

FINANCIAL FORECASTING

Investment and financing decisions are not made in a vacuum; they are made within the guidelines set down by firms' operating and financial plans.

The need for financial forecasting arises where the future financing needs of the firm is being estimated. When planning the short- or long-term funding requirements of a business, it is more important to forecast the likely cash requirements than to project profitability etc. Whilst profit, the difference between sales and costs within a specified period, is a vital indicator of the performance of a business, the generation of a profit does not necessarily guarantee its development, or even the survival. Bear in mind that more businesses fail for lack of cash than for want of profit.

1. What is a Cash flow?

Normally, the main sources of cash inflows to a business are receipts from sales, increases in bank loans, proceeds of share issues and asset disposals, and other income such as interest earned. Cash outflows include cost of sales, payments to suppliers and staff, capital and interest repayments for loans, dividends, taxation, and capital expenditure.

Net cash flow is the difference between the inflows and outflows within a given period. A projected cumulative positive net cash flow over several periods highlights the capacity of a business to generate surplus cash and, conversely, a cumulative negative cash flow indicates the amount of additional cash required to sustain the business.

Cash flow planning entails forecasting and tabulating all significant cash inflows relating to sales, new loans, interest received etc. and then analyzing in detail the timing of expected payments relating to suppliers, wages, other expenses, capital expenditure, loan repayments, dividends, tax, interest payments etc. The difference between the cash in- and out-flows within a given period indicates the net cash flow. When this net cash flow is added to or subtracted from opening bank balances, any likely short-term bank funding requirements can be ascertained

2. Planning to Forecast Cash Flows

Before using a model for cash flow forecasting, a manager or entrepreneur should:

- Decide the central purpose of the forecasting (internal planning and control, valuations or negotiate of a loan, etc.).
- Identify the target audience (directors, bank manager etc.)
- Set the time intervals and horizon (e.g., monthly, quarterly, or annually)
- Sort out the level of detail required.
- Check that all the necessary key assumptions and data are to hand and have been adequately researched.
- Compile opening balances and income statements for all items which will involve cash flows within the forecasting period.

- Think through the likely impact of the critical assumptions on the cash flow projections. If necessary, prepare preliminary forecasts manually to confirm their overall direction and consider the underlying strategic issues relating to sales, funding, costs, stocks etc. As a guide, sales forecasts and debtor & creditor terms are likely to have the most profound impacts on short-term cash flows.

3. Steps to Consider When Developing Forecasts.

A. Analyze Historical Performance

- To develop and evaluate forecasts of future performance, you must have a sound understanding of the company's past performance.
- Often forecasts of next year's performance shows better results than recent historical performance. Does management have credible strategies and plans to produce better results?

B. Evaluate The Outlook for The Industry

- Estimate industry revenue growth.
- Evaluate industry's competitive structure
- What are the forces that will shape the industry's profitability?
- What are the factors that might affect future industry profitability?
- Entry barriers coming down. (Indicates lower returns)
- Customers becoming more powerful (indicates lower returns)
- Change in technology (more capital expenditures investments)

C. Forecast Key Drivers Items

1. The key ingredient in the financial forecasting process is the sales forecast.
2. Other variables (expenses, working capital) are driven off the sales forecast.
3. Analyze historical level of variables and determine how they may change in the future (e.g., will margins likely increase or decrease; working capital as percentage of sales increase or decrease?)
4. Prepare income statement, balance sheet, and cash flow statement.
5. Determine external financing requirement (i.e. amount of debt or equity capital required from investors).

Forecasting Methods:

The forecasting method is based on either the Pro Forma Statements or Cash Flow Statements. Below is the process of forecasting for each method

1. Forecasting the Pro Forma Statements

Managers are vitally concerned with *future financial statements* and with the effects of alternative assumptions and policies on these *projected*, or *pro forma*, statements. The construction of pro forma statements begins with a *sales forecast*. Based on the sales forecast, the amount of assets necessary to support this sales level is determined. Although some liabilities will increase *spontaneously* with increased sales, if the sales growth rate is rapid, then external capital will be required to support the growth in sales.

Pro forma statements are important for two reasons. First, if projected operating results look poor, management can reformulate its plans for the coming year. Second, it is desirable to plan the acquisition of funds well in advance to ensure that funds will be available when they are needed.

Well-run companies generally base their operating plans on a set of forecasted financial statements. A **sale forecast** for the next five years or so is developed, the assets required to meet the sales target are determined, and a decision is made concerning how to finance the required assets. These forecasts represent the "base case" and are a standard by which to judge alternate forecasts.

Sales Forecast

The sales forecast generally begins with a review of sales for the past 5 to 10 years. If the sales forecast is off, the consequences can be serious. Thus, an accurate sales forecast is critical to the wellbeing of the firm.

The first step is to forecast next year's **income statement**.

1. A sales forecast is needed.
2. Assumptions about the cost of goods sold (% of sales), the tax rate (%), interest charges, and the dividend payout ratio (DPR=% of net income after tax) are made.
3. In the simplest case, costs are assumed to increase at the same rate as sales; in more complicated situations, cost changes are forecasted separately.
4. The objective is to determine how much income the company will earn and then retain for reinvestment in the business during the forecasted year.

The second step is to forecast next year's **balance sheet**.

1. All asset accounts can be assumed to vary directly with sales unless the firm is operating at less than full capacity. If the firm is not operating at full capacity, then fixed assets will not vary directly with sales.
2. Liabilities, equity, or both must also increase if assets increase as asset expansions must be financed in some manner.
3. Certain liability accounts, such as accounts payable (% of sales) and accruals, will increase *spontaneously* with sales. Retained earnings will increase, but not proportionately with sales. The new retained earnings will be determined from the projected income statement. That is:

$$RE_{93} = RE_{92} + NPM \text{ Sales}_{\text{Projected}} (RR)$$

$$RR = \text{Retention Ratio} = 1 - \text{Dividend Payout Ratio (DPR)}$$

4. Other financing accounts, such as short-term debt, long-term debt, and common stock, **are not directly** related to sales and would be kept constant for the first estimations. Changes in these accounts result from managerial decisions; they do not increase spontaneously as sales increase.
5. The difference between projected total assets and projected liabilities and capital is the amount of additional funds needed.

$$\text{Additional Funds Needed} = \text{Total Assets} - (\text{Total Liabilities} + \text{Equity})$$

The third step is the decision on how to finance the additional funds required. Sometimes contractual agreements, such as a limit on the debt ratio, will restrict the firm's financing decisions.

One complexity that arises in financial forecasting relates to *financing feedback*, which are the effects on the income statement and balance sheet of actions taken to finance increases in assets. Financing feedbacks are incorporated into the pro forma financial statements through additional calculations of the projected income statement and balance sheet. For example, if when we financed the additional funds needed with new debt, the new interest payment must be added to the existing interest payment in the income statement. This financing feedback will change the addition to retained earnings in the balance sheet, which in turn results in different AFN. This process of feedback adjustment requires several iterations before the balance sheet is balanced.

Once the pro forma financial statements have been developed, the key ratios can be analyzed to determine whether the forecast meets the firm's financial targets as specified in the firm's financial plan.

Although most firms' forecasts of capital requirements are made by constructing pro forma financial statements as described above, the following formula also is sometimes used to forecast financial requirements:

The formula is as follows:

$$\text{Additional funds needed} = \begin{array}{ccccc} & \text{Required} & & \text{Spontaneous} & \\ & \text{increase -} & & \text{increase} & - \\ & \text{in assets} & & \text{in liabilities} & \\ & & & & \text{Increase in} \\ & & & & \text{retained} \\ & & & & \text{earnings} \end{array}$$

Or

$$AFN(or\ EFN) = \frac{A}{S} \Delta(S) - \frac{L}{S} \Delta(S) - NPM(S_{Projected})(RR)$$

Here, A/S = assets that must increase if sales are to increase, expressed as a percentage of sales, or the required dollar increase in assets per \$1 increase in sales; L/S = liabilities (accounts payable and accruals) that increase spontaneously with sales as a percentage of sales, or spontaneously generated financing per \$1 increase in sales;

Sales Projected = total expected sales for the year in question (note that S_0 = last year's sales); ΔS = change in sales = ($P_{Projected} - S_0$); NPM = Net Profit Margin, or rate of profits after taxes per \$1 of sales; and DPR = the percentage of earnings paid out in dividends (dividend payout ratio).

Inherent in the formula is the assumption that each asset item must increase in direct proportion to sales increases and that designated liability accounts also grow at the same rate as sales. Obviously, these assumptions do not always hold, so its results are not always reliable. Thus, the formula is often used as a supplement to the percent of sales method.

The difference between this forecast and the balance sheet approach is due to the tax deductibility of the depreciation

- The faster a firm's growth rates in sales, the greater its need for additional financing. Higher growth rates require managers to plan very carefully to decide if the additional financing needed is actually available to the firm. Otherwise, they may need to reconsider their projected growth rate.
- Dividend policy as reflected in the payout ratio also affects external capital requirements: the higher the payout ratio, the smaller the addition to retained earnings, and hence the greater the requirements for external capital. Dividend policy may be changed to satisfy internal financing requirements, but this may have a negative impact on stock price and may be met with resistance from investors.
- The amount of assets required per dollar of sales, A/S , is often called the *capital intensity ratio*. This factor has a major effect on capital requirements per unit of sales growth. If the capital intensity ratio is low, then sales can grow rapidly without much outside capital. However, if a firm is capital intensive, even a small growth in output will require a great deal of outside capital.
- Net Profit Margin, NPM, also has an effect on capital requirements. The higher the profit margins the lower the funds requirement; and the lower the profit margin, the higher the requirement. Thus, highly profitable firms can raise most of their capital internally.

The forecasting process is greatly complicated if the ratios of balance sheet items to sales are not constant at all level of sales.

- Where *economies of scale* occur in asset use, the ratio of that asset to sales will change as the size of the firm increases.
- Technological considerations sometimes dictate that fixed assets be added in large, discrete units, often referred to as *lumpy assets*. This automatically creates excess capacity immediately after a plant expansion.
- *Forecasting errors* can cause the actual asset/sales ratio for a given period to be quite different from the planned ratio. This situation can result in excess capacity.

If any of the above conditions apply (economies of scale, lumpy assets, or excess capacity), the A/S ratio will not be a constant, and the percent sales method should not be used. Rather, other techniques must be used to forecast assets levels to determine additional financing requirements. Two of these methods include simple linear regression and excess capacity adjustments.

If one assumes that the relationship between a certain type of asset and sales is linear, then one can use simple linear regression techniques to estimate the requirements for that type of asset for any given sales increase. An estimated regression equation is determined

which provides an estimated relationship between a given asset account and sales. For example, we could state that,

$$\begin{aligned} AR_t &= a + b \text{ Sales}_t \\ \text{Inventory}_t &= a + b \text{ Sales}_t \end{aligned}$$

Since excess capacity may exist in fixed assets, projected sales levels need to be adjusted downward since they were estimated on the assumption of full capacity of fixed assets.

- Full capacity sales is defined as actual sales divided by the percentage of capacity at which the fixed assets operated to achieve these sales:

$$\text{Full Capacity Sales} = \frac{\text{Actual Sales}}{\% \text{ of Capacity at which fixed assets were operated}}$$

- The target fixed assets to sales ratio (TFA Ratio) is equal to the current year's fixed assets divided by full capacity sales:

$$\text{TFA Ratio} = \frac{\text{Actual Fixed Assets}}{\text{Full Capacity Sales}}$$

- The required level of fixed assets (RFA) is equal to the target fixed assets to sales ratio times projected sales:

$$\text{RFA} = \text{TFA Ratio} (\text{Forecasted Sales})$$

Financial forecasting and planning are vital to corporate success, but planning is for ought unless the firm has a control system (1) that ensures implementation of the planned policies and (2) that provides an information feedback loop which permits rapid adjustments if the market conditions upon which the plan is based change.

In a financial control system, the key question is "How is the firm doing in 200X as compared with our forecasts, and if actual results differ from the budget, what can we do to get back on track?"

The basic tools of financial control are *budgets* and *pro forma financial statements*. These express management's targets and are compared with actual corporate performance to determine *variances*, the difference between actual and target values. By focusing on variances, managers can manage by exception, concentrating on those variables that are most in need of Improvement and leaving lone those operations that are running smoothly.

2. Cash Flow Statements

The key value drivers for this forecast are:

1. Sales growth rate
2. Operating profit margin
3. Cash tax rate
4. Additional working capital requirements

5. Additional fixed asset requirements

4. The Use of Variances in Cash-flow Forecasting

The accuracy of cash flows forecasting efforts is judged by examining the variances between actual results and forecasted results. The significance of a variance is further evaluated by comparing the size of the variance to the total in-flows or out-flows.

The manager in charge of forecasting needs to compare the quarterly or annually actual and forecast data for each cash in-flow and out-flow item over time before it can reliably forecast cash in-flows and out-flows for the following years.

Development of quarterly (annually) variance reports will provide the management with timely and critical warning of both adverse and favorable changes in cash flows.

Quarterly and annually data will enable the manager to determine the cause of the variances and respond to them in a timely fashion. Ideally, the detailed summaries of the actual, forecast, and variance data including variance percentages and amounts for each quarter or year. These variance summaries should also include summary explanations of the variances and management's strategies for addressing them.

5. Cash-flow Forecasting Strengths and Pitfalls

A. Strengths

The strength of forecasting is based on the broad knowledge, experience, and expertise of its management, which will be applied to the analysis, comparison, and distribution of forecasts and reports. Senior and middle managers demonstrated ready knowledge of the factors that impact cash flows and the potential ramifications of changes in cash flow resulting from changes in the industry and economy. The broad knowledge, experience, and expertise of the managers enable them to identify and address both favorable and adverse changes in cash flows. The managers accept the need to revise and improve the cash-flow forecasts as new data are made available and as time and resources allow improvement of current procedures and forecasts.

B. Pitfalls

When preparing cash flow projections, be aware of the dangers of:

- Overstating sales forecasts
- Underestimating costs and delays likely to be encountered
- Ignoring historic trends or performances by debtors etc.
- Making unduly optimistic assumptions about the availability of bank loans, credit, grants, equity etc.
- Seeking spurious accuracy whilst failing to recognize matters of strategic importance

These problems can arise as the result of a lack of foresight or knowledge, or because of excessive optimism. They can lead to under-estimation of the cash and other resources required to sustain or develop a business with potentially disastrous consequences.

When forecasting bank requirements and preparing cash flow projections, realistic views should always be taken about future prospects. There is often merit in compiling "worst"

case projections to complement "most likely" or "best" forecasts and to accept that the "worst" case might occur and to plan accordingly.