

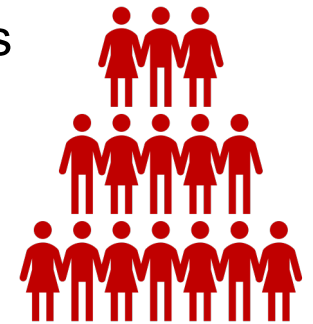
Responsibility Accounting Systems

The key point



A company's owners and top managers must delegate decision-making authority to others except in very SMALL organizations.

When a company's owners (e.g. stockholders) delegate decision-making authority to top managers, they employ corporate governance systems (see lecture #4).



Similarly, when a company's top managers delegate decision-making authority to subordinates, they employ management control systems to direct and control the actions of those subordinates.

In a DECENTRALIZED ORG, decision-making authority is spread throughout the organization rather than being confined to a few top executives.

Decentralization in Organizations: what do we already know?

**Benefits of
Decentralization**

**Disadvantages of
Decentralization**

Decentralization in Organizations: Benefits

Benefits of Decentralization

**Lower-level decisions
often based on
better information.**

**Lower-level managers
gain experience in
decision-making.**

**Top management
freed to concentrate
on strategy.**

**Lower level managers
can respond quickly to
customers.**

**Decision-making
authority leads to
job satisfaction.**

Decentralization in Organizations: Disadvantages

May be a lack of coordination among autonomous managers.

Lower-level managers may make decisions without seeing the “big picture.”

Disadvantages of Decentralization

Lower-level manager's objectives may not be those of the organization.

May be difficult to spread innovative ideas in the organization.

Responsibility Accounting

Managers are held responsible for those items—and *only* those items—that they can actually control to a significant extent.

A responsibility center is used for any part of an organization whose manager has control over and is accountable for cost, profit, or investments.

Responsibility centers

The three main type of RC are:

- 1. Cost centers**
- 2. Profit centers**
- 3. Investments centers**

Cost Center

A segment whose manager has control over costs, but not over revenues or investment funds.

Profit Center

A segment whose manager has control over **both costs and revenues, but no control over investment funds.**

Revenues

Sales

Interest

Other

Costs

Mfg. costs

Commissions

Salaries

Other

Investment Center

A segment whose manager has control over costs, revenues, and investments in operating assets.

Learning Objective 1

Compute return on investment (ROI) and show how changes in sales, expenses, and assets affect ROI.

Basics on financial statement

The FS is a mandatory set of documents prepared yearly by firms. It includes two main accounting documents.

INCOME STATEMENT

*Negative items
of income*

*Positive items of
income*

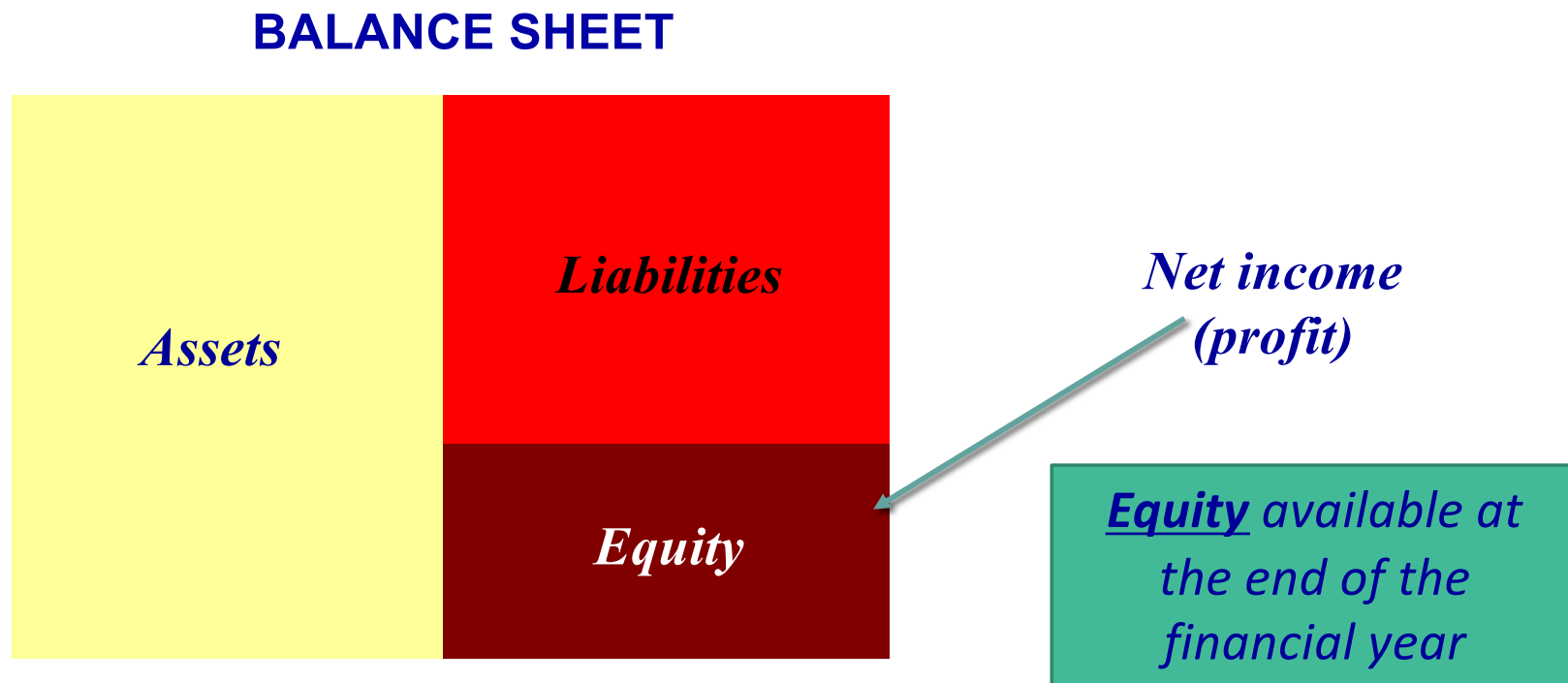
*Net income
(profit)*

*Net income realized
during the financial year*

Basics on financial statement

The FS is a mandatory set of documents prepared yearly by firms.

It includes two main accounting documents.



Basics on financial statement

To assess the financial health of companies, Financial Statement is usually «analysed» and the items of BS and IS are positioned within each document in order to obtain more information on the company and its performance.

Assets

Cash and cash equivalent: amounts in checking accounts and saving accounts + money

Account receivables or trade r.: amounts due from customers for goods or services that have already been delivered or sold

Inventories: goods kept in stock, available for sale

Property plant and equipment: assets which cannot be readily converted into cash (computers, cars, plants..)

Securities: bonds, stocks or share of other firms acquired (investment purposes)

Norton Balance Sheet – Part 1

NORTON CORPORATION		
Balance Sheets		
December 31		
	This Year	Last Year
Assets		
Current assets:		
Cash	\$ 30,000	\$ 20,000
Accounts receivable, net	20,000	17,000
Inventory	12,000	10,000
Prepaid expenses	3,000	2,000
Total current assets	65,000	49,000
Property and equipment:		
Land	165,000	123,000
Buildings and equipment, net	116,390	128,000
Total property and equipment	281,390	251,000
Total assets	\$ 346,390	\$ 300,000

Liabilities

Bank overdraft: withdraw fund (usually used by firms to pay suppliers)

Account payable or trade p.: amounts due to suppliers for goods or services that have already been acquired/received

Note payable: obligation to repay an amount of borrowed money at a particular future date

Severance provisions (employee benefit liabilities): obligation towards employees. It will be paid when the employee will finish his/her employment

Long term borrowings: obligations due to lenders (i.e. bank loan). Long term means that they are expected to be paid off beyond 12 months.

Equity

Share capital: amounts invested by owners of the company

Retained earnings (or reserves): the sum of net income (profit) over the life of the company which has not been distributed to owners in the form of dividend (dividends are distribution of profit)

Net income: difference between positive and negative items of income (profit or loss)

Norton Balance Sheet – Part 2

NORTON CORPORATION		
Balance Sheets		
December 31		
	This Year	Last Year
Liabilities and Stockholders' Equity		
Current liabilities:		
Accounts payable	\$ 39,000	\$ 40,000
Notes payable, short-term	3,000	2,000
Total current liabilities	42,000	42,000
Long-term liabilities:		
Notes payable, long-term	70,000	78,000
Total liabilities	112,000	120,000
Stockholders' equity:		
Common stock, \$1 par value	27,400	17,000
Additional paid-in capital	158,100	113,000
Total paid-in capital	185,500	130,000
Retained earnings	48,890	50,000
Total stockholders' equity	234,390	180,000
Total liabilities and stockholders' equity	\$ 346,390	\$ 300,000

Par value =
nominal value

APIC: money an
investor pays above
and beyond
the par value

Norton Income Statement

Gross margin =
revenues - cost of
goods sold (only
product not selling
and admin)

Cost of financial
resources

NORTON CORPORATION Income Statements For the Years Ended December 31		
	This Year	Last Year
Sales	\$ 494,000	\$ 450,000
Cost of goods sold	140,000	127,000
Gross margin	354,000	323,000
Operating expenses	270,000	249,000
Net operating income	84,000	74,000
Interest expense	7,300	8,000
Net income before taxes	76,700	66,000
Less income taxes (30%)	23,010	19,800
Net income	\$ 53,690	\$ 46,200

Return on Investment (ROI)

ROI compares the operating income produced by the firm to the operating assets.

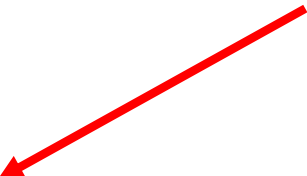
It is a measure of profitability.

It measures the ability of the company to generate operating income by using its operating assets (**is the core business going well?**)

Return on Investment (ROI) Formula

**Income before interest
and taxes (EBIT)**



$$\text{ROI} = \frac{\text{Net operating income}}{\text{Average operating assets}}$$


**Cash, accounts receivable, inventory,
plant and equipment, and other
productive assets.**

Understanding ROI

$$\text{ROI} = \frac{\text{Net operating income}}{\text{Average operating assets}}$$

$$\text{Margin} = \frac{\text{Net operating income}}{\text{Sales}}$$

$$\text{Turnover} = \frac{\text{Sales}}{\text{Average operating assets}}$$

$$\text{ROI} = \text{Margin} \times \text{Turnover}$$

Margin

$$\text{Margin} = \frac{\text{Net operating income}}{\text{Sales}}$$

The margin indicates a company's ability to earn an operative income (revenues - op. expenses) from sales.

Turnover

Turnover =

$$\frac{\text{Sales}}{\text{Average operating assets}}$$

Turnover is a measure of the efficiency in the use of the firm's operating assets.

It expresses the number of times that the assets «are used» to produce sales (during a year).

Increasing ROI: An Example

Regal Company reports the following:

Net operating income	\$ 30,000
Average operating assets	\$ 200,000
Sales	\$ 500,000
Operating expenses	\$ 470,000

What is Regal Company's ROI?

ROI = Margin × Turnover

$$\text{ROI} = \frac{\text{Net operating income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Average operating assets}}$$

Increasing ROI – An Example: Solution

$$\text{ROI} = \text{Margin} \times \text{Turnover}$$

$$\text{ROI} = \frac{\text{Net operating income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Average operating assets}}$$

$$\text{ROI} = \frac{\$30,000}{\$500,000} \times \frac{\$500,000}{\$200,000}$$

$$\text{ROI} = 6\% \times 2.5 = 15\%$$

Investing in Operating Assets to Increase Sales – An Example

Assume that Regal's manager invests in a \$30,000 piece of equipment that increases sales by \$35,000, while increasing operating expenses by \$15,000.

Regal Company reports the following:

Net operating income	\$ 50,000
Average operating assets	\$ 230,000
Sales	\$ 535,000
Operating expenses	\$ 485,000

Let's calculate the new ROI.



Investing in Operating Assets to Increase Sales – An Example: Solution

$$\text{ROI} = \text{Margin} \times \text{Turnover}$$

$$\text{ROI} = \frac{\text{Net operating income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Average operating assets}}$$

$$\text{ROI} = \frac{\$50,000}{\$535,000} \times \frac{\$535,000}{\$230,000}$$

$$\text{ROI} = 9.35\% \times 2.33 = 21.8\%$$

ROI increased from 15% to 21.8%.

Criticisms of ROI

In the absence of the balanced scorecard, management may not know how to increase ROI.

Managers often inherit many committed costs over which they have no control.

Managers evaluated on ROI may reject profitable investment opportunities.

Learning Objective 2

Compute residual income and explain its strengths and weaknesses.

Residual Income – Another Measure of Performance

Residual Income is net operating income above some minimum return on operating assets.

Calculating Residual Income

$$\text{Residual income} = \text{Net operating income} - \left(\text{Average operating assets} \times \text{Minimum required rate of return} \right)$$

This computation differs from ROI.

ROI measures net operating income earned relative to the investment in average operating assets.

Residual income measures net operating income earned less the minimum required return on average operating assets.

Residual Income – An Example

The Retail Division of Zephyr, Inc. has average operating assets of \$100,000 and is required to earn a return of 20% on these assets.

In the current period, the division earns \$30,000.

Let's calculate residual income.

Residual Income – An Example: Solution

Operating assets	\$ 100,000
Required rate of return	× 20%
Minimum required return	<u>\$ 20,000</u>

Actual income	\$ 30,000
Minimum required return	<u>(20,000)</u>
Residual income	<u>\$ 10,000</u>

Motivation and Residual Income

Residual income encourages managers to make profitable investments that would be rejected by managers using ROI.

Quick Check 1

Redmond Awnings, a division of Wrap-up Corp., has a net operating income of \$60,000 and average operating assets of \$300,000. The required rate of return for the company is 15%. What is the division's ROI?

- a. 25%
- b. 5%
- c. 15%
- d. 20%

Quick Check 1a

Redmond Awnings, a division of Wrap-up Corp., has a net operating income of \$60,000 and average operating assets of \$300,000. The required rate of return for the company is 15%. What is the division's ROI?

- a. 25%
- b. 5%
- c. 15%
- ☒ d. 20%

$$\begin{aligned}\text{ROI} &= \text{NOI} / \text{Average operating assets} \\ &= \$60,000 / \$300,000 = 20\%\end{aligned}$$

Quick Check 2

Redmond Awnings, a division of Wrap-up Corp., has a net operating income of \$60,000 and average operating assets of \$300,000. If the manager of the division is evaluated based on ROI, will she want to make an investment of \$100,000 that would generate additional net operating income of \$18,000 per year?

- a. Yes
- b. No

Quick Check 2a

Redmond Awnings, a division of Wrap-up Corp., has a net operating income of \$60,000 and average operating assets of \$300,000. If the manager of the division is evaluated based on ROI, will she want to make an investment of \$100,000 that would generate additional net operating income of \$18,000 per year?

a. Yes

b. No

$$\text{ROI} = \$78,000 / \$400,000 = 19.5\%$$

This lowers the division's ROI from 20.0% down to 19.5%.

Quick Check 3

The company's required rate of return is 15%. Would the company want the manager of the Redmond Awnings division to make an investment of \$100,000 that would generate additional net operating income of \$18,000 per year?

- a. Yes
- b. No

Quick Check 3a

The company's required rate of return is 15%. Would the company want the manager of the Redmond Awnings division to make an investment of \$100,000 that would generate additional net operating income of \$18,000 per year?

a. Yes

b. No

$$\text{ROI} = \$18,000 / \$100,000 = 18\%$$

The return on the investment exceeds the minimum required rate of return.

Quick Check 4

Redmond Awnings, a division of Wrap-up Corp., has a net operating income of \$60,000 and average operating assets of \$300,000. The required rate of return for the company is 15%. What is the division's residual income?

- a. \$240,000
- b. \$ 45,000
- c. \$ 15,000
- d. \$ 51,000

Quick Check 4a

Redmond Awnings, a division of Wrap-up Corp., has a net operating income of \$60,000 and average operating assets of \$300,000. The required rate of return for the company is 15%. What is the division's residual income?

- a. \$240,000
- b. \$ 45,000
- c. \$ 15,000**
- d. \$ 51,000

Net operating income	\$60,000
Required return (15% of \$300,000)	<u>(45,000)</u>
Residual income	<u>\$15,000</u>

Quick Check 5

If the manager of the Redmond Awnings division is evaluated based on residual income, will she want to make an investment of \$100,000 that would generate additional net operating income of \$18,000 per year?

- a. Yes
- b. No

Quick Check 5a

If the manager of the Redmond Awnings division is evaluated based on residual income, will she want to make an investment of \$100,000 that would generate additional net operating income of \$18,000 per year?

a. Yes

b. No

Net operating income	\$ 78,000
Required return (15% of \$400,000)	(60,000)
Residual income	<u>\$ 18,000</u>

Yields an increase of \$3,000 in the residual income (\$18,000 - \$15,000).

Learning Objective 3

Determine the range, if any, within which a negotiated transfer price should fall.

Key Concepts/Definitions

A transfer price is the price charged when one segment of a company provides goods or services to another segment of the company.

The fundamental objective in setting transfer prices is to motivate managers to act in the best interests of the overall company.

Three Primary Approaches

There are three primary approaches to setting transfer prices:

- 1. Negotiated transfer prices**
- 2. Set transfer prices at cost using either variable cost or full cost**
- 3. Transfers at market price**

Negotiated Transfer Prices

A negotiated transfer price results from discussions between the selling and buying divisions.

Advantages of negotiated transfer prices:

1. They preserve the autonomy of the divisions, which is consistent with the spirit of decentralization.
2. The managers negotiating the transfer price are likely to have much better information about the potential costs and benefits of the transfer than others in the company.



Grocery Storehouse – Part 1

Assume the information as shown with respect to West Coast Plantations and Grocery Mart (both companies are owned by Grocery Storehouse).

West Coast Plantations:

Naval orange harvest capacity per month	10,000	crates
Variable cost per crate of naval oranges	\$ 10	per crate
Fixed costs per month	\$ 100,000	
Selling price of navel oranges on the outside market	\$ 25	per crate

Grocery Mart:

Purchase price of current naval oranges	\$ 20	per crate
Monthly sales of naval oranges	1,000	crates

Grocery Storehouse – Part 2

The selling division's (West Coast Plantations) lowest acceptable transfer price is calculated as:

$$\text{Transfer Price} \geq \text{Variable cost per unit} + \frac{\text{Total contribution margin on lost sales}}{\text{Number of units transferred}}$$

Let's calculate the lowest and highest acceptable transfer prices under three scenarios.

The buying division's (Grocery Mart) highest acceptable transfer price is calculated as:

$$\text{Transfer Price} \leq \text{Cost of buying from outside supplier}$$

If an outside supplier does not exist, the highest acceptable transfer price is calculated as:

$$\text{Transfer Price} \leq \text{Profit to be earned per unit sold (not including the transfer price)}$$

Grocery Storehouse – Part 3

If West Coast Plantations has **sufficient idle capacity** (3,000 crates) to satisfy Grocery Mart's demands (1,000 crates), without sacrificing sales to other customers, then the lowest and highest possible transfer prices are computed as follows:

Selling division's lowest possible transfer price:

$$\text{Transfer Price} \geq \$10 + \frac{\$ -}{1,000} = \$10$$

Buying division's highest possible transfer price:

$$\text{Transfer Price} \leq \text{Cost of buying from outside supplier} = \$20$$

Therefore, the range of acceptable transfer prices is \$10 – \$20.

Grocery Storehouse – Part 4

If West Coast Plantations has **no idle capacity** (0 crates) and must sacrifice other customer orders (1,000 crates) to meet Grocery Mart's demands (1,000 crates), then the lowest and highest possible transfer prices are computed as follows:

Selling division's lowest possible transfer price:

$$\text{Transfer Price} \geq \$ 10 + \frac{(\$25 - \$10) \times 1,000}{1,000} = \$ 25$$

Buying division's highest possible transfer price:

$$\text{Transfer Price} \leq \text{Cost of buying from outside supplier} = \$ 20$$

Therefore, there is no range of acceptable transfer prices.

Grocery Storehouse – Part 5

If West Coast Plantations has **some idle capacity** (500 crates) and must sacrifice other customer orders (500 crates) to meet Grocery Mart's demands (1,000 crates), then the lowest and highest possible transfer prices are computed as follows:

Selling division's lowest possible transfer price:

$$\text{Transfer Price} \geq \$10 + \frac{(\$25 - \$10) \times 500}{1,000} = \$17.50$$

Buying division's highest possible transfer price:

$$\text{Transfer Price} \leq \text{Cost of buying from outside supplier} = \$20$$

Therefore, the range of acceptable transfer prices is \$17.50 – \$20.00.

Evaluation of Negotiated Transfer Prices

If a transfer within a company would result in higher overall profits for the company, there is **always** a range of transfer prices within which both the selling and buying divisions would have higher profits if they agree to the transfer.

If managers are pitted against each other rather than against their past performance or reasonable benchmarks, a **noncooperative atmosphere** is almost guaranteed.

Given the disputes that often accompany the negotiation process, **most companies rely on some other means of setting transfer prices.**

Three Primary Approaches

There are three primary approaches to setting transfer prices:

- 1. Negotiated transfer prices**
- 2. Set transfer prices at cost using either variable cost or full cost**
- 3. Transfers at market price**

Transfers at the Cost to the Selling Division

Many companies set transfer prices at either the variable cost or full cost incurred by the selling division.

Drawbacks of this approach include:

- 1. Using full cost as a transfer price can lead to suboptimization.**
- 2. The selling division will never show a profit on any internal transfer.**
- 3. Cost-based transfer prices do not provide incentives to control costs.**

Three Primary Approaches

There are three primary approaches to setting transfer prices:

- 1. Negotiated transfer prices**
- 2. Set transfer prices at cost using either variable cost or full cost**
- 3. Transfers at market price**

Transfers at Market Price

A **market price (i.e., the price charged for an item on the open market) is often regarded as the best approach to the transfer pricing problem.**

1. A market price approach works best when the product or service is sold in its present form to outside customers **and** the selling division has no idle capacity.
2. A market price approach does not work well when the selling division has idle capacity.

Exercise - Alpha Manufacturing Company

The Company has two divisions:

- Components Division, which manufactures electronic components.
- Assembly Division, which uses these components to produce finished products.

Each division is managed as a profit center, and divisional managers are evaluated based on their operating income.

The Components Division currently sells its components to external customers for €80 per unit.

The variable manufacturing cost is €45 per unit.

The Assembly Division needs 2,000 components for a new product. It can purchase them from an external supplier for €75 per unit.

Exercise - Alpha Manufacturing Company

The Components Division has sufficient idle capacity to produce these additional components without reducing its sales to external customers.

No additional fixed costs would be incurred.

The manager of the Components Division proposes a transfer price of €80 per unit.

However, the manager of the Assembly Division refuses to pay more than €75.

The two managers cannot reach an agreement.

Exercise - Alpha Manufacturing Company

1. What is the minimum transfer price that the Components Division should be willing to accept?
2. Why does the Components Division prefer a transfer price of €80, while the Assembly Division refuses to pay more than €75?
3. What is the range of acceptable transfer price (if any) when the idle capacity is 500 units?
4. What is the range of acceptable transfer price (if any) when the idle capacity is 200 units?

Exercise - Alpha Manufacturing Company

1. What is the minimum transfer price that the Components Division should be willing to accept?

Since the Components Division has idle capacity, transferring the components internally would **not** reduce external sales.

Therefore, the opportunity cost is zero.

Minimum transfer price = €45 + €0 = €45 per unit.

Exercise - Alpha Manufacturing Company

2. Why does the Components Division prefer a transfer price of €80, while the Assembly Division refuses to pay more than €75?

The Components Division prefers €80 because a higher transfer price increases its reported operating income.

The Assembly Division refuses to pay more than €75 because it can purchase identical components externally for that price.

Both managers are trying to maximize their own divisional operating income, but their interests are not necessarily aligned with the interests of the company as a whole.

Exercise - Alpha Manufacturing Company

3. What is the range of acceptable transfer price (if any) when the idle capacity is 500 units?

Since the Components Division has 500 units of idle capacity, transferring the components internally would reduce external sales.

Therefore, the opportunity cost is not zero.

Opportunity cost: $(80-45) \times 1,500 = € 52,500$

Minimum transfer price = $€45 + € 52,500/2000 = € 45 + € 26.25 = € 71.25$

The range is between 71.25 – 75.00

Exercise - Alpha Manufacturing Company

4. What is the range of acceptable transfer price (if any) when the idle capacity is 200 units?

Since the Components Division has 200 units of idle capacity, transferring the components internally would reduce external sales. Therefore, the opportunity cost is not zero.

Opportunity cost: $(80-45) \times 1,800 = \text{€ } 63,000$

Minimum transfer price = $\text{€}45 + \text{€ } 63,000/2000 = \text{€ } 45 + \text{€ } 31.50 = \text{€ } 76.50$

No range of acceptable transfer prices