

## 1 Introduction

1.1 Financial forecasting, an essential element of planning, is **the basis for budgeting activities**. Well-run companies generally base their operating plans on a set of forecasted financial statements.

1.2 Budgeting is a tool for *planning* and *control*.

1.3 The financial statements forecast begins with a **sales forecast** for the next five or so years. Then the assets required to meet the sales targets are determined, and a decision is made concerning how to finance the required assets.

1.4 At that point, income statements and balance sheets can be projected, and earnings and dividends per share, as well as a set of key ratios, can be forecasted.

1.5 Steps in Financial Forecasting:

**Step 1:** Project the firm's sales. Most other forecasts (budgets) follow the sales forecast. The statistical methods of forecasting sales include:

- (a) Time-series analysis
- (b) Regression analysis
- (c) Exponential smoothing

**Step 2:** Project variables such as expenses.

**Step 3:** Estimate the level of investment in current and fixed assets that is required to support the projected sales.

**Step 4:** Calculate the firm's financing needs.



### Key terms:

**Sales forecast** – it is a forecast of a firm's unit and dollar sales for some future period; it is generally based on recent sales trends plus forecasts of the economic prospects for the nation, region, industry, and so forth.

1.6 Factors to be considered in developing a sales forecast:

- To begin the forecasting process, projections are made on the basis of historical growth
- The level of economic activity
- Probable market share in the industry – needs to consider the firm's production and distribution capacity, competitors' capacities, new product introductions by the competitors, and potential changes in technology
- The effects of inflation on prices and interest rates
- Marketing strategies – includes advertising campaigns, promotional discounts, credit terms, and so forth

1.7 Once sales have been forecasted, the future balance sheets and income statements can be forecasted. One of the most useful and simplest techniques for explaining the mechanics of financial statements forecasting, is **the Constant Ratio Method**.

**Key terms:**

**Constant Ratio Method** – it is a method of forecasting future financial statements and future financial requirements that assumes certain financial ratios will remain constant.

**Projected retained earnings** = present retained earnings + projected net income  
- cash dividends paid

## 2 Financial Statement Forecasting: The Constant Ratio Method

### **Step 1:** Forecasted Income Statement

The income statement for the coming year is forecasted in order to obtain an estimate of reported income and the amount of retained earnings the company will generate during the year. In the simplest case, the assumption is made that *all costs will increase at the same rate as sales*; in more complicated cases, specific costs will be forecasted separately.

Example: If sales and costs will grow by 10% in 2006 over the 2005 levels, then the factor  $(1+g) = 1.10$  will be used.

### **Step2:** Forecast the Balance Sheet

If sales are to increase, so must the assets. If the company is operating at full capacity, then each asset account must increase if the higher sales level is to be achieved. More cash will be needed for transactions, higher sales will lead to higher receivables, additional inventory will have to be stocked, and new plant and equipment have to be added.

If assets are to increase, the liabilities and equity must also increase – the additional assets must be financed/funded in some manner. **Spontaneously generated funds** will be provided by accounts payable and accruals. In general, these spontaneous liability accounts will *increase* at the same rate as sales.

In summary, (1) higher sales must be supported by additional assets, (2) some of the assets increases can be financed by spontaneous increases in accounts payable and accruals and by retained earnings, and (3) any shortfall must be financed from external sources, using some combination of debt, preferred stock, and common stock.

### **Step 3:** Raising the Additional Funds Needed

The financial mix or structure will be based on several factors, including: the firm's target capital structure, the effect of short-term borrowing on its current ratio, conditions in the debt and equity markets, and restrictions imposed by existing debt agreements. Interest must be paid on the debt used to help finance the additional funds needed (**AFN**). These payments would *lower* the net income and retained earnings shown in the projected statements. These effects are known as “**financing feedback effects**”.

### **Step 4:** Analysis of the Forecast

The projected statements are analyzed to determine whether the forecast meets the firm's financial targets as set forth in the five-year financial plan. If the statements do not meet the targets, then elements of the forecast must be changed.

**Key terms:**

**Spontaneously Generated Funds** – is the funds that are obtained automatically from **routine** business transactions.

**Additional Funds Needed (AFN)** – Funds that a firm must raise externally through borrowing or by selling new common or preferred stock.

3 The AFN Formula

Most firms forecast their capital requirements by constructing pro-forma income statements and balance sheets as described above. However, when ratios are expected to remain constant, then the following formula is sometimes used to forecast financial requirements:

$$\text{AFN} = (\text{A/S}) \Delta\text{S} - (\text{L/S}) \Delta\text{S} - (\text{PM})(\text{PS})(1-\text{d})$$

Where:

AFN = Additional Funds Needed

A/S = assets that increase spontaneously with sales as a percentage of sales

L/S = liabilities that increase spontaneously with sales as a percentage of sales

$\Delta\text{S}$  = change in sales

PM = profit margin on sales

PS = projected sales

d = dividend payout ratio

3.1 In a forecast of additional funds needed, *external* funds needed equal required increase in assets **minus** the sum of spontaneous increase in liabilities plus increase in retained earnings.

3.2 Why **the AFN formula or the Equation method** may produce results different from those determined under **the pro-forma income statements and balance sheets**?

- Equation method assumes a constant profit margin, a constant dividend payout, and a constant capital structure.
- Financial statement method is more flexible. More important, it allows different items to grow at different rates.

4 Capacity Adjustments

It is important to take into account the capacity adjustment when projecting the AFN.

Formula for calculating the full capacity sales:

$$\text{Full Capacity Sales} = \frac{\text{Actual sales}}{\% \text{ of capacity}}$$

Where:

% of capacity = percentage of capacity at which fixed assets were operated

Example: Fixed assets were being utilized to 96% of capacity. Hence, excess capacity equals 4%. Assumes actual sales was \$3,000 million, and actual fixed assets was \$1,000 million, **full capacity sales** will be:

$$\begin{aligned}\text{Full Capacity Sales} &= \frac{\$3,000 \text{ million}}{96\%} \\ &= \$3,125 \text{ million}\end{aligned}$$

Next, the Target fixed assets/Sales ratio can be calculated.

$$\begin{aligned}\text{Target fixed assets/Sales ratio} &= \frac{\text{Actual fixed assets}}{\text{Full capacity sales}} \\ &= \frac{\$1,000}{\$3,125} \\ &= 0.32 \text{ or } 32\%\end{aligned}$$

Therefore, if sales are to increase to \$3,300 million, then fixed assets would have to increase to \$1,056 million.

$$\begin{aligned}\text{Required level of fixed assets} &= (\text{Target fixed assets/Sales ratio}) (\text{Projected sales}) \\ &= 0.32 \times \$3,300 = \$1,056\end{aligned}$$

The \$1,056 million is the capacity-adjusted forecast figure for the level of fixed assets required.



#### Key terms:

**Economies of Scale** – in economic terms, economies of scale characterizes a production process in which an increase in the scale of the firm causes a *decrease* in the long run average cost of each unit. In determining the AFN, very large sales increases would require very few additional inventories due to economies of scale.

**Lumpy Assets** – are assets that cannot be acquired in small increments but must be obtained in large, *discrete* units. Lumpy assets have a major effect on the fixed assets/sales ratio at different sales levels, and consequently on financial requirements. For example, a small projected sales increase would bring with it a very large financial requirements.

**Summary:** How different factors affect the AFN forecast.

Excess capacity:

- Existence lowers AFN.

Base stocks of assets:

- Leads to less-than-proportional asset increases.

Economies of scale:

- Also leads to less-than-proportional asset increases.

Lumpy assets:

- Leads to large periodic AFN requirements, recurring excess capacity.

Reading/reference materials:

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- Mohr A. Financial Management 101. Advantage Quest Publications Edition 2004