FINANCIAL MANAGEMENT
lecture 7

CHAPTER 4
FINANCIAL FORECAST

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Chapter 4: Financial Forecast

❖ *Studying Purpose*

- *Financial forecasting is essential to the strategic growth of the firm*
- *The three financial statements for forecasting are the pro forma income statement, the cash budget, and the pro forma balance sheet*
- *The percent-of-sales method may also be used for forecasting on a less precise basis*
- *The various methods of forecasting enable the firm to determine the amount of new funds required in advance*
- *The process of forecasting forces the firm to consider seasonal and other effects on cash flow*

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Chapter 4: Financial Forecast

- **Main Contents:**
  1. Pro Forma Statement
  2. Cash Budget
  3. Pro forma Balance Sheet
  4. Percent-of-Sales Method

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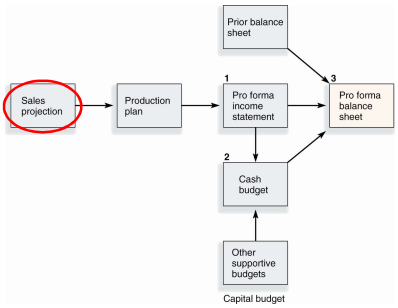
I. Pro Forma Statement



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I. Pro Forma Statement (cont'd)

❖ ***Establish a Sales Projection***

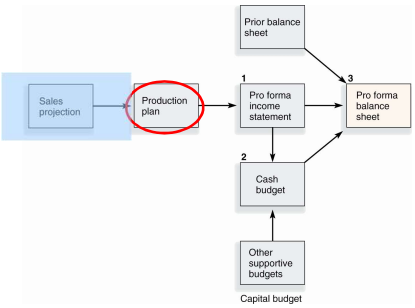
Goldman Corporation

- *The firm has two primary products: wheels and casters*

– ***Projected wheel and caster sales for first 6 month of the year:***

	Wheels	Casters	
Quantity	1,000	2,000	
Sales price	$30	$35	
Sales revenue	$30,000	$70,000	
Total			$100,000

I. Pro Forma Statement (cont'd)



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I. Pro Forma Statement (cont'd)

❖ *Determine a Production Schedule and the Gross Profit*

– *Stock of beginning inventory:*

	Wheels	Casters	
Quantity	85	180	
Cost	$16	$20	
Total value	$1,360	$3,600	
Total			$4,960

Production requirement	=	Projected sales	+	Desired ending inventory	-	Beginning inventory

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I. Pro Forma Statement (cont'd)

❖ *Determine a Production Schedule and the Gross Profit (cont'd)*

Production requirement	=	Projected sales	+	Desired ending inventory	-	Beginning inventory

– *Production requirement for 6 months:*

	Wheels	Casters
Projected unit sales (Table 4–1)	+1,000	+2,000
Desired ending inventory (assumed to represent 10% of unit sales for the time period)	+100	+200
Beginning inventory (Table 4–2)	−85	−180
Units to be produced	1,015	2,020

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I. Pro Forma Statement (cont'd)

❖ *Determine a Production Schedule and the Gross Profit (cont'd)*

– *The production cost for each unit:*

	Wheels	Casters
Materials	$10	$12
Labor	5	6
Overhead	3	4
Total	$18	$22

– *The total production cost:*

	Wheels	Casters	
Units to be produced (Table 4–3)	1,015	2,020	
Cost per unit (Table 4–4)	$18	$22	
Total cost	$18,270	$44,440	$62,710

I. Pro Forma Statement (cont'd)

❖ *Determine a Production Schedule and the Gross Profit (cont'd)*

- *Cost associated with the units sold during the time period*
- *Assumptions for cost of good sold: FIFO accounting is used*

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I. Pro Forma Statement (cont'd)

❖ *Determine a Production Schedule and the Gross Profit (cont'd)*

	Wheels		Casters		Combined
Quantity sold (Table 4–1)		1,000		2,000	3,000
Sales price		$30		$35	
Sales revenue		$30,000		$70,000	$100,000
Cost of goods sold:					
Old inventory (Table 4–2)					
Quantity (units)	85		180		
Cost per unit	$16		$20		
Total		$ 1,360		$ 3,600	
New inventory (the remainder)					
Quantity (units)	915		1,820		
Cost per unit (Table 4–4)	$18		$22		
Total		16,470		40,040	
Total cost of goods sold		17,830		43,640	$ 61,470
Gross profit		$12,170		$26,360	$ 38,530

I. Pro Forma Statement (cont'd)

❖ *Determine a Production Schedule and the Gross Profit (cont'd)*

+	Beginning inventory (Table 4–2)	$ 4,960
+	Total production costs (Table 4–5)	62,710
	Total inventory available for sales	67,670
–	Cost of goods sold (Table 4–6)	61,470
	Ending inventory	$ 6,200

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I. Pro Forma Statement (cont'd)

❖ *Other expense items*

Goldman Corporation

- *General and Administration expenses: $12,000*
- *Interest expense: $1,500*
- *Dividends: $1,500*

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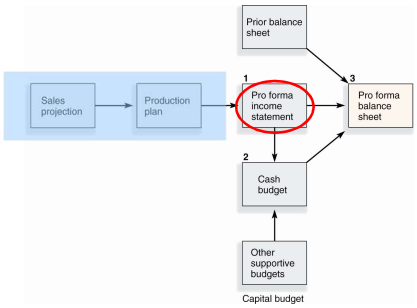
I. Pro Forma Statement (cont'd)



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I. Pro Forma Statement (cont'd)

❖ *Actual Pro Forma Income Statement*

Pro Forma Income Statement
June 30, 2008

Sales revenue	$100,000
Cost of goods sold	61,470
Gross profit	38,530
General and administrative expense	12,000
Operating profit (EBIT)	26,530
Interest expense	1,500
Earnings before taxes (EBT)	25,030
Taxes (20%)*	5,006
Earnings after taxes (EAT)	20,024
Common stock dividends	1,500
Increase in retained earnings	$ 18,524

*20 percent is applied for simplicity.

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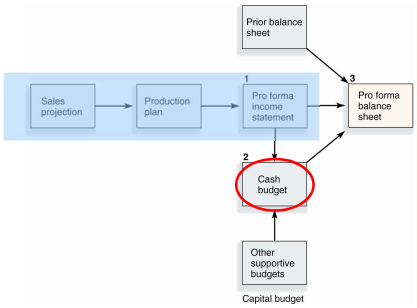
I. Pro Forma Statement (cont'd)



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II. Cash Budget

- ***Cash receipt***
  - ***Assuming the projected six-month sales can be divided as:***

January	February	March	April	May	June
$15,000	$10,000	$15,000	$25,000	$15,000	$20,000

  - ***From the past analysis, 20% of sales is collected in the month, 80% in the following month, and the sales of December is $12,000***

	December	January	February	March	April	May	June
Sales	$12,000	$15,000	$10,000	$15,000	$25,000	$15,000	$20,000
Collections: (20% of current sales)		$ 3,000	$ 2,000	$ 3,000	$ 5,000	$ 3,000	$ 4,000
Collections: (80% of previous month's sales)		9,600	12,000	8,000	12,000	20,000	12,000
Total cash receipts		$12,600	$14,000	$11,000	$17,000	$23,000	$16,000

II. Cash Budget (cont'd)

- ***Cash payments***
  - ***Monthly costs associated with:***
    - *Inventory manufactured during the period (material, labor, and overhead)*
    - *Disbursement for general and administrative expenses*
    - *Interest payment, taxes and dividends*
    - *Cash payments for new plant and equipment*

	Wheels			Casters			
	Units Produced	Cost per Unit	Total Cost	Units Produced	Cost per Unit	Total Cost	Combined Cost
Materials	1,015	$10	$10,150	2,020	$12	$24,240	$34,390
Labor	1,015	5	5,075	2,020	6	12,120	17,195
Overhead	1,015	3	3,045	2,020	4	8,080	11,125
							$62,710

II. Cash Budget (cont'd)

❖ *Cash payments (cont'd)*

	Total Costs	Time Frame	Average Monthly Cost
Materials	$34,390	6 months	$5,732
Labor	17,195	6 months	2,866
Overhead	11,125	6 months	1,854

- *Payment for material, once a month after purchases have been made*
- *Labor and overhead: direct monthly cash outlays*
- *Interest, tax, dividend, purchase of $8,000 in new equipment in February, $10,000 in June*

Goldman Corporation

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II. Cash Budget (cont'd)

❖ *Cash payments (cont'd)*

	December	January	February	March	April	May	June
From Table 4–12:							
Monthly material purchase	$4,500	$ 5,732	$ 5,732	$ 5,732	$ 5,732	$ 5,732	$ 5,732
Payment for material (prior month's purchase)		$ 4,500	$ 5,732	$ 5,732	$ 5,732	$ 5,732	$ 5,732
Monthly labor cost		2,866	2,866	2,866	2,866	2,866	2,866
Monthly overhead		1,854	1,854	1,854	1,854	1,854	1,854
From Table 4–8:							
General and administrative expense ($12,000 over 6 months)		2,000	2,000	2,000	2,000	2,000	2,000
Interest expense							1,500
Taxes (two equal payments)				2,503			2,503
Cash dividend							1,500
Also:							
New equipment purchases			8,000				10,000
Total payments		$11,220	$20,452	$14,955	$12,452	$12,452	$27,953

II. Cash Budget (cont'd)

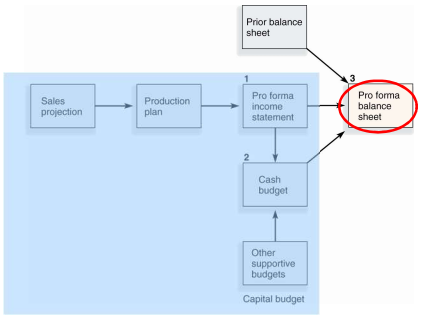
❖ *Actual budget*

	January	February	March	April	May	June
Total receipts (Table 4–10)	$12,600	$14,000	$11,000	$17,000	$23,000	$16,000
Total payments (Table 4–13)	11,220	20,452	14,955	12,452	12,452	27,953
Net cash flow	$ 1,380	($ 6,452)	($ 3,955)	$ 4,548	$10,548	($11,953)

	January	February	March	April	May	June
1. Net cash flow	$1,380	($6,452)	($3,955)	$4,548	$10,548	($11,953)
2. Beginning cash balance	5,000*	6,380	5,000	5,000	5,000	11,069
3. Cumulative cash balance	6,380	(72)	1,045	9,548	15,548	(884)
4. Monthly loan (or repayment)	—	5,072	3,955	(4,548)	(4,479)	5,884
5. Cumulative loan balance	—	5,072	9,027	4,479	—	5,884
6. Ending cash balance	6,380	5,000	5,000	5,000	11,069	5,000

*We assume the Goldman Corporation has a beginning cash balance of $5,000 on January 1, 2008, and it desires a minimum monthly ending cash balance of $5,000.

II. Cash Budget (cont'd)



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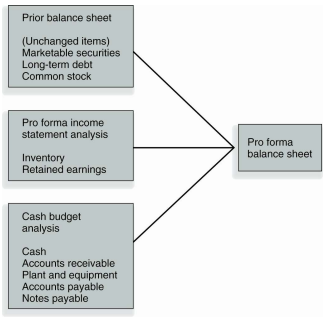
III. Pro Forma Balance Sheet



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Balance Sheet
December 31, 2007

Assets	
Current assets:	
Cash	$ 5,000
Marketable securities	3,200
Accounts receivable	9,600
Inventory	4,960
Total current assets	22,760
Plant and equipment	27,740
Total assets	$50,500
	$ 4,500
	0
	15,000
	10,500
	20,500
	$50,500

Pro Forma Balance Sheet
June 30, 2008

Assets	
Current assets:	
1. Cash	$ 5,000
2. Marketable securities	3,200
3. Accounts receivable	16,000
4. Inventory	6,200
Total current assets	30,400
5. Plant and equipment	45,740
Total assets	$76,140
Liabilities and Stockholders' Equity	
6. Accounts payable	$ 5,732
7. Notes payable	5,884
8. Long-term debt	15,000
9. Common stock	10,500
10. Retained earnings	39,024
Total liabilities and stockholders' equity	$76,140

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III. Pro Forma Balance Sheet (cont'd)

❖ ***Analysis of Pro Forma Statement***

– ***The growth of the asset ($25,640) was financed by:***

- *Account payable: $1,232*
- *Notes payable: $5,884*
- *Retained earning: $18,524*

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IV. Percent-of-Sales Method

❖ ***The purpose of the method:***

- *To determine financial needs that finance for the sales growth*

HOWARD CORPORATION
Balance Sheet and Percent-of-Sales Table

Assets		Liabilities and Stockholders' Equity	
Cash	$ 5,000	Accounts payable	$ 40,000
Accounts receivables	40,000	Accrued expenses	10,000
Inventory	25,000	Notes payable	15,000
Total current assets	$ 70,000	Common stock	10,000
Plant and equipment	50,000	Retained earnings	45,000
Total assets	$120,000	Total liabilities and stockholders' equity	$120,000

$200,000 Sales

Percent of Sales			
Cash	2.5%	Accounts payable	20.0%
Accounts receivable	20.0	Accrued expenses	5.0
Inventory	12.5		25.0%
Total current assets	35.0		
Plant and equipment	25.0		
	60.0%		

•*Notes payable, common stock, and retained earning are not assumed to a direct relationship with sales*

IV. Percent-of-Sales Method (cont'd)

– *In the case of full capacity, any dollar increase in sales will necessitate a 35% increase in current assets, 25% in plant and equipment*

– ***In the case of full capacity, if the sales is projected to $300,000; what is the Required New Funds (RFN) ? assuming that EAT of 6% on the sales, and 50% of profit paid as dividend***

$$RFN = \frac{A}{S}\Delta S - \frac{L}{S}\Delta S - PS_2(1-D)$$

- *A/S : percentage relationship assets to sales*
- *ΔS : change in sales*
- *L/S : percentage relationship liabilities to sales*
- *P: profit margin*
- *S_2 : new sales*
- *D : dividend ratio*

RFN = $26,000

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IV. Percent-of-Sales Method (cont'd)

– ***What if the firm is operating at less than its full capacity and does not need to buy new plant and new equipment; what is the Required New Funds (RFN) ?***

$$RFN = \frac{A}{S}\Delta S - \frac{L}{S}\Delta S - PS_2(1-D)$$

- *A/S : percentage relationship assets to sales*
- *ΔS : change in sales*
- *L/S : percentage relationship liabilities to sales*
- *P: profit margin*
- *S_2 : new sales*
- *D : dividend ratio*

RFN = $1,000

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Appendix

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III. Percentage of Sales approach

- *The simple planning model is not suitable for long-term borrowing*

❖ ***The basic idea:***

- *Separate the income statement and balance sheet accounts into two groups:*
  - *One varies directly with sales*
  - *One don't varies with sales*
- *With the sales forecast, calculate how much financing the firm will need to support the predicted sales level*

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III. Percentage of Sales approach
(cont'd)

1. The income statement

ROSENGARTEN CORPORATION Income Statement		
Sales		$1,000
Costs		800
Taxable income		$ 200
Taxes (34%)		68
Net income		$ 132
Dividends	$44	
Addition to retained earnings	88	

- *Assuming that the projected sales increases 25% for the coming year. The pro forma income statement is:*

ROSENGARTEN CORPORATION Pro Forma Income Statement	
Sales (projected)	$1,250
Costs (80% of sales)	1,000
Taxable income	$ 250
Taxes (34%)	85
Net income	$ 165

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III. Percentage of Sales approach
(cont'd)

1. The income statement (cont'd)

ROSENGARTEN CORPORATION Pro Forma Income Statement	
Sales (projected)	$1,250
Costs (80% of sales)	1,000
Taxable income	$ 250
Taxes (34%)	85
Net income	$ 165

- *Next, the dividend payment will be projected*

  ✓ *Assuming that company pays out a constant fraction of net income in the form of cash dividend*

  ✓ *The current dividend payout ratio: 33.3%*

  ✓ *The current plowback ratio: 66.7%*

  - *Projected dividends paid to shareholder: $165 x 33.3% = $55*
  - *Projected additional to retained earning: $165 x 66.7% = $110*

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III. Percentage of Sales approach
(cont'd)

2. The balance sheet

- *Assuming that on the balance sheet, some items vary differently with sales and others do not*

ROSENGARTEN CORPORATION Balance Sheet					
Assets			Liabilities and Owners' Equity		
	$	Percentage of Sales		$	Percentage of Sales
Current assets			Current liabilities		
Cash	$ 160	16%	Accounts payable	$ 300	30%
Accounts receivable	440	44	Notes payable	100	n/a
Inventory	600	60	Total	$ 400	n/a
Total	$1,200	120	Long-term debt	$ 800	n/a
Fixed assets			Owners' equity		
Net plant and equipment	$1,800	180	Common stock and paid-in surplus	$ 800	n/a
			Retained earnings	1,000	n/a
			Total	$1,800	n/a
Total assets	$3,000	300%	Total liabilities and owners' equity	$3,000	n/a

- *Assuming that the percentage will also apply to the coming year*

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III. Percentage of Sales approach
(cont'd)

2. The balance sheet (cont'd)

ROSENGARTEN CORPORATION
Partial Pro Forma Balance Sheet

Assets	Present Year	Change from Previous Year	Liabilities and Owners' Equity	Present Year	Change from Previous Year
Current assets			Current liabilities		
Cash	$ 200	$ 40	Accounts payable	$ 375	$ 75
Accounts receivable	550	110	Notes payable	100	0
Inventory	750	150	Total	$ 475	$ 75
Total	$1,500	$300	Long-term debt	$ 800	$ 0
Fixed assets					
Net plant and equipment	$2,250	$450	Owners' equity		
			Common stock and paid-in surplus	$ 800	$ 0
			Retained earnings	1,110	110
			Total	$1,910	$110
Total assets	$3,750	$750	Total liabilities and owners' equity	$3,185	$185
			External financing needed	$ 565	$565

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- *The increase in sales (25%) cannot be achieved without new financing ($565)*

III. Percentage of Sales approach
(cont'd)

3. A particular scenario

- *If the company take the need for $565 in new financing, it has three possible sources:*
  - ✓ *Short-term borrowing*
  - ✓ *Long-term borrowing*
  - ✓ *New equity*
- *The company chooses to borrow some over the short-term and some over the long-term:*
  - ✓ *Current assets: increased by $300*
  - ✓ *Current liabilities: increased by $75*

Borrow $225 in short-term notes payable

Borrow $565 - $225 = $340 in long-term notes payable

III. Percentage of Sales approach
(cont'd)

3. A particular scenario (cont'd)

ROSENGARTEN CORPORATION
Pro Forma Balance Sheet

Assets	Present Year	Change from Previous Year	Liabilities and Owners' Equity	Present Year	Change from Previous Year
Current assets			Current liabilities		
Cash	$ 200	$ 40	Accounts payable	$ 375	$ 75
Accounts receivable	550	110	Notes payable	325	225
Inventory	750	150	Total	$ 700	$300
Total	$1,500	$300	Long-term debt	$1,140	$340
Fixed assets					
Net plant and equipment	$2,250	$450	Owners' equity		
			Common stock and paid-in surplus	$ 800	$ 0
			Retained earnings	1,110	110
			Total	$1,910	$110
Total assets	$3,750	$750	Total liabilities and owners' equity	$3,750	$750

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III. Percentage of Sales approach
(cont'd)

3. An alternative scenario

- *In reality, increase in sales would not necessarily have need to invest in the fixed assets, the company could run an extra shift*

- *Assuming that the company is operating at only 70% of capacity*
  - *Means that the current sales level is 70% of the full-capacity sales level*
    - *Full-capacity sales = $1,000 / 70% = $1,429*
      - *Sales would have to increase 42.9% before any new fixed asset would be needed*

- *The company should not spend $450 on fixed assets, then the company needs only $565 - $450 = $115 in external funds*

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Thank you for your attention !

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