Ch 7 - Cost-Volume-Profit Analysis

Cost-Volume-Profit Analysis{CVP}

- a study of the effects of change of costs and volume on income/Profit
- considers the interrelationships among the five components:
  1. level of activity (sales volume)
  2. unit selling price
  3. variable cost per unit
  4. fixed costs
  5. sales mix

Break-even Analysis !

Breakeven point: the level of activity at which total revenues = total costs

desired **unit** sales = $fixed costs / $CM *per unit*

Where CM =Contribution Margin

What about break-even sales dollars

1. $ fixed costs / CM ratio = B/E sales $ Where CM ratio is CM/Total Revenue
2. Based on the equation:
   Revenues - Variable Costs - Fixed Costs = Operating Income
   Set operating income to zero and solve for unknown(s).

desired NIBT = desired Net Income / (1 - t)

Break-even Analysis - cont'd

- Margin of safety: the difference between actual sales and the break-even sales
  - expressed in dollars or as a %
- Operating Leverage factor - a measure of the volatility of earnings and degree to which a firm uses fixed costs.
  = contribution Margin/ operating Income
  →An operating Leverage of 2 implies that a 1% increase in sales will result in a 2% increase in operating income

Multi-Product Environment

- Multiproduct environment: The ratio or percentage of each product that is sold is always specified in question.
- Simulate the single-product environment by:
  1. Bundling the products by their ratio and determine the **'bundle' CM**
  2. Find the Break-even units for the bundle
  3. Unbundle into individual products

DO ICP 7-29

Major Underlying Assumptions

- Revenue per unit, variable costs per unit, and fixed costs are constant within the RELEVANT RANGE
- mixed costs can be accurately separated into their fixed and variable components
- sales = production
  - necessary because of the allocation of fixed costs to inventory at potentially different rates each year
- **sales mix remains constant**
- labour, production productivity does not change

Ch 8 - Alternative Inventory Costing Methods

Absorption Costing vs. Variable Costing

	Absorption Costing	Variable Costing
Direct Materials	√	√
Direct Labour	√	√
Variable manufacturing overhead	√	√
Fixed manufacturing overhead	√	Period Cost

Absorption Costing

- Absorption [aka Full Costing]: Allocate both Fixed and Variable Manufacturing Overhead to F/G inventory. THIS IS WHAT WE HAVE BEEN DOING SO FAR. All product costs eventually go to COGS.

CRITICISMS OF ABSORPTION COSTING

- Incentive to overproduce: Managers can reduce the average cost per unit by increasing production and thereby shift more fixed costs to inventory - can be overcome by:
  - charge managers for holding inventory
  - policy against holding excess inventories
  - change focus of performance measures from short-term to long-term
  - adopt a Just-in-Time Inventory system (low inventories)
  - use variable costing

Variable Costing

- all fixed costs are written off against income in they year they are incurred - they are treated as period costs

- Advantages:
  - eliminates distortions to income and product costs when volume changes
  - reduces the dysfunctional incentives to overproduce
- Disadvantages:
  - it is not acceptable for external financial reporting purposes
  - managers need to consider fixed costs when making long-term pricing decisions

Absortion VS. Variable Costing

- We will be doing notes in class and concentrate on understanding the exercises/problems. Not much in terms of power point slides.

Chapter 9

Profit Planning and ~~Activity-Based~~ Budgeting

Learning Objectives

1. List and explain five purposes of budgeting systems.
2. **Prepare** each of the budget schedules that make up the master budget.
3. Describe a typical organization's process of budget administration.
4. Discuss the behavioural implications of budgetary slack and participative budgeting.
5. Of course, be able to do all the ICPs, and as much of the hwk as you can.

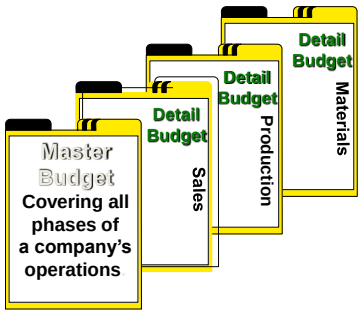
Learning Objective 1
Purposes of Budgeting Systems

Budget

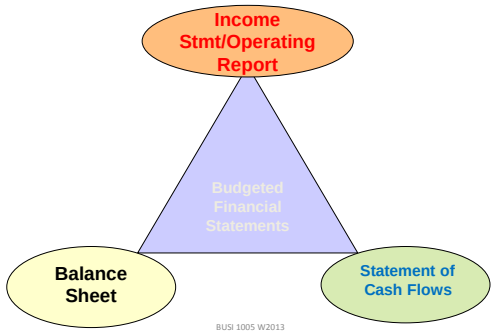
a detailed plan, expressed in quantitative terms, that specifies how resources will be acquired and used during a specified period of time.

1. **Planning**
2. **Facilitating Communication and Coordination**
3. **Allocating Resources**
4. **Controlling Profit and Operations** during period
5. ***Evaluating Performance and Providing Incentives***

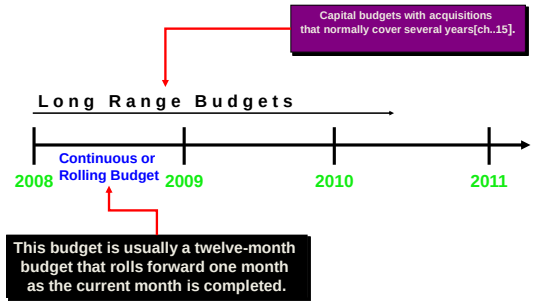
Types of Budgets- the order is not correct below

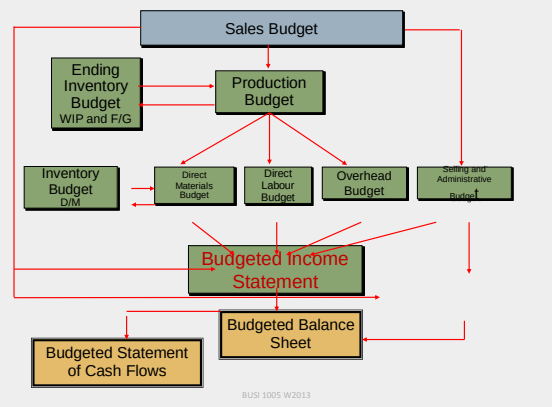


Types of Budgets



Types of Budgets Cont'd





Sales Budget

1. Breakers, Inc. 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.

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 Revenue	$200,000	$500,000	$300,000	$1,000,000

Production Budget

The management of Breakers, Inc. wants ending inventory to be equal to 20% of the following month's budgeted sales in units.

On March 31, 4,000 units were on hand.

Let's prepare the production budget.

Desired inventory 10,000 units

Production Budget-units

From sales budget

	April	May	June	Quarter
Sales in units	20,000	50,000	30,000	100,000
Add: desired end. inventory	10,000	6,000	5,000	5,000
Total needed	30,000	56,000	35,000	105,000
Less: beg. inventory	4,000	10,000	6,000	4,000
Units to be produced	26,000	46,000	29,000	101,000

March 31 ending inventory

Direct-Material Budget

- At Breakers, five kilograms of material are required per unit of product.
- Management wants materials on hand at the end of each month equal to 10% of the following month's production.
- On March 31, 13,000 kilograms of material are on hand. Material cost $.40 per kilogram.

Let's prepare the direct materials budget.

Direct-Material Budget

From our production budget

	April	May	June	Quarter
Production in units	26,000	46,000	29,000	101,000
Materials per unit	5	5	5	5
Production needs	130,000	230,000	145,000	505,000
Add: desired ending inventory	23,000	14,500	11,500	11,500
Total needed	153,000	244,500	156,500	516,500
Less: beginning inventory	13,000	23,000	14,500	13,000
Materials to be purchased	140,000	221,500	142,000	503,500

10% of the following month's production

March 31 inventory

Direct-Labour Budget

- At Breakers, each unit of product requires 0.1 hours of direct labour.
- The Company has a "no layoff" policy so all employees will be paid for 40 hours of work each week.
- In exchange for the "no layoff" policy, workers agreed to a wage rate of $8 per hour regardless of the hours worked (No overtime pay).
- For the next three months, the direct labour workforce will be paid for a minimum of 3,000 hours per month.

Let's prepare the direct labour budget.

Direct-Labour Budget

	April	May	June	Quarter
Production in units	26,000	46,000	29,000	101,000
Direct labour hours	0.10	0.10	0.10	0.10
Labour hours required	2,600	4,600	2,900	10,100
Guaranteed labour hours	3,000	3,000	3,000	
Labour hours paid	3,000	4,600	3,000	10,600
Wage rate	$ 8	$ 8	$ 8	$ 8
Total direct labour $	$ 24,000	$ 36,800	$ 24,000	$ 84,800

From our production budget

This is the greater of labour hours required or labour hours guaranteed.

Overhead Budget

Here is Breakers' Overhead Budget for the quarter.

	April	May	June	Quarter
Indirect labour	$ 17,500	$ 26,500	$ 17,900	$ 61,900
Indirect material	7,000	12,600	8,600	28,200
Utilities	4,200	8,400	5,200	17,800
Rent	13,300	13,300	13,300	39,900
Insurance	5,800	5,800	5,800	17,400
Maintenance	8,200	9,400	8,200	25,800
	$ 56,000	$ 76,000	$ 59,000	$ 191,000

Cash Receipts Budget

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

Cash Disbursements Budget

- Breakers pays $0.40 per kilogram for its materials.
- One-half of a month's purchases are paid for in the month of purchase; the other half is paid in the following month.
- No discounts are available.
- The March 31 accounts payable balance is $12,000.

Cash Receipts Budget

	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

Materials Cash Disbursements Budget

	April	May	June	Quarter
Accounts pay. 3/31	$ 12,000			$ 12,000
April purchases				
50% x $56,000	28,000			28,000
50% x $56,000		$ 28,000		28,000
May purchases				
50% x $88,600		44,300		44,300
50% x $88,600			$ 44,300	44,300
June purchases				
50% x $56,800			28,400	28,400
Total cash payments for materials	$ 40,000	$ 72,300	$ 72,700	$185,000

140,000 kgs. × $.40/kg. = $56,000

Cash Disbursements Budget (cont'd)

Breakers:

- Maintains a 12% open line of credit for $75,000.
- Maintains a minimum cash balance of $30,000.
- Borrows and repays loans on the last day of the month.
- Pays a cash dividend of $25,000 in April.
- Purchases $143,700 of equipment in May and $48,300 in June paid in cash.
- Has an April 1 cash balance of $40,000.

From our Cash Receipts Budget

Cash Budget

(Collections and Disbursements) *Try to do other columns before going to next slide*

	April	May	June	Quarter
Beginning cash balance	$ 40,000			
Add: cash collections	170,000			
Total cash available	210,000			
Less: disbursements				
Materials	40,000			
Direct labour	24,000			
Mfg. overhead	56,000			
Selling and admin.	70,000			
Equipment purchase	-			
Dividends	25,000			
Total disbursements	215,000			
Excess (deficiency) of Cash available over disbursements	$ (5,000)			

From our Cash Disbursements Budget

From our Direct Labour Budget

From our Overhead Budget

From our Selling and Administrative Expense Budget

To maintain a cash balance of $30,000, Breakers must borrow $35,000 on its line of credit.

Cash Budget
(Collections and Disbursements)

	April	May	June	Quarter
Beginning cash balance	$ 40,000	$ 30,000		
Add: cash collections	170,000	400,000		
Total cash available	210,000	430,000		
Less: disbursements				
Materials	40,000	72,300		
Direct labour	24,000	36,800		
Mfg. overhead	56,000	76,000		
Selling and admin.	70,000	85,000		
Equipment purchase	-	143,700		
Dividends	25,000	-		
Total disbursements	215,000	413,800		
Excess (deficiency) of Cash available over disbursements	$ (5,000)	$ 16,200		

Breakers must borrow an addition $13,800 to maintain a cash balance of $30,000.

Cash Budget
(Collections and Disbursements)

has enough cash to re the $48,800 loan plus in at 12%.

	April	May	June	Quarter
Beginning cash balance	$ 40,000	$ 30,000	$ 30,000	
Add: cash collections	170,000	400,000	335,000	
Total cash available	210,000	430,000	365,000	
Less: disbursements				
Materials	40,000	72,300	72,700	
Direct labour	24,000	36,800	24,000	
Mfg. overhead	56,000	76,000	59,000	
Selling and admin.	70,000	85,000	75,000	
Equipment purchase	-	143,700	48,300	
Dividends	25,000	-	-	
Total disbursements	215,000	413,800	279,000	
Excess (deficiency) of Cash available over disbursements	$ (5,000)	$ 16,200	$ 86,000	

Cash Budget
(Collections and Disbursements)

	April	May	June	Quarter
Beginning cash balance	$ 40,000	$ 30,000	$ 30,000	$ 40,000
Add: cash collections	170,000	400,000	335,000	905,000
Total cash available	210,000	430,000	365,000	945,000
Less: disbursements				
Materials	40,000	72,300	72,700	185,000
Direct labour	24,000	36,800	24,000	84,800
Mfg. overhead	56,000	76,000	59,000	191,000
Selling and admin.	70,000	85,000	75,000	230,000
Equipment purchase	-	143,700	48,300	192,000
Dividends	25,000	-	-	25,000
Total disbursements	215,000	413,800	279,000	907,800
Excess (deficiency) of Cash available over disbursements	$ (5,000)	$ 16,200	$ 86,000	$ 37,200

Ending cash balance for April is the beginning May balance.

Cash Budget

(Financing and Repayment)

	April	May	June	Quarter
Excess (deficiency) of Cash available over disbursements	$ (5,000)	$16,200	$86,000	$37,200
Financing:				
Borrowing	35,000	13,800		48,800
Repayments	-	-	(48,800)	(48,800)
Interest	-	-	(838)	(838)
Total financing	35,000	13,800	(49,638)	(838)
Ending cash balance	$30,000	$30,000	$36,362	$36,362

Borrowing		Rate		Interest		Outstanding		Expense
$ 35,000	×	12%	=	$ 4,200	×	2 mths	=	$ 700
13,800	×	12%	=	1,656	×	1 mth.	=	138
								$ 838

Cost of Goods Manufactured BUDGET

	April	May	June	Quarter
Direct material:				
Beg.material inventory	$ 5,200	$ 9,200	$ 5,800	$ 5,200
Add: Materials purchases	56,000	88,600	56,800	201,400
Material available for use	61,200	97,800	62,600	206,600
Deduct: End. material inventory	9,200	5,800	4,600	4,600
Direct material used	52,000	92,000	58,000	202,000
Direct labour	24,000	36,800	24,000	84,800
Manufacturing overhead	56,000	76,000	59,000	191,000
Total manufacturing costs	132,000	204,800	141,000	477,800
Add: Beg. Work-in-process inventory	3,800	16,200	9,400	3,800
Subtotal	135,800	221,000	150,400	481,600
Deduct: End.Work-in-process inventory	16,200	9,400	17,000	17,000
Cost of goods manufactured	$ 119,600	$ 211,600	$ 133,400	$ 464,600

Cost of Goods Sold BUDGET

	April	May	June	Quarter
Cost of goods manufactured	$ 119,600	$ 211,600	$ 133,400	$ 464,600
Add: Beg. finished-goods inventory	18,400	46,000	27,600	18,400
Cost of goods available for sale	138,000	257,600	161,000	483,000
Deduct: End. finished-goods inventory	46,000	27,600	23,000	23,000
Cost of goods sold	$ 92,000	$ 230,000	$ 138,000	$ 460,000

Budgeted Income Statement

Breakers, Inc. Budgeted Income Statement For the Three Months Ended June 30		
Revenue (100,000 × $10)		$ 1,000,000
Cost of goods sold		460,000
Gross margin		540,000
Operating expenses:		
Selling and admin. expenses	$ 260,000	
Interest expense	838	
Total operating expenses		260,838
Net income		$ 279,162

Budgeted Statement of Cash Flows

	April	May	June	Quarter
Cash flows from operating activities:				
Cash receipts from customers	$ 170,000	$ 400,000	$ 335,000	$ 905,000
Cash payments:				
To suppliers of raw material	(40,000)	(72,300)	(72,700)	(185,000)
For direct labour	(24,000)	(36,800)	(24,000)	(84,800)
For manufacturing-overhead expenditures	(56,000)	(76,000)	(59,000)	(191,000)
For selling and administrative expenses	(70,000)	(85,000)	(75,000)	(230,000)
For interest	-	-	(838)	(838)
Total cash payments	(190,000)	(270,100)	(231,538)	(691,638)
Net cash flow from operating activities	$ (20,000)	$ 129,900	$ 103,462	$ 213,362
Cash flows from investing activities:				
Purchase of equipment	-	(143,700)	(48,300)	(192,000)
Net cash used by investing activities	$ -	$ (143,700)	$ (48,300)	$ (192,000)
Cash flows from financing activities:				
Payment of dividends	(25,000)	-	-	(25,000)
Principle of bank loan	35,000	13,800	-	48,800
Repayment of bank loan	-	-	(48,800)	(48,800)
Net cash provided by financing activities	$ 10,000	$ 13,800	$ (48,800)	$ -
Net increase in cash	$ (10,000)	$ -	$ 6,362	$ (3,638)
Balance in cash, beginning	40,000	30,000	30,000	40,000
Balance in cash. end of month	$ 30,000	$ 30,000	$ 36,362	$ 36,362

Assumptions and Predictions

The budget/Plan has many assumptions and predictions build into it. Computerized models can be run many times to explore various what-if scenarios, for example, the impact on bottom-line profitability of changes in budget variables (e.g., interest rates, demand, inflation rates, and competitors' actions, prices, etc.).

Budget Administration

The Budget Committee is a standing committee responsible for . . .

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

International Aspects of Budgeting

Firms with international operations face special problems when preparing a budget.

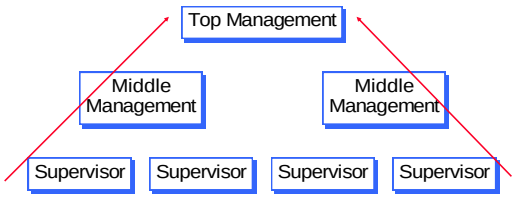
1. **Fluctuations in foreign currency exchange rates.**
2. **High inflation rates in some foreign countries.**
3. **Differences in local economic conditions.**

Behavioural Impact of Budgets

Budgetary Slack: Padding the Budget

People often perceive that their performance will look better in their superiors' eyes if they can "beat the budget."

Participative Budgeting



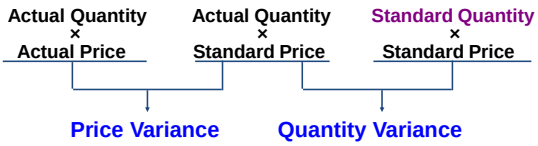
Which way is the Flow of Budget Data here?

Ch 10 – Standard Costing and *Flexible* Budgeting

Static vs. *Flexible* Budgets

- Static budgets do not vary with volume/activity
- *Flexible* budget is a function of either sales $ or sales Units.
- *Flexible* budget is prepared for different levels of volume/activity within a firm's relevant range. From the various levels of activity you can calculate what costs should be
  - the *flexible* budget is re-calculated at the actual level of volume after the year end. Why?
  - if there are variable costs, any comparison of budget vs. actual must be done using the *flexible* budget. Static vs. Actual is not very meaningful. Why?

A General Model for Variance Analysis



Standard quantity is the quantity that should have been used [aka budget quantity].

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Standard Cost Systems

- the standard cost card - provides the budgeted inputs at budgeted prices required to produce one good unit of output:

Direct materials: 3.5 kg @ $5.00	$17.50
Direct labour: 2 hours @ $14.00	28.00
Variable overhead: 2 hours @ 5.00	10.00
Fixed overhead: 2 hours @ 8.00	16.00
	$71.50

Standard Cost Systems

- all inventories are carried at standard cost:
  - direct materials
  - work-in-process
  - finished goods
- variances between standard and actual are written off in the period incurred against cost of goods sold. This is if company has been using budgeted amounts in the records.

Direct materials variances

- direct materials *flexible* budget variance = D/M flexible budget less DM actual costs incurred
- Above variance breaks out into two variances:
  1. DM price variance = Actual Quantity Purchased x [Actual Price (AP) - Standard price (SP)]
  2. DM quantity variance = Standard price x (Actual Quantity Used - Standard Quantity Allowed)

Direct labour variances

- direct labour *flexible* budget variance = DL flexible budget less DL actual costs incurred
- breaks out into two variances:
  1. D/L price/rate variance = Actual Hours x (Actual Rate - Standard Rate)
  2. D/L efficiency variance = Standard Rate x (Actual Hours - Standard Hours Allowed)

Variable Overhead Variances

- Variable overhead *flexible* budget variance = VOH flexible budget less VOH actual costs incurred
- breaks out into two variances:
  1. VOH Spending variance = Actual Hours x (Actual Rate - Standard Rate)
  2. VOH efficiency variance = Standard Rate x (Actual Hours - Standard Hours Allowed)

Fixed Overhead Variances

- FOH Spending/Budget Variance =
  FOH Budget - FOH Actual
- FOH Volume Variance =
  FOH Budget - *FOH Applied*
  - -if **U**nderapplied then **U**nfavourable
  - -if **o**verapplied then Favourable

Variance Formulas

The handout to be given in class is very important for test 2 and final exam. It is only one sheet but it is full.

We will go through it too. You will need to go over it many times. **At least no debits and credits.**

Under or Over-Applied Overhead

- the balance in the Manufacturing Overhead account = sum of :
  - VOH Spending Variance
  - VOH Efficiency Variance
  - FOH Budget Variance
  - FOH Volume Variance

Chapter 12

Responsibility Centres and Transfer Pricing

Learning Objectives

1. Explain the role of responsibility accounting in fostering goal congruence.
2. Define and give an example of a cost centre, a revenue centre, a profit centre, and an investment centre. Evaluation of each centre.
3. Compute an investment centre's return on investment (ROI), residual income (RI), and economic value added (EVA).
4. Explain how a manager can improve ROI.

Learning Objectives (con'd)

5. Describe some advantages and disadvantages of both ROI and residual income as divisional performance measures.
6. Explain how to measure a division's income and invested capital.
7. Use the general economic rule to set an optimal transfer price.
8. Explain how to base a transfer price on market prices, costs, or negotiations.

Responsibility Accounting

Accounting is also structured to measure the performance of people and/or departments to foster goal congruence.

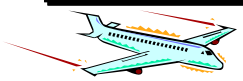
A Responsibility centre is a subunit in an organization whose manager is held accountable for specified financial results.

Responsibility Centres (cont'd)

Cost Centre
Segment has control over the incurrence of costs.

The Paint Department in an automobile plant.

Revenue Centre
Segment is responsible for the revenue of a unit because of control.



The Reservations Department of an airline.

Responsibility Centres (cont'd)

Profit Centre
Segment has control over both costs and revenues.

Company-owned restaurant in a fast-food chain.

Investment Centre
Segment has control over profits and invested capital.

A division of a large corporation.

Performance Reports

	Flexible Budget*		Actual Results*		Variance†	
	February	Year to Date	February	Year to Date	February	Year to Date
Company	$30,660	$64,567	$30,716	$64,570	$56 F	$ 3 F
Maui Division	$18,400	$38,620	$18,470	$38,630	$70 F	$10 F
Oahu Division	12,260	25,947	12,246	25,940	14 U	7 U
Total profit	$30,660	$64,567	$30,716	$64,570	$56 F	$ 3 F
Oahu Division						
Waimea Beach Resort	$6,050	$12,700	$6,060	$12,740	$10 F	$40 F
Diamond Head Lodge	2,100	4,500	2,050	4,430	50 U	70 U
Waikiki Sands Hotel	4,110	8,747	4,136	8,770	26 F	23 F
Total profit	$12,260	$25,947	$12,246	$25,940	$14 U	$ 7 U
Waikiki Sands Hotel						
Grounds and Maintenance	($45)	($90)	($44)	($90)	$ 1 F	—
Housekeeping and Custodial	(40)	(90)	(41)	(90)	1 U	—
Recreational Services	40	85	41	88	1 F	$ 3 F
Food	2,800	6,000	2,840	6,030	40 F	30 F
Beverage	1,355	2,842	1,340	2,832	15 F	10 U
Total profit	$4,110	$8,747	$4,136	$8,770	$26 F	$23 F
Food & Beverage Department						
Banquets and Catering	$600	$1,260	$605	$1,265	$ 5 F	$ 5 F
Restaurants	1,785	3,750	1,760	3,740	25 U	10 U
Total profit	(1,030)	(2,168)	(1,025)	(2,173)	5 F	5 U
	$1,355	$2,842	$1,340	$2,832	$15 U	$10 U
Kitchen						
Kitchen staff wages	($80)	($168)	($78)	($169)	$ 2 F	$ 1 U
Food	(675)	(1,420)	(678)	(1,421)	3 U	1 U
Paper products	(120)	(250)	(115)	(248)	5 F	2 F
Variable overhead	(70)	(150)	(71)	(154)	1 U	4 U
Fixed overhead	(85)	(180)	(83)	(181)	2 F	1 U
Total expense	($1,030)	($2,168)	($1,025)	($2,173)	$ 5 F	$ 5 U

*Numbers without parentheses denote profit; numbers with parentheses denote expenses; numbers in thousands.
†F denotes favorable variance; U denotes unfavorable variance.

Show the budgeted and actual amounts, and the variances between these amounts, of key financial results appropriate for the type of responsibility centre.

Measuring Performance in Investment Centres

Investment Centre managers make decisions that affect both profit and invested capital.

Corporate Headquarters

Investment/Profit Centre Evaluation →
1. Return on investment,
2. Residual income, or
3. ~~Economic value added~~

Return on Investment (ROI)

$$ROI = \frac{\text{Income}}{\text{Invested Capital}}$$

$$ROI = \frac{\text{Income}}{\text{Sales Revenue}} \times \frac{\text{Sales Revenue}}{\text{Invested Capital}}$$

Sales Margin

Capital Turnover

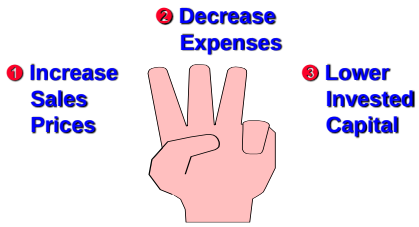
Residual Income

Investment centre profit
– Investment charge
= Residual income

Investment capital
× Imputed interest rate
= Investment charge

Investment centre's minimum required rate of return

Improving ROI



Three ways to improve ROI

ROI Advantages and Disadvantages

- ROI measures return in a percentage form rather than in absolute dollars, which is helpful when comparing segments of different sizes.
- A drawback to using ROI is the potential of decreased goal congruence.

Residual Income Advantages and Disadvantages

- As long as the residual income of a project is a positive amount, the project is deemed attractive because it increases a manager's income pool. Thus, any project that returns more than the corporate goal will be accepted in accordance with top management's desire.
- Since residual income is expressed in absolute dollar terms, *an analyst* forfeits the ability to compare firms/divisions of differing sizes on a common basis.

In Summary

Both ROI and residual income are useful, but both tools have drawbacks. Therefore, companies will use a combination of ROI and residual income (as well as other measures) to evaluate performance.

Issues: Measuring Investment Capital

3 issues must be considered before we can properly measure the investment capital:

First, what assets should be included?

1. Total assets.
2. Total productive assets.
3. Only the assets controllable by the manager being evaluated.

Second : Should we use beginning or ending values?

Third Issue

Should the assets be shown at historical or current cost?

Measuring Investment Centre Income

Division managers should be evaluated on profit margin they control.

– Exclude these costs:

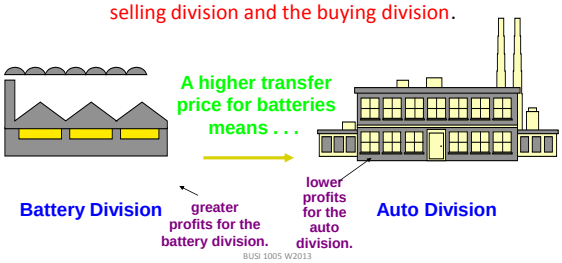
- Costs traceable to the division but not controlled by the division manager.
- Common costs incurred elsewhere and allocated to the division.

The key issue is controllability.

CH. 12 Part II

Transfer Pricing

The transfer price affects the profit measure for both the selling division and the buying division.



Goal Congruence

The ideal transfer price allows each division manager to make decisions that maximize the company's profit, while attempting to maximize his/her own division's profit. **This is the GOAL**

General-Transfer-Pricing Rule

Transfer price	=	Additional outlay cost per unit incurred because goods are transferred	+	Opportunity cost per unit to the organization because of the transfer

Scenario I: No Excess Capacity

- The Battery Division makes a standard 12-volt battery.

Production capacity	300,000 units
Selling price per battery	$40 (to outsiders)
Variable costs per battery	$18
Fixed costs per battery	$7 (at 300,000 units)

- The Battery division is currently selling 300,000 batteries to outsiders at $40. The Auto Division can use 100,000 of these batteries in its X-7 model.

What is the appropriate transfer price?

Scenario I: No Excess Capacity (cont'd)

Transfer price	=	Additional outlay cost per unit incurred because goods are transferred	+	Opportunity cost per unit to the organization because of the transfer
Transfer price	=	$18 variable cost per battery	+	$22 Contribution lost if outside sales given up
Transfer price	=	$40 per battery		

Scenario I: No Excess Capacity (cont'd)

Auto division can purchase 100,000 batteries from an outside supplier for less than $40.

Auto division can purchase 100,000 batteries from an outside supplier for more than $40.

Transfer will not occur.

$40 transfer price

Transfer will occur.

Scenario I: No Excess Capacity (cont'd)

Rule of Thumb:

When the selling division is operating at capacity, the transfer price should be set at the market price.

Q. What if mktg. costs are less if sold internally ?

Scenario II: Excess Capacity

- The Battery Division makes a standard 12-volt battery.

Production capacity	300,000 units
Selling price per battery	$40 (to outsiders)
Variable costs per battery	$18
Fixed costs per battery	$7 (at 300,000 units)

- The Battery division is currently selling 150,000 batteries to outsiders at $40. The Auto Division can use 100,000 of these batteries in its X-7 model. It can purchase them for $38 from an outside supplier.

What is the appropriate transfer price?

Scenario II: Excess Capacity

Transfer price	=	Additional outlay cost per unit incurred because goods are transferred	+	Opportunity cost per unit to the organization because of the transfer
Transfer price	=	$18 variable cost per battery	+	$0
Transfer price	=	$18 per battery		

Optimal TP is lower

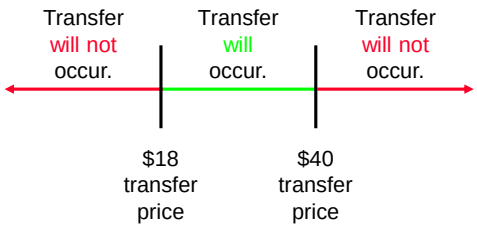
Scenario II: Excess Capacity

Rule:

When the selling division is operating below capacity, the minimum transfer price is the variable cost per unit.

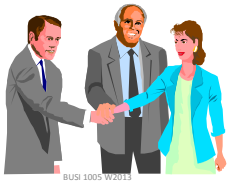
So, the transfer price will be no lower than $18, and no higher than $40.

Scenario II: Excess Capacity



Setting Transfer Prices

The value placed on transfer goods is used to make it possible to transfer goods between divisions while allowing them to retain their autonomy. What is autonomy?



Setting Transfer Prices

Conflicts may be resolved by . . .

1. Direct intervention by top management.
2. Centrally established transfer price policies.
3. Negotiated transfer prices.
4. Market based pricing

Setting Transfer Prices (cont'd)

Top management may become swamped with pricing disputes causing division managers to lose autonomy.

Undermining Divisional Autonomy

Transfer prices are used in a decentralized environment where managers have authority to make decisions and control operations. When disputes arise, top management should step aside and let the division managers resolve the issues. Intervention would decrease the divisional autonomy. However, sometimes upper mgmt. steps in. When?

An International Perspective

Since tax rates and import duties are different in different countries, companies have incentives to set transfer prices that will:

1. Increase revenues in low-tax countries.
2. Increase costs in high-tax countries.
3. Reduce cost of goods transferred to high-import-duty countries.

WE COVER INTENATIONAL TRANSFER PRICING IN BUSI 3008.