

Principles of Managerial Finance Solution

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CHAPTER 3

Cash Flow and Financial Planning

INSTRUCTOR'S RESOURCES

Overview

This chapter introduces the student to the financial planning process, with the emphasis on short-term (operating) financial planning and its two key components: cash planning and profit planning. Cash planning requires preparation of the cash budget, while profit planning involves preparation of a pro forma income statement and balance sheet. The text illustrates through example how these budgets and statements are developed. The weaknesses of the simplified approaches (judgmental and percent-of-sales methods) of pro forma statement preparation are outlined. The distinction between Operating cash flow and Free cash flow is presented and discussed. Current tax law regarding the depreciation of assets and the effect on cash flow are also described. The firm's cash flow is analyzed through classification of sources and uses of cash. The student is guided in a step-by-step preparation of the statement of cash flows and the interpretation of this statement.

PMF DISK

This chapter's topics are not covered on the *PMF Tutor*, *PMF Problem-Solver*, or the *PMF Templates*.

Study Guide

Suggested *Study Guide* examples for classroom presentation:

<u>Example</u>	<u>Topic</u>
1	Cash budgets
3	Pro forma financial statements

ANSWERS TO REVIEW QUESTIONS

3-1 The first four classes of property specified by the MACRS system are categorized by the length of the depreciation (recovery) period are called 3-, 5-, 7-, and 10-year property:

Recovery Period	Definition
3 years	Research and experiment equipment and certain special tools.
5 years	Computers, typewriters, copiers, duplicating equipment, cars, light duty trucks, qualified technological equipment, and similar assets.
7 years	Office furniture, fixtures, most manufacturing equipment, railroad track, and single-purpose agricultural and horticultural structures.
10 years	Equipment used in petroleum refining or in the manufacture of tobacco products and certain food products.

The depreciation percentages are determined by the double-declining balance (200%) method using the half-year convention and switching to straight-line depreciation when advantageous.

3-2 *Operating flows* relate to the firm's production cycle—from the purchase of raw materials to the finished product. Any expenses incurred directly related to this process are considered operating flows.

Investment flows result from the purchases and sales of fixed assets and business interests.

Financing flows result from borrowing and repayment of debt obligations and from equity transactions such as the sale or purchase of stock and dividend payments.

3-3 A decrease in the cash balance is a *source* of cash flow because cash flow must have been released for some purpose, such as an increase in inventory. Similarly, an increase in the cash balance is a *use* of cash flow, since the cash must have been drawn from some source of cash flow. The increase in cash is an investment (use) of cash in an asset.

3-4 Depreciation (and amortization and depletion) is a cash inflow to the firm since it is treated as a non-cash expenditure from the income statement. This reduces the firm's cash outflows for tax purposes. Cash flow from operations can be found by adding depreciation and other non-cash charges back to profits after taxes. Since depreciation is deducted for tax purposes but does not actually require any cash outlay, it must be added back in order to get a true picture of operating cash flows.

3-5 Cash flows shown in the statement of cash flows are divided into three categories and presented in the order of: 1. cash flow from operations, 2. cash flow from investments, and 3. cash flow from financing. Traditionally cash outflows are shown in brackets to distinguish them from cash inflows.

3-6 *Operating cash flow* is the cash flow generated from a firm's normal operations of producing and selling its output of goods and services. *Free cash flow* is the amount of cash flow available to both debt and equity investors after the firm has met its operating and asset investment needs.

3-7 The *financial planning process* is the development of long-term strategic financial plans that guide the preparation of short-term operating plans and budgets. *Long-term (strategic) financial plans* anticipate the financial impact of planned long-term actions (periods ranging from two to ten years). *Short-term*

Chapter 3 Cash Flow and Financial Planning

(operating) financial plans anticipate the financial impact of short-term actions (periods generally less than two years).

- 3-8** Three key statements resulting from short-term financial planning are 1) the cash budget, 2) the pro forma income statement, and 3) the pro forma balance sheet.
- 3-9** The *cash budget* is a statement of the firm's planned cash inflows and outflows. It is used to estimate its short-term cash requirements. The sales forecast is the key variable in preparation of the cash budget. Significant effort should be expended in deriving a sales figure.
- 3-10** The basic format of the cash budget is presented in the table below.

Cash Budget Format

	Jan.	Feb.	...	Nov.	Dec.
Cash receipts	\$xx	\$xx		\$xx	\$xx
Less: Cash disbursements	<u>xx</u>	<u>xx</u>	...	<u>xx</u>	<u>xx</u>
Net cash flow	xx	xx		xx	xx
Add: Beginning cash	<u>xx</u>	<u>xx</u>	...	<u>xx</u>	<u>xx</u>
Ending cash	xx	xx		xx	xx
Less: Minimum cash balance	<u>xx</u>	<u>xx</u>	...	<u>xx</u>	<u>xx</u>
Required total financing (Notes payable)	\$xx				
Excess cash balance (Marketable securities)		\$xx			

The components of the cash budget are defined as follows:

Cash receipts - the total of all items from which cash inflows result in any given month. The most common components of cash receipts are cash sales, collections of accounts receivable, and other cash received from sources other than sales (dividends and interest received, asset sales, etc.).

Cash disbursements - all outlays of cash in the periods covered. The most common cash disbursements are cash purchases, payments of accounts payable, payments of cash dividends, rent and lease payments, wages and salaries, tax payments, fixed asset outlays, interest payments, principal payments (loans), and repurchases or retirement of stock.

Net cash flow - found by subtracting the cash disbursements from cash receipts in each month.

Ending cash - the sum of beginning cash and net cash flow.

Required total financing - the result of subtracting the minimum cash balance from ending cash and obtaining a negative balance. Usually financed with notes payable.

Excess cash - the result of subtracting the minimum cash balance from ending cash and obtaining a positive balance. Usually invested in marketable securities.

Chapter 3 Cash Flow and Financial Planning

- 3-11** The ending cash without financing, along with any required minimum cash balance, can be used to determine if additional cash is needed or excess cash will result. If the ending cash is less than the minimum cash balance, additional financing must be arranged; if the ending cash is greater than the minimum cash balance, investment of the surplus should be planned.
- 3-12** Uncertainty in the cash budget is due to the uncertainty of ending cash values, which are based on forecasted values. This may cause a manager to request or arrange to borrow more than the maximum financing indicated. One technique used to cope with this uncertainty is *sensitivity analysis*. This involves preparing several cash budgets, based on different assumptions: a pessimistic forecast, a most likely forecast, and an optimistic forecast. A more sophisticated technique is to use *computer simulation*.
- 3-13** *Pro forma statements* are used to provide a basis for analyzing future profitability and overall financial performance as well as predict external financing requirements. The *sales forecast* is the first statement prepared, since projected sales figures are the driving force behind the development of all other statements. The firm's latest actual balance sheet and income statement are needed as the base year for preparing pro forma statements.
- 3-14** In the *percent-of-sales method* for preparing a pro forma income statement, the financial manager begins with sales forecasts and uses values for cost of goods sold, operating expenses, and interest expense that are expressed as a percentage of projected sales. This technique assumes all costs to be variable. The weakness of this approach is that net profit may be overstated for firms with high fixed costs and understated for firms with low fixed costs. The strength of this approach is ease of calculation.
- 3-15** Due to the effect of leverage, ignoring fixed costs tends to understate profits when sales are rising and overstate them when sales are falling. To avoid this problem, the analyst should divide the expense portion of the pro forma income statement into fixed and variable components.
- 3-16** The *judgmental approach* is used to develop the pro forma balance sheet by estimating some balance sheet accounts while calculating others. This method assumes that values of variables such as cash, accounts receivable, and inventory can be forced to take on certain values rather than occur as a natural flow of business transactions.
- 3-17** The balancing, or "plug," figure used in the pro forma balance sheet prepared with the judgmental approach is the amount of financing necessary to bring this statement into balance. Sometimes an analyst wishing to estimate a firm's long-term borrowing requirement will forecast the balance sheet and let this "plug" figure represent the firm's estimated external funds required.
- A positive external funds required figure means the firm must raise funds externally to meet its operating needs. Once it determines whether to use debt or equity, its pro forma balance sheet can be adjusted to reflect the planned financing strategy. If the figure is negative, the firm's forecast shows that its financing is greater than its requirements. Surplus funds can be used to repay debt, repurchase stock, or increase dividends. The pro forma balance sheet would be modified to show the planned changes.
- 3-18** Simplified approaches to preparing pro forma statements have two basic weaknesses: 1) the assumption that the firm's past financial condition is an accurate predictor of its future and 2) the assumption that the values of certain variables can be forced to take on desired values. The approaches remain popular due to ease of calculation.

3-19 The financial manager may perform ratio analysis and may possibly prepare source and use statements from pro forma statements. He treats the pro forma statements as if they were actual statements in order to evaluate various aspects of the firm's financial health—liquidity, activity, debt, and profitability—expected at the end of the future period. The resulting information is used to adjust planned operations to achieve short-term financial goals. Of course, the manager reviews and may question various assumptions and values used in forecasting these statements.

SOLUTIONS TO PROBLEMS

3-1 LG 1: Depreciation

Depreciation Schedule			
Year	Cost (1)	Percentages from Table 3.2 (2)	Depreciation [(1) x (2)] (3)
Asset A			
1	\$17,000	33%	\$5,610
2	\$17,000	45	7,650
3	\$17,000	15	2,550
4	\$17,000	7	1,190

Depreciation Schedule			
Year	Cost (1)	Percentages from Table 3.2 (2)	Depreciation [(1) x (2)] (3)
Asset B			
1	\$45,000	20%	\$ 9,000
2	\$45,000	32	14,400
3	\$45,000	19	8,550
4	\$45,000	12	5,400
5	\$45,000	12	5,400
6	\$45,000	5	2,250

3-2 LG 2: Accounting Cash flow

Earnings after taxes	\$50,000
Plus: Depreciation	28,000
Plus: Amortization	<u>2,000</u>
Cash flow from operations	<u>\$80,000</u>

3-3 LG 1, 2: MACRS Depreciation Expense, Taxes, and Cash Flow

- a.** From table 3.2
 Depreciation expense = \$80,000 x .20 = \$16,000
- b.** New taxable income = \$430,000 - \$16,000 = \$414,000
 Tax liability = \$113,900 + [(\$414,000 - \$335,000) x .34] = \$113,900 + \$26,860
 = \$140,760

Original tax liability before depreciation expense:

$$\text{Tax liability} = \$113,900 + [(\$430,000 - \$335,000) \times .34] = \$113,900 + \$32,300 = \$146,200$$

Chapter 3 Cash Flow and Financial Planning

Tax savings = \$146,200 - \$140,760 = \$5,440

c.	After-tax net income	\$289,240 (\$430,000 - \$140,760)
	Plus depreciation expense	<u>16,000</u>
	Net cash flow	<u>\$305,240</u>

3-4 LG 1, 2: Depreciation and Accounting Cash Flow

a.	Cash flow from operations:	
	Sales revenue	\$400,000
	Less: Total costs before depreciation, interest, and taxes	290,000
	Depreciation expense	34,200
	Interest expense	<u>15,000</u>
	Net profits before taxes	\$ 60,800
	Less: Taxes at 40%	<u>24,320</u>
	Net profits after taxes	\$ 36,480
	Plus: Depreciation	<u>34,200</u>
	Cash flow from operations	<u>\$ 70,680</u>

b. Depreciation and other no cash charges serve as a tax shield against income, increasing annual cash flow.

3-5 LG 2: Classifying Inflows and Outflows of Cash

Item	Change (\$)	I/O	Item	Change (\$)	I/O
Cash	+ 100	<u>O</u>	Accounts receivable	-700	<u>I</u>
Accounts payable	-1,000	<u>O</u>	Net profits	+ 600	<u>I</u>
Notes payable	+ 500	<u>I</u>	Depreciation	+ 100	<u>I</u>
Long-term debt	-2,000	<u>O</u>	Repurchase of stock	+ 600	<u>O</u>
Inventory	+ 200	<u>O</u>	Cash dividends	+ 800	<u>O</u>
Fixed assets	+ 400	<u>O</u>	Sale of stock	+1,000	<u>I</u>

3-6 LG 2: Finding Operating and Free Cash Flows

- a. Cash flow from operations = Net profits after taxes + Depreciation
Cash flow from operations = \$1,400 + 11,600
Cash flow from operations = \$13,000
- b. OCF = EBIT – Taxes + Depreciation
OCF = \$2,700 – \$933 + \$11,600
OCF = \$13,367
- c. FCF = OCF – Net fixed asset investment* – Net current asset investment**
FCF = \$13,367 - \$1,400 - \$1,400
FCF = \$10,567

* Net fixed asset investment = Change in net fixed assets + Depreciation
Net fixed asset investment = (\$14,800 - \$15,000) + (\$14,700 - \$13,100)

Chapter 3 Cash Flow and Financial Planning

Net fixed asset investment = $-\$200 + \$1,600 = \$1,400$

** Net current asset investment = Change in current assets – change in (accounts payable and accruals)
Net current asset investment = $(\$8,200 - \$6,800) - (\$1,800 - \$1,800)$
Net current asset investment = $\$1,400 - 0 = \$1,400$

- d. Keith Corporation has significant positive cash flows from operating activities. The accounting cash flows are a little less than the operating and free cash flows. The FCF value is very meaningful since it shows that the cash flows from operations are adequate to cover both operating expense plus investment in fixed and current assets.

3-7 LG 4: Cash Receipts

	April	May	June	July	August
Sales	\$ 65,000	\$ 60,000	\$ 70,000	\$100,000	\$100,000
Cash sales (.50)	\$ 32,500	\$ 30,000	\$ 35,000	\$ 50,000	\$ 50,000
Collections:					
Lag 1 month (.25)		16,250	15,000	17,500	25,000
Lag 2 months (.25)			<u>16,250</u>	<u>15,000</u>	<u>17,500</u>
Total cash receipts			\$ 66,250	\$ 82,500	\$ 92,500

Chapter 3 Cash Flow and Financial Planning

3-8 LG 4: Cash Disbursement Schedule

	February	March	April	May	June	July
Sales	\$500,000	\$500,000	\$560,000	\$610,000	\$650,000	\$650,000
Disbursements						
Purchases (.60)	\$300,000	\$336,000	\$366,000	\$390,000	\$390,000	
Cash			36,600	39,000	39,000	
1 month delay						
(.50)			168,000	183,000	195,000	
2 month delay						
(.40)			120,000	134,400	146,400	
Rent			8,000	8,000	8,000	
Wages & salary						
Fixed			6,000	6,000	6,000	
Variable			39,200	42,700	45,500	
Taxes					54,500	
Fixed assets			75,000			
Interest					30,000	
Cash dividends			12,500			
Total						
Disbursements			\$465,300	\$413,100	\$524,400	

Chapter 3 Cash Flow and Financial Planning

3-9 LG 4: Cash Budget–Basic

	March	April	May	June	July
Sales	\$50,000	\$60,000	\$70,000	\$80,000	\$100,000
Cash sales (.20)	\$10,000	\$12,000	\$14,000	\$16,000	\$ 20,000
Lag 1 month (.60)			36,000	42,000	48,000
Lag 2 months (.20)			10,000	12,000	14,000
Other income			<u>2,000</u>	<u>2,000</u>	<u>2,000</u>
Total cash receipts			\$62,000	\$72,000	\$ 84,000
<u>Disbursements</u>					
Purchases			\$50,000	\$70,000	\$80,000
Rent			3,000	3,000	3,000
Wages & salaries			6,000	7,000	8,000
Dividends				3,000	
Principal & interest				4,000	
Purchase of new equipment					6,000
Taxes due				<u>6,000</u>	
Total cash disbursements			\$59,000	\$93,000	\$97,000
Total cash receipts			\$62,000	\$72,000	\$84,000
Total cash disbursements			<u>59,000</u>	<u>93,000</u>	<u>97,000</u>
Net cash flow			\$ 3,000	(\$21,000)	(\$13,000)
Add: Beginning cash			<u>5,000</u>	<u>8,000</u>	<u>(13,000)</u>
Ending cash			\$ 8,000	(\$13,000)	(\$26,000)
Minimum cash			<u>5,000</u>	<u>5,000</u>	<u>5,000</u>
Required total financing (Notes Payable)				\$18,000	\$31,000
Excess cash balance (Marketable Securities)			\$ 3,000	-0-	-0-

The firm should establish a credit line of at least \$31,000.

3-10 LG 4: Cash Budget–Advanced

a.

Xenocore, Inc.							
(\$000)							
Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.

Chapter 3 Cash Flow and Financial Planning

Forecast Sales	\$210	\$250	\$170	\$160	\$140	\$180	\$200	\$250
Cash sales (.20)			\$ 34	\$ 32	\$ 28	\$ 36	\$ 40	\$ 50
Collections								
Lag 1 month (.40)			100	68	64	56	72	80
Lag 2 months (.40)			84	100	68	64	56	72
Other cash receipts					15	27	15	12
Total cash receipts			\$218	\$200	\$175	\$183	\$183	\$214
Forecast Purchases	\$120	\$150	\$140	\$100	\$ 80	\$110	\$100	\$ 90
Cash purchases			\$ 14	\$ 10	\$ 8	\$ 11	\$ 10	\$ 9
Payments								
Lag 1 month (.50)			75	70	50	40	55	50
Lag 2 months (.40)			48	60	56	40	32	44
Salaries & wages			50	34	32	28	36	40
Rent			20	20	20	20	20	20
Interest payments					10			10
Principal payments								30
Dividends					20			20
Taxes								80
Purchases of fixed assets				25				
Total cash disbursements			\$207	\$219	\$196	\$139	\$153	\$303
Total cash receipts			\$218	\$200	\$175	\$183	\$183	\$214
Less: Total cash disbursements			207	219	196	139	153	303
Net cash flow			11	(19)	(21)	44	30	(89)
Add: Beginning cash			22	33	14	(7)	37	67
Ending cash			33	14	(7)	37	67	(22)
Less: Minimum cash balance			15	15	15	15	15	15
b. Required total financing (Notes payable)				1	22			37
Excess cash balance (Marketable securities)			18			22	52	

- c.** The line of credit should be at least \$37,000 to cover the maximum borrowing needs for the month of April.

3-11 LG 4: Cash Flow Concepts

Note to instructor: There are a variety of possible answers to this problem, depending on the assumptions the student might make. The purpose of this question is to have a chance to discuss the difference between cash flows, income, and assets.

Transaction	Cash Budget	Pro Forma Income Statement	Pro Forma Balance Sheet
Cash sale	x	x	x

Chapter 3 Cash Flow and Financial Planning

Credit sale	x	x	x
Accounts receivable are collected	x		x
Asset with a five-year life is purchased	x		x
Depreciation is taken		x	x
Amortization of goodwill is taken		x	x
Sale of common stock	x		x
Retirement of outstanding bonds	x		x
Fire insurance premium is paid for the next three years	x		x

3-12 LG 4: Cash Budget–Sensitivity Analysis

a.

Trotter Enterprises, Inc. Multiple Cash Budgets (\$000)

	October			November			December		
	Pessi- mistic	Most Likely	Opti- mistic	Pessi- mistic	Most Likely	Opti- mistic	Pessi- mistic	Most Likely	Opti- mistic
Total cash receipts	\$260	\$342	\$462	\$200	\$287	\$366	\$191	\$294	\$353
Total cash disbursements	285	326	421	203	261	313	287	332	315
Net cash flow	(15)	16	41	(3)	26	53	(96)	(38)	38
Add:									
Beginning cash	(20)	(20)	(20)	(35)	(4)	21	(38)	22	74
Ending cash:	(35)	(4)	21	(38)	22	74	(134)	(16)	112
Financing	53	22		56			152	34	
	\$18	\$18	\$21	\$18	\$22	\$74	\$18	\$18	\$112

b. Under the pessimistic scenario Trotter will definitely have to borrow funds, up to \$152,000 in December. Their needs are much smaller under their most likely outcome. If events turn out to be consistent with their optimistic forecast, the firm should have excess funds and will not need to access the financial markets.

3-13 LG 4: Multiple Cash Budgets–Sensitivity Analysis

a. and b.

Chapter 3 Cash Flow and Financial Planning

Brownstein, Inc.
Multiple Cash Budgets
(\$000)

	<u>1st Month</u>			<u>2nd Month</u>			<u>3rd Month</u>		
	Pessi- mistic	Most Likely	Opti- mistic	Pessi- mistic	Most Likely	Opti- mistic	Pessi- mistic	Most Likely	Opti- mistic
Sales	\$ 80	\$ 100	\$ 120	\$ 80	\$ 100	\$ 120	\$ 80	\$ 100	\$ 120
Sale of asset							8	8	8
Purchases	(60)	(60)	(60)	(60)	(60)	(60)	(60)	(60)	(60)
Wages	(14)	(15)	(16)	(14)	(15)	(16)	(14)	(15)	(16)
Taxes	(20)	(20)	(20)						
Purchase of fixed asset				(15)	(15)	(15)			
Net cash flow	\$(14)	\$ 5	\$ 24	\$(9)	\$ 10	\$ 29	\$ 14	\$ 33	\$ 52
Add:									
Beginning cash	0	0	0	(14)	5	24	(23)	15	53
Ending cash:	\$(14)	\$ 5	\$ 24	\$(23)	\$ 15	\$ 53	\$ (9)	\$ 48	\$ 105

- c. Considering the extreme values reflected in the pessimistic and optimistic outcomes allows Brownstein, Inc. to better plan its borrowing or investment requirements by preparing for the worst case scenario.

3-14 LG 5: Pro Forma Income Statement

a.

Pro Forma Income Statement
Metro line Manufacturing, Inc.
For the Year Ended December 31, 2004
(percent-of-sales method)

Sales	\$1,500,000
Less: Cost of goods sold (.65 x sales)	<u>975,000</u>
Gross profits	\$ 525,000
Less: Operating expenses (.086 x sales)	<u>129,000</u>
Operating profits	\$ 396,000
Less: Interest expense	<u>35,000</u>

Chapter 3 Cash Flow and Financial Planning

Net profits before taxes	\$ 361,000
Less: Taxes (.40 x NPBT)	144,400
Net profits after taxes	\$ 216,600
Less: Cash dividends	70,000
To retained earnings	\$ 146,600

b.

Pro Forma Income Statement
 Metroline Manufacturing, Inc.
 for the Year Ended December 31, 2004
 (based on fixed and variable cost data)

Sales	\$1,500,000
Less: Cost of goods sold	
Fixed cost	210,000
Variable cost (.50 x sales)	750,000
Gross profits	\$ 540,000
Less: Operating expense:	
Fixed expense	36,000
Variable expense (.06 x sales)	90,000
Operating profits	\$ 414,000
Less: Interest expense	35,000
Net profits before taxes	\$ 379,000
Less: Taxes (.40 x NPBT)	151,600
Net profits after taxes	\$ 227,400
Less: Cash dividends	70,000
To retained earnings	\$ 157,400

c. The pro forma income statement developed using the fixed and variable cost data projects a higher net profit after taxes due to lower cost of goods sold and operating expenses. Although the percent-of-sales method projects a more conservative estimate of net profit after taxes, the pro forma income statement which classifies fixed and variable cost is more accurate.

3-15 LG 5: Pro Forma Income Statement–Sensitivity Analysis

a.

Pro Forma Income Statement
 Allen Products, Inc.
 for the Year Ended December 31, 2004

	Pessimistic	Most Likely	Optimistic
Sales	\$900,000	\$1,125,000	\$1,280,000
Less cost of goods sold (45%)	405,000	506,250	576,000
Gross profits	\$495,000	\$ 618,750	\$ 704,000
Less operating expense (25%)	225,000	281,250	320,000
Operating profits	\$270,000	\$ 337,500	\$ 384,000
Less interest expense (3.2%)	28,800	36,000	40,960
Net profit before taxes	\$241,200	\$ 301,500	\$ 343,040
Taxes (25%)	60,300	75,375	85,760
Net profits after taxes	\$180,900	\$ 226,125	\$ 257,280

Chapter 3 Cash Flow and Financial Planning

b. The simple percent-of-sales method assumes that all cost are variable. In reality some of the expenses will be fixed. In the pessimistic case this assumption causes all costs to decrease with the lower level of sales when in reality the fixed portion of the costs will not decrease. The opposite occurs for the optimistic forecast since the percent-of-sales assumes all costs increase when in reality only the variable portion will increase. This pattern results in an understatement of costs in the pessimistic case and an overstatement of profits. The opposite occurs in the optimistic scenario.

c.

Pro Forma Income Statement
Allen Products, Inc.
for the Year Ended December 31, 2004

	<u>Pessimistic</u>	<u>Most Likely</u>	<u>Optimistic</u>
Sales	\$900,000	\$1,125,000	\$1,280,000
Less cost of goods sold:			
Fixed	250,000	250,000	250,000
Variable (18.3%)	164,700	205,875	234,240
Gross profits	\$485,300	\$ 669,125	\$ 795,760
Less operating expense			
Fixed	180,000	180,000	180,000
Variable (5.8%)	52,200	65,250	74,240
Operating profits	\$253,100	\$ 423,875	\$ 541,520
Less interest expense	30,000	30,000	30,000
Net profit before taxes	\$223,100	\$ 393,875	\$ 511,520
Taxes (25%)	55,775	98,469	127,880
Net profits after taxes	\$167,325	\$ 295,406	\$ 383,640

d. The profits for the pessimistic case are larger in part a than in part c. For the optimistic case, the profits are lower in part a than in part c. This outcome confirms the results as stated in part b.

3-16 LG 5: Pro Forma Balance Sheet–Basic

a.

Pro Forma Balance Sheet

Leonard Industries

December 31, 2004

Assets

Current assets

Cash	\$ 50,000
Marketable securities	15,000
Accounts receivable	300,000
Inventories	<u>360,000</u>
Total current assets	\$ 725,000
Net fixed assets	<u>658,000</u> ¹
Total assets	<u>\$1,383,000</u>

Liabilities and stockholders' equity

Current liabilities

Accounts payable	\$ 420,000
Accruals	60,000
Other current liabilities	<u>30,000</u>
Total current liabilities	\$ 510,000
Long-term debts	<u>350,000</u>
Total liabilities	\$ 860,000
Common stock	200,000
Retained earnings	<u>270,000</u> ²
Total stockholders' equity	\$ 470,000
External funds required	<u>53,000</u> ³
Total liabilities and stockholders' equity	<u>\$1,383,000</u>

¹	Beginning gross fixed assets	\$ 600,000
	Plus: Fixed asset outlays	90,000
	Less: Depreciation expense	<u>(32,000)</u>
	Ending net fixed assets	\$ 658,000

²	Beginning retained earnings (Jan. 1, 2004)	\$ 220,000
	Plus: Net profit after taxes (\$3,000,000 x .04)	120,000
	Less: Dividends paid	<u>(70,000)</u>
	Ending retained earnings (Dec. 31, 2004)	\$ 270,000

³	Total assets	\$1,383,000
	Less: Total liabilities and equity	<u>1,330,000</u>
	External funds required	\$ 53,000

b. Based on the forecast and desired level of certain accounts, the financial manager should arrange for credit of \$53,000. Of course, if financing cannot be obtained, one or more of the constraints may be changed.

Chapter 3 Cash Flow and Financial Planning

- c. If Leonard Industries reduced its 2004 dividend to \$17,000 or less, the firm would not need any additional financing. By reducing the dividend, more cash is retained by the firm to cover the growth in other asset accounts.

3-17 LG 5: Pro Forma Balance Sheet

a.

Pro Forma Balance Sheet
Peabody & Peabody
December 31, 2005

Assets

Current assets	
Cash	\$ 480,000
Marketable securities	200,000
Accounts receivable	1,440,000
Inventories	<u>2,160,000</u>
Total current assets	\$4,280,000
Net fixed assets	<u>4,820,000</u> ¹
Total assets	<u>\$9,100,000</u>

Liabilities and stockholders' equity

Current liabilities	
Accounts payable	\$1,680,000
Accruals	500,000
Other current liabilities	<u>80,000</u>
Total current liabilities	\$2,260,000
Long-term debts	<u>2,000,000</u>
Total liabilities	\$4,260,000
Common equity	4,065,000 ²
External funds required	<u>775,000</u>
Total liabilities and stockholders' equity	<u>\$9,100,000</u>

¹	Beginning gross fixed assets (January 1, 2005)	\$4,000,000
	Plus: Fixed asset outlays	1,500,000
	Less: Depreciation expense	<u>(680,000)</u>
	Ending net fixed assets (December 31, 2005)	\$4,820,000

² Note: Common equity is the sum of common stock and retained earnings.

	Beginning common equity (January 1, 2004)	\$3,720,000
	Plus: Net profits after taxes (2004)	330,000
	Net profits after taxes (2005)	360,000
	Less: Dividends paid (2004)	(165,000)
	Dividends paid (2005)	<u>(180,000)</u>
	Ending common equity (December 31, 2005)	\$4,065,000

Chapter 3 Cash Flow and Financial Planning

- b. Peabody & Peabody must arrange for additional financing of at least \$775,000 over the next two years based on the given constraints and projections.

3-18 LG 5: Integrative–Pro Forma Statements

a.

Pro Forma Income Statement
Red Queen Restaurants
for the Year Ended December 31, 2004
(percent-of-sales method)

Sales	\$ 900,000
Less: Cost of goods sold (.75 x sales)	<u>675,000</u>
Gross profits	\$ 225,000
Less: Operating expenses (.125 x sales)	<u>112,500</u>
Net profits before taxes	\$ 112,500
Less: Taxes (.40 x NPBT)	<u>45,000</u>
Net profits after taxes	\$ 67,500
Less: Cash dividends	<u>35,000</u>
To Retained earnings	<u>\$ 32,500</u>

Chapter 3 Cash Flow and Financial Planning

b.

Pro Forma Balance Sheet
Red Queen Restaurants
December 31, 2004
(Judgmental Method)

<u>Assets</u>		<u>Liabilities and Equity</u>	
Cash	\$ 30,000	Accounts payable	\$ 112,500
Marketable securities	18,000	Taxes payable	11,250
Accounts receivable	162,000	other current liabilities	<u>5,000</u>
Inventories	<u>112,500</u>	Current liabilities	\$ 128,750
Current assets	\$ 322,500	Long-term debt	200,000
Net fixed assets	<u>375,000</u>	Common stock	150,000
		Retained earnings	207,500 *
		External funds required	<u>11,250</u>
		Total liabilities and	
Total assets	\$ <u>697,500</u>	stockholders' equity	\$ <u>697,500</u>

*	Beginning retained earnings (January 1, 2004)	\$ 175,000
	Plus: Net profit after taxes	67,500
	Less: Dividends paid	<u>(35,000)</u>
	Ending retained earnings (December 31, 2004)	\$ <u>207,500</u>

c. Using the judgmental approach, the external funds requirement is \$11,250.

3-19 LG 5: Integrative–Pro Forma Statements

a.

Pro Forma Income Statement
Provincial Imports, Inc.
For the Year Ended December 31, 2004
(Percent-of-sales method)

Sales	\$ 6,000,000
Less: Cost of goods sold (.35 x sales + \$1,000,000)	<u>3,100,000</u>
Gross profits	\$ 2,900,000
Less: Operating expenses (.12 x sales + \$250,000)	<u>970,000</u>
Operating profits	\$ 1,930,000
Less: Interest Expense	<u>200,000</u>
Net profits before taxes	\$ 1,730,000
Less: Taxes (.40 x NPBT)	<u>692,000</u>
Net profits after taxes	\$ 1,038,000
Less: Cash dividends (.40 x NPAT)	<u>415,200</u>
To Retained earnings	\$ <u>622,800</u>

b.

Pro Forma Balance Sheet
Provincial Imports, Inc.
December 31, 2004
(Judgmental Method)

Chapter 3 Cash Flow and Financial Planning

<u>Assets</u>		<u>Liabilities and Equity</u>	
Cash	\$ 400,000	Accounts payable	\$ 840,000
Marketable securities	275,000	Taxes payable	138,400 ¹
		Notes payable	200,000
Accounts receivable	750,000	Other current liabilities	<u>6,000</u>
Inventories	<u>1,000,000</u>	Current liabilities	\$1,184,400
Current assets	\$2,425,000	Long-term debt	550,000
Net fixed assets	<u>1,646,000</u>	Common stock	75,000
		Retained earnings	1,651,800 ²
		External funds required	<u>609,800</u>
		Total liabilities and stockholders' equity	<u>\$4,071,000</u>
Total assets	<u>\$4,071,000</u>		

- 1 Taxes payable for 2000 are nearly 20% of the 2000 taxes on the income statement. The pro forma value is obtained by taking 20% of the 2001 taxes ($.2 \times \$692,000 = \$138,400$).
- 2
- | | |
|---|---------------------|
| Beginning retained earnings (January 1, 2004) | \$ 1,375,000 |
| Plus: Net profit after taxes | 692,000 |
| Less: Dividends paid | <u>(415,200)</u> |
| Ending retained earnings (December 31, 2004) | <u>\$ 1,651,800</u> |
- c. Using the judgmental approach, the external funds requirement is \$609,800.

CHAPTER 3 CASE

Preparing Martin Manufacturing's 2004 Pro Forma Financial Statement

In this case, the student prepares pro forma financial statements, using them to determine whether Martin Manufacturing will require external funding in order to embark on a major expansion program.

a.

Martin Manufacturing Company
Pro Forma Income Statement
for the Year Ended December 31, 2004

Sales revenue	\$6,500,000	(100%)
Less: Cost of goods sold	<u>4,745,000</u>	(.73 x sales)
Gross profits	\$1,755,000	(.27 x sales)
Less: Operating expenses		
Selling expense and general and administrative expense	\$1,365,000	(.21 x sales)
Depreciation expense	<u>185,000</u>	
Total operating expenses	<u>\$1,550,000</u>	
Operating profits	\$ 205,000	
Less: Interest expense	<u>97,000</u>	
Net profits before taxes	\$ 108,000	
Less: Taxes (40%)	<u>43,200</u>	
Total profits after taxes	<u>\$ 64,800</u>	

Note: Calculations "driven" by cost of goods sold and operating expense (excluding depreciation, which is given) percentages.

b.

Martin Manufacturing Company
Pro Forma Balance Sheet
December 31, 2004

Assets

Current assets

Cash	\$ 25,000
Accounts receivable	902,778
Inventories	<u>677,857</u>
Total current assets	<u>\$1,605,635</u>

Gross fixed assets	\$2,493,819
Less: Accumulated depreciation	<u>685,000</u>
Net fixed assets	<u>\$1,808,819</u>
Total assets	<u><u>\$3,414,454</u></u>

Liabilities and stockholders' equity

Current liabilities

Accounts payable	\$ 276,000
Notes payable	311,000
Accruals	<u>75,000</u>
Total current liabilities	\$ 662,000
Long-term debts	<u>1,165,250</u>
Total liabilities	<u>\$1,827,250</u>

Stockholders' equity

Preferred stock	\$ 50,000
Common stock (at par)	100,000
Paid-in capital in excess of par	193,750
Retained earnings	<u>1,044,800</u> ¹
Total stockholders' equity	<u>\$1,388,550</u>
Total	\$3,215,800
External funds required	<u>198,654</u>
Total liabilities and stockholders' equity	<u><u>\$3,414,454</u></u>

¹ Beginning retained earnings (January 1, 2004)	\$1,000,000
Plus: Net profits	64,800
Less: Dividends paid	<u>(20,000)</u>
Ending retained earnings (December 31, 2004)	<u><u>\$1,044,800</u></u>

c. Based on the pro forma financial statements prepared above, Martin Manufacturing will need to raise about \$200,000 (\$198,654) in external financing in order to undertake its construction program.

INTEGRATIVE CASE 1

TRACK SOFTWARE, INC.

Integrative Case 1, Track Software, Inc., places the student in the role of financial decision maker to introduce the basic concepts of financial goal-setting, measurement of the firm's performance, and analysis of the firm's financial condition. Since this seven-year-old software company has cash flow problems, the student must prepare and analyze the statement of cash flows. Interest expense is increasing, and the firm's financing strategy should be evaluated in view of current yields on loans of different maturities. A ratio analysis of Track's financial statements is used to provide additional information about the firm's financial condition. The student is then faced with a cost/benefit trade-off: Is the additional expense of a new software developer, which will decrease short-term profitability, a good investment for the firm's long-term potential? In considering these situations, the student becomes familiar with the importance of financial decisions to the firm's day-to-day operations and long-term profitability.

- a. (1) Stanley is focusing on maximizing profit, as shown by the increase in net profits over the period 1997 to 2003. His dilemma about adding the software designer, which would depress earnings for the near term, also demonstrates his emphasis on this goal. Maximizing wealth should be the correct goal for a financial manager. Wealth maximization takes a long-term perspective and also considers risk and cash flows. Profits maximization does not integrate these three factors (cash flow, timing, risk) in the decision process
- (2) An agency problem exists when managers place personal goals ahead of corporate goals. Since Stanley owns 40% of the outstanding equity, it is unlikely that an agency problem would arise at Track Software.

b. Earnings per share (EPS) calculation:

<u>Year</u>	<u>Net Profits after Taxes</u>	<u>EPS (NPAT ÷ 100,000 shares)</u>
1997	(\$50,000)	\$0
1998	(20,000)	0
1999	15,000	.15
2000	35,000	.35
2001	40,000	.40
2002	43,000	.43
2003	48,000	.48

Earnings per share has increased steadily, confirming that Stanley is concentrating his efforts on profit maximization.

c. Calculation of Operating and Free Cash Flows

$$\text{OCF} = \text{EBIT} - \text{Taxes} + \text{Depreciation}$$

$$\text{OCF} = \$89 - 12 + 11 = \$88$$

$$\text{FCF} = \text{OCF} - \text{Net fixed asset investment}^* - \text{Net current asset investment}^{**}$$

$$\text{FCF} = \$88 - 15 - 47 = 26$$

$$^* \text{NFAI} = \text{Change in net fixed assets} + \text{depreciation}$$

$$\text{NFAI} = (132 - 128) + 11 = 15$$

Chapter 3 Cash Flow and Financial Planning

NCAI = Change in current assets - change in (accounts payable + accruals)

$$\text{NCAI} = 59 - (10 + 2) = 47$$

Track Software is providing a good positive cash flow from its operating activities. The OCF is large enough to provide the cash needed for the needed investment in both fixed assets and the increase in net working capital. The firm still has \$26,000 available to pay investors (creditors and equity holders).

d.

Ratio Analysis Track Software, Inc.

Ratio	Actual		Industry Average	TS: Time-series CS: Cross-sectional
	2002	2003	2003	
Net working capital	\$21,000	\$58,000	\$96,000	TS: Improving CS: Poor
Current ratio	1.06	1.16	1.82	TS: Improving CS: Poor
Quick ratio	0.63	0.63	1.10	TS: Stable CS: Poor
Inventory turnover	10.40	5.39	12.45	TS: Deteriorating CS: Poor
Average collection period	29.6 days	35.3 days	20.2 days	TS: Deteriorating CS: Poor
Total asset turnover	2.66	2.80	3.92	TS: Improving CS: Poor

Ratio	Actual		Industry Average	TS: Time-series CS: Cross-sectional
	2002	2003	2003	
Debt ratio	0.78	0.73	0.55	TS: Decreasing CS: Poor
Times interest earned	3.0	3.1	5.6	TS: Stable CS: Poor
Gross profit margin	32.1%	33.5%	42.3%	TS: Improving CS: Fair
Operating profit margin	5.5%	5.7%	12.4%	TS: Improving CS: Poor
Net profit margin	3.0%	3.1%	4.0%	TS: Stable

Chapter 3 Cash Flow and Financial Planning

CS: Fair

Return on total Assets (ROA)	80%	8.7%	15.6%	TS: Improving CS: Poor
Return on Equity (ROE)	36.4%	31.6%	34.7%	TS: Deteriorating CS: Fair

Analysis of Track Software based on ratio data:

- (1) **Liquidity:** Track Software's liquidity as reflected by the current ratio, net working capital, and acid-test ratio has improved slightly or remained stable, but overall is significantly below the industry average.
- (2) **Activity:** Inventory turnover has deteriorated considerably and is much worse than the industry average. The average collection period has also deteriorated and is also substantially worse than the industry average. Total asset turnover improved slightly but is still well below the industry norm.
- (3) **Debt:** The firm's debt ratio improved slightly from 2002 but is higher than the industry averages. The times interest earned ratio is stable and, although it provides a reasonable cushion for the company, is below the industry average.
- (4) **Profitability:** The firm's gross, operating, and net profit margins have improved slightly in 2003 but remain low compared to the industry. Return on total assets has improved slightly but is about half the industry average. Return on equity declined slightly and is now below the industry average.

Track Software, while showing improvement in most liquidity, debt, and profitability ratios, should take steps to improve activity ratios, particularly inventory turnover and accounts receivable collection. It does not compare favorably to its peer group.

- e. Stanley should make every effort to find the cash to hire the software developer. Since the major goal is profit maximization, the ability to add a new product would increase sales and lead to greater profits for Track Software over the long-term.