

# §4. LONG-TERM FINANCIAL PLANNING AND GROWTH

FIN 360: PRINCIPLES OF FINANCIAL MANAGEMENT  
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## WHAT IS FINANCIAL PLANNING?

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**Financial planning**, also known as *strategic planning*, formulates the way in which a firm's longer-term financial goals are to be achieved. It establishes guidelines for change and growth in the firm. Major elements of a financial plan include:

1. The firm's needed investment in new assets. *Why are new assets needed at all?*
2. The degree of financial leverage the firm chooses to employ. *What's the benefit of leverage in the first place? Why have leverage at all?*
3. The amount of cash the firm thinks is necessary and appropriate to pay shareholders (**dividend policy**). *Why and when would a firm pay the shareholders?*
4. The amount of liquidity and working capital the firm needs on an ongoing basis. *Why don't firms just maximize liquidity and working capital?*

The firm's decisions regarding these four areas will affect its future profitability, need for external financing, and opportunities for growth. Growth should not be a goal unto itself: it is important that it generates increasing value of a share for existing shareholders.

## FINANCIAL PLANNING MODEL: PERCENTAGE OF SALES APPROACH

The **percentage of sales approach** to developing a financial planning model begins with a firm's sales forecast and observing how this "flows through" other accounts and items on the financial statements.



**PRACTICE:** A firm has projected a 7% increase in sales. With this assumption, we generate what is known as a **pro forma** income statement, or a statement that presents forecasts based on our assumptions. Management for the firm has chosen a 45% **dividend payout ratio**, whereby it pays 45% of each period's net income to shareholders as a dividend. This implies a  $1 - 45\% = 55\%$  **retention** or **plowback ratio** that flows into the firm's retained earnings.

	<u>Last Period</u>	% of Sales	<u>Pro Forma</u>	
Net Sales	\$18,746.1		\$	Step 1: Compute Sales
Cost of Goods Sold	15,286.0			
Gross Profit	3,460.1		3,702.3	
SG&A	1,422.5			
Depreciation	569			
EBIT	1,468.6		1,571.4	Step 3: Complete the Pro Forma Statement using forecast sales and expenses.
Interest Expense	372.6			
Earnings Before Taxes	1,096.0			
Income Tax Expense	241.1		258.0	
<b>Net Income</b>	<b>\$854.9</b>		<b>\$914.7</b>	

Step 2: Determine items' % of past sales (revenue)

Step 4: Determine the forecast dividend payouts (45%) and retention (55%) amounts:

Dividend payout: \$ \_\_\_\_\_ Plowback amount: \$ \_\_\_\_\_

Step 5: Determine balance sheet items by the percentage of sales method. Recall that sales revenue in the last period was \$18,746.10 as listed on the income statement above. The pro forma values will be based on the pro forma sales of \$20,058.30.



Note that certain financing items, particularly **notes payable**, **long term debt**, and **common stock** do not necessarily vary with sales. The firm still “owes” the items or maintains their levels regardless of how much it sells. **Retained earnings** will be adjusted based on the **plowback ratio**.

	<u>Last Period</u>	% of Sales	<u>Pro Forma</u>
<b><u>ASSETS</u></b>			
Current assets			
Cash and cash equivalents	\$290.9		
Accounts receivable	2,786.0		
Inventories	2,582.7		
Total current assets	<u>5,659.6</u>		<u>6,055.8</u>
Fixed assets			
Gross property and equip.	\$31,300.3		
Accumulated depreciation	(7,705.6)		
Net plant and equipment	<u>23,594.7</u>		<u>25,246.3</u>
Total Assets	<u>29,254.3</u>		<u>\$31,302.1</u>
<b><u>LIABILITIES AND EQUITY</u></b>			
Current liabilities			
Accts payable, other accr.	\$2,783.6		
Notes payable	359.5		
Taxes payable	501.0		
Total current liabilities	<u>3,644.1</u>		<u>3,874.0</u>
Long term debt	<u>\$13,918.5</u>		
Total liabilities	<u>\$17,562.6</u>		<u>\$17,792.5</u>
Owners' Equity			
Com. stock paid-in-sur.	\$6,491.6		
Retained earnings	<u>5,200.1</u>		
Total equity	<u>\$11,691.7</u>		<u>\$12,194.8</u>
Total liabilities and equity	<u>\$29,254.3</u>		<u>\$29,987.3</u>

*Step 6:* Retained earnings must increase by the \$503.11 plowback amount.  
 $RE = 5,200.1 + 503.11$

*Step 7: This pro forma balance sheet doesn't balance! We define the **External Financing Needed (EFN)** as the amount of additional financing required to make the balance sheet balance.*

$$EFN = Total Assets - Total Liabilities and Equity$$

$$EFN = \$ \underline{\hspace{2cm}} - \$ \underline{\hspace{2cm}} = \$ \underline{\hspace{2cm}}$$

Note that this projected amount of EFN is under the assumption that our notes payable, long-term debt, and common stock are unchanged.

**INTERPRETATION:** The firm needs to raise the computed EFN for the 7% level of growth to occur. This may be done through some mix of short term borrowing, long term borrowing, or issuing additional equity (though as we will see later, issuing new equity is often costly and may not be preferable to borrowing).



Can EFN be negative? What would that imply about the growth rate?

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Therefore, EFN is the *required increase in assets* minus the *spontaneous increase in liabilities* minus the *increase in retained earnings*:

$$EFN = \frac{A^*}{S_0} \Delta S - \frac{L^*}{S_0} \Delta S - (MS_1 \times b)$$

In the EFN formula:

$A^*$  = Assets (existing) tied to sales

$S_0$  = Sales (at time zero)

$\Delta S$  = Dollar change in sales based on forecast

$L^*$  = Liabilities that change spontaneously (tied to sales)

$M$  = Profit margin

$S_1$  = Sales (forecast)

$b$  = Retention ratio or **plowback ratio**

Additionally, we know

$$\text{Net Income}_1 = MS_1$$

$$b = 1 - \text{dividend payout ratio}$$

$$\Delta \text{Retained Earnings} = MS_1 \times b$$



**PRACTICE:** Revisiting the previous example, we can calculate EFN as:

$$EFN = \frac{\begin{array}{c} \text{Cash} \\ \downarrow \\ 290.9 \end{array} + \begin{array}{c} \text{A/R} \\ \downarrow \\ 2786 \end{array} + \begin{array}{c} \text{INV} \\ \downarrow \\ 2582.7 \end{array} + \begin{array}{c} \text{G.PPE} \\ \downarrow \\ 31300.3 \end{array} - \begin{array}{c} \text{A/D} \\ \downarrow \\ 7705.6 \end{array}}{18746.1} (\begin{array}{c} S_1 \\ \downarrow \\ 20058.3 \end{array} - \begin{array}{c} S_0 \\ \downarrow \\ 18746.1 \end{array})$$

$$- \frac{\begin{array}{c} \text{A/P} \\ \downarrow \\ 2783.6 \end{array} + \begin{array}{c} \text{Tax/P} \\ \downarrow \\ 501 \end{array}}{18746.1} (\begin{array}{c} S_1 \\ \downarrow \\ 20058.3 \end{array} - \begin{array}{c} S_0 \\ \downarrow \\ 18746.1 \end{array}) - (\begin{array}{c} MS_1 \\ \downarrow \\ 914.7 \end{array} \times \begin{array}{c} b \\ \downarrow \\ 0.55 \end{array})$$

Which yields the same EFN as we found by building pro forma statements:

$EFN =$



Work additional examples in the Excel File [Financial Forecasting](http://www.josephfarizo.com/fin360) at [www.josephfarizo.com/fin360](http://www.josephfarizo.com/fin360). Be sure that you can find the same EFN by either building pro forma statements or using the formula.

## GROWTH RATES

We've seen how the firm can determine the financing needed to achieve projected growth. But how might the firm determine appropriate growth rates? We consider two measures.

### INTERNAL GROWTH RATE

The firm's **internal growth rate** is the maximum growth rate achievable without requiring additional financing of any kind. The formula is:

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

where ROA is the return on assets (existing net income over existing assets) and  $b$  is the plowback ratio.



What does a projected growth rate above the internal growth rate imply about what the firm will need to do if it wants to achieve that projected rate?

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## SUSTAINABLE GROWTH RATE

The firm's **sustainable growth rate** is the maximum growth rate a firm can achieve with external financing while maintaining its existing debt to equity ratio. The formula is:

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

where ROE is the return on equity (existing net income over existing equity) and  $b$  is the plowback ratio.



What does a projected growth rate above the sustainable growth rate imply about what the firm will need to do? How might this present issues for the firm?

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Note that when we compute these growth rates, we need to first assume that *no liabilities, not even current liabilities, vary spontaneously with sales*. The intention of these formulas is to provide growth rates that allow the firm to then make choices about how to vary liabilities and equity to finance growth.



While assets and costs may be proportional to sales when building pro forma statements, we assume no liabilities or equity vary spontaneously with sales when determining internal and sustainable growth rates.

With the *percentage of sales* approach above, however, liabilities may vary spontaneously with sales.



**PRACTICE:** Given the following information, compute the internal and sustainable growth rates for the firm, assuming a plowback ratio of 65%. Interpret these values.

	Year End		Year End
Net Sales	\$442	Current Assets	\$30
Cost of Goods Sold	349	Fixed Assets	100
Gross Profit	<hr/> 63	<b>Total</b>	<hr/> 130
SG&A	40		
Depreciation	<hr/> 10	Current Liabilities	15
EBIT	43	Long Term Debt	15
Interest Expense	<hr/> 10	Equity	<hr/> 100
Earnings Before Taxes	33	<b>Total</b>	<hr/> <b>\$130</b> <hr/>
Income Tax Expense	<hr/> 10		
<b>Net Income</b>	<hr/> <b>\$23</b> <hr/>		

**SOLUTION:**

$$\text{Internal Growth Rate} = \frac{ROA \times b}{1 - (ROA \times b)} = 12.99\%$$

$$\text{Sustainable Growth Rate} = \frac{ROE \times b}{1 - (ROE \times b)} = 17.58\%$$

We could also find these growth rates using *only* the following measures:

Total asset turnover: 3.40  
 Profit margin: 5.2%  
 Equity multiplier: 1.30  
 Dividend payout ratio: 35%

$$ROE = PM \times TAT \times EM = 0.052 \times 3.40 \times 1.30 = 22.984\%$$

and

$$ROE = \frac{\text{Net Income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets}} \times \frac{\text{Assets}}{\text{Equity}} \Rightarrow \frac{\text{Net Income}}{\text{Assets}} \times \frac{\text{Assets}}{\text{Equity}} \Rightarrow ROA \times EM = ROE$$

$$ROE = ROA \times EM \Rightarrow 22.984\% = ROA \times 1.30$$

$$ROA = 17.69\%$$

and

$$b = 1 - 0.35 = 0.65$$

We plug these computed ROA and ROE values into the growth rate formulas. Notice if the firm grows at exactly the internal growth rate (with values we obtain from the formulas):

$$EFN = \frac{A^*}{S_0} \Delta S - \frac{L^*}{S_0} \Delta S - (MS_1 \times b) = \frac{130}{442} (57.435) - \frac{0}{442} (57.435) - (25.989 \times 0.65) = 0$$



If the firm grows at exactly the sustainable growth rate:

$$EFN = \frac{A^*}{S_0} \Delta S - \frac{L^*}{S_0} \Delta S - (MS_1 \times b) = \frac{130}{442} (77.694) - \frac{0}{442} (77.694) - (27.043 \times 0.65) = 5.273$$



This tells us that if the firm increases its debt by \$5.273, its debt-to-equity ratio would be exactly as it was before, assuming growth at the sustainable rate. You can verify this by building the pro forma statements (see the Excel file linked below).

**INTERPRETATION:** Growing at the internal growth rate implies that EFN will be zero. Growing at the sustainable growth rate tells the firm if it adds exactly the EFN to the “left side” of its balance sheet equation, its debt-to-equity ratio will be unchanged.



The Excel file [Growth Rates](#) at [www.josephfarizo.com/fin360](http://www.josephfarizo.com/fin360) provides this example and many other useful examples.

## IN SUMMARY

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Here, we've largely assumed that firms are **operating at capacity**, or that any new increase in sales requires additional investment in fixed assets. This isn't always the case: on average, **capacity utilization** is about 70-80%, exceeding only 90% during wartime. Thus, we might be overstating the EFN slightly if the firm can simply “turn on the existing machines” to increase sales revenue growth rather than purchase new ones.

Financial planning is an iterative process that should constantly be revisited and modified as conditions change. It relies on many assumptions, historical ROA and ROE figures, and fixed ratios of accounting items to sales. It is one of many tools the firm should use to finance growth.

## CRITICAL THINKING & CONCEPTUAL QUESTIONS

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1. List and describe the four major elements of a financial plan.
2. While long term financial planning is largely about making capital budgeting decisions, explain how capital structure and working capital decisions are important to financial planning.
3. Explain why maximizing shareholder value, not growth, is the ultimate goal of the financial manager.
4. Explain why a firm maximizing liquidity can be problematic.
5. Explain how a firm's high liquidity can be a good thing.
6. Using a simple mathematical example, show that a \$1,000 investment that grows to \$1,100 yields a greater return if half of the investment is paid for with a loan charging 5% than if the full \$1,000 was paid for by an investor using no borrowing.
7. Considering the example you provide in the previous problem, explain why mega-millionaires like [Beyoncé and Jay-Z, and billionaires like hedge fund manager Ken Griffin, take out mortgages to purchase homes](#) even though they can afford to pay cash.<sup>1</sup>
8. Considering the example you provide in the earlier problem, explain why firms with billions of dollars of cash still carry debt on their balance sheets.
9. Describe the percentage of sales approach and what a pro forma statement is used for.
10. Why are certain items, including notes payable, long-term debt, and common stock not forecasted as a percentage of sales?
11. Why is retained earnings not forecast as a percentage of sales? How do we determine retained earnings in our pro forma statements?
12. Explain why the pro forma balance sheet may not balance when using the percentage of sales approach, and what the difference between "assets" and "liabilities + equity" tells the firm.
13. Is it possible for the pro forma balance sheet to balance?
14. What does a positive value for EFN imply? What does a negative value for EFN imply?
15. What do we know about the EFN if the firm's sales growth is exactly the internal growth rate?
16. What do we know about the EFN if the firm's sales growth is exactly the sustainable growth rate?
17. What is the important assumption that we need to make when we compute internal and sustainable growth rates? Why is this assumption important?
18. Assume we calculate a positive EFN for the firm, but that the firm is not operating at capacity. Is the EFN we computed accurate? Why or why not?

## **ANALYTICAL QUESTIONS**

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In March of 2023, Pfizer announced its plan to acquire Seagen, a biotechnology company, for \$43 billion. Below us their abbreviated press release.<sup>2</sup> Read this press release and identify on the statement of cash flow where they report (1) how much they borrowed for this transaction, and (2) how much they paid in cash for this transaction from the attached financial statements. Do you think the growth rate they achieve from this transaction will exceed their sustainable growth rate? Will it exceed its internal growth rate? Why or why not? There is no need to do any calculations.

### *Pfizer Invests \$43 Billion to Battle Cancer*

- *Pfizer to acquire Seagen for \$229 per Seagen share in cash, for a total enterprise value of approximately \$43 billion*
- *Proposed combination enhances Pfizer's position as a leading company in Oncology*
- *Seagen's medicines, late-stage development programs and pioneering expertise in Antibody-Drug Conjugates (ADCs) strongly complement Pfizer's Oncology portfolio*
- *Seagen expected to contribute more than \$10 billion in risk-adjusted revenues in 2030*
- *Pfizer and Seagen to hold analyst and investor call at 8 a.m. EDT today*

*NEW YORK & BOTHELL, Wash.--(BUSINESS WIRE)-- Pfizer Inc. (NYSE: PFE) and Seagen Inc. (Nasdaq: SGEN) today announced that they have entered into a definitive merger agreement under which Pfizer will acquire Seagen, a global biotechnology company that discovers, develops and commercializes transformative cancer medicines, for \$229 in cash per Seagen share for a total enterprise value of \$43 billion. The Boards of Directors of both companies have unanimously approved the transaction.*

*Pfizer expects to finance the transaction substantially through \$31 billion of new, long-term debt, and the balance from a combination of short-term financing and existing cash. The transaction is expected to be neutral to slightly accretive to adjusted diluted earnings per share (EPS) in the third to fourth full year post close. Pfizer expects to achieve nearly \$1 billion in cost efficiencies in the third full year after the completion of the transaction.*

(MILLIONS)	Year Ended December 31,		
	2023	2022	2021
<b>Operating Activities</b>			
Net income before allocation to noncontrolling interests	\$ 2,158	\$ 31,407	\$ 22,025
Discontinued operations—net of tax	(15)	6	(434)
Net income from continuing operations before allocation to noncontrolling interests	2,172	31,401	22,459
Adjustments to reconcile net income before allocation to noncontrolling interests to net cash provided by/(used in) operating activities:			
Depreciation and amortization	6,290	5,064	5,191
Asset write-offs and impairments	3,408	550	276
Deferred taxes	(3,442)	(3,764)	(4,293)
Share-based compensation expense	525	872	1,182
Benefit plan contributions in excess of expense/income	(787)	(1,158)	(3,123)
Inventory write-offs and related charges associated with COVID-19 products <sup>(a)</sup>	6,199	1,183	—
Other adjustments, net	(3,492)	758	(1,573)
Other changes in assets and liabilities, net of acquisitions and divestitures:			
Trade accounts receivable	347	261	(3,811)
Inventories <sup>(a)</sup>	(1,169)	(591)	(1,125)
Other assets <sup>(b)</sup>	(663)	(4,506)	(1,057)
Trade accounts payable	(300)	1,191	1,242
Other liabilities <sup>(c)</sup>	595	(1,449)	18,721
Other tax accounts, net	(982)	(545)	(1,166)
Net cash provided by/(used in) operating activities from continuing operations	8,700	29,267	32,922
Net cash provided by/(used in) operating activities from discontinued operations	—	—	(343)
Net cash provided by/(used in) operating activities	8,700	29,267	32,580
<b>Investing Activities</b>			
Purchases of property, plant and equipment	(3,907)	(3,236)	(2,711)
Purchases of short-term investments	(30,974)	(36,384)	(38,457)
Proceeds from redemptions/sales of short-term investments	39,264	44,821	27,447
Net (purchases of)/proceeds from redemptions/sales of short-term investments with original maturities of three months or less	5,174	(483)	(8,088)
Purchases of long-term investments	(204)	(1,913)	(1,068)
Proceeds from redemptions/sales of long-term investments	1,979	641	649
Acquisitions of businesses, net of cash acquired	(43,430)	(22,997)	—
Dividend received from the Consumer Healthcare JV <sup>(d)</sup>	—	3,960	—
Other investing activities, net	(179)	(192)	(305)
Net cash provided by/(used in) investing activities from continuing operations	(32,278)	(15,783)	(22,534)
Net cash provided by/(used in) investing activities from discontinued operations	—	—	(12)
Net cash provided by/(used in) investing activities	(32,278)	(15,783)	(22,546)

Financing Activities

Proceeds from short-term borrowings	4,525	3,891	—
Payments on short-term borrowings	(3)	(3,887)	—
Net (payments on)/proceeds from short-term borrowings with original maturities of three months or less	3,161	(222)	(96)
Proceeds from issuances of long-term debt	30,831	—	997
Payments on long-term debt	(2,569)	(3,298)	(2,004)
Purchases of common stock	—	(2,000)	—
Cash dividends paid	(9,247)	(8,983)	(8,729)
Other financing activities, net	(631)	(335)	16
Net cash provided by/(used in) financing activities	26,066	(14,834)	(9,816)
Effect of exchange-rate changes on cash and cash equivalents and restricted cash and cash equivalents	(40)	(165)	(59)
Net increase/(decrease) in cash and cash equivalents and restricted cash and cash equivalents	2,448	(1,515)	159
Cash and cash equivalents and restricted cash and cash equivalents, at beginning of period	468	1,983	1,825
Cash and cash equivalents and restricted cash and cash equivalents, at end of period	\$ 2,917	\$ 468	\$ 1,983



## NOTES & REFERENCES

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<sup>1</sup> See <https://www.wsj.com/articles/what-beyonce-and-these-billionaires-have-in-common-massive-mortgages-1537457152>.

<sup>2</sup> Read the full press release here: <https://www.pfizer.com/news/press-release/press-release-detail/pfizer-invests-43-billion-battle-cancer>.

