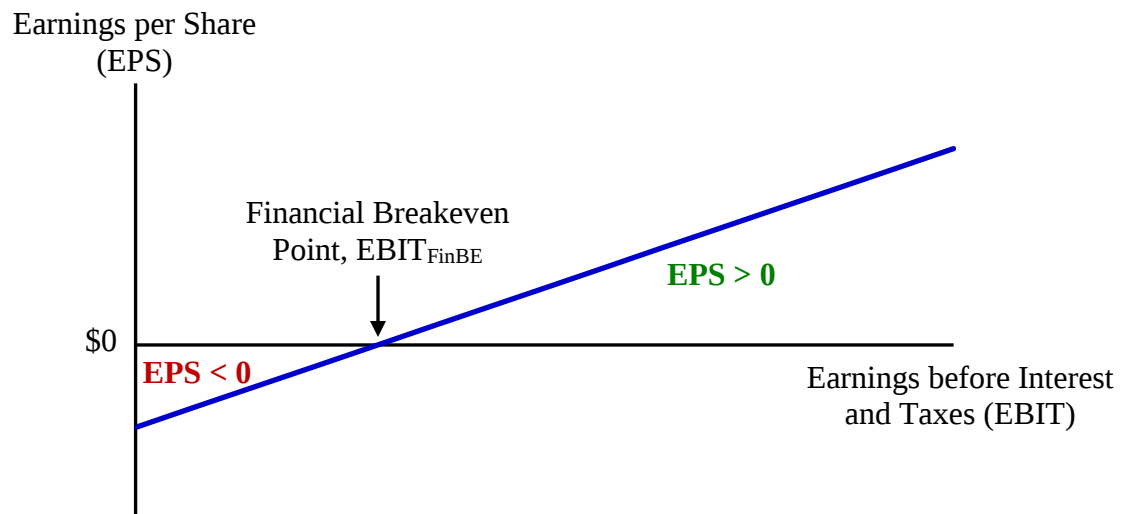


Based on the breakeven chart, we can conclude that $\text{DOL}_A > \text{DOL}_B$.

- Financial Breakeven Analysis—defined as the level of operating income (NOI or EBIT) that covers all fixed financing charges—that is, where earnings per share, EPS, equal zero; for the most part, fixed financial charges include interest paid on debt and preferred stock dividends; for firms that do not have preferred stock, the financial breakeven point, $\text{EBIT}_{\text{FinBE}}$, is simply interest on

debt; most firms do not have preferred stock.

- Breakeven graph—graphically, the financial breakeven point is:



- Breakeven computation--mathematically, the financial breakeven point is stated as:

$$EBIT_{FinBE} = \text{Interest costs} + \frac{\text{Preferred dividend payments}}{1 - \text{Tax rate}}$$

- Using financial breakeven analysis—financial breakeven analysis gives an indication how the firm's mix of debt and preferred stock (fixed financing) affects EPS.
- Financial Leverage—financial leverage exists if the firm has fixed financial charges, such as interest and preferred dividend payments; the degree of financial leverage is the percent change in EPS that results from a particular percent change in net operating income (EBIT); mathematically, the degree of financial leverage, DFL, can be written:

$$DFL = \frac{EBIT}{EBIT - \text{Financial BEP}} = \frac{EBIT}{EBIT - \left(\text{Interest} - \frac{\text{Preferred dividends}}{1 - \text{Tax rate}} \right)}$$

If a firm has no preferred stock, the DFL simplifies to:

$$DFL = \frac{EBIT}{EBIT - \text{Interest}}$$

Generally, a firm with a high DFL is considered to have high risk associated with its financing.

Example: Using the forecasted values, we can compute the DFL for the firm we introduced at the beginning of these notes:

$$DFL = \frac{\$48.6}{\$48.6 - \$12.0} = 1.33 \times$$

Thus, if EBIT is 22.2 percent lower than expected, as shown previously, then net income and EPS will be 29.5 percent lower than expected. If you complete the income statement shown in the section where we discussed DOL, you should find net income is \$15.5, which is 29.5 percent lower than the original forecast.

- Combining Operating and Financial Leverage (DTL)—the degree of total leverage is the combination of DOL and DFL; by definition, DTL is the percent change in EPS that is associated with a particular percent change in sales; mathematically, $DTL = DOL \times DFL$, or:

$$DTL = DOL \times DFL = \frac{\text{Gross profit}}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{EBIT} - \text{Financial BEP}} = \frac{\text{Gross profit}}{\text{EBIT} - \text{Financial BEP}}$$

Example: Continuing with the previous examples, we have:

$$DTL = DOL \times DFL = 2.22 \times 1.33 = 2.95$$

As the example indicates, a 10 percent decline in the forecasted sales resulted in a 29.5 percent decline in net income, and thus in EPS.

All else equal, a higher degree of total leverage, DTL, is associated with greater total risk—both operating risk and financial risk.

- Using Leverage and Forecasting for Control—knowledge of the degree of leverage, whether operating, financial, or both, helps determine how a change in sales will affect income—operating income, net income, or both; greater leverage indicates greater changes in income (either EBIT or net income) will result from changes in sales; greater variability associated with greater leverage suggests greater risk; a firm that is considered to have greater risk will have a higher weighted average cost of capital ($WACC = r$) than a firm that is considered to have less risk.
- Financial Planning and Control Summary Questions—You should answer these questions as a summary for the chapter and to help you study for the exam.
 - What general process must be followed to construct pro forma financial statements? What does AFN mean and why is it important in the construction of pro formas? Why does the process of constructing pro formas have to be repetitive? What are some factors that affect, or might complicate, the process?
 - What is the operating breakeven and financial breakeven. Why is it important to conduct breakeven analyses?
 - What is leverage? What is operating leverage? Financial leverage? What information does the degree of leverage, whether operating, financial, or total, provide?