

What is Financial Planning

Firms must plan for both the short term and the long term. Short-term planning rarely looks further ahead than the next 12 months. It seeks to ensure that the firm has enough cash to pay its bills and that short-term borrowing and lending is arranged to the best advantage. We discuss short-term planning in the next chapter.

Here we are concerned with long-term planning, where a typical planning horizon is 5 years, although some firms look out 10 years or more. For example, it can take at least 10 years for an electric utility to design, obtain approval for, build, and test a major generating plant.

Long-term financial planning focuses on the firm's long-term goals, the investment that will be needed to meet those goals, and the finance that must be raised. But you can't think about these things without also tackling other important issues. For example, you need to consider possible dividend policies, for the more that is paid out to shareholders; the more the external financing that will be needed. You also need to think about what is an appropriate debt ratio for the firm. A conservative capital structure may mean greater reliance on new share issues. The financial plan is used to enforce consistency in the way that these questions are answered and to highlight the choices that the firm needs to make. Finally, by establishing a set of consistent goals, the plan enables subsequent evaluation of the firm's performance in meeting those goals.

Financial Planning Focuses on the Big Picture

Many of the firm's capital expenditures are proposed by plant managers. But the final budget must also reflect strategic plans made by senior management. Positive-NPV opportunities occur in those businesses where the firm has a real competitive advantage. Strategic plans need to identify such businesses and look to expand them. The plans also seek to identify businesses to sell or liquidate as well as businesses that should be allowed to run down.

Strategic planning involves capital budgeting on a grand scale. In this process, financial planners try to look at the investment by each line of business and avoid getting bogged down in details. Of course, some individual projects are large enough to have significant individual impact. For example, the telecom giant Verizon recently announced its intention to spend billions of dollars to deploy fiber-optic-based broadband technology to its residential customers, and you can bet that this project was explicitly analyzed as part of its long-range financial plan. Normally, however, financial planners do not work on a project-by-project basis. Smaller projects are aggregated into a unit that is treated as a single project.

At the beginning of the planning process the corporate staff might ask each division to submit three alternative business plans covering the next 5 years:

- 1: A best-case or aggressive growth plan calling for heavy capital investment and rapid growth of existing markets.
- 2: A normal growth plan in which the division grows with its markets but not significantly at the expense of its competitors.
- 3: A plan of retrenchment if the firm's markets contract. This is planning for lean economic times.

The plan will contain a summary of capital expenditures, working capital requirements, as well as strategies to raise funds for these investments.

Why Build Financial Plans?

Firms spend considerable energy, time, and resources building elaborate financial plans. What do they get for this investment?

Contingency Planning

Planning is not just forecasting. Forecasting concentrates on the most likely outcomes, but planners need to worry about unlikely events as well as likely ones. If you think ahead about what could go wrong, then you are less likely to ignore the danger signals and you can respond faster to trouble.

Companies have developed a number of ways of asking “what-if” questions about both individual projects and the overall firm. For example, managers often work through the consequences of their decisions under different scenarios. One scenario might envisage high interest rates contributing to a slowdown in world economic growth and lower commodity prices. A second scenario might involve a buoyant domestic economy, high inflation, and a weak currency.

The idea is to formulate responses to inevitable surprises. What will you do, for example, if sales in the first year turn out to be 10 percent below forecast? A good financial plan should help you adapt as events unfold.

Considering Options

Planners need to think whether there are opportunities for the company to exploit its existing strengths by moving into a wholly new area. Often they may recommend entering a market for “strategic” reasons—that is, not because the immediate investment has a positive net present value but because it establishes the firm in a new market and creates options for possibly valuable follow-on investments.

For example, Verizon’s costly fiber-optic initiative would never be profitable strictly in terms of its current uses, for phone or conventional Internet applications. But the new technology gives Verizon *options* to offer services that may be highly valuable in the future, such as the rapid delivery of an array of home entertainment services. The justification for the huge investment lies in these potential growth options.

Forcing Consistency

Financial plans draw out the connections between the firm’s plans for growth and the financing requirements. For example, a forecast of 25 percent growth might require the firm to issue securities to pay for necessary capital expenditures, while a 5 percent growth rate might enable the firm to finance capital expenditures by using only reinvested profits.

Financial plans should help to ensure that the firm’s goals are mutually consistent. For example, the chief executive might say that she is shooting for a profit margin of 10 percent and sales growth of 20 percent, but financial planners need to think whether the higher sales growth may require price cuts that will reduce profit margin.

Moreover, a goal that is stated in terms of accounting ratios is not operational unless it is translated back into what that means for business decisions. For example, a higher profit margin can result from higher prices, lower costs, or a move into new, high-margin products. Why then do managers define objectives in this way? In part, such goals may be a code to communicate real concerns. For example, a target profit margin may be a way of saying that in pursuing sales growth, the firm has allowed costs to get out of control.

The danger is that everyone may forget the code and the accounting targets may be seen as goals in themselves. No one should be surprised when lower-level managers focus on the goals for which they are rewarded. For example, when Volkswagen set a goal of 6.5 percent profit margin, some VW groups responded by developing and promoting expensive, high-margin cars. Less attention was paid to marketing cheaper models, which had lower profit margins but higher sales volume. In 2002 Volkswagen announced that it would de-emphasize its profit margin goal and would instead focus on return on investment. It hoped that this would encourage managers to get the most profit out of every dollar of invested capital.

Financial Planning has three important uses:

Forecast the amount of external financing that will be required

Evaluate the impact that changes in the operating plan have on the value of the firm

Set appropriate targets for compensation plans

The following steps are used to develop a financial forecast:

Forecast sales

Project the assets needed to support sales

Project internally generated funds

Project outside funds needed

Decide how to raise funds

See effects of plan on ratios and stock price

Financial Planning Models

Financial planners often use a financial planning model to help them explore the consequences of alternative financial strategies. These models range from simple models, such as the one presented later in this chapter, to models that incorporate hundreds of equations.

Financial planning models support the financial planning process by making it easier and cheaper to construct forecast financial statements. The models automate an important part of planning that would otherwise be boring, time-consuming, and labor-intensive.

Programming these financial planning models used to consume large amounts of computer time and high-priced talent. These days standard spreadsheet programs such as Microsoft Excel are regularly used to solve complex financial planning problems.

Components of a Financial Planning Model

A completed financial plan for a large company is a substantial document. A smaller corporation's plan would have the same elements but less detail. For the smallest businesses, financial plans may be entirely in the financial managers' heads. The basic elements of the plans will be similar, however, for firms of any size.

A completed financial plan for a large company is a substantial document. A smaller corporation's plan would have the same elements but less detail. For the smallest businesses, financial plans may be entirely in the financial managers' heads. The basic elements of the plans will be similar, however, for firms of any size.

Financial plans include three components: inputs, the planning model, and outputs. Let's look at them in turn.

Inputs

The inputs to the financial plan consist of the firm's current financial statements and its forecasts about the future. Usually, the principal forecast is the likely growth in sales, since many of the other variables such as labor requirements and inventory levels are tied to sales. These forecasts are only in part the responsibility of the financial manager. Obviously, the marketing department will play a key role in forecasting sales. In addition, because sales will depend on the state of the overall economy, large firms will seek forecasting help from firms that specialize in preparing macroeconomic and industry forecasts.

The Planning Model

The financial planning model calculates the implications of the manager's forecasts for profits, new investment, and financing. The model consists of equations relating output variables to forecasts. For example, the equations can show how a change in sales is likely to affect costs, working capital, fixed assets, and financing requirements. The financial model could specify that the total cost of goods produced may increase by 80 cents for every \$1 increase in total sales, that accounts receivable will be a fixed proportion of sales, and that the firm will need to increase fixed assets by 8 percent for every 10 percent increase in sales.

Outputs

The output of the financial model consists of financial statements such as income statements, balance sheets, and statements describing sources and uses of cash. These statements are called pro formas, which means that they are forecasts based on the inputs and the assumptions built into the plan. Usually the output of financial models also includes many of the financial ratios we discussed in the last chapter. These ratios indicate whether the firm will be financially fit and healthy at the end of the planning period.

We will learn about forecasting using the following example.

Maggie Taylor is the financial manager of Synapse Enzymes (SE), a New Jersey producer of specialized enzymes for use in cellulosic ethanol production, and must prepare a financial forecast for 2010. SE's 2009 sales were \$2 billion, and the marketing department is forecasting a 25 percent increase for 2010. Eduard Buchner, SE's CEO has directed Maggie to prepare a forecast assuming the company is at full capacity and another assuming current production is less than full capacity. The 2009 financial statements, plus some other data, are shown below.

Table SE-1 2009 Income Statement (in millions)

		Percent of Sales
Sales	\$2,000.00	
Variable Costs	1,200.00	0.6000
Fixed Costs	700	0.3500
EBIT	<u>\$100.00</u>	
Interest	20	
EBT	<u>\$80.00</u>	
Taxes(40%)	<u>\$32.00</u>	
Net Income	\$48.00	
Dividends (40%)	\$19.20	
Additions to Retained Earnings	\$28.80	

Table SE-2 2009 Balance Sheet (in millions)

		Percent of Sales
Cash and Securities	\$20.00	0.0100
Accounts Receivable	\$240.00	0.1200
Inventories	<u>\$240.00</u>	0.1200
Total Current Assets	\$500.00	
Net Fixed Assets	\$500.00	0.2500
Total Assets	<u><u>\$1,000.00</u></u>	
Accounts Payable and Accruals	\$100.00	0.0500
Notes Payable	\$100.00	
Total Current Liabilities	<u>\$200.00</u>	
Long Term Debt	\$100.00	
Common Stock	\$500.00	
Retained Earnings	\$200.00	
Total Liabilities and Equity	<u><u>\$1,000.00</u></u>	

Table SE-3 Key Ratios (SE & Industry)

	2009		Ratio
	SE	Industry	Formulas
Profit margin	2.40%	4.00%	$NI/Sales$
ROE	6.86%	15.60%	$NI/Common\ Equity$
DSO	43.80	32.00	$AR / (Annual\ Sales / 365)$
Inventory turnover	8.33	11.00	$Sales / Inventory$
Fixed asset turnover	4.00	5.00	$Sales / NFA$
Debt/Assets	30.00%	36.00%	TD / TA
TIE	5.00	9.40	$EBIT / Interest\ Expense$
Current ratio	2.50	3.00	CA / CL
NOPAT	\$60.00		$EBIT(1-T)$
NOWC	\$400.00		$CA - A/P \& Accruals$
Total Net Operating Capital	\$900.00		$NOWC + NFA$
NOPAT/Sales	3.00%	5.00%	
Net Operating Capital / Sales	45.00%	35.00%	
Return on Invested Capital (NOPAT/Capital)	6.67%	14.00%	

You were recently hired as a Financial Analyst reporting to Ms. Taylor. Your responsibilities include assisting in the development of the forecast. She asked you to begin by answering the following set of questions.

Table SE-4 Forecast Inputs

Inputs

Percent growth in sales	25%
Interest rate on debt	10%
Tax rate	40%
Dividend Payout Ratio	40%

Funds will be generated through:

Notes Payable:	50%
Long-Term Debt:	50%

- 1) Assume that SE was operating at full capacity in 2009 with respect to all assets, therefore all assets must grow proportionally with sales, accounts payable and accruals will also grow in proportion to sales, and the 2009 profit margin and dividend payout will be maintained. Under these conditions, what will the company's financial requirements be for the coming year? Use the EFN equation to answer this question.

The EFN Equation is:

$$EFN = \left(\frac{A^*}{S}\right)(\Delta S) - \left(\frac{L^*}{S}\right)(\Delta S) - (PM)(S_1)(1 - d)$$

$$EFN = \frac{1,000}{2,000} 500 - \frac{100}{2,000} 500 - (0.024)(2,500)(1 - 0.40)$$

$$EFN = \$189.00$$

If EFN is positive, then you must secure additional financing.

If EFN is negative, then you have more financing than is needed.

Pay off debt.

Buy back stock.

Buy short-term investments.

- 2) How would changes in these items affect the EFN? (Consider each item separately and hold all other things constant.)

Sales increase

Increases asset requirements, increases EFN

Dividend payout ratio increases

Reduces funds available internally, increases EFN

Profit margin increases

Increases funds available internally, decreases EFN

Capital intensity ratio increases

Increases asset requirements, increases EFN

SE begins paying its suppliers sooner.

Decreases spontaneous liabilities, increases EFN

3) Now estimate the 2010 financial requirements using the percent of sales method.

Project sales based on forecasted growth rate in sales

Forecast some items as a percent of the forecasted sales

- Costs**
- Cash**
- Accounts receivable**
- Inventories**
- Net fixed assets**
- Accounts payable and accruals**

Table SE-5 2010 Forecast

2009 Income Statement (in millions)		Percent of Sales	2010 Forecast
Sales	\$2,000.00		\$2,500.00
Variable Costs	1,200.00	0.6000	1,500.00
Fixed Costs	700.00	0.3500	875.00
EBIT	<u>\$100.00</u>		<u>\$125.00</u>
Interest	20.00		20.00
EBT	<u>\$80.00</u>		<u>\$105.00</u>
Taxes(40%)	<u>\$32.00</u>		<u>\$42.00</u>
Net Income	\$48.00		\$63.00
Dividends(40%)	\$19.20		\$25.20
Additions to Retained Earnings	\$28.80		\$37.80
		Percent	
2009 Balance Sheet (in millions)		of Sales	
Cash and Securities	\$20.00	0.0100	\$25.00
Accounts Receivable	\$240.00	0.1200	\$300.00
Inventories	<u>\$240.00</u>	0.1200	<u>\$300.00</u>
Total Current Assets	\$500.00		\$625.00
Net Fixed Assets	\$500.00	0.2500	\$625.00
Total Assets	<u><u>\$1,000.00</u></u>		<u><u>\$1,250.00</u></u>
Accounts Payable and Accruals	\$100.00	0.0500	\$125.00
Notes Payable	\$100.00		\$100.00
Total Current Liabilities	<u>\$200.00</u>		<u>\$225.00</u>
Long Term Debt	\$100.00		\$100.00
Common Stock	\$500.00		\$500.00
Retained Earnings	\$200.00		\$237.80
Total Liabilities and Equity	<u><u>\$1,000.00</u></u>		<u><u>\$1,062.80</u></u>
Required assets =			\$1,250.00
Specified sources of financing =			\$1,062.80
External funds needed (EFN) =			\$187.20

SE has a choice when considering other items

Debt

Dividend policy (which determines retained earnings)

Common stock

Assume:

Each type of asset, as well as payables, accruals, and fixed and variable costs, will be the same percent of sales in 2010 as in 2009

The payout ratio is held constant at 40 percent

External funds needed are financed 50 percent by notes payable and 50 percent by long-term debt (no new common stock will be issued)

All debt carries an interest rate of 10 percent

Interest expenses should be based on the average of the beginning and ending debt values.

Interest expense is actually based on the daily balance of debt during the year.

There are three ways to approximate interest expense. Base it on:

Debt at end of year

Debt at beginning of year

Average of beginning and ending debt

Basing Interest Expense on Debt at End of Year

Will over-estimate interest expense if debt is added throughout the year instead of all on January 1.

Causes circularity called financial feedback: more debt causes more interest, which reduces net income, which reduces retained earnings, which causes more debt, etc.

Basing Interest Expense on Debt at the Beginning of Year

Will under-estimate interest expense if debt is added throughout the year instead of all on December 31.

But doesn't cause problem of circularity

Basing Interest Expense on Average of Beginning and Ending Debt

Will accurately estimate the interest payments if debt is added smoothly throughout the year.

But has problem of circularity.

Table SE-6 2010 Forecast

2009 Income Statement (in millions)		Percent of Sales	2010 Forecast				
			Without EFN	Feedback	1st Pass	Feedback	2nd Pass
Sales	\$2,000.00		\$2,500.00		\$2,500.00		\$2,500.00
Variable Costs	1,200.00	0.6000	1,500.00		1,500.00		1,500.00
Fixed Costs	700.00	0.3500	875.00		875.00		875.00
EBIT	<u>\$100.00</u>		<u>\$125.00</u>		<u>\$125.00</u>		<u>\$125.00</u>
Interest	20.00		20.00	\$29.36	29.36	\$29.53	29.53
EBT	<u>\$80.00</u>		<u>\$105.00</u>		<u>\$95.64</u>		<u>\$95.47</u>
Taxes(40%)	<u>\$32.00</u>		<u>\$42.00</u>		<u>\$38.26</u>		<u>\$38.19</u>
Net Income	<u>\$48.00</u>		<u>\$63.00</u>		<u>\$57.38</u>		<u>\$57.28</u>
Dividends(40%)	\$19.20		\$25.20		\$22.95		\$22.91
Additions to Retained Earnings	\$28.80		\$37.80		\$34.43		\$34.37
2009 Balance Sheet							
(in millions)							
Cash and Securities	\$20.00	0.0100	\$25.00		\$25.00		\$25.00
Accounts Receivable	\$240.00	0.1200	\$300.00		\$300.00		\$300.00
Inventories	\$240.00	0.1200	\$300.00		\$300.00		\$300.00
Total Current Assets	<u>\$500.00</u>		<u>\$625.00</u>		<u>\$625.00</u>		<u>\$625.00</u>
Net Fixed Assets	\$500.00	0.2500	\$625.00		\$625.00		\$625.00
Total Assets	<u><u>\$1,000.00</u></u>		<u><u>\$1,250.00</u></u>		<u><u>\$1,250.00</u></u>		<u><u>\$1,250.00</u></u>
Accounts Payable and Accruals	\$100.00	0.0500	\$125.00		\$125.00		\$125.00
Notes Payable	\$100.00		\$100.00	\$93.60	\$193.60	\$1.68	\$195.28
Total Current Liabilities	<u>\$200.00</u>		<u>\$225.00</u>		<u>\$318.60</u>		<u>\$320.28</u>
Long Term Debt	\$100.00		\$100.00	\$93.60	\$193.60	\$1.68	\$195.28
Common Stock	\$500.00		\$500.00		\$500.00		\$500.00
Retained Earnings	\$200.00		\$237.80		\$234.43		\$234.37
Total Liabilities and Equity	<u><u>\$1,000.00</u></u>		<u><u>\$1,062.80</u></u>		<u><u>\$1,246.63</u></u>		<u><u>\$1,249.94</u></u>
Required assets =			\$1,250.00		\$1,250.00		\$1,250.00
Specified sources of financing =			\$1,062.80		\$1,246.63		\$1,249.94
Additional funds needed (EFN) =			\$187.20		\$3.37		\$0.06

- 4) Why does the percent of sales approach produce a somewhat different EFN than the equation approach? Which method provides the more accurate forecast?

Equation method assumes a constant profit margin.

Pro forma method is more flexible. More important, it allows different items to grow at different rates.

- 5) Calculate SE's forecasted ratios, and compare them with the company's 2009 ratios and with the industry averages. Calculate SE's forecasted free cash flow and return on invested capital (ROIC).

Table SE-7 2010 Forecast Ratios

Key Ratios	2009		2010
	SE	Industry	2 nd Pass
Profit margin	2.40%	4.00%	2.29%
ROE	6.86%	15.60%	7.80%
DSO	43.80	32.00	43.80
Inventory turnover	8.33	11.00	8.33
Fixed asset turnover	4.00	5.00	4.00
Debt/Assets	30.00%	36.00%	41.25%
TIE	5.00	9.40	4.23
Current ratio	2.50	3.00	1.95
NOPAT	\$60.00		\$75.00
NOWC	\$400.00		\$500.00
Total Net Operating Capital	\$900.00	\$0.25	\$1,125.00
NOPAT/Sales	3.00%	5.00%	3.00%
Net Operating Capital / Sales	45.00%	35.00%	45.00%
ROIC (NOPAT/Capital)	6.67%	14.00%	6.67%
Investment in Capital			\$225.00
FCF			-150.00

Remember Cash Flow from Assets for Fin 311

$$CF_A = OCF - \text{Net Capital spending} - \Delta NWC$$

$$\text{Operating cash flow (OCF)} = \text{EBIT} + \text{Dep} - \text{Taxes} = \text{EBIT}(1 - T) + \text{Dep}$$

$$\text{Net Capital Spending} = NFA_{\text{End}} - NFA_{\text{Beg}} + \text{Dep}$$

$$\Delta \text{NOWC} = \text{NOWC}_{\text{End}} - \text{NOWC}_{\text{Beg}}$$

Table SE-8 2010 Forecast Free Cash Flows and Other Information

Free Cash Flow		Forecast	
		2009	2010
NOPAT	$100(1 - 0.40) =$	\$60.00	\$75.00 = $125(1 - 0.40)$
Net operating working capital (NOWC)	$500 - 100 =$	\$400.00	\$500.00 = $625 - 125$
Total Operating Capital	$400 + 500 =$	\$900.00	\$1,125.00 = $500 + 625$
Investment in Capital			\$225.00 = $1,125 - 900$
FCF			-\$150.00 = $75 - 225$
Return on Invested Capital (NOPAT/Capital)		6.67%	Industry 14.00%

- 6) Based on comparisons between SE's days sales outstanding (DSO) and inventory turnover ratios with the industry average figures, does it appear that SE is operating efficiently with respect to its inventory and accounts receivable? Suppose SE were able to bring these ratios into line with the industry averages. What effect would this have on its EFN and its financial ratios? What effect would this have on free cash flow and ROIC?

Table SE-9 2010 Forecast with Ratio Improvements

Ratio Improvements

DSO	32.00
Inventory turnover	11.00

2009 Income Statement (in millions)		Percent of Sales		2010 Forecast		
			Without EFN	Feedback	1st Pass	Feedback
Sales	\$2,000.00		\$2,500.00		\$2,500.00	\$2,500.00
Variable Costs	1,200.00	0.6000	1,500.00		1,500.00	1,500.00
Fixed Costs	700.00	0.3500	875.00		875.00	875.00
EBIT	\$100.00		\$125.00		\$125.00	\$125.00
Interest	20.00		20.00	\$21.68	21.68	\$21.71
EBT	\$80.00		\$105.00		\$103.32	\$103.29
Taxes(40%)	\$32.00		\$42.00		\$41.33	\$41.31
Net Income	\$48.00		\$63.00		\$61.99	\$61.97
Dividends(40%)	\$19.20		\$25.20		\$24.80	\$24.79
Additions to Retained Earnings	\$28.80		\$37.80		\$37.19	\$37.18

2009 Balance Sheet (in millions)		Percent of Sales		2010 Forecast		
			Without EFN	Feedback	1st Pass	Feedback
Cash and Securities	\$20.00	0.0100	\$25.00		\$25.00	\$25.00
Accounts Receivable	\$240.00	0.1200	\$219.18		\$219.18	\$219.18
Inventories	\$240.00	0.1200	\$227.27		\$227.27	\$227.27
Total Current Assets	\$500.00		\$471.45		\$471.45	\$471.45
Net Fixed Assets	\$500.00	0.2500	\$625.00		\$625.00	\$625.00
Total Assets	\$1,000.00		\$1,096.45		\$1,096.45	\$1,096.45

Accounts Payable and Accruals	\$100.00	0.0500	\$125.00		\$125.00	\$125.00
Notes Payable	\$100.00		\$100.00	\$16.83	\$116.83	\$117.13
Total Current Liabilities	\$200.00		\$225.00		\$241.83	\$242.13
Long Term Debt	\$100.00		\$100.00	\$16.83	\$116.83	\$117.13
Common Stock	\$500.00		\$500.00		\$500.00	\$500.00
Retained Earnings	\$200.00		\$237.80		\$237.19	\$237.18
Total Liabilities and Equity	\$1,000.00		\$1,062.80		\$1,095.85	\$1,096.44

Required assets =		\$1,096.45		\$1,096.45		\$1,096.45
Specified sources of financing =		\$1,062.80		\$1,095.85		\$1,096.44
Additional funds needed (EFN) =		\$33.65		\$0.61		\$0.01

Table SE-10 2010 Key Ratio Forecast

Key Ratios	2009		2010
	SE	Industry	2nd Pass
Profit margin	2.40%	4.00%	2.48%
ROE	6.86%	15.60%	8.41%
DSO	43.80	32.00	32.00
Inventory turnover	8.33	11.00	11.00
Fixed asset turnover	4.00	5.00	4.00
Debt/Assets	30.00%	36.00%	32.77%
TIE	5.00	9.40	5.76
Current ratio	2.50	3.00	1.95
NOPAT	\$60.00		\$75.00
NOWC	\$400.00		\$346.45
Total Net Operating Capital	\$900.00		\$971.45
NOPAT/Sales	3.00%	5.00%	3.00%
Net Operating Capital / Sales	45.00%	35.00%	38.86%
ROIC (NOPAT/Capital)	6.67%	14.00%	7.72%
Investment in Capital			\$71.45
FCF			\$3.55

Table SE-11 2010 Free Cash Flow and Other Forecasts

Free Cash Flow	Forecast	
	2009	2010
NOPAT	$100(1 - 0.40) = \$60.00$	$\$75.00 = 125(1 - 0.40)$
Net operating working capital (NOWC)	$500 - 100 = \$400.00$	$\$346.45 = 471.45 - 125$
Total Operating Capital	$400 + 500 = \$900.00$	$\$971.45 = 346.45 + 625$
Investment in Capital		$\$71.45 = 971.45 - 900$
FCF		$\$3.55 = 75 - 71.45$
Return on Invested Capital (NOPAT/Capital)		Industry 7.72% 14.00%

In addition to improving the ratios considered above what if SE was able to control Selling and Admin Cost? Specifically, what if fixed costs were decreased to 33 percent of sales? What effect would this have on its EFN and its financial ratios? What effect would this have on free cash flow and ROIC?

Table SE-12 2010 Forecast with Ratio Improvements & Cost Reduction

Ratio & Cost Improvements						
DSO:	32.00					
Inventory turnover:	11.00					
Fixed Costs:	33%					
		Percent				
2009 Income Statement		of Sales	2010 Forecast			
(in millions)			Without EFN	Feedback	With EFN	Feedback
						With EFN
Sales	\$2,000.00		\$2,500.00		\$2,500.00	\$2,500.00
Variable Costs	1,200.00	0.6000	1,500.00		1,500.00	1,500.00
Fixed Costs	700.00	0.3300	825.00		825.00	825.00
EBIT	\$100.00		\$175.00		\$175.00	\$175.00
Interest	20.00		20.00	\$20.78	20.78	\$20.80
EBT	\$80.00		\$155.00		\$154.22	\$154.20
Taxes(40%)	\$32.00		\$62.00		\$61.69	\$61.68
Net Income	\$48.00		\$93.00		\$92.53	\$92.52
Dividends(40%)	\$19.20		\$37.20		\$37.01	\$37.01
Additions to Retained Earnings	\$28.80		\$55.80		\$55.52	\$55.51
		Percent				
2009 Balance Sheet (in millions)		of Sales				
Cash and Securities	\$20.00	0.0100	\$25.00		\$25.00	\$25.00
Accounts Receivable	\$240.00		\$219.18		\$219.18	\$219.18
Inventories	\$240.00		\$227.27		\$227.27	\$227.27
Total Current Assets	\$500.00		\$471.45		\$471.45	\$471.45
Net Fixed Assets	\$500.00	0.2500	\$625.00		\$625.00	\$625.00
Total Assets	\$1,000.00		\$1,096.45		\$1,096.45	\$1,096.45
Accounts Payable and Accruals	\$100.00	0.0500	\$125.00		\$125.00	\$125.00
Notes Payable	\$100.00		\$100.00	\$7.83	\$107.83	\$107.97
Total Current Liabilities	\$200.00		\$225.00		\$232.83	\$232.97
Long Term Debt	\$100.00		\$100.00	\$7.83	\$107.83	\$107.97
Common Stock	\$500.00		\$500.00		\$500.00	\$500.00
Retained Earnings	\$200.00		\$255.80		\$255.52	\$255.51
Total Liabilities and Equity	\$1,000.00		\$1,080.80		\$1,096.17	\$1,096.45
Required assets =			\$1,096.45		\$1,096.45	\$1,096.45
Specified sources of financing =			\$1,080.80		\$1,096.17	\$1,096.45
Additional funds needed (EFN) =			\$15.65		\$0.28	\$0.01

Table SE-13 2010 Key Ratio Forecast

Key Ratios	2009		2010
	SE	Industry	2nd Pass
Profit margin	2.40%	4.00%	3.70%
ROE	6.86%	15.60%	12.25%
DSO	43.80	32.00	32.00
Inventory turnover	8.33	11.00	11.00
Fixed asset turnover	4.00	5.00	4.00
Debt/Assets	30.00%	36.00%	31.09%
TIE	5.00	9.40	8.41
Current ratio	2.50	3.00	2.02
NOPAT	\$60.00		\$105.00
NOWC	\$400.00		\$346.45
Total Net Operating Capital	\$900.00		\$971.45
NOPAT/Sales	3.00%	5.00%	4.20%
Net Operating Capital / Sales	45.00%	35.00%	38.86%
ROIC (NOPAT/Capital)	6.67%	14.00%	10.81%
Investment in Capital			\$71.45
FCF			\$33.55

Table SE-14 2010 Free Cash Flow and Other Forecasts

	Forecast		
		2009	2010
Free Cash Flow			
NOPAT	$100(1 - 0.40) =$	\$60.00	\$105.00 = $175(1 - 0.40)$
Net operating working capital (NOWC)	$500 - 100 =$	\$400.00	\$346.45 = $471.45 - 125$
Total Operating Capital	$400 + 500 =$	\$900.00	\$971.45 = $346.45 + 625$
Investment in Capital			\$71.45 = $971.45 - 900$
FCF			\$33.55 = $105 - 71.45$
Return on Invested Capital (NOPAT/Capital)			10.81% Industry 14.00%

- 7) Suppose you now learn that SE's 2009 receivables and inventories were in line with required levels, given the firm's credit and inventory policies, but that excess capacity existed with regard to fixed assets. Specifically, fixed assets were operated at only 75 percent of capacity.

What level of sales could have existed in 2009 with the available fixed assets?

Effect of Excess Capacity

Suppose in 2009 fixed assets had been operated at only 75% of capacity?

Capacity Sales = Actual Sales/% of Capacity

Capacity Sales = \$2,000/0.75

Capacity Sales = \$2,666.67

How would the existence of excess capacity in fixed assets affect the additional funds needed during 2010?

Forecasted sales are less than this, so no new fixed assets are needed.

Table SE-15

Previously forecasted EFN = \$187.20 From Table SE-6

Previously forecasted addition to fixed assets = \$125.00 From Table SE-6

EFN if there is excess capacity = \$62.20

If Sales went up to \$3,000, not \$2500, what would the F.A. requirement be?

Target Ratio = Fixed Assets/ Capacity Sales

Target Ratio = \$500/\$2,666.67

Target Ratio = 0.1875

Change in FA = (0.1875)(\$333.33)

Change in FA = \$62.50

Change in CA = (0.25)(3,000) - 500.00 = 250.00

Change in CL = (0.05)(3,000) - 100.00 = 50.00

Change in R/E = 246.80 - 200.00 = 46.80

EFN = 250 + 62.50 - 50.00 - 46.80 = 215.70

- 8) The relationship between sales and the various types of assets is important in financial forecasting. The percent of sales approach, under the assumption that each asset item grows at the same rate as sales, leads to an EFN forecast that is reasonably close to the forecast using the EFN equation. Explain how each of the following factors would affect the accuracy of financial forecasts based on the EFN equation:

Economies of scale in the use of assets

Economies of scale: leads to less-than-proportional asset increases.

Lumpy assets.

Lumpy assets: leads to large periodic EFN requirements, recurring excess capacity.

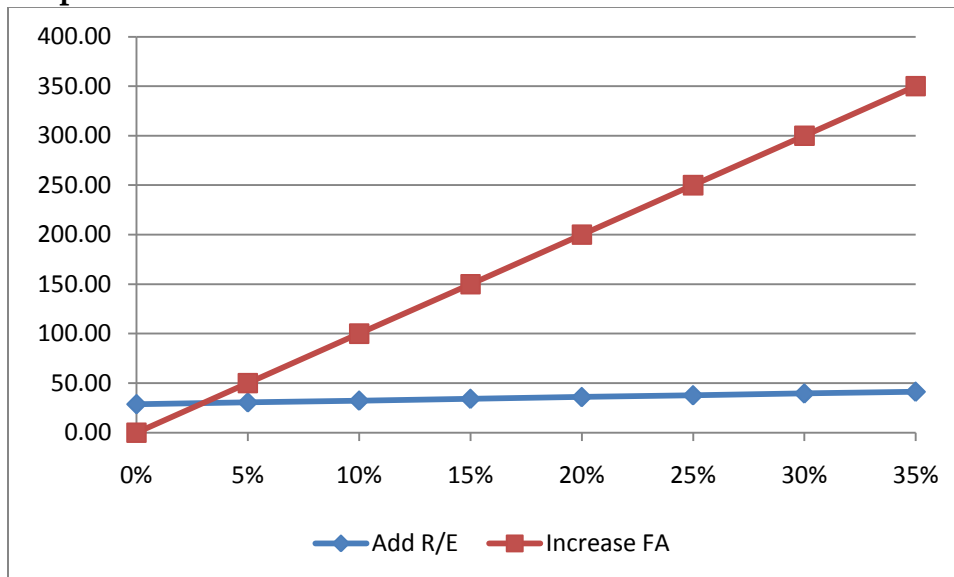
External Financing and Growth

Table SE-15 shows that at low sales growth rates, SE will have a surplus of cash. When the growth rate is 6.88 percent, Se requires external funds.

Table SE-15

Sales Growth	Increase FA	Add R/E
0%	0	28.8
5%	50	30.6
10%	100	32.4
15%	150	34.2
20%	200	36.0
25%	250	37.8
30%	300	39.6
35%	350	41.4

Graph SE-1



Internal and Sustainable Growth Rates

The internal growth rate is the maximum growth a firm can be achieved with internally generated funds. The equation is:

$$\text{Internal Growth Rate} = \frac{(ROA)(b)}{1 - (ROA)(b)}$$

$$\text{Sustainable Growth Rate} = \frac{(ROE)(b)}{1 - (ROE)(b)}$$

For SE:

$$2009 \text{ Rate} = \frac{(0.048)(0.60)}{1 - (0.048)(0.60)} = 0.0297$$

$$2010 \text{ 2nd Pass Rate} = \frac{(0.0458)(0.60)}{1 - (0.0458)(0.60)} = 0.0283$$

$$2009 \text{ Rate} = \frac{(0.0686)(0.60)}{1 - (0.0686)(0.60)} = 0.0429$$

$$2010 \text{ 2nd Pass Rate} = \frac{(0.0780)(0.60)}{1 - (0.0780)(0.60)} = 0.0491$$

Determinants of Growth

Profit Margin

Dividend Policy

Financial Policy

Total Asset Turnover