Overview and Learning Objectives

Overview

This chapter begins with an introduction to the financial statement analysis, and discusses how to use this technique to evaluate the strengths and weaknesses of a company. Then, it presents fundamental information regarding financial planning process and model. Financial planning plays a crucial role in a company's strategic planning because it provides a framework that enables decision makers to visualize the interactions of different functional areas (e.g. economics, accounting, marketing, strategic management, operations management) with finance in achieving the firm's objectives. It also demonstrates how the three major financial decisions impact one another.

Learning Objectives

After reading course materials on this chapter, students should be able to:

- Conduct a comprehensive financial statement analysis on a company, using both the cross-sectional and time series approaches. This should include both the computation and interpretation of ratios that measure the performance of various areas of activities and management.
- Identify the financial strengths and weaknesses of a company.
- Explain the financial planning process.
- Identify and explain the ingredients of a basic financial planning model.
- Use the percent-of-sales method in the Pro Forma Financial Statement context to estimate the amount of external funds needed (EFN) for financing growth.
- Explain and estimate the sustainable versus internal growth in sales.
- Discuss the weaknesses of financial planning models.

Financial Management I (FIN 531)

Financial Statement Analysis (Ref.: Chapter 3 Sections 1~3)

The objective of the financial statement (or ratio) analysis is to identify the strengths and weaknesses of a company by examining a set of ratios that measure the performance of various areas of its activities and management. This is achieved mainly through the cross-sectional (or peer) analysis, i.e., the comparison of the company's ratios to those of its competitors operating in the same industry. Since some ratios are driven by the characteristics of the operating environment and the lines of business that the company is operating in, it is critical to control for the industry effect in the cross-sectional analysis. The time-series (or trend) analysis provides further insight on the performance of the company by indicating whether the financial health of the company is improving or deteriorating over time both on its own term and relative to its peers.

Financial Management I (FIN 531)

Financial Statement Analysis: Ratios

The list of ratios, discussed in this review of the topic of financial statement analysis, covers five areas of activities and management. The formulae and results for the list of ratios, using the U.S. Composite Corporation example, can be found on the last two pages of the lecture notes. Also, please refer to the lecture slides for specific questions addressed by individual ratios and the text for the computation and discussion of individual ratios.

1. Short-Term Solvency (Liquidity) Ratios

Measures the ability of the company to meet its short-term financial obligations, i.e., those due within a year.

- Current Ratio*
  - = Current Assets/Current Liabilities
    How much current assets are there to cover each dollar of current liabilities? What is the cushion of safety?
- Quick Ratio*
  - = (Current Assets − Inventories)/Current Liabilities
    How much 'liquid or quick' assets are there to meet the short-term obligations?

* In general, a higher value is preferred.

2. Activity (Efficiency or Asset Management) Ratios

How effective is the company utilizing its resources to generate sale revenues? How well is the company managing its assets (or investment)?

- - Also known as Asset Management Rations or Efficiency Rations
- Total Asset Turnover Ratio*
  - = Sale Revenues/Total Assets (average)
    How much sale revenues are generated by each dollar invested in total assets?
- Fixed Asset Turnover Ratio*
  - = Sale Revenues/Fixed Assets (average)
    How much sale revenues are generated by each dollar invested in fixed assets?
- Inventory Turnover Ratio*
  - = Cost of Goods Sold/Inventory (average)
    How fast can the company sell its inventories?
- Receivables Turnover Ratio*
  - = Sale Revenues/Accounts Receivable (average)
- Days in Inventory**
  - = Days in Period/Inventory Turnover
    How long does the company hold its inventories?
- Average Collection Period**
  - = Days in Period/Receivables Turnover
    How long does it take the company to collect cash from its customers?

* In general, a higher value is preferred.
** In general, a shorter period is preferred.

Financial Management I (FIN 531)

Financial Statement Analysis: Ratios (cont'd.)

3. Long-Term Solvency Ratios

- Financial Leverage Ratios
    - To what extent does the company use debt financing?
- Total Debt Ratio*
    - = Total Debt/Total Assets
    What proportion of the company's assets is financed with debt?
- Debt-to-Equity Ratio*
    - = Total Debt/Total Equity
    How much does the company borrow for each dollar of the owner's investment?

* A high value is associated with high risk, while a low value may suggest underutilization of tax benefits from debt financing. As such, a 'middle-of-the-road' approach on debt ratios is preferred.

- Interest Coverage Ratio
    The ability of the company to cover finance charges associated with its use of financial leverage from its operation.
    - Times Interest Earned (TIE) Ratio
        - = EBIT/Interest Expense
        How many dollars of operating income are there to cover each dollar of interest expense?
        What is the margin of safety in the ability to pay interest?
    - In general, a higher value is preferred.

4. Profitability Ratios

How profitable are the operation and investment of the company?

- On sales
    - Net Profit Margin
        - = Net Income/Sale Revenues
        What is the amount of after-tax profit for each dollar of sales?
    - Gross Profit Margin
        - = EBIT/Sale Revenues
        What is the operating return on sales?
        How effective is the company keeping costs of production low?
- On total investment
    - Return on Assets (ROA)
        - = Net Income/Total Assets (average)
        What is the ability of the company to generate after-tax profit with its investment, i.e. total assets?
    - Basic Earnings Power
        - = EBIT/Total Assets (average)
- On owners' investment
    - Return on Equity (ROE)
        - = Net Income/Total Equity (average)
        What is the ability of the company to generate after-tax profit for the owner's investment?
        - A high value is preferred.

Du Pont Equation

A framework to examine the overall performance of the company with an emphasis on the profitability of owners' investment, i.e., ROE, the 'bottom-line' ratio, while incorporating the performance measures on other major areas of activities. Be specific, this model links the returns on sales, the overall asset management and debt management to the return on equity.

- ROE = (Net Profit Margin) × (Total Asset Turnover) × (Equity Multiplier)
  - Where Equity Multiplier = Total Assets/Total Equity
    - Another measure of financial leverage
    - How much total assets are financed by owners' investment?

Financial Management I (FIN 531)

Financial Statement Analysis: Ratios (cont'd.)

5. Market Value and Other Ratios

- Sustainable Growth Rate
    - = ROE × (Retention Ratio)
      How fast can the company grow with internally generated resources from its operation?
        - Where Retention Ratio = 1 − Payout Ratio
          Payout Ratio = Cash Dividends/Net Income (or DPS/EPS)
- Market Value Ratios
  Proxies for the perceived growth potential of the company
    - Price-to-Earnings (PE) Ratio
        - = Stock Price/Earnings Per Share (EPS)
          How much are investors willing to pay for each dollar of earnings per share?
    - Market-to-Book (M/B) Value Ratio
        - = Stock Price/Book Value of Equity Per Share
          A high value is preferred, and a negative value is meaningless

In conducting a financial statement analysis, we should not only apply the peer and trend analyses on individual ratios, we will get more insight on the strengths and weaknesses of the company by examining the interaction among various ratios both within the same category but also across different categories.

For further discussions and review of issues concerning financial statements analysis, please reference Chapter 3 Sections 1~3 of the text as well as the text of your ACC505 or its equivalent!

Financial Management I (FIN 531)

Financial Statement Analysis Definitions

Short-term Solvency Ratios

Current ratio = Current assets ÷ Current liabilities

Quick ratio = (Current assets − Inventory) ÷ Current liabilities

Activity Ratios

Total asset turnover = Total operating revenues ÷ Average total assets

Receivables turnover = Total operating revenues ÷ Average receivables

Average collection period = Days in period ÷ Receivables turnover

Inventory turnover = Cost of goods sold ÷ Average inventory

Days in inventory = Days in period ÷ Inventory turnover

Financial Leverage Ratios

Debt ratio = Total debt ÷ Total assets

Debt-equity ratio = Total debt ÷ Total equity

Equity multiplier = Total assets ÷ Total equity

Interest coverage = Earnings before interest and taxes ÷ Interest

Profitability Ratios

Net profit margin = Net income ÷ Total operating revenue

Gross profit margin = Earnings before interest and taxes ÷ Total operating revenues

Net return on assets = Net income ÷ Average total assets

Gross return on assets = Earnings before interest and taxes ÷ Average total assets

Net[Gross] Return on assets (ROA) = Net[gross] profit margin × Asset turnover

Return on equity (ROE) = Net income ÷ Average stockholders' equity

Payout ratio = Cash dividends ÷ Net income

Retention ratio = Retained earnings ÷ Net income = 1 − Payout ratio

Market value Ratios

Price-to-earnings (P/E) ratio = Market price per share ÷ Earnings per share

Dividend yield = Dividend per share ÷ Market price per share

Market-to-book (M/V) ratio = Market price per share ÷ Book value per share

Tobin's Q ratio = (Market value of debt + Market value of equity) ÷ Replacement value of total assets

Financial Management I (FIN 531)

Financial Statement Analysis (Results)

These ratios are calculated for the U.S. Composite Company in the textbook. The Balance Sheet and Income State data are provided below.

Balance Sheet

Assets	20X2	20X1	Liabilities (Debt) and Stockholder's Equity	20X2	20X1
Current assets:			Current Liabilities:		
Cash and equivalents	$140	$107	Accounts payable	$213	$197
Accounts receivable	294	270	Notes payable	50	53
Inventories	269	280	Accrued expenses	223	205
Other	58	50	Total current liabilities	$486	$455
Total current assets	$761	$707			
			Long-term liabilities:		
Fixed assets:			Deferred taxes	$117	$104
Property, plant, and equipment	$1,423	$1,274	Long-term debt	471	458
Less accumulated depreciation	-550	-460	Total long-term liabilities	$588	$562
Net property, plant, and equipment	873	814			
Intangible assets and other	245	221	Stockholder's equity:		
Total fixed assets	$1,118	$1,035	Preferred stock	$39	$39
			Common stock ($1 per value)	55	32
			Capital surplus	347	327
			Accumulated retained earnings	390	347
			Less treasury stock	-26	-20
			Total equity	$805	$725
Total assets	$1,879	$1,742	Total liabilities and stockholder's equity	$1,879	$1,742

Income Statement

Total operating revenues	$2,262
Cost of goods sold	- 1,655
Selling, general, and administrative expenses	- 327
Depreciation	- 90
Operating income	$190
Other income	29
Earnings before interest and taxes	$219
Interest expense	- 49
Pretax income	$170
Taxes	- 84
Current: $71	
Deferred: $13	
Net income	$86
Retained earnings:	$43
Dividends:	$43

Results

Short-term solvency:

Current ratio = 1.57
Quick ratio = 1.01

Activity:

Average total assets = 1810.5
Total asset turnover = 1.25
Receivables turnover = 8.02
Average receivables = 282
Average collection period = 45.5 days
Inventory turnover = 6.03
Average inventory = 274.5
Days in inventory = 60.5 days

Financial leverage:

Debt ratio = 0.57
Debt-equity ratio = 1.33
Equity multiplier = 2.33
Interest coverage = 4.5 times

Profitability:

Net profit margin = 3.8%
Gross profit margin = 9.7%
Net return on assets (Net ROA) = 4.75%
Gross return on assets (Gross ROA) = 12.1%
Return on equity (ROE) = 11.27%
Payout ratio = 0.5 **-->** Retention ratio = 1 − 0.5 = 0.5
Sustainable growth rate = 11.27% * 0.5 = 5.6%

Financial Management I (FIN 531)

Financial Planning Process: An Overview (Ref: Section 3.4)

As a crucial element in the strategic planning of a firm, financial planning helps the management visualize the implications of corporate strategies on the firm's financial position, and identifie a path for the firm to achieve its goals. The financial planning process involves aggregating the input estimates on resources needed for investment in new assets, i.e., capital budgeting decision, from each division and operational unit, to the corporate level.

By nature, the financial planning process involves uncertainty in the estimates and hence risk analysis such as decision tree analysis, scenario analysis, sensitivity analysis, and even simulation analysis, are used in practice.

The goals of financial planning are to:

1. Identify interactions among different projects/departments, as well as those among investing, financing and operating activities of the firm;
2. Evaluate financing and investment options jointly;
3. Ensure that the financial plan is feasible, and is consistent with the long-term firm value maximization objective;
4. Avoid surprises by providing a benchmark for identifying discrepancies, and a process to monitor plan implementation and adjust for changing environment.

Financial Management I (FIN 531)

Financial Planning Model & Process: The Ingredients (Ref: Section 3.5)

Typically, the financial planning model/process is composed of the ingredients/steps below.

1. Economic Assumptions and Sales Forecast

Assumptions on the economic environment (expected levels and changes in inflation and interest rates, GNP growth, industry growth, etc.) over the forecast horizon necessarily underlie any financial planning model. Given the estimated economic environment, the most important variable in the financial model is the forecast of expected future sales. This is the critical element of the analysis because many other financial variables (e.g. cost of goods sold, taxes, assets, working capital, and profitability) are usually expressed as a percentage of sales. The financial planning model will be only as good as the sales forecast.

In addition to the economic and other factors that determine the overall demand for the product(s), the sale forecast of each project/department also takes into account of the firm's market share, production capacity, new product development, marketing effort and effectiveness, etc.

2. Pro Forma Financial Statements

Preparation of a system of pro forma financial statements (balance sheet, income statement, and sources-and-uses-of-cash statement) that can be used to analyze the impact of the plan on the financial position of the firm. This system also facilitates monitoring of the implementation of the plan and adjustments of the plan for the changing environment.

3. Asset and Financing Requirements

Basing on the sales forecast, the financial plan will describe the assets and net working capital requirements associated with the proposed capital spending (RHS of the Balance Sheet). Then, the natural next step is to determine the financing requirements needed to support the proposed capital spending such that the assets and net working capital requirements will be met (LHS of the Balance Sheet). All these can be done with the pro forma financial statements. In addressing the financing requirements, the capital structure and the dividend policy of the firm will be considered. In many cases, the firm needs to consider the type of security and the issuance method in raising external funding with the assistance of investment bankers.

4. The Plug Variable

As long as not all financial statement variables change at the same rate, a variable plays the role of the Plug to balance the pro forma statements. The plug variable can be from the balance sheet or the income statement. For instance, the plug can be the amount of additional equity or (long-term or short-term) debt capital needed to sustain the firm's growth per the financial plan. The role of the plug variable is to make the Balance Sheet balance.

Financial Management I (FIN 531)

The Percent-of-Sales Approach (Ref: Section 3.5)

As most firms create value for their shareholders by investing in value creating projects, which typically result in increasing sales, a popular approach in financial planning is the percent-of-sales approach. The key input variable of this approach is the sales forecast, which is expressed as an annual growth rate in dollar sale revenues. This approach assumes that most financial variables can be expressed as a percentage of the sales. For those variables that are independent of sales, their levels from the previous fiscal year ('constant') will be used as the estimates in the Pro Forma financial statements in order to determine the amount of the plug, i.e., the External Funds Needed (EFN).

By assuming that all income statement variables can be expressed as a percentage of the sales, and the firm adopts a fixed dividend payout policy, the procedures of the percent-of-sales approach to determine the plug (EFN) can be summarized as follows: **(Please reference the IMPORTANT NOTE section below)**

1. Express balance-sheet items that vary with sales as a percentage of sales.
2. Multiply the percentages determined in step 1 by projected sales to obtain the amount for the future period.
3. When no percentage applies, simply insert the previous balance-sheet figure into the future period.
4. Computer Projected retained earnings as
   Present retained earnings + Projected net income − Cash dividends = Projected retained earnings.
5. Add the asset accounts to determine projected assets. Next, add the liabilities and equity accounts to determine the total financing; any difference is the shortfall. This equals the external funds needed (EFN).
6. Use the plug to fill EFN.

Assuming that short-term debt, but NOT long-term debt, varies proportional with the sales level, we can express:

EFN = (Assets/Sales)× Δ Sales − (Spontaneous Liabilities/Sales) × Δ Sales − (PM × projected sales) × (1 − d),

where PM is the net profit margin (NI/Sales) and d is the dividend payout ratio.

IMPORTANT NOTE: While the above EFN equation provides a handy way to estimate the External Financing Needed (or the Plug), this equation is greatly restricted by the assumption that the entire income statement can be expressed as a percentage of sales as discussed above. However, the Interest Expenses item on the income statement does NOT necessarily vary proportionally with the sales level given that long-term debt does not vary proportionally with the sales level. This will result in the level of Net Income NOT varying proportional to the sales level as well. Hence, the above EFN equation will NOT hold! Another weakness in the above EFN equation could be due to the fact that Fixed Assets (on the balance sheet) and hence the Depreciation Expenses (on the income Statement) may not vary proportionally with the sales level.

As such, you are strongly advised to **construct the Pro Forma financial statements according to the given information and conditions to estimate the EFN**, instead of using the above EFN equation! Please see the related post on the Discussion forum for a numerical illustration on how to use the Pro Forma financial statements to estimate EFN!

Financial Management I (FIN 531)

The Percent-of-Sales Approach (cont'd.)

A Brief Example

Rosengarten Corporation has projected a **25% increase** in its current sales of $1,000 for the coming year.

Total costs are expected to continue to run at **80% of sales** and the tax rate will remain at 34%.

The firm has a policy of paying out a constant fraction of net income in the form of a cash dividend (i.e., the payout ratio based on most recent year = 44/132 = 33 1/3%.) Thus, the retention or plowback ratio is (1 − 33 1/3%) = 66 2/3%.

The firm believes that all of its assets grow directly with its level of sales (as a percent of sales, e.g. inventory is 60% of sales).

The firm believes that only account payable varies with sales but not other items on the RHS of the B/S.

Will the firm be able to finance growth in sales with retained earnings and new debt?

The Percentage Sales Method: EFN

The external funds needed for a 25% growth in sales:

$$\left[\left(\frac{Assets}{Sales}\right) \times \Delta Sales\right] - \left[\frac{SpLiab}{Sales} \times \Delta Sales\right] - \left[PM \times Projected\,Sales\right) \times (1-d)]$$

$$\left(\frac{Assets}{Sales}\right) = \frac{\$3000}{\$1000} = 3 \qquad \left(\frac{SpLiab}{Sales}\right) = \frac{\$300}{\$1000} = 0.3$$

$SpLiab$ = Spontaneous liabilities (those vary with sales)

PM = Net profit margin = 0.132;

d = Dividend payout ratio = 1/3
$\Delta Sales$ = Projected change in sales = $250

The amount of external financing needed:

$$\left[\left(\frac{Assets}{Sales}\right) \times \Delta Sales\right] - \left[\frac{SpLiab}{Sales} \times \Delta Sales\right] - [PM \times ProjectedSales \times (1-d)]$$

$$= \left(\frac{3000}{1000} \times \$250\right) - \left(\frac{300}{1000} \times \$250\right) - (0.132 \times \$1250 \times 2/3)$$

$$= \$565$$

However, while accounts payable normally vary directly with sales, other forms of debt especially long-term debt generally do not vary with sales because they are part of the capital structure decision determined by the management. Hence, a more general expression for the plug variable is:

EFN = (Assets/Sales)× Δ Sales – (SpLiab/Sales) × Δ Sales – (PM × projected sales) × (1 – d), where SpLiab = Spontaneous liabilities (i.e., those, such as accounts payable, vary directly with sales)

NOTE: In this numerical illustration, the implicit (though not valid) assumption is that interest expenses also vary proportionally with the sales level such that the same net profit margin applies in this simplified illustration of how the EFN equation works. But this will give us an INCORRECT estimate for EFN!

Please reference the spreadsheet titled "EFN with Pro Forma Financial Statements" posted on Chapter 3's Discussion Forum for the numerical illustration on how to use Pro Forma financial statements to CORRECTLY estimate the EFN!

Financial Management I (FIN 531)

What Determines Growth? (Ref: Section 3.5)

A. Sustainable Growth Rate

In the earlier discussion, it is assumed that the firm will seek external equity funds to finance its growth by issuing new shares of equity. However, many firms are reluctant to issue new shares of stock due to the adverse price effect of such decision on existing shares. It is natural to ask the question – How fast can a firm grow solely with internally generated equity capital (i.e., earnings retained) and external debt financing? In other words, what is the ability of a firm to grow without raising external equity capital? This growth rate is called the sustainable growth rate (in sales). Reference the text for further discussion on this topic.

Uses of the Sustainable Growth Rate:

- A commercial lender would want to compare a potential borrower's actual growth rate with their sustainable growth rate.
- If the actual growth rate is much higher than the sustainable growth rate, the borrower runs the risk of "growing broke" and any lending must be viewed as a down payment on a much more comprehensive lending arrangement than just one round of financing.

The assumptions of the sustainable growth model are:

- Assets grow in proportion to sales: $\%\Delta TA = \%\Delta S$
- Net income is a constant proportion of sales: $\%\Delta NI = \%\Delta S$
- Dividend payout (d) and debt equity (D/E) ratios are fixed
- Number of shares outstanding is fixed, i.e., NO external equity financing

The sales growth that can be sustained without requiring external equity financing is:

$$\frac{\Delta S}{S_0} = \frac{p \times (1-d) \times (1+L)}{T - (p \times (1-d) \times (1+L))}$$

where

       $T = TA/S$ = ratio of total assets to sales
       p (or PM) = NI/S = ratio of net income to sales (net profit margin on sales)
       d = Dividend/NI = dividend payout ratio
       L = D/E = debt-equity ratio

Alternatively, the **Sustainable growth rate** can be expressed as:

(ROE × b) / (1 − ROE × b), where $b = 1 − d$ = earnings retention ratio; and ROE = NI/E = return on equity

Assumptions 1 and 2 hold investment policy, operations, and returns on investment constant. Assumptions 3 and 4 hold dividend and financing policies constant. The firm's sustainable growth rate depends on its profit margin (i.e., operating efficiency), its asset turnover (i.e., asset management efficiency), its dividend policy, and its capital structure (or financing) policy. The firm cannot grow at a rate faster than $\Delta S/S_0$ unless one of these factors changes or the firm seeks new outside equity financing.

For instance, a firm can do one or more of the following to increase the sustainable growth rate:

       Sell new shares of stock
       Increase its reliance on debt

Reduce its dividend-payout ratio
Increase profit margins
Decrease its asset-requirement ratio

Financial Management I (FIN 531)

What Determines Growth? (cont'd.)

A. Sustainable Growth Rate

Numerical Illustration

Consider the following information for Triathlete Corporation:

Last year's sales $100,000
Last year's earnings $5,000
Dividends paid $2,000

Assets		Liabilities and Owners' Equity	
Current Assets	$50,000	Current Liabilities	$20,000
Fixed Assets	$50,000	Equity	$80,000

What is the maximum growth rate the firm can sustain under the conditions of Section 3.6 without resorting to external equity funds or changing its financing, investment, or dividend policy?

T = Total Assets/Sales = 1.0
L = Debt/Equity = 0.25
p (or PM) = Net profit margin on sales = 5%
d = Dividend payout ratio = 40%

Sustainable sales growth rate =
$$\frac{[(.05)(1-.4)(1+.25)]}{[1-(.05)(1-.4)(1+.25)]} = 3.9\%$$

Alternatively, the Sustainable sales growth rate can be expressed as:

(ROE × b) / (1 − ROE × b), where b = 1 − d = earnings retention ratio; and ROE = NI/E = return on equity

In the above numerical illustration, ROE = 5,000/80,000 = 0.0625; and b = 1 − 0.4 = 0.6

Hence, Sustainable sales growth rate = (0.0625×0.6)/(1−0.0625×0.6) = 3.9%

Financial Management I (FIN 531)

What Determines Growth? (cont'd.)

B. Internal Growth Rate

In the above discussion, it is assumed that the firm will seek external debt capital to partially finance its growth while maintaining a constant debt ratio. Our next question is – How fast can a firm grow solely with internally generated capital? In other words, what is the ability of a firm to grow without raising any form of external capital? This growth rate is called the Internal growth rate (in sales). Reference the text for further discussion on this topic.

The Internal sales growth rate can be expressed as:

(ROA × b) / (1 − ROA × b), where ROA = NI/TA = return on assets

In the numerical illustration on the previous page, ROA = 5,000/100,000 = 0.05; and b = 1 − 0.4 = 0.6

Hence, Internal sales growth rate = (0.05×0.6)/(1−0.05×0.6) = 3.1%

Financial Management I (FIN 531)

Some Caveats of Financial-Planning Models (Ref: Section 3.6)

The Simultaneity Problem

In the earlier discussion, the "plug" variable in the financial model is the amount of additional capital, usually external equity, necessary to sustain growth and meet the investment requirements given the financing and dividend policies of the firm.

There is one nuance in the calculation of the plug variable that is not discussed in the text. A first guess at the plug variable is the difference between the projected assets and projected liabilities and equity. However, if projected assets exceed projected liabilities and equity (a surplus), then excess assets may be invested and an after-tax rate of return earned. If projected liabilities and equity exceed projected assets (a deficit), then external funds are needed. If the firm maintains its current capital structure (one of the assumptions of the financial planning model), then debt must be issued, incurring additional interest payments that will affect net income and hence retained earnings (internal funds). This problem of simultaneity (the "balancing problem"), which highlights the interactive nature of the financial planning process, is addressed by Kester [1987]. One approach is to solve for external funds needed iteratively. The Solver function in Microsoft Excel® is an excellent tool for this problem.

Two common criticisms of financial planning models are:

1. Financial planning models are too simple. The model introduced in this chapter is a good beginning for the blueprint of financial models. In practice, companies use more sophisticated approaches to develop pro-forma financial statements. However, sales forecast often remains the most important variable. A good financial model should recognize the interaction between investment and financing policies. For example, if external funds are needed, the issuing costs and additional tax benefits should be incorporated in the capital budgeting analysis of the proposed projects. This is another simultaneity problem because the amount of external funds needed depends on the number of positive net present value (NPV) projects.
2. Financial planning models do not indicate which financial policies are the best. If the capital structure of the firm is assumed fixed, then the Adjusted Present Value (APV) approach can be used to estimate the present value of the financing effects. If the firm wants to change its capital structure, then we face the dilemma of capital structure policy. These issues are beyond the scope of this course, and will be discussed in FIN581 (Financial Management II).

Financial Management I (FIN 531)