Long-Term Financial Planning and Growth

Ch. 4

"Financial planning requires long-term thinking. Especially if you get caught."


The Financial Planning Process
1
Determine current financial situation
2
Develop your financial goals
3
Identify alternative courses of action
4
Evaluate alternatives
Consider
• life situation
• personal values
• economic factors
Assess
• risk
• time value of money (opportunity cost)
5
Create and implement your financial action plan
6
Review and revise the financial plan

Plowback and dividend payout ratios

Your company has net income of $1,600 for the year. You paid out $400 in dividends to your stockholders.

What is the dividend payout ratio?

What is the plowback ratio?

What is the dollar increase in retained earnings?

Plowback and dividend payout ratios

Your company has net income of $1,600 for the year. You paid out $400 in dividends to your stockholders.

$$\text{Dividend payout ratio} = \frac{\text{Cash dividends}}{\text{Net income}} = \frac{\$400}{\$1{,}600} = .25$$

$$\text{Plowback ratio} = 1 - \text{dividend payout ratio} = 1 - .25 = .75$$

$$\text{Addition to retained earnings} = \text{Net income} \times \text{plowback ratio} = \$1{,}600 \times .75 = \$1{,}200$$

Plowback and dividend payout ratios

This year your company expects net income of $2,800. You now adhere to a 60% plowback ratio.

What is the expected dollar increase in retained earnings?

How much do you expect to pay in dividends?

What is the dividend payout ratio?

Plowback and dividend payout ratios

This year your company expects net income of $2,800. You now adhere to a 60% plowback ratio.

$$\begin{aligned}\text{Addition to retained earnings} &= \text{Net income} \times \text{plowback ratio} \\ &= \$2{,}800 \times .60 \\ &= \$1{,}680\end{aligned}$$

$$\begin{aligned}\text{Dividends paid} &= \text{Net income} - \text{Addition to retained earnings} \\ &= \$2{,}800 - \$1{,}680 \\ &= \$1{,}120\end{aligned}$$

$$\begin{aligned}\text{Dividend payout ratio} &= \frac{\text{Cash dividends}}{\text{Net income}} \\ &= \frac{\$1{,}120}{\$2{,}800} \\ &= 40\%\end{aligned}$$

Constant growth planning

You expect your sales, costs and assets to grow by 10% next year. You will not pay any dividends. Can you complete the pro forma statement? Round all amounts to whole dollars.

Income Statement

	Current	Projected
Sales	$800	$_____
Costs	$700	$_____
Taxable income	$100	$_____
Taxes (34%)	$ 34	$_____
Net income	$ 66	$_____

Balance Sheet

	Current	Projected		Current	Projected
Assets	$400	$_____	Debt	$150	$_____
			Equity	$250	$_____
Total	$400	$_____	Total	$400	$_____

Constant growth planning

The computations are shown on the next slide.

Income Statement

	Current	Projected
Sales	$800	$880
Costs	$700	$770
Taxable income	$100	$110
Taxes (34%)	$ 34	$ 37
Net income	$ 66	$ 73

Balance Sheet

	Current	Projected		Current	Projected
Assets	$400	$440	Debt	$150	$117
			Equity	$250	$323
Total	$400	$440	Total	$400	$440

Constant growth planning

Step 1

$$\begin{aligned}\text{Projected equity} &= \text{Current equity} + \text{Projected net income}\\ &= \$250 + \$73\\ &= \$323\end{aligned}$$

Step 2

$$\begin{aligned}\text{Sales} &= \$800(1.10) = \$880\\ \text{Costs} &= \$700(1.10) = \$770\\ \text{Taxes} &= \$34(1.10) = \$37(\textit{rounded})\\ \text{Assets} &= \$400(1.10) = \$440\end{aligned}$$

Step 3

$$\begin{aligned}\text{Total liabilities} + \text{equity} &= \text{Total assets}\\ &= \$440\end{aligned}$$

Step 4

$$\begin{aligned}\text{Debt} &= (\text{Total liabilities} + \text{equity}) - \text{equity}\\ &= \$440 - \$323\\ &= \$117\end{aligned}$$

Percentage of sales planning

The assets and current liabilities of **Taraz Inc.** vary in direct proportion to the increase in sales. The current sales are $2,000 and you expect them to increase by 20% next year. Net income is projected at 5% of sales. The firm is not planning on issuing any more common stock nor paying any dividends.

Using this information, can you compile the pro forma balance sheet shown on the next slide?

Percentage of sales planning

	Current	% of sales	Projected
Cash	$ 120	_____%	$_____
Accounts receivable	$ 500	_____%	$_____
Inventory	$ 840	_____%	$_____
Fixed assets	$2,600	_____%	$_____
Total assets	$4,060	_____%	$_____
Accounts payable	$ 600	_____%	$_____
Long-term debt	$ 700	_____%	$_____
Common stock and paid in surplus	$1,000	_____%	$_____
Retained earnings	$1,760	_____%	$_____
Total liabilities and equity	$4,060	_____%	$_____

Refer to the prior slide for information pertaining to this problem.
Enter n/a where the % of sales does not apply.

Percentage of sales planning

	Current	% of sales	Projected
Cash	$ 120	6%	$ 144
Accounts receivable	$ 500	25%	$ 600
Inventory	$ 840	42%	$1,008
Fixed assets	$2,600	130%	$3,120
Total assets	$4,060	203%	$4,872
Accounts payable	$ 600	30%	$ 720
Long-term debt	$ 700	n/a	$1,272
Common stock and paid in surplus	$1,000	n/a	$1,000
Retained earnings	$1,760	n/a	$1,880
Total liabilities and equity	$4,060	n/a	$4,872

See the next slide for the computations

Percentage of sales planning

Step 1

$$\text{Cash} = \frac{\$120}{\$2{,}000} = .06 = 6\%$$

$$\text{Accounts receivable} = \frac{\$500}{\$2{,}000} = .25 = 25\%$$

$$\text{Inventory} = \frac{\$840}{\$2{,}000} = .42 = 42\%$$

$$\text{Fixed assets} = \frac{\$2{,}600}{\$2{,}000} = 1.30 = 130\%$$

$$\text{Total assets} = \frac{\$4{,}060}{\$2{,}000} = 2.03 = 203\%$$

$$\text{Accounts payable} = \frac{\$600}{\$2{,}000} = .30 = 30\%$$

Step 2

$$\text{Sales} = \$2{,}000 \times 1.20 = \$2{,}400$$

$$\text{Cash} = .06 \times \$2{,}400 = \$144$$

$$\text{Accounts receivable} = .25 \times \$2{,}400 = \$600$$

$$\text{Inventory} = .42 \times \$2{,}400 = \$1{,}008$$

$$\text{Fixed assets} = 1.30 \times \$2{,}400 = \$3{,}120$$

$$\text{Accounts payable} = .30 \times \$2{,}400 = \$720$$

Computations continued on next slide

Percentage of sales planning

Step 3

$$\text{Common stock} = \$1{,}000 + \$0 = \$1{,}000$$

$$\text{Retained earnings} = \$1{,}760 + (.05 \times \$2{,}400) = \$1{,}880$$

$$\text{Total liabilities and owners' equity} = \text{Total assets} = \$4{,}872$$

Step 4

Total liabilities and owners' equity	$4,872
Accounts payable	-$ 720
Common stock and paid in surplus	-$1,000
Retained earnings	-$1,880
Long-term debt	$1,272

External financing need

You project your sales will increase by $3,000 next year. Net income is 10% of sales and accounts payable is 25% of sales. The capital intensity ratio is 2.5. No dividends are anticipated.

How much external financing is needed to fund this growth?

Try to solve this problem without looking at the hints on the next slide.

External financing need

You project your sales will increase by $3,000 next year. Net income is 10% of sales and accounts payable is 25% of sales. The capital intensity ratio is 2.5. No dividends are anticipated.

How much external financing is needed to fund this growth?

Hints:

Step 1: Compute the increase in total assets

Step 2: Compute the increase in accounts payable

Step 3: Compute the increase in retained earnings

Step 4: Compute the additional long-term debt and equity financing that is needed

External financing need

Step 1

$$\begin{aligned}\text{Total assets} &= \text{Sales} \times \text{Capital intensity ratio} \\ &= \$3{,}000 \times 2.5 \\ &= \$7{,}500\end{aligned}$$

Step 2

$$\begin{aligned}\text{Accounts payable} &= .25 \times \text{Sales} \\ &= .25 \times \$3{,}000 \\ &= \$750\end{aligned}$$

Step 3

$$\begin{aligned}\text{Addition to retained earnings} &= \text{Net income} - \text{Dividends paid} \\ &= (.10 \times \text{sales}) - 0 \\ &= .10 \times \$3{,}000 \\ &= \$300\end{aligned}$$

Step 4

$$\begin{aligned}\text{External financing need} &= \text{Total assets} - \text{Accounts payable} - \text{Additions to retained earnings} \\ &= \$7{,}500 - \$750 - \$300 \\ &= \$6{,}450\end{aligned}$$

Pro forma with external financing

Your firm currently has long-term debt of $4,400, common stock and paid in surplus of $10,000 and retained earnings of $4,600. The capital intensity ratio is 2.2 and the tax rate is 35%. Costs are 72% of sales and accounts payable are 30% of sales. Sales currently are $10,000 and are expected to increase by 10% next year. The dividend payout ratio is 20%. Long-term debt will be used to fund 40% of the external funding need.

Given this information, can you complete the pro forma financial statements on the next slide?

Pro forma with external financing

Round all amounts to whole dollars.

Pro forma Income Statement

Sales	$_____
Costs	$_____
Taxable income	$_____
Taxes (35%)	$_____
Net Income	**$_____**

Pro forma Balance Sheet

Assets	$_____	Accounts payable	$_____
		Long-term debt	$_____
		Common stock	$_____
		Retained earnings	$_____
Total	**$_____**	**Total**	**$_____**

Pro forma with external financing

The computations are shown on the next four slides.

Pro forma Income Statement

Sales	$11,000
Costs	$ 7,920
Taxable income	$ 3,080
Taxes (35%)	$ 1,078
Net Income	**$ 2,002**

Pro forma Balance Sheet

Assets	$24,200	Accounts payable	$ 3,300
		Long-term debt	$ 4,519
		Common stock	$10,179
		Retained earnings	$ 6,202
Total	**$24,200**	**Total**	**$24,200**

Pro forma with external financing

$$\text{Sales} = \$10{,}000 \times 1.10 = \$11{,}000$$

$$\text{Costs} = .72 \times \$11{,}000 = \$7{,}920$$

$$\text{Taxable income} = \$11{,}000 - \$7{,}920 = \$3{,}080$$

$$\text{Tax} = .35 \times \$3{,}080 = \$1{,}078$$

$$\text{Net income} = \$3{,}080 - \$1{,}078 = \$2{,}002$$

Pro forma with external financing

$$\text{Total assets} = 2.2 \times \$11{,}000 = \$24{,}200$$

$$\text{Accounts payable} = .30 \times \$11{,}000 = \$3{,}300$$

$$\text{Plow back ratio} = 1 - \text{Dividend payout ratio} = 1\text{-}.20 = .80$$

$$\text{Retained earnings} = \$4{,}600 + (\text{Plowback ratio} \times \text{Net income}) = \$4{,}600 + (.80 \times \$2{,}002) = \$6{,}202 \ (\textit{rounded})$$

$$\text{Total liabilities and owners' equity} = \text{Total assets} = \$24{,}200$$

Pro forma with external financing

Total liabilities and owners' equity	$24,200
Accounts payable	-$ 3,300
Retained earnings	-$ 6,202
Current long-term debt	-$ 4,400
Current common stock	-$10,000
External financing need	$ 298

Pro forma with external financing

$$\begin{aligned}\text{Pro forma long-term debt} &= \text{Current long-term debt} + (.40 \times \text{External financing need}) \\ &= \$4{,}400 + (.40 \times \$298) \\ &= \$4{,}400 + \$119 \textit{ (rounded)} \\ &= \$4{,}519\end{aligned}$$

$$\begin{aligned}\text{Pro forma common stock} &= \text{Current common stock} + (.60 \times \text{External financing need}) \\ &= \$10{,}000 + (.60 \times \$298) \\ &= \$10{,}000 + \$179 \textit{ (rounded)} \\ &= \$10{,}179\end{aligned}$$

Capacity level

Your firm has fixed assets of $28,000 and is operating at 80% of capacity. Current sales are $18,000.

What is the full-capacity sales level?

What is the capital intensity ratio at the full-capacity sales level?

Capacity level

Your firm has fixed assets of $28,000 and is operating at 80% of capacity. Current sales are $18,000.

$$\text{Full-capacity sales} = \frac{\text{Current sales}}{\text{Current operating level}}$$

$$= \frac{\$18{,}000}{.80}$$

$$= \$22{,}500$$

$$\text{Full capacity capital intensity ratio} = \frac{\text{Fixed assets}}{\text{Full-capacity sales}}$$

$$= \frac{\$28{,}000}{\$22{,}500}$$

$$= 1.24\ (\textit{rounded})$$

Capacity level

Your firm has projected sales of $1,600. The capital intensity ratio at the full-capacity sales level of $1,900 is 1.20. Ignoring the capacity level, you have projected net fixed assets at $2,100 and the external financing need at $1,000.

What is the external financing need if the capacity level is considered?

Capacity level

Your firm has projected sales of $1,600. The capital intensity ratio at the full-capacity sales level of $1,900 is 1.20. Ignoring the capacity level, you have projected net fixed assets at $2,100 and the external financing need at $1,000. What is the external financing need if the capacity level is considered?

$$\begin{aligned}\text{Fixed assets needed} &= \text{Sales} \times \text{Capital intensity ratio} \\ &= \$1{,}600 \times 1.2 \\ &= \$1{,}920\end{aligned}$$

$$\begin{aligned}\text{Excess estimate} &= \text{Fixed assets projected} - \text{Fixed assets needed} \\ &= \$2{,}100 - \$1{,}920 \\ &= \$180\end{aligned}$$

$$\begin{aligned}\text{Actual external financing need} &= \text{Projected external financing need} - \text{Excess estimate} \\ &= \$1{,}000 - \$180 \\ &= \$820\end{aligned}$$

Internal growth

Your firm has net income of $6,000 and total assets of $30,000.

The dividend payout ratio is 40%.

What is the internal growth rate?

Internal growth

Your firm has net income of $6,000 and total assets of $30,000. The dividend payout ratio is 40%. What is the internal growth rate?

$$\text{Return on assets} = \frac{\text{Net income}}{\text{Total assets}} = \frac{\$6{,}000}{\$30{,}000} = .20$$

$$\text{Plowback ratio} = 1 - \text{Dividend payout ratio} = 1 - .40 = .60$$

$$\text{Internal growth rate} = \frac{\text{ROA} \times b}{1 - \text{ROA} \times b} = \frac{.20 \times .60}{1 - .20 \times .60} = \frac{.12}{.88} = .1364 (\textit{rounded}) = 13.64\%$$

Sustainable growth

A firm has net income of $2,000 and pays $400 in dividends. Total equity is $8,000.

What is the sustainable growth rate?

Sustainable growth

A firm has net income of $2,000 and pays $400 in dividends. Total equity is $8,000. What is the sustainable growth rate?

Step 1

$$\text{Dividend payout ratio} = \frac{\text{Cash dividends}}{\text{Net income}} = \frac{\$400}{\$2{,}000} = .20$$

Step 2

$$\text{Plowback ratio} = 1 - \text{Dividend payout ratio} = 1 - .20 = .80$$

Step 3

$$\text{Return on equity} = \frac{\text{Net income}}{\text{Total equity}} = \frac{\$2{,}000}{\$8{,}000} = .25$$

Step 4

$$\text{Sustainable growth rate} = \frac{\text{ROE} \times b}{1 - \text{ROE} \times b} = \frac{.25 \times .80}{1 - .25 \times .80} = \frac{.20}{.80} = .25 = 25\%$$

Sustainable growth

Your firm has a 10% net profit margin and a dividend payout ratio of 25%. The debt-equity ratio is 40% and the total asset turnover rate is 2.

What is the sustainable rate of growth?

Sustainable growth

Your firm has a 10% net profit margin and a dividend payout ratio of 25%. The debt-equity ratio is 40% and the total asset turnover rate is 2. What is the sustainable rate of growth?

Hints:

Step 1. Find the equity multiplier using the debt-equity ratio

Step 2. Compute the ROE using the DuPont formula

Step 3. Find the plowback ratio using the dividend payout ratio

Step 4. Compute the sustainable growth rate

Sustainable growth

Your firm has a 10% net profit margin and a dividend payout ratio of 25%. The debt-equity ratio is 40% and the total asset turnover rate is 2.

Step 1

$$\text{Equity multiplier} = 1 + \text{Debt - equity ratio}$$
$$= 1 + .40$$
$$= 1.40$$

Step 2

$$\text{ROE} = \text{PM} \times \text{TAT} \times \text{EM}$$
$$= .10 \times 2 \times 1.40$$
$$= .28$$

Step 3

$$\text{Plowback ratio} = 1 - \text{Dividend payout ratio}$$
$$= 1 - .25$$
$$= .75$$

Step 4

$$\text{Sustainable growth rate} = \frac{\text{ROE} \times b}{1 - \text{ROE} \times b}$$
$$= \frac{.28 \times .75}{1 - .28 \times .75}$$
$$= \frac{.21}{.79}$$
$$= .2658(\textit{rounded})$$
$$= 26.58\%$$


“you’re in safe hands”