

FN 201: Lecture Note 3

Financial Planning and Forecasting

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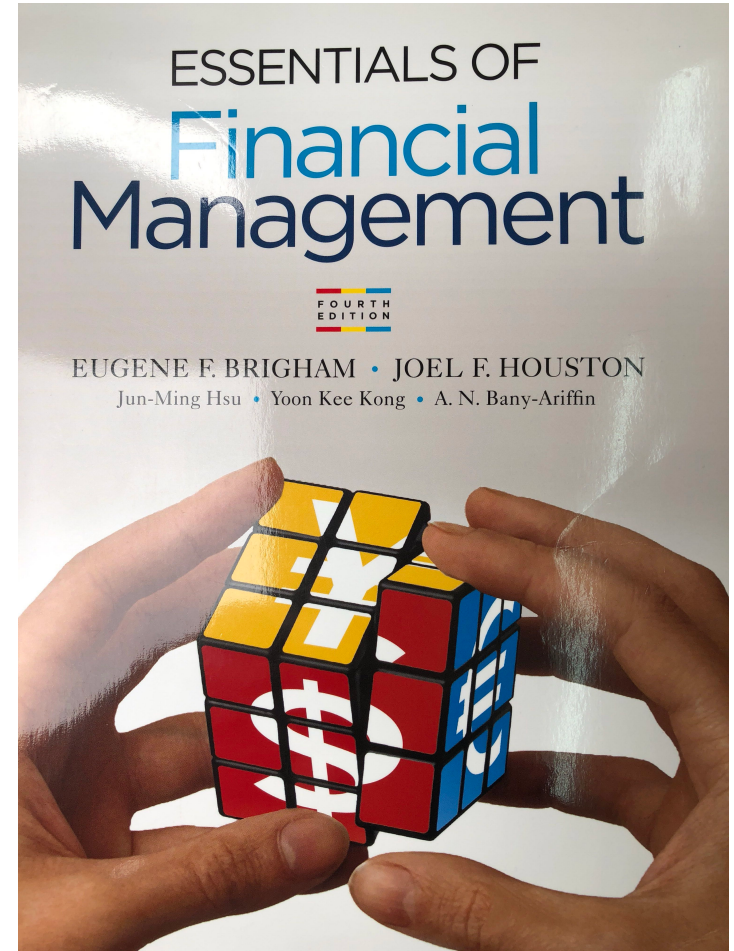
Bachelor of Economics, International Program

Thammasat University

Reading

- Brigham, E.F., Houston, J.F., Hsu, JM., Kong, Y.K., Bany-Ariffin, A.N. (2018).
Essentials of Financial Management. 4th Edition, Cengage Learning.

Chapter 6



Key Concepts and Skills

- Apply the percentage of sales method
- Compute the external financing needed to fund a firm's growth
- Name the determinants of a firm's growth
- Anticipate some of the problems in planning for growth

Outline

1. What is Financial Planning?
2. The Percentage of Sales Approach and Additional Fund Needed

1. What is Financial Planning?

Elements of Financial Planning

1. Investment in new assets
 - determined by capital budgeting decisions
2. Degree of financial leverage
 - determined by capital structure decisions
3. Cash paid to shareholders
 - determined by dividend policy decisions
4. Liquidity requirements
 - determined by net working capital decisions

Financial Planning Process

- Planning Horizon – divide decisions into short-run decisions (usually next 12 months) and long-run decisions (usually 2 – 5 years)
- Aggregation – combine capital budgeting decisions into one large project
- Assumptions and Scenarios
 - Make realistic assumptions about important variables
 - Run several scenarios where you vary the assumptions by reasonable amounts
 - Determine, at a minimum, worst case, normal case, and best case scenarios

Financial Planning Model Ingredients

- **Sales Forecast** – many cash flows depend directly on the level of sales (often estimated using sales growth rate)
- **Pro Forma Statements** – setting up the plan using projected financial statements allows for consistency and ease of interpretation
- **Asset Requirements** – the additional assets that will be required to meet sales projections
- **Financial Requirements** – the amount of financing needed to pay for the required assets
 - **Plug Variable** – determined by management deciding what type of financing will be used to make the balance sheet balance
 - **Economic Assumptions** – explicit assumptions about the coming economic environment

Example: Historical Financial Statements

Gourmet Coffee Inc. Balance Sheet December 31, 2018				Gourmet Coffee Inc. Income Statement For Year Ended December 31, 2018	
Assets	1000	Debt	400	Revenues	2000
		Equity	600	Less: costs	(1600)
Total	<u>1000</u>	Total	<u>1000</u>	Net Income	<u>400</u>

Example: Pro Forma Income Statement

- Initial Assumptions
 - Revenues will grow at 15%
(2,000 × 1.15).
 - All items are tied directly to sales, and the current relationships are optimal.
 - Consequently, all other items will also grow at 15%.

Gourmet Coffee Inc.

***Pro Forma* Income Statement For Year Ended 2019**

Revenues	2,300
Less: costs	(1,840)
Net Income	460

Example: Pro Forma Balance Sheet

- Case I
 - Dividends are the plug variable, so equity increases at 15%.
- Case II
 - Debt is the plug variable and no dividends are paid.

Gourmet Coffee Inc.			
<i>Pro Forma</i> Balance Sheet			
Case 1			
Assets	1,150	Debt	460
		Equity	
Total	<u>1,150</u>	Total	<u>1,150</u>

Gourmet Coffee Inc.			
<i>Pro Forma</i> Balance Sheet			
Case 2			
Assets	1,150	Debt	
		Equity	1,060
Total	<u>1,150</u>	Total	<u>1,150</u>

2. The Percentage of Sales Approach and Additional Fund Needed

Percentage of Sales Approach

- Some items vary directly with sales, while others do not.
- **Income Statement**
 - Costs may vary directly with sales – if this is the case, then the profit margin is constant.
 - Depreciation and interest expense may not vary directly with sales – if this is the case, then the profit margin is not constant.
 - Dividends are a management decision and generally do not vary directly with sales – this influences additions to retained earnings.
- **Balance Sheet**
 - Initially assume all assets, including fixed, vary directly with sales.
 - Accounts payable will also normally vary directly with sales.
 - Notes payable, long-term debt and equity generally do not vary directly with sales because they depend on management decisions about capital structure.
 - The change in the retained earnings portion of equity will come from the dividend decision.

Financial Forecasting: Income Statement

Example: In 2016, sales for American Pulp and Paper were \$100,000 million. In 2017, management believes that sales will increase by 35%, with a continued profit margin expected to be 5% and dividend payout ratio of 40%. Given the following income statement (in millions), what is the pro forma income statement?

INCOME STATEMENT 2016

Sale revenue	100,000
COGS	80,000
Gross profit	20,000
Operating expenses	10,000
Operating profit	10,000
Financial expenses	1,000
Earnings before tax	9,000
Tax (15%)	1,350
Net profit	7,650
Dividend	4,000
Retained earning	3,650

Financial Forecasting: Income Statement

Pro Forma Income Statement

Percent-of-Sales Method

- 1) **ALL** types grow proportionally with sales.
- 2) **SOME** types grow proportionally with sales.

= Percent of sales of the based year.

How much is expected sale revenue in 2017?

Financial Forecasting: Income Statement

1) ALL types grow proportionally with sales.

		<u>% of sales</u>	<u>2017f</u>	<u>Change</u>
Sale revenue	100,000	100.00%	135,000.00	35,000
COGS	80,000	80.00%	108,000.00	28,000
Gross profit	20,000	20.00%	27,000.00	7,000
Operating expenses	10,000	10.00%	13,500.00	3,500
Operating profit	10,000	10.00%	13,500.00	3,500
Financial expenses	1,000	1.00%	1,350.00	350
Earnings before tax	9,000	9.00%	12,150.00	3,150
Tax (15%)	1,350	1.35%	1,822.50	473
Net profit	7,650	7.65%	10,327.50	2,678.50
Dividend	4,000		4,000.00	
Retained earning	3,650		6,327.50	

Financial Forecasting: Income Statement

2) **SOME** types grow

Proportionally
with sales.

		<u>% of sales</u>	<u>2017f</u>	<u>Change</u>
Sale revenue	100,000	100.00%	135,000.00	35,000
COGS				
Fixed (50%)	40,000		40,000.00	
Variable (50%)	40,000	40.00%	54,000.00	14,000
Gross profit	20,000	20.00%	41,000.00	21,000
Operating expenses				
Fixed (50%)	5,000		5,000.00	
Variable (50%)	5,000	5.00%	6,750.00	1,750
Operating profit	10,000	10.00%	29,250.00	19,250
Financial expenses	1,000	1.00%	1,000.00	
Earnings before tax	9,000	9.00%	28,250.00	19,250
Tax (15%)	1,350	1.35%	4,237.50	2,887.50
Net profit	7,650	7.65%	24,012.50	16,362.50
Dividend	4,000		4,000.00	
Retained earning	3,650		20,012.50	

Financial Forecasting: Income Statement

Pro Forma Income Statement

Percent-of-Sales Method

- 1) **ALL** types grow proportionally with sales.
- 2) **SOME** types grow proportionally with sales.

Which one is more realistic?

Financial Forecasting: Balance Sheet

Pro Forma Statement of Financial Position (Balance Sheet)

INVESTMENT:

1. Current Assets – Spontaneous Investment
2. Fixed Assets – Full capacity vs. Excess capacity

FINANCING:

1. Current Liabilities – Spontaneous Financing
2. Equity – Retained earnings

=>> Additional Funds Needed (AFN) or External Financing Need (EFN)

Financial Forecasting: Balance Sheet

Example: The Statement of Financial Position of American Pulp and Paper for the year end 2016 are as follows.

ASSETS:			LIABILITIES AND EQUITY:		
	Value	% of Sale		Value	% of Sale
Cash	6,000.00	6.00%	A/P	7,000.00	7.00%
ST-investment	4,000.00	4.00%	Tax Payable	300.00	0.30%
A/R	13,000.00	13.00%	Note Payable	8,300.00	8.30%
Inventory	16,000.00	16.00%	Other Current Liabilities	3,400.00	3.40%
Current Assets	39,000.00	39.00%	Current Liabilities	19,000.00	19.00%
Fixed Assets	51,000.00	51.00%	Long-term Debt	18,000.00	18.00%
Total Assets	90,000.00	90.00%	Common stock	30,000.00	30.00%
			R/E	23,000.00	23.00%
			Liabilities and Equity	90,000.00	90.00%

Financial Forecasting: Balance Sheet

Example: The Statement of Financial Position of American Pulp and Paper for the year end 2016 are as follows.

- 1) Full capacity => FA investment needed
- 2) Excess Capacity => No / some part of FA investment

Financial Forecasting: Balance Sheet

1) Full Capacity - Assets

Sale = 135,000

<u>ASSETS:</u>	<u>2016Value</u>	<u>% of sales</u>	<u>2017f</u>	<u>Change</u>
Cash	6,000	6%	8,100	2,100
ST-investment	4,000	4%	5,400	1,400
A/R	13,000	13%	17,550	4,550
Inventory	16,000	16%	21,600	5,600
Current Assets	39,000	39%	52,650	13,650
Fixed Assets	51,000	51%	68,850	17,850
Total Assets	90,000	90%	121,500	31,500

Financial Forecasting: Balance Sheet

1) Full Capacity – Liability & Equity

LIABILITIES AND

<u>EQUITY:</u>	<u>2016Value</u>	<u>% of sales</u>	<u>2017f</u>	<u>Change</u>
A/P	7,000	7.00%	9,450	2,450
Tax Payable	300	0.30%	405	105
Note Payable	8,300		8,300	
Other CL	3,400	3.40%	4,590	1,190
Current Liabilities	19,000		22,745	3,745
Long-term Debt	18,000		18,000	
Common stock	30,000		30,000	
R/E	23,000	+6,327	29,327	6,327
AFN			21,428	21,428
Liabilities and Equity	90,000	90.00%	121,500	31,500

Financial Forecasting: Balance Sheet

1) Full Capacity - Additional Funds Needed (AFN)

- Additional ASSETS investment = $A_{2017} - A_{2016}$

$$= 121,500 - 90,000 = \underline{31,500}$$

- Spontaneous Financing: (+) A/P =

$$(+)\ T/P =$$

$$(+)\ \text{other CL} =$$

$$(+)\ R/E =$$

$$\text{Total Spontaneous Financing} =$$

- AFN =

Financial Forecasting: Balance Sheet

2) Excess Capacity - Assets

Sale = 135,000

<u>ASSETS:</u>	<u>2016Value</u>	<u>% of sales</u>	<u>2017f</u>	<u>Change</u>
Cash	6,000	6%	8,100	2,100
ST-investment	4,000	4%	5,400	1,400
A/R	13,000	13%	17,550	4,550
Inventory	16,000	16%	21,600	5,600
Current Assets	39,000	39%	52,650	13,650
Fixed Assets	51,000		51,000	
Total Assets	90,000	90%	103,650	13,650

Financial Forecasting: Balance Sheet

2) Excess Capacity – Liability & Equity

LIABILITIES AND

<u>EQUITY:</u>	<u>2016Value</u>	<u>% of sales</u>	<u>2017f</u>	<u>Change</u>
A/P	7,000	7.00%	9,450	2,450
Tax Payable	300	0.30%	405	105
Note Payable	8,300		8,300	
Other CL	3,400	3.40%	4,590	1,190
Current Liabilities	19,000		22,745	3,745
Long-term Debt	18,000		18,000	
Common stock	30,000		30,000	
R/E	23,000	+6,327	29,327	6,327
AFN			3,578	<u>3,578</u>
Liabilities and Equity	90,000	90.00%	103,650	13,650

Financial Forecasting: Balance Sheet

2) Excess Capacity – Additional Funds Needed (AFN)

- Additional ASSETS investment = $A_{2017} - A_{2016}$

$$= 103,650 - 90,000 = \underline{13,650}$$

- Spontaneous Financing: (+) A/P =

$$(+)\text{ T/P} =$$

$$(+)\text{ other CL} =$$

$$(+)\text{ R/E} =$$

$$\text{Total Spontaneous Financing} =$$

- AFN =

Financial Forecasting: Balance Sheet

AFN Relationships

$$\begin{aligned} \text{AFN} &= (\text{Additional Assets}) \\ &\quad - (\text{Spontaneous Financing}) \\ &\quad - (\text{R/E}) \end{aligned}$$

$$AFN = \left(\frac{A^*}{S_0} \right) \times \Delta S - \left(\frac{L^*}{S_0} \right) \times \Delta S - (M \times S_1 - \text{Dividend})$$

Financial Forecasting: Balance Sheet

Full Capacity – Additional Funds Needed (AFN)

$$AFN = \left(\frac{A^*}{S_0} \right) \times \Delta S - \left(\frac{L^*}{S_0} \right) \times \Delta S - (M \times S_1 - Dividend)$$

Financial Forecasting: Balance Sheet

Full Capacity – Additional Funds Needed (AFN)

Note: Only 10,000 needed.

Financial Forecasting: Balance Sheet

Excess Capacity – Additional Funds Needed (AFN)

Financial Forecasting: Balance Sheet

$$AFN = \left(\frac{A^*}{S_0} \right) \times \Delta S - \left(\frac{L^*}{S_0} \right) \times \Delta S - (M \times S_1 - Dividend)$$

Key Drivers	Changes	Changes in AFN
ΔS	(+)	(+)
A^*/S_0	(+)	(+)
L^*/S_0	(+)	(-)
M	(+)	(-)
RR	(+)	(-)

Financial Forecasting: Notes

1. Changes in pattern of relationship among accounting items

- Inventory to Sales Ratio
- Economies of Scales

2. Excess Capacity

- Fixed Asset Utilization Rate

3. Lumpy Asset

- Machine
- New Plant / Factory

Question?