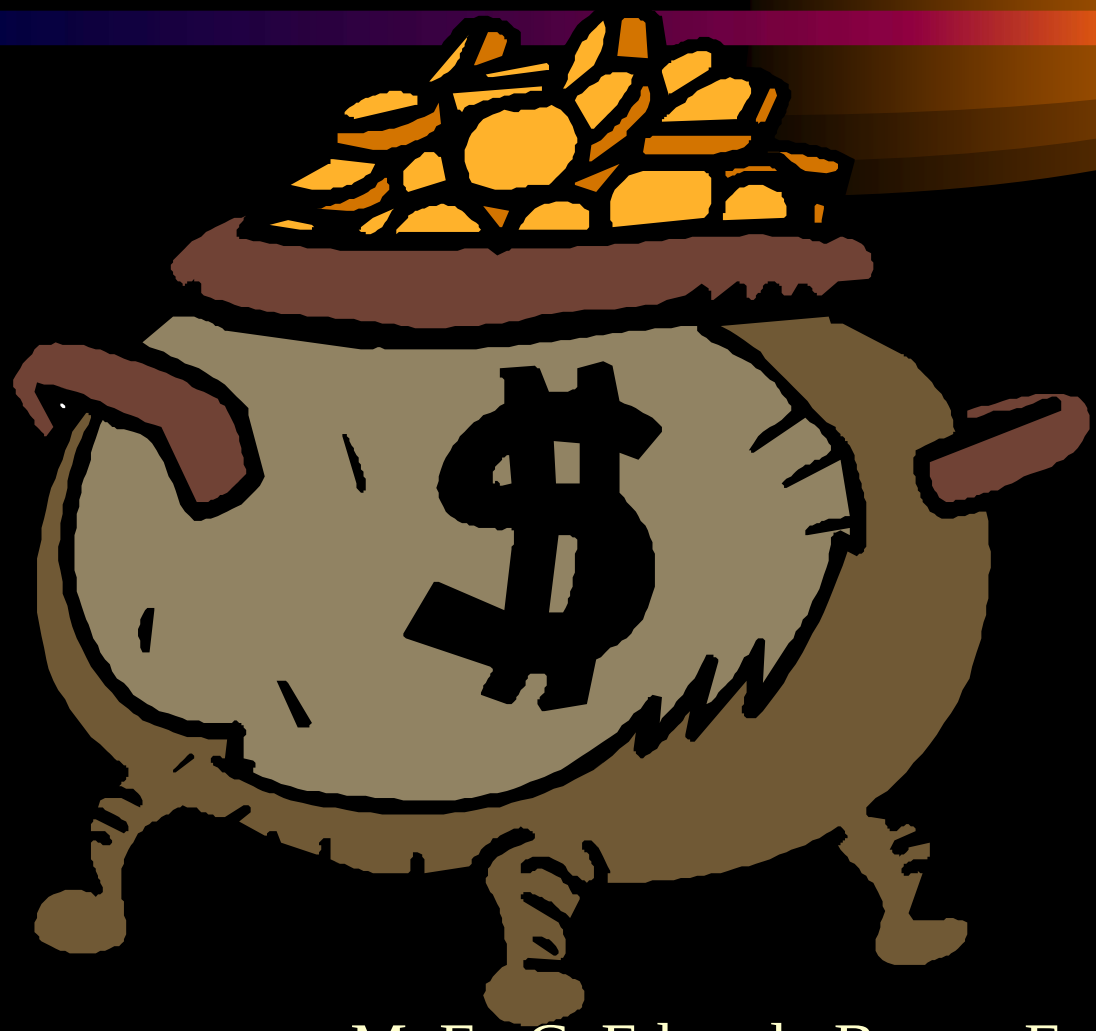
Financial Forecasting, Planning, and Budgeting



M. En C. Eduardo Bustos Farías

Planning and Control

Planning -- involves developing objectives and preparing various budgets to achieve these objectives.

Control – involves the steps taken by management that attempt to ensure the objectives are attained.

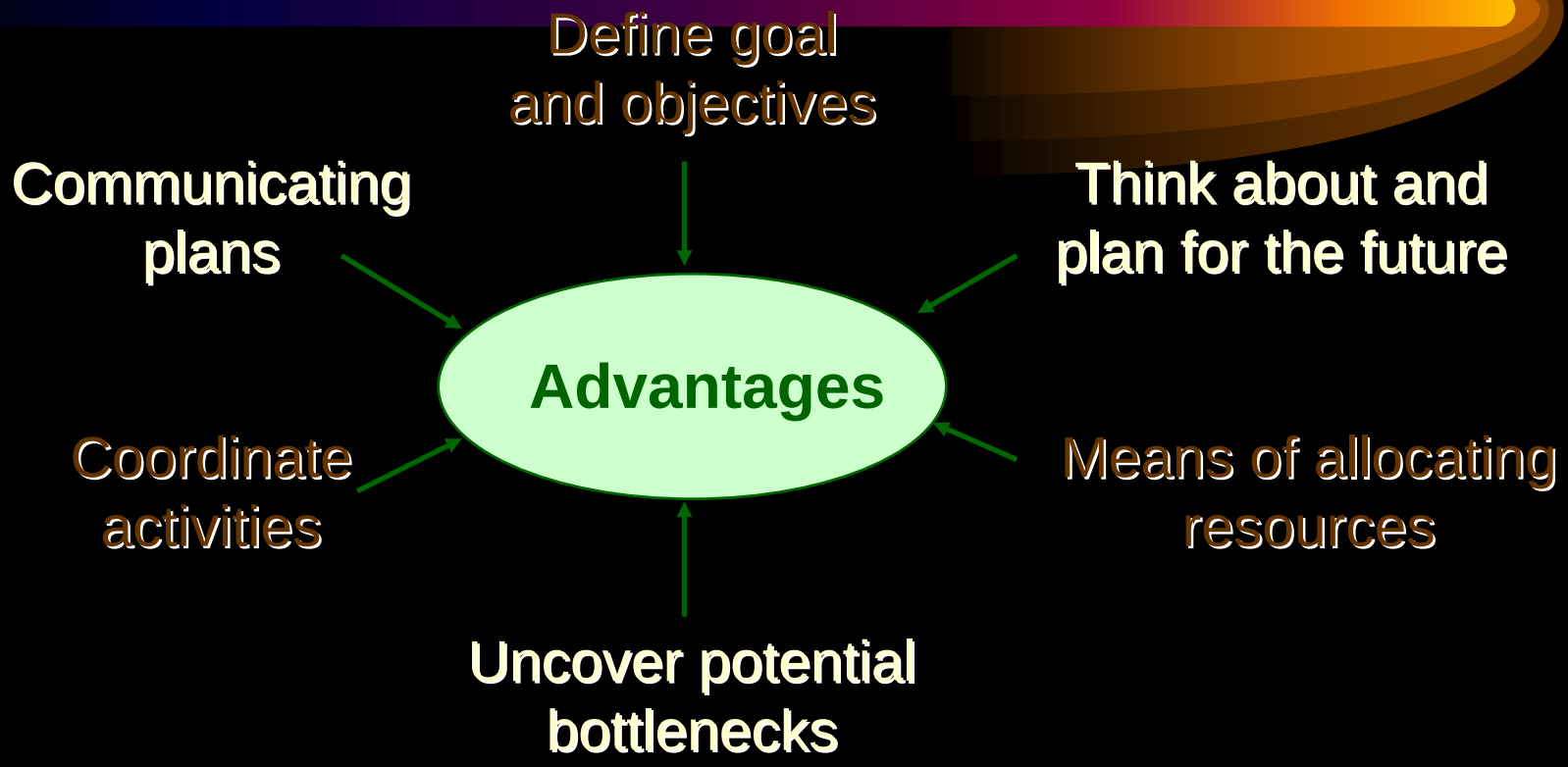
Budgets

- **Budget: a forecast of future events.**

Budgets

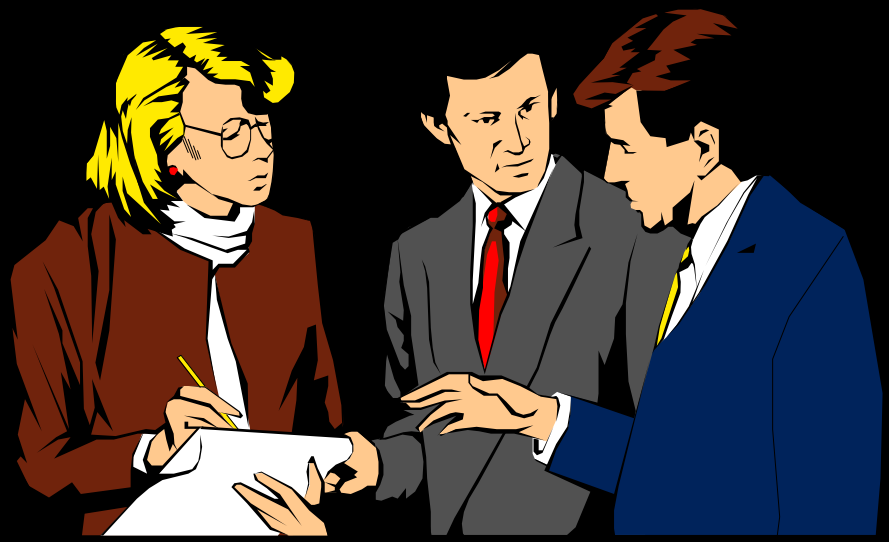
- **Budgets indicate the amount and timing of future financing needs.**
- **Budgets provide a basis for taking corrective action if budgeted and actual figures do not match.**
- **Budgets provide the basis for performance evaluation.**

Advantages of Budgeting

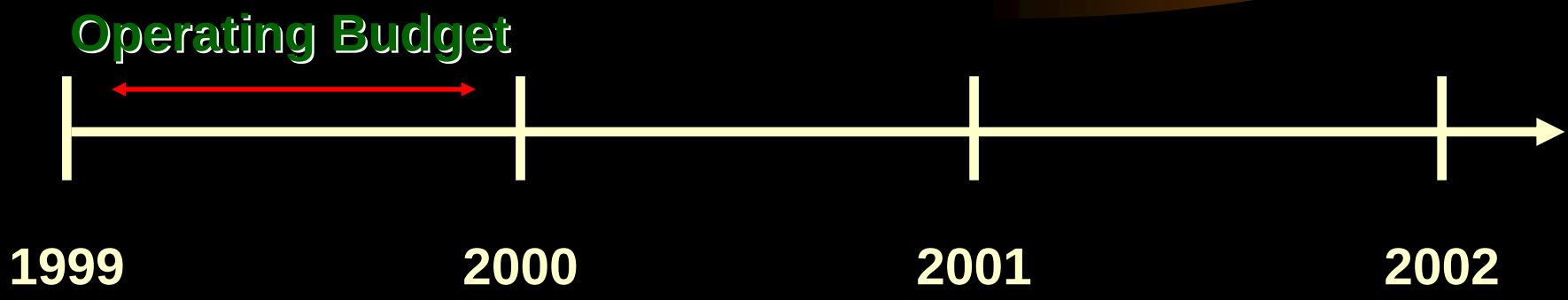


Responsibility Accounting

Managers should be held responsible for those items — and only those items — that the manager can actually control to a significant extent.

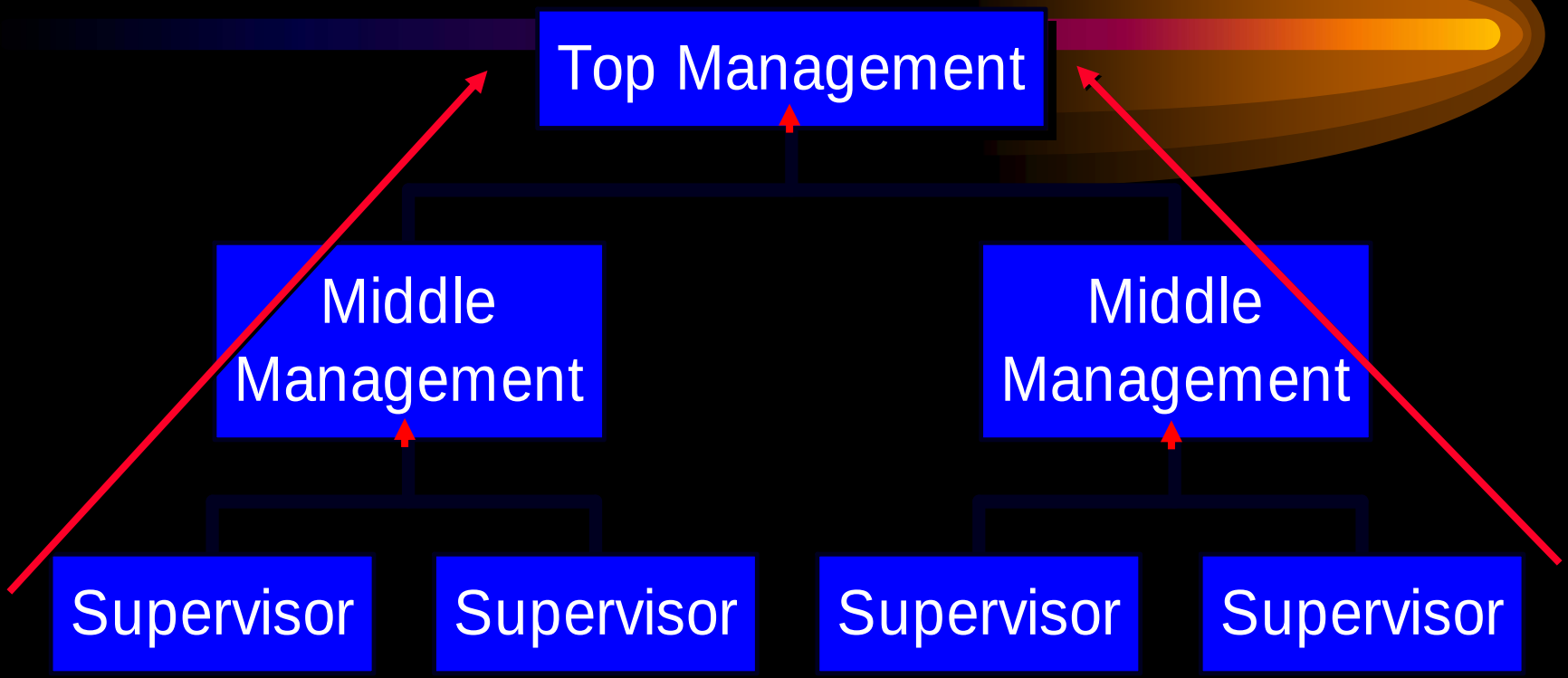


Choosing the Budget Period



The annual operating budget may be divided into quarterly or monthly budgets.

Participative Budget System



Flow of Budget Data

Human Factors in Budgeting

The success of budgeting depends upon:

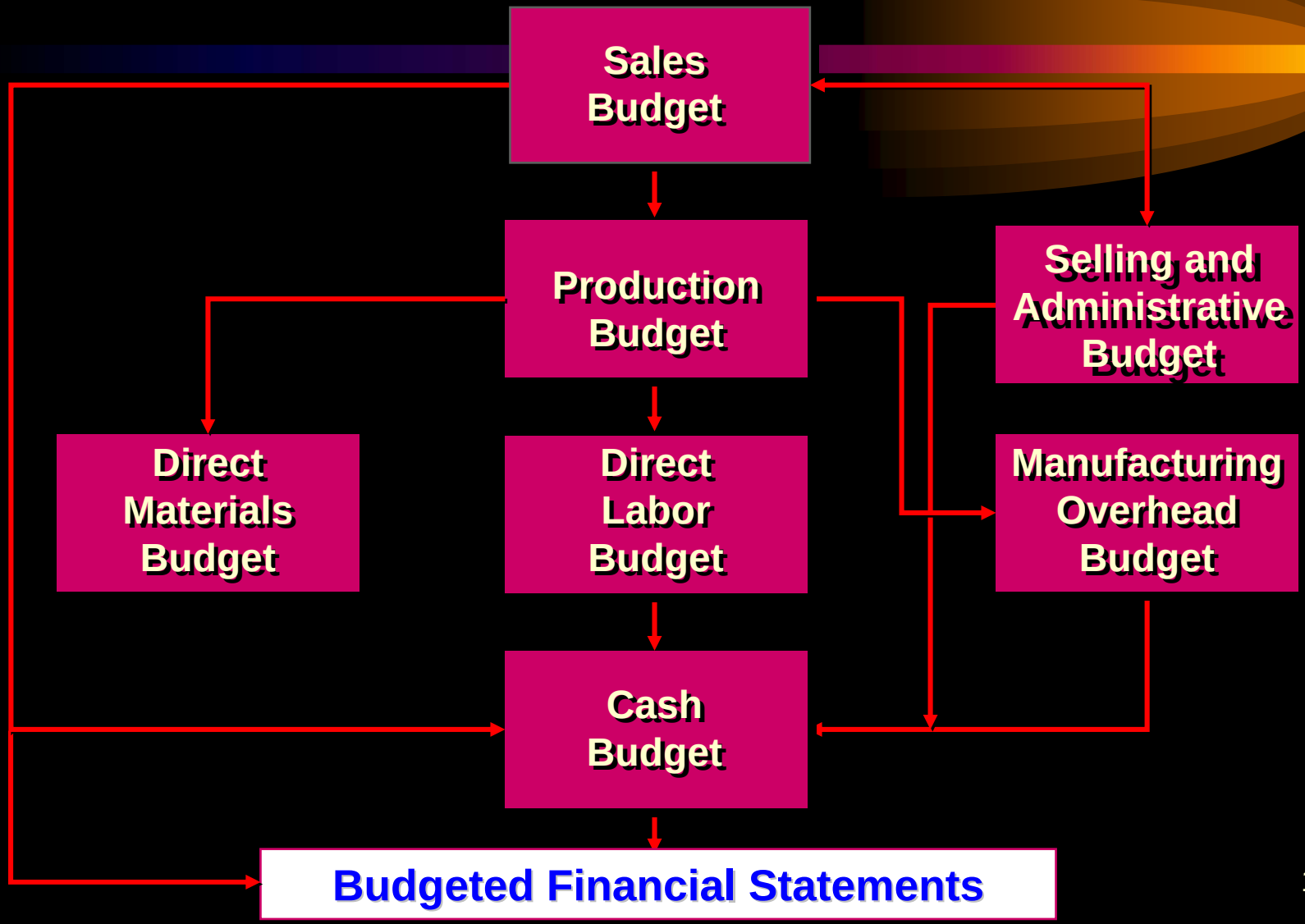
- The degree to which top management accepts the budget program as a vital part of the company's activities.
- The way in which top management uses budgeted data.

The Budget Committee

A standing committee responsible for

- overall policy matters relating to the budget
- coordinating the preparation of the budget

The Master Budget



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The Sales Budget

Detailed schedule showing expected sales for the coming periods expressed in units and dollars.

Budgeting Example

1. Royal Company is preparing budgets for the quarter ending June 30.
2. Budgeted sales for the next five months are:

April	**20,000 units**
May	**50,000 units**
June	**30,000 units**
July	**25,000 units**
August	**15,000 units.**

3. The selling price is $10 per unit.

The Sales Budget

	April	May	June	Quarter
Budgeted sales (units)	20,000	50,000	30,000	100,000
Selling price per unit				
Total sales				

The Sales Budget

	April	May	June	Quarter
Budgeted sales (units)	20,000	50,000	30,000	100,000
Selling price per unit	$ 10	$ 10	$ 10	$ 10
Total sales	$200,000	$500,000	$300,000	$1,000,000

Expected Cash Collections

- All sales are on account.
- Royal's collection pattern is:
  - 70% collected in the month of sale,
  - 25% collected in the month following sale,
  - 5% is uncollectible.
- The March 31 accounts receivable balance of $30,000 will be collected in full.

Expected Cash Collections

	April	May	June	Quarter
Accounts rec. - 3/31	$ 30,000			$ 30,000
Total cash collections				

Expected Cash Collections

	April	May	June	Quarter
Accounts rec. - 3/31	$ 30,000			$ 30,000
April sales				
70% x $200,000	140,000			140,000
25% x $200,000		$ 50,000		50,000
Total cash collections	$ 170,000	$ 50,000		

From the Sales Budget for April.

Expected Cash Collections

	April	May	June	Quarter
Accounts rec. - 3/31	$ 30,000			$ 30,000
April sales				
70% x $200,000	140,000			140,000
25% x $200,000		$ 50,000		50,000
May sales				
70% x $500,000		350,000		350,000
25% x $500,000			$ 125,000	125,000
Total cash collections	$ 170,000	$ 400,000		

From the Sales Budget for May.

Quick Check ✓

What will be the total cash collections for the quarter?

a. $700,000

b. $220,000

c. $190,000

d. $905,000

Quick Check ✓

What will be the total cash collections for the quarter?

a. $700,000

b. $220,000

c. $190,000

d. $905,000

Expected Cash Collections

	April	May	June	Quarter
Accounts rec. - 3/31	$ 30,000			$ 30,000
April sales				
70% x $200,000	140,000			140,000
25% x $200,000		$ 50,000		50,000
May sales				
70% x $500,000		350,000		350,000
25% x $500,000			$125,000	125,000
June sales				
70% x $300,000			210,000	210,000
Total cash collections	$170,000	$400,000	$335,000	$905,000

Película

What is Financial Forecasting?

- Financial forecasting is looking ahead to develop a financial plan for the future
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- Very important for the strategic growth of a firm

Overview of Financial Forecasting

- Who has done forecasting?
  - What did you forecast?
  - What was it used for?
  - What was the greatest challenge?

Why Forecast?

- Figure out how much money you need
- Figure out when you need it
- Figure out how much debt you can afford
- Figure out what kinds of investments you can afford and when
- Give your stakeholders information they need to make decisions (investors, landlords, bankers, employees, etc.)

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Plans & Budgets

- Definitions:
  - Forecast
    - Best Estimate Projection of Future
  - Plan
    - Measurable Goals
  - Budget
    - Same as Plan
  - Proforma
    - Combination of Actual and Forecast

Financial Planning Process

- There are three key aspects to the financial planning process.
  - Cash Planning, forecasting the need for cash.
  - Forecasting future profitability.
  - Forecasting the need for financing.
- These are prepared as “Pro Forma” income statements and balance sheets.

Long-Term Strategic *Plans*

- Long-term financial plans are the planned financial actions and the anticipated financial impact of those actions over periods ranging from 2 to 10 years.
- Such planning projections may be carried out as a regular function of the firm's operations, or in conjunction with corporate strategic planning efforts.

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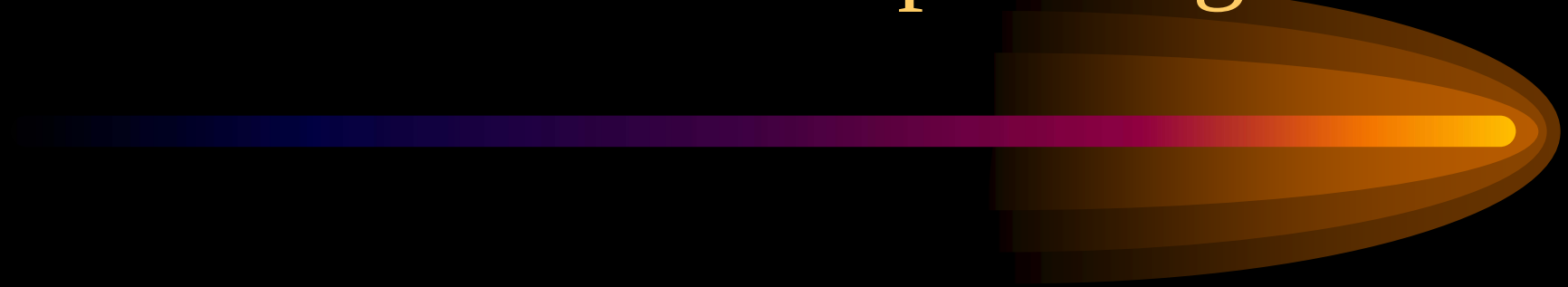
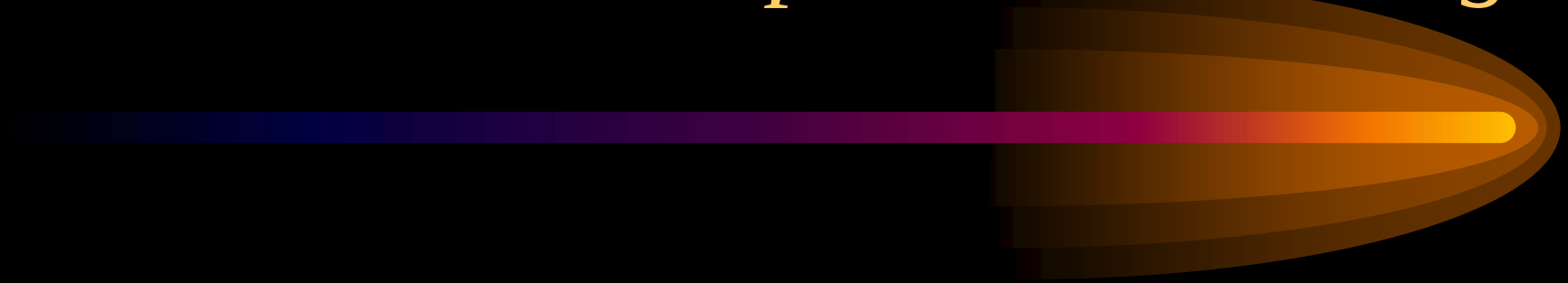
Short-Term Operating *Plans*



Short-Term Operating *Plans*

- Short-term financial plans are those planned financial actions and the anticipated impact of those actions over periods ranging from one to two years.
- Because of their relevance to immediate operations, such plans form a regular and needed function to the firm.

7 Critical Steps in Forecasting



7 Critical Steps in Forecasting

1. Determine Purpose/Use of Forecast
2. Set Forecast Time Frame (matches Use)
3. Project Revenue (history & expectations)
4. Project Expenses (ratios & one time events)
5. Project Balance Sheet:
    1. Investment Needs (Uses of funds)
    2. Spontaneous Sources of funds
6. Calculate External Financing Need
7. Sensitivity Test Assumptions

Step 1: Determine Purpose of Forecast

- Sample Purposes:
  - When to convert Investments to Cash
  - When Debt can be paid down
  - Estimating Sales Commissions
  - Setting Marketing Expense Budget
- Typical Audiences
  - Your Bank
  - Your Management
  - All Employees
  - Investors

Step 2: Set Forecast Timeframe

- 12 week Cash Budget
- One Year Operating Plan
- 3 Year Rolling Long Range Plan
- 5-10 Year Strategic Plan

Step 3: Project Revenue

- How
  - Trends
  - Expected Change Factors
- Components of Revenue
  - Units x Price
  - Ratio of Products to Services
  - Pipeline and Sales Cycle

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- Importance of getting it Right
- Validation & Updating

Step 4: Project Expenses

- % of Sales (Top Down) Method
- Bottom-Up (Zero Based) Method
- FTE (Full Time Employee) or Headcount-Based Method
- Must develop Assumption for each Expense Line…

Sample Expense Assumptions

• Cost of Goods	▪ % of Sales
▪ Research & Developmt.	▪ Headcount, Inflation
▪ Sales & Marketing	▪ Inflation, Competition
▪ General & Administ.	▪ Inflation
▪ Depreciation	▪ % of Fixed Assets
▪ Amortization	▪ % of Intangible Assets
▪ Interest Expense	▪ % of Debt

Step 5: Project Balance Sheet

- Spontaneous vs Discretionary Cash Uses
  - Define & Examples
- Spontaneous vs Discretionary Financing
  - Define & Examples
- Develop Assumption for each line on Balance Sheet

Sample Balance Sheet Assumptions

Accounts Receivable	% of Sales
Inventory	% of Sales
Fixed Assets	Replacement, Events
Accounts Payable	% of Expenses
Debt	Use to Balance
Stock (CS, PS)	Decision
Retained Earnings	Net Income less Dividends

Step 6: Calculate External Financing Need

- Cash Used to Increase Assets

  Less Spontaneous Financing (increase in Current Liabilities)

  Less Increase in Equity (Net Income less Dividends)

  = Discretionary (External) Financing Need
  - "DFN"
  - Equals Need to Increase Debt or Sell Stock

Summary formula for projecting Discretionary Financing Need

DFN = Est. change in Total Assets

- Est. change in Spontaneous Liabilities

- Est. change in Retained Earnings

Step 7: Sensitivity Test each Assumption

- Best Case Scenario
- Worst Case Scenario
- Competitive Ratios
- Calculate & Graph Impact:

2 Methods of Financial Forecasting:

- Using *Pro Forma*, or Projected, Financial Statements.
- *Percent-of-Sales Method* (less precise, easier to calculate)

Using Pro Forma, *or Projected, Financial Statements*

3 Financial Statements for Forecasting

- Pro Forma Income Statement (I/S)
- Cash Budget
- Pro Forma Balance Sheet (B/S)

- The first step is to develop a sales projection
- Often times these statements are required by lenders

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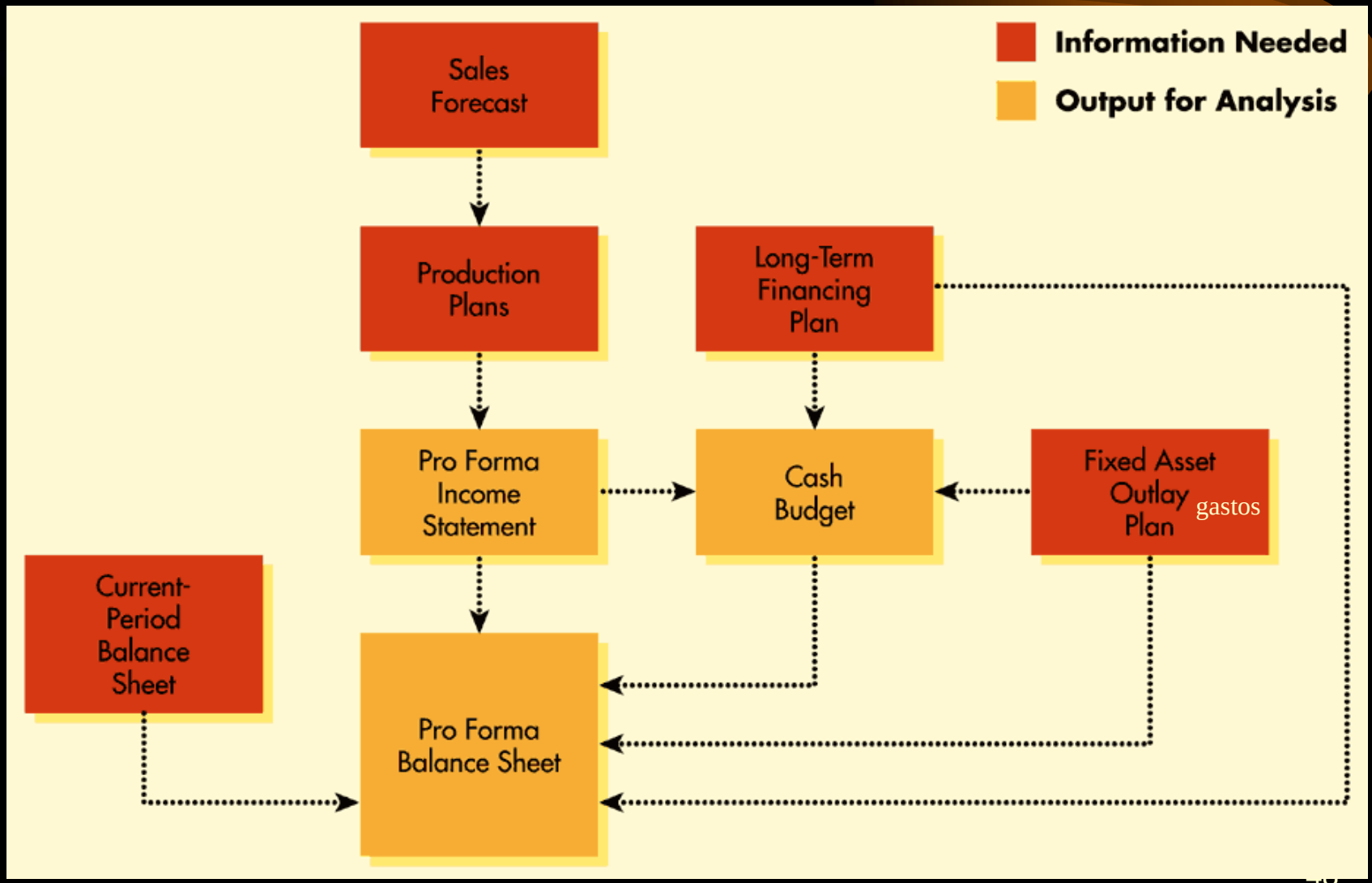
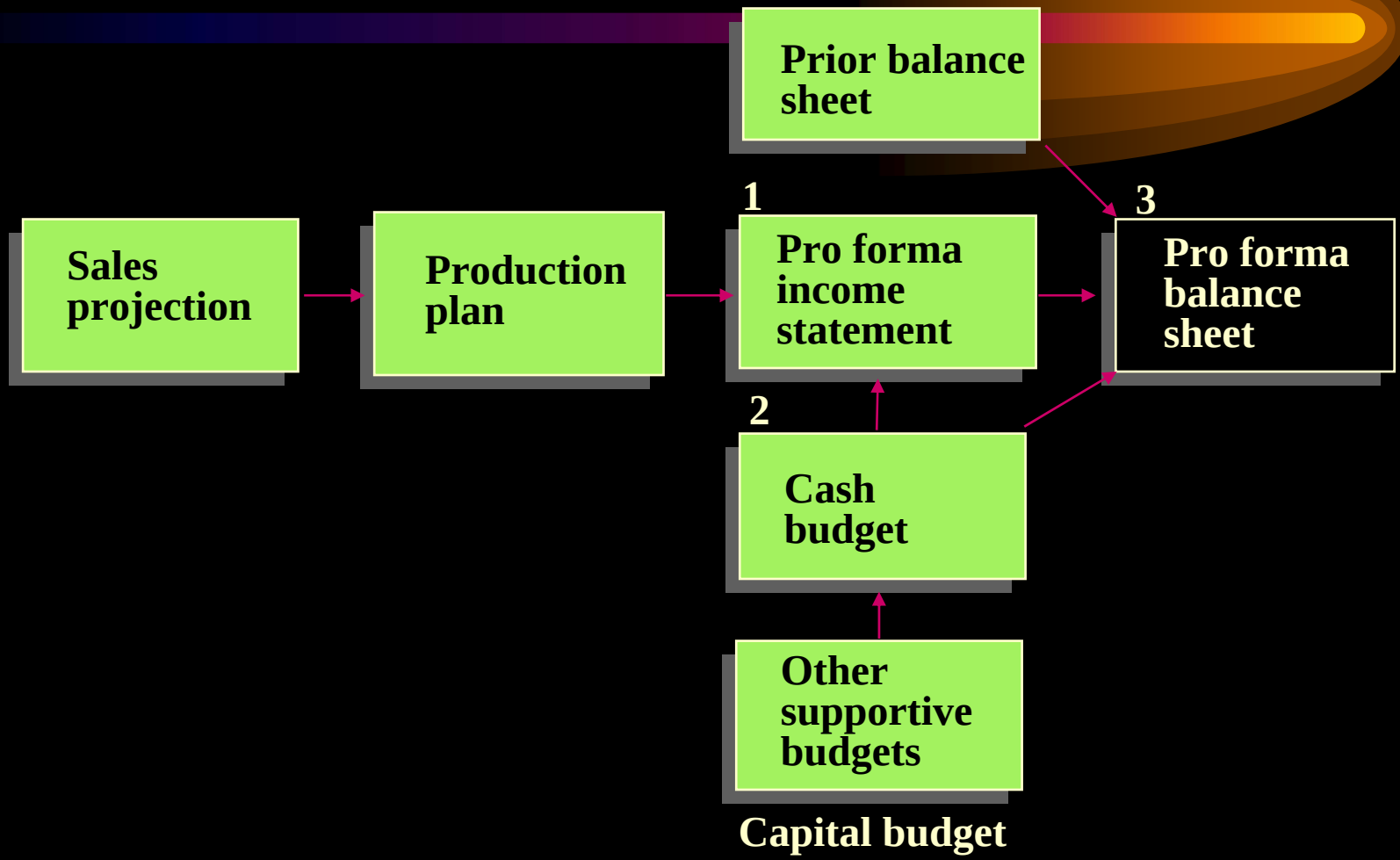
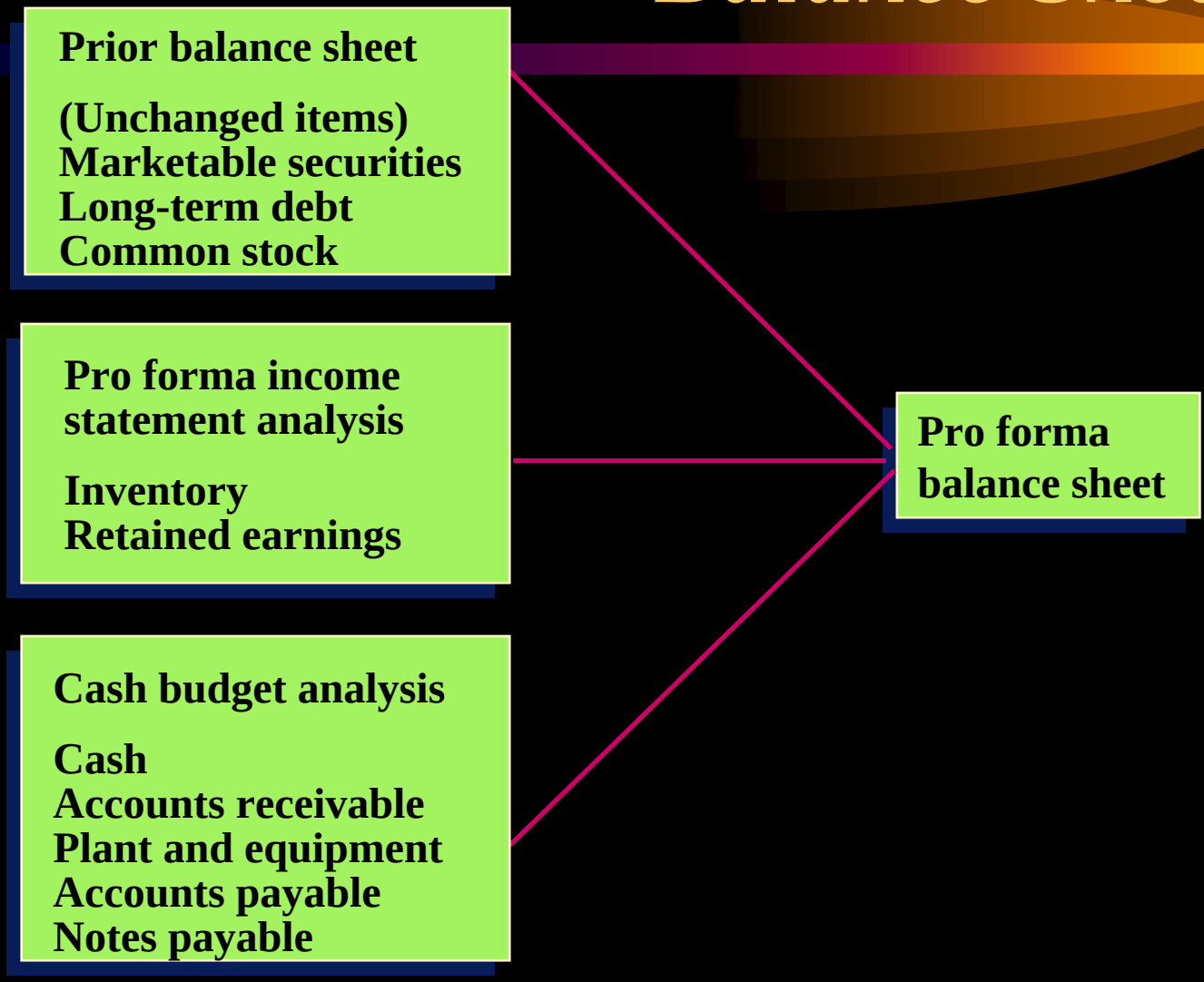
Figure Short-Term Financial Planning



Development of pro forma statements



Development of a Pro Forma Balance Sheet



Sales Forecast

- The prediction of the firm's sales over a given period, based on external and internal data, and used as the key input to the financial planning process.
  - External forecasts involve the use of general economic data such as GDP, interest rates, disposable personal income, and other similar data.
  - Internal forecasts utilize data internal to the firm, such as sales force surveys, order buildups, and other sales channel information.

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Fundamentals of Pro Forma *Statements*

- Pro Forma statements are vital for
  - Management to evaluate the future expected financial position, and
  - Investors and Creditors to evaluate the firm's ability to provide a return on funds invested.
- Three key outputs of forecasting:
  - Pro forma income statement,
  - Pro forma balance sheet, and
  - Statement of external financing requirements.

Items Required for Forecasting

- Preparing Pro Forma statements require:
  - Financial statements from the previous year,
  - Sales forecast for the forecast year, and
  - Forecasts for all other financial statement accounts.

Pro Forma *Income Statement*

- Like the Cash Budget, Pro Forma Income Statements are based on the sales forecast.
- One approach to forecasting expenses is to project them as their historical “percentage of sales.”

Percent-of-Sales Method

Weaknesses of Percent-of-Sales

- There are three weaknesses of the percent-of-sales approach:
  - It is unrealistic to assume all expenses will remain exactly the same percentage from year to year.
  - It essentially locks in a fixed profit margin.
  - It assumes all costs are variable.
- Basing forecasts solely on past data tends to understate profits when sales increase, and overstate profits when sales decline.

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Financial Forecasting

- **1) Project sales revenues and expenses.**

Financial Forecasting

- **1) Project sales revenues and expenses.**
- **2) Estimate current assets and fixed assets necessary to support projected sales.**

Financial Forecasting

- **1) Project sales revenues and expenses.**
- **2) Estimate current assets and fixed assets necessary to support projected sales.**
  - **Percent of sales forecast**

Percent-of-Sales Method (an estimate)

- Spontaneous Assets—assets whose value increases proportionately with sales.

- Spontaneous Liabilities—liabilities whose value increases in proportion with sales.

Percent-of-Sales Method

- A short-cut, less exact, easier method of determining financing needs (The "quick and dirty" approach)
- Assumes that B/S accounts will maintain a constant percentage relationship to sales
  - Assets / Current Sales = % of Sales
- B/S=balance/sales

Pro Forma *Balance Sheet*

- The Judgmental Approach is a method for developing the Pro Forma Balance Sheet where values of certain balance sheet accounts are estimated, and others are calculated, based on a ratio analysis.
- Projected changes in assets from the latest fiscal year to the forecast year determines the Total Financing Required (TFR).

Pro Forma *Balance Sheet (continued)*

- Increases in accounts payable and accruals generate the internal "spontaneous sources of financing."
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- When internal financing is less than the Total Financing Required, the Pro Forma Balance Sheet will determine the External Financing Required (EFR).

Using Pro Forma *Statements*

- Both financial managers and lenders can analyze the firm's expected financial performance.
- After analyzing pro forma statements, managers can take steps to adjust planned operations to better achieve short-term financial goals.

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Cash Planning: Cash Budget

- The Cash Budget or cash forecast is a statement of the firm's planned inflows and outflows of cash that is used to estimate its short-term cash requirements.

Preparing Cash Budgets

- Two basic categories of data are required to develop the Cash Budget:
  - Cash Receipts, including cash sales, collections of accounts receivable, and other cash receipts.
  - Cash Disbursements, including cash dividends, principal repayment, purchases, payment of accounts payable, wages, salaries, and taxes.

Preparing Cash Budgets (continued)

- Given the Cash Receipts and Cash Disbursements the Cash Budget produces:
  - Net Cash Flows,
  - Ending period cash, and
  - Any required total financing needs or excess cash balances.

Evaluating Cash Budget

- The Cash budget provides the firm with figures indicating whether a cash shortage or surplus is expected to result in each month covered by the forecast.

Coping with Budget Uncertainty

- There are two basic ways of coping with uncertainty for the cash budget:
  - Prepare several cash budgets based on pessimistic, most likely, and optimistic forecasts of cash receipts and disbursements.
  - Develop a cash budget simulation with detailed assumptions of possible outcomes and their underlying probability distributions.

Cash Flows within the Month

- While the cash budget generally shows cash flows on a monthly basis, this may not ensure that the firm is able to meet daily cash requirements.
- Effective cash planning requires a look beyond the cash budget.

EXAMPLE

Percent of Sales Method

- **Suppose this year's sales will total $32 million.**
- **Next year, we forecast sales of $40 million.**
- **Net income should be 5% of sales.**
- **Dividends should be 50% of earnings.**

		This year	% of $32m
Assets			
Current Assets		$8m	25%
Fixed Assets		$16m	50%
Total Assets		$24m	
Liab. and Equity			
Accounts Payable	$4m		12.5%
Accrued Expenses	$4m		12.5%
Notes Payable	$1m		n/a
Long Term Debt	$6m		n/a
Total Liabilities		$15m	
Common Stock	$7m		n/a
Retained Earnings	$2m		
Equity		$9m	
Total Liab. & Equity		$24m	

	Next year	% of $40m
Assets		
Current Assets		25%
Fixed Assets		50%
Total Assets		
Liab. and Equity		
Accounts Payable		12.5%
Accrued Expenses		12.5%
Notes Payable		n/a
Long Term Debt		n/a
Total Liabilities		
Common Stock		n/a
Retained Earnings		
Equity		
Total Liab. & Equity		

	Next year	% of $40m
Assets		
Current Assets	$10m	25%
Fixed Assets		50%
Total Assets		
Liab. and Equity		
Accounts Payable		12.5%
Accrued Expenses		12.5%
Notes Payable		n/a
Long Term Debt		n/a
Total Liabilities		
Common Stock		n/a
Retained Earnings		
Equity		
Total Liab. & Equity		

	Next year	% of $40m
Assets		
Current Assets	$10m	25%
Fixed Assets	$20m	50%
Total Assets		
Liab. and Equity		
Accounts Payable		12.5%
Accrued Expenses		12.5%
Notes Payable		n/a
Long Term Debt		n/a
Total Liabilities		
Common Stock		n/a
Retained Earnings		
Equity		
Total Liab. & Equity		

	Next year	% of $40m
Assets		
Current Assets	$10m	25%
Fixed Assets	$20m	50%
Total Assets	$30m	
Liab. and Equity		
Accounts Payable		12.5%
Accrued Expenses		12.5%
Notes Payable		n/a
Long Term Debt		n/a
Total Liabilities		
Common Stock		n/a
Retained Earnings		
Equity		
Total Liab. & Equity		

	Next year	% of $40m
Assets		
Current Assets	$10m	25%
Fixed Assets	$20m	50%
Total Assets	$30m	
Liab. and Equity		
Accounts Payable	$5m	12.5%
Accrued Expenses		12.5%
Notes Payable		n/a
Long Term Debt		n/a
Total Liabilities		
Common Stock		n/a
Retained Earnings		
Equity		
Total Liab. & Equity		

	Next year	% of $40m
Assets		
Current Assets	$10m	25%
Fixed Assets	$20m	50%
Total Assets	$30m	
Liab. and Equity		
Accounts Payable	$5m	12.5%
Accrued Expenses	$5m	12.5%
Notes Payable		n/a
Long Term Debt		n/a
Total Liabilities		
Common Stock		n/a
Retained Earnings		
Equity		
Total Liab. & Equity		

	Next year	% of $40m
Assets		
Current Assets	$10m	25%
Fixed Assets	$20m	50%
Total Assets	$30m	
Liab. and Equity		
Accounts Payable	$5m	12.5%
Accrued Expenses	$5m	12.5%
Notes Payable	$1m	n/a
Long Term Debt		n/a
Total Liabilities		
Common Stock		n/a
Retained Earnings		
Equity		
Total Liab. & Equity		

	Next year		% of $40m
Assets			
Current Assets		$10m	25%
Fixed Assets		$20m	50%
Total Assets		$30m	
Liab. and Equity			
Accounts Payable	$5m		12.5%
Accrued Expenses	$5m		12.5%
Notes Payable	$1m		n/a
Long Term Debt	$6m		n/a
Total Liabilities			
Common Stock			n/a
Retained Earnings			
Equity			
Total Liab. & Equity			

	Next year		% of $40m
Assets			
Current Assets		$10m	25%
Fixed Assets		$20m	50%
Total Assets		$30m	
Liab. and Equity			
Accounts Payable	$5m		12.5%
Accrued Expenses	$5m		12.5%
Notes Payable	$1m		n/a
Long Term Debt	$6m		n/a
Total Liabilities		$17m	
Common Stock			n/a
Retained Earnings			
Equity			
Total Liab. & Equity			

	Next year		% of $40m
Assets			
Current Assets		$10m	25%
Fixed Assets		$20m	50%
Total Assets		$30m	
Liab. and Equity			
Accounts Payable	$5m		12.5%
Accrued Expenses	$5m		12.5%
Notes Payable	$1m		n/a
Long Term Debt	$6m		n/a
Total Liabilities		$17m	
Common Stock	$7m		n/a
Retained Earnings			
Equity			
Total Liab. & Equity			

Predicting Retained Earnings

Predicting Retained Earnings

- **Next year's projected retained earnings = last year's $2 million, plus:**

Predicting Retained Earnings

- **Next year's projected retained earnings = last year's $2 million, plus:**

$$\text{projected sales} \times \frac{\text{net income}}{\text{sales}} \times \left(1 - \frac{\text{cash dividends}}{\text{net income}}\right)$$

Predicting Retained Earnings

- **Next year's projected retained earnings = last year's $2 million, plus:**

$$\text{projected sales} \times \frac{\text{net income}}{\text{sales}} \times \left(1 - \frac{\text{cash dividends}}{\text{net income}}\right)$$

$40 million x .05 x (1 - .50)

Predicting Retained Earnings

- **Next year's projected retained earnings = last year's $2 million, plus:**

$$\text{projected sales} \times \frac{\text{net income}}{\text{sales}} \times \left(1 - \frac{\text{cash dividends}}{\text{net income}}\right)$$

$40 million x .05 x (1 - .50)

= $2 million + $1 million = $3million

		Next year	% of $40m
Assets			
Current Assets		$10m	25%
Fixed Assets		$20m	50%
Total Assets		$30m	
Liab. and Equity			
Accounts Payable	$5m		12.5%
Accrued Expenses	$5m		12.5%
Notes Payable	$1m		n/a
Long Term Debt	$6m		n/a
Total Liabilities		$17m	
Common Stock	$7m		n/a
Retained Earnings	$3m		
Equity			
Total Liab. & Equity			

		Next year	% of $40m
Assets			
Current Assets		$10m	25%
Fixed Assets		$20m	50%
Total Assets		$30m	
Liab. and Equity			
Accounts Payable	$5m		12.5%
Accrued Expenses	$5m		12.5%
Notes Payable	$1m		n/a
Long Term Debt	$6m		n/a
Total Liabilities		$17m	
Common Stock	$7m		n/a
Retained Earnings	$3m		
Equity		$10m	
Total Liab. & Equity			

	Next year		% of $40m
Assets			
Current Assets		$10m	25%
Fixed Assets		$20m	50%
Total Assets		$30m	
Liab. and Equity			
Accounts Payable	$5m		12.5%
Accrued Expenses	$5m		12.5%
Notes Payable	$1m		n/a
Long Term Debt	$6m		n/a
Total Liabilities		$17m	
Common Stock	$7m		n/a
Retained Earnings	$3m		
Equity		$10m	
Total Liab. & Equity		$27m	

		Next year	% of $40m
Assets			
Current Assets		$10m	25%
Fixed Assets		$20m	50%
Total Assets		$30m	
Liab. and Equity			
Accounts Payable	$5m		
Accrued Expenses	$5m		
Notes Payable	$1m		
Long Term Debt	$6m		
Total Liabilities		$17m	
Common Stock	$7m		
Retained Earnings	$3m		
Equity		$10m	
Total Liab. & Equity		$27m	

How much Discretionary Financing will we Need?

	Next year		% of $40m
Assets			
Current Assets		$10m	25%
Fixed Assets		$20m	50%
Total Assets		$30m	
Liab. and Equity			
Accounts Payable	$5m		
Accrued Expenses	$5m		
Notes Payable	$1m		
Long Term Debt	$6m		
Total Liabilities		$17m	
Common Stock	$7m		
Retained Earnings	$3m		
Equity		$10m	
Total Liab. & Equity		$27m	

How much Discretionary Financing will we Need?

		Next year	% of $40m
Assets			
Current Assets		$10m	25%
Fixed Assets		$20m	50%
Total Assets		$30m	
Liab. and Equity			
Accounts Payable	$5m		
Accrued Expenses	$5m		
Notes Payable	$1m		
Long Term Debt	$6m		
Total Liabilities		$17m	
Common Stock	$7m		
Retained Earnings	$3m		
Equity		$10m	
Total Liab. & Equity		$27m	

How much Discretionary Financing will we Need?

Predicting Discretionary Financing Needs

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projected total assets	**-**	**projected total liabilities**	**-**	**projected owners' equity**

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$30 million - $17 million - $10 million

Predicting Discretionary Financing Needs

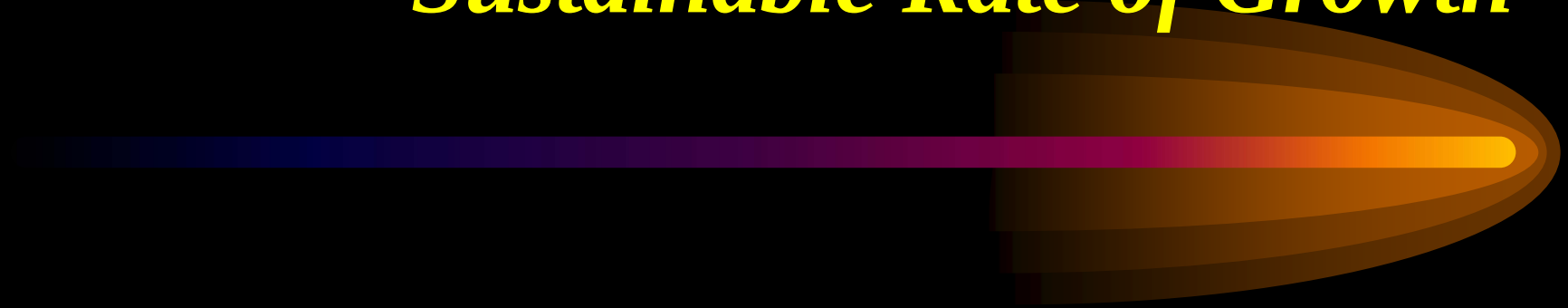
Discretionary Financing Needed =

projected total assets	**-**	**projected total liabilities**	**-**	**projected owners' equity**

$30 million - $17 million - $10 million

= $3 million in discretionary financing

Sustainable Rate of Growth



Sustainable Rate of Growth

- The maximum sales growth rate a firm can have while maintaining its capital structure (financing mix).

Sustainable Rate of Growth

G* = ROE (1 - b) **where**

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(dividends / net income)

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G* = ROE (1 - b) where

b = dividend payout ratio

(dividends / net income)

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(net income / common equity) or

$$\text{ROE} = \frac{\text{net income}}{\text{sales}} \times \frac{\text{sales}}{\text{assets}} \times \frac{\text{assets}}{\text{common equity}}$$

Sustainable Rate of Growth

- G* = Sustainable Rate of Growth
  = Rate at which Sales can Grow from Internally Generated Funds (no new Debt or Stock)

G* = ROE (1 – b)

ROE = Net Income / Equity

b = Dividends / Net Income (Div. Payout Ratio)

(1 – b) = Plowback Ratio

Implications of Sustainable Rate of Growth

$$G^* = ROE\,(1 - b)$$

$$G^* = \frac{\text{Net Inc}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets}} \times \frac{\text{Assets}}{\text{Equity}} \times \text{Plowback Ratio}$$