Variable Costing and Segment Reporting: Tools for Management

Chapter 7 – Part two

Learning Objective 4

Prepare a segmented income statement that differentiates traceable fixed costs from common fixed costs and use it to make decisions.

Decentralization and Segment Reporting

A **segment** is any part or activity of an organization about which a manager seeks cost, revenue, or profit data.

- An individual store
- A Sales Territory
- A Service Center

Keys to Segmented Income Statements

There are two keys to building segmented income statements:

A contribution format should be used because it separates fixed from variable costs and it enables the calculation of a contribution margin.

Traceable fixed costs should be separated from common fixed costs to enable the calculation of a segment margin.

1) Identifying Traceable Fixed Costs

Traceable fixed costs arise because of the existence of a particular segment and would disappear over time if the segment itself disappeared.

The salary of Fritos product manager at PepsiCo is a **traceable fixed cost** of the Fritos business segment of PepsiCo.

The maintenance cost for the building in which Boeing 747s are assembled is a **traceable fixed cost** of the 747 business segment of Boeing.

2) Identifying Common Fixed Costs

Common fixed costs arise because of the overall operation of the company and would not disappear if any particular segment were eliminated.

The salary of the CEO of General Motors is a **common fixed cost** of the various divisions of General Motors.

The receptionist's salary at an office shared by a number of doctors is a **common fixed cost** of the doctors.

Traceable Fixed Costs

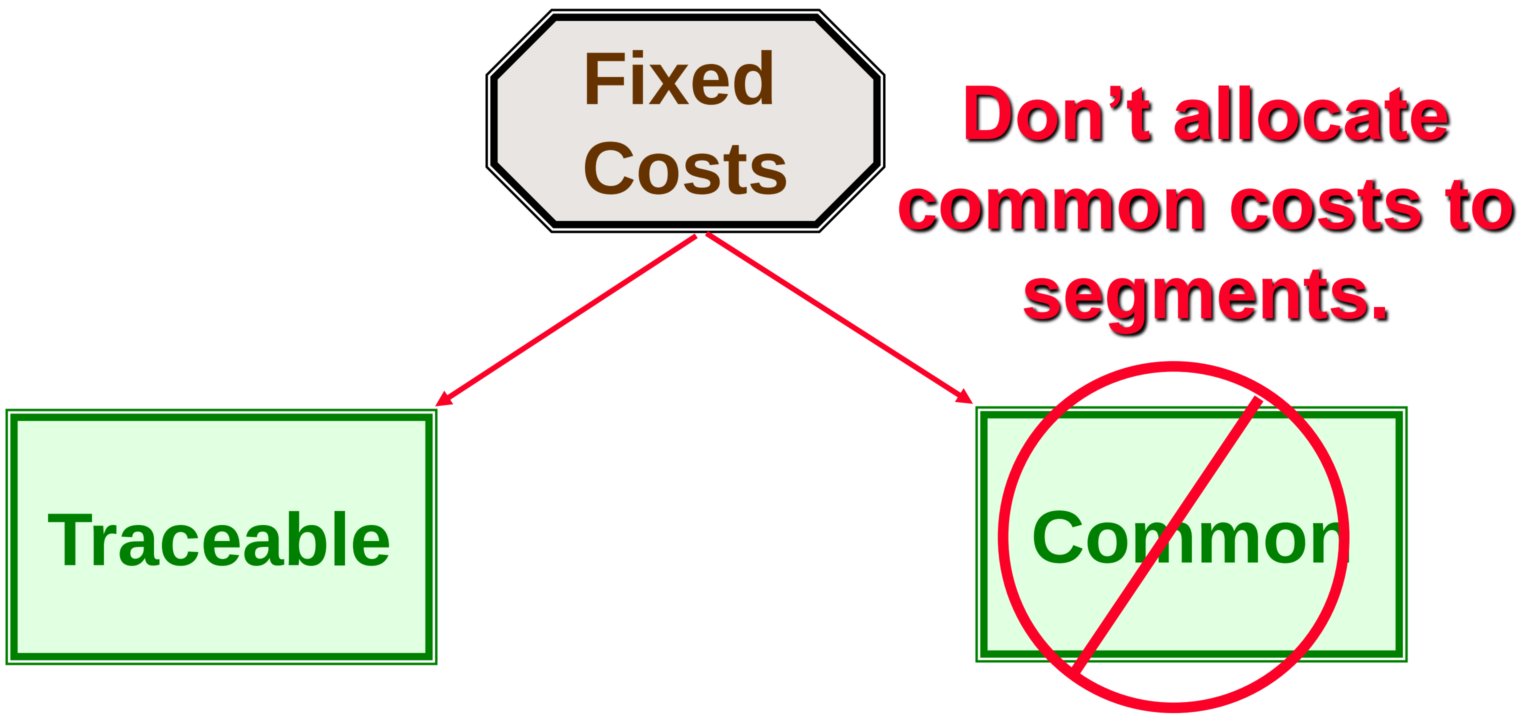
It is important to realize that the traceable fixed costs of one segment may be a common fixed cost of another segment.

For example, the landing fee paid to land an airplane at an airport is traceable to the particular flight, but it is not traceable to first-class, business-class, and economy-class passengers.

3) Segment Margin

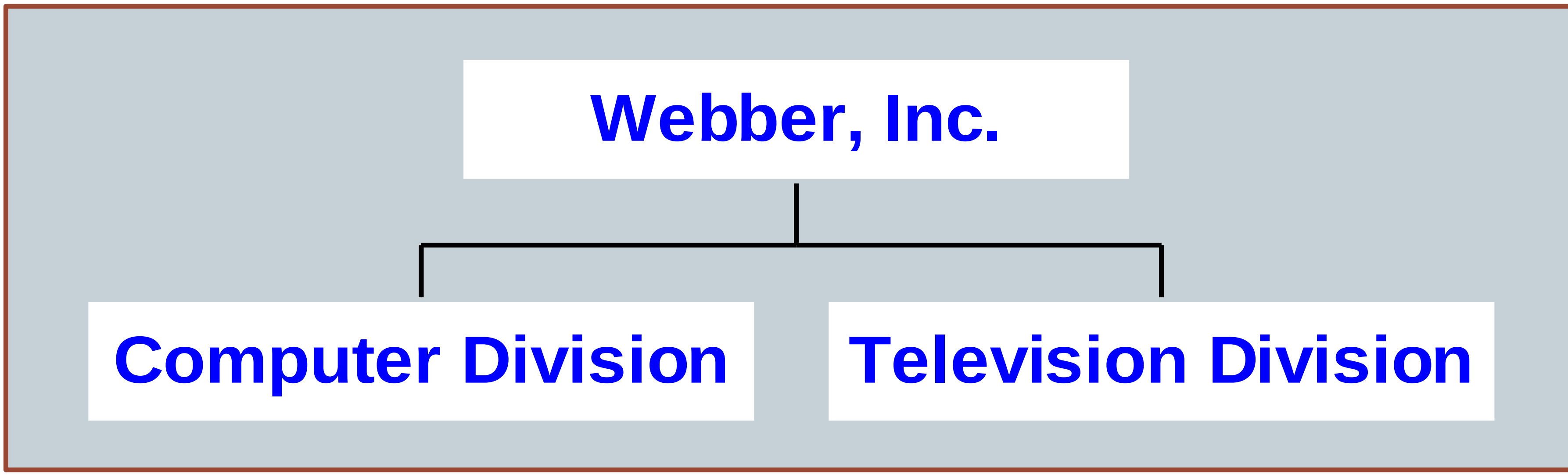
The segment margin, which is computed by subtracting the traceable fixed costs of a segment from its contribution margin, is the best assessment of the long-run profitability of a segment.

Traceable and Common Costs



Levels of Segmented Statements – Segmented Income Statement for Webber, Inc.

Webber, Inc. has two divisions.



Let's look more closely at the Television Division's income statement.

Levels of Segmented Statements – Contribution Format Income Statement

Our approach to segment reporting uses the contribution format.

Income Statement
Contribution Margin Format
Television Division

Sales	$ 300,000
Variable COGS	120,000
Other variable costs	30,000
Total variable costs	150,000
Contribution margin	150,000
Traceable fixed costs	90,000
Division margin	$ 60,000

Cost of goods sold consists of variable manufacturing costs.

Fixed and variable costs are listed in separate sections.

Levels of Segmented Statements – Contribution Margin Format

Our approach to segment reporting uses the contribution format.

Income Statement Contribution Margin Format Television Division	
Sales	$ 300,000
Variable COGS	120,000
Other variable costs	30,000
Total variable costs	150,000
Contribution margin	150,000
Traceable fixed costs	90,000
Division margin	$ 60,000

Contribution margin is computed by taking sales minus variable costs.

Segment margin is Television's contribution to profits.

Levels of Segmented Statements – Segmented Income Statement – Overall Results

Income Statement

	Company	Television	Computer
Sales	$ 500,000	$ 300,000	$ 200,000
Variable expenses	230,000	150,000	80,000
CM	270,000	150,000	120,000
Traceable FC	170,000	90,000	80,000
Division margin	100,000	$ 60,000	$ 40,000
Common expenses			
Net operating income			

Levels of Segmented Statements – Segmented Statements – Common Costs

Income Statement

	Company	Television	Computer
Sales	$ 500,000	$ 300,000	$ 200,000
Variable expenses	230,000	150,000	80,000
CM	270,000	150,000	120,000
Traceable FC	170,000	90,000	80,000
Division margin	100,000	$ 60,000	$ 40,000
Common expenses	25,000		
Net operating income	$ 75,000		

Common fixed expenses should not be allocated to the divisions. These expenses would remain even if one of the divisions were eliminated.

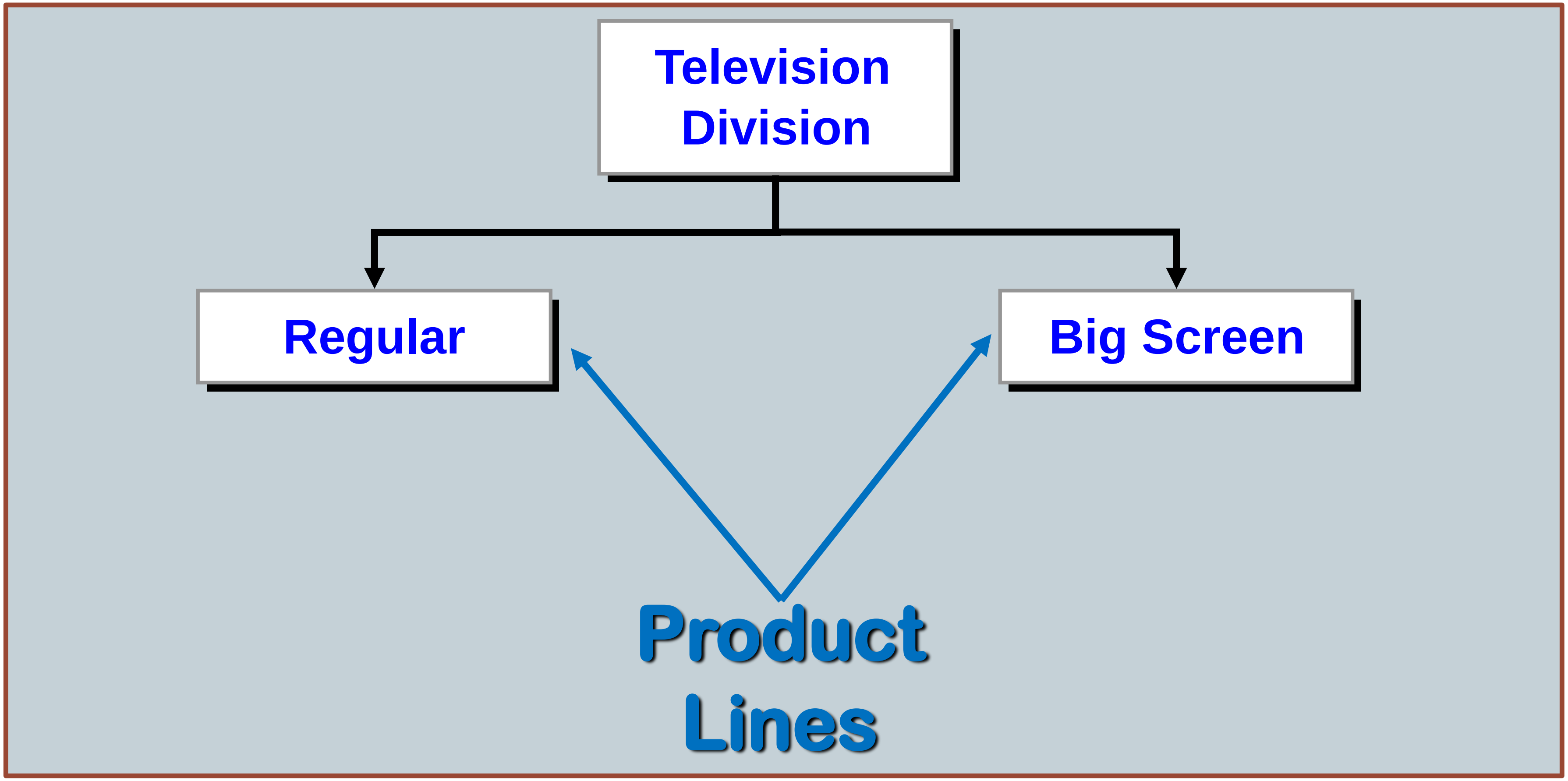
Traceable Fixed Costs Can Become Common Fixed Costs

As previously mentioned, fixed expenses that are traceable to one segment can become common fixed expenses if the company is divided into **smaller** segments.

Let's see how this works using the Webber, Inc. example!

Traceable Fixed Costs for Television Division

Webber's Television Division



Traceable Fixed Costs for Television Division - Explanation

Income Statement

	Television Division	Regular	Big Screen
Sales		$ 200,000	$ 100,000
Variable expenses		95,000	55,000
CM		105,000	45,000
Traceable FC		45,000	35,000
Product line margin		$ 60,000	$ 10,000
Common expenses			
Divisional margin			

We obtained the following information from the Regular and Big Screen segments.

Traceable Fixed Costs for Television Division Become Common Costs

Income Statement

	Television Division	Regular	Big Screen
Sales	$ 300,000	$ 200,000	$ 100,000
Variable expenses	150,000	95,000	55,000
CM	150,000	105,000	45,000
Traceable FC	80,000	45,000	35,000
Product line margin	70,000	$ 60,000	$ 10,000
Common expenses	10,000		
Divisional margin	$ 60,000		

Fixed costs directly traced to the Television Division
\$80,000 + \$10,000 = \$90,000

Segmented Income Statements—Decision Making and Break-even Analysis

Once a company prepares a contribution format segmented income statements, it can use those statements to make decisions and perform break-even analysis.

Segmented Income Statements—Decision Making

5% increase in sales

Income Statement			
	Television Division	Regular	Big Screen
Sales	$ 315,000	$ 210,000	$ 105,000
Variable expenses	157,500	99,750	57,750
CM	157,500	110,250	47,250
Traceable FC	80,000	45,000	35,000
Product line margin	77,500	$ 65,250	$ 12,250
Common expenses	15,000		
Divisional margin	$ 62,500		

$5,000 additional advertising

Division margin increases by $2,500

Margin increases by $5,250

Margin increases by $2,250

Learning Objective 5

Compute companywide and segment break-even points for a company with traceable fixed costs.

Segmented Income Statements—Break-even Analysis – Part 1

Income Statement

	Company	Television	Computer
Sales	$ 500,000	$ 300,000	$ 200,000
Variable expenses	230,000	150,000	80,000
CM	270,000	150,000	120,000
Traceable FC	170,000	90,000	80,000
Division margin	100,000	$ 60,000	$ 40,000
Common expenses	25,000		
Net operating income	$ 75,000		

Segmented Income Statements—Break-even Analysis – Part 2

$$\text{Break-even Point} = \frac{\$170{,}000 + \$25{,}000}{0.54} = \$361{,}111$$

$$\text{Contribution Margin Ratio} = \frac{\$270{,}000}{\$500{,}000} = 0.54$$

The companywide break-even point is computed by dividing the sum of the company's traceable fixed expenses and common fixed expenses by the company's overall contribution margin ratio.

Segmented Income Statements—Break-even Analysis – Part 3

Income Statement

	Company	Television	Computer
Sales	$ 500,000	$ 300,000	$ 200,000
Variable expenses	230,000	150,000	80,000
CM	270,000	150,000	120,000
Traceable FC	170,000	90,000	80,000
Product line margin	100,000	$ 60,000	$ 40,000
Common expenses	25,000		
Net operating income	$ 75,000		

Calculate break-even point for each business segment.

Segmented Income Statements— Break-even Analysis – Part 4

Television

$$\text{Break-even Point} = \frac{\$90{,}000}{0.50} = \$180{,}000$$

$$\text{Contribution Margin Ratio} = \frac{\$150{,}000}{\$300{,}000} = 0.50$$

Computer

$$\text{Break-even Point} = \frac{\$80{,}000}{0.60} = \$133{,}333$$

$$\text{Contribution Margin Ratio} = \frac{\$120{,}000}{\$200{,}000} = 0.60$$

A business segment's break-even point is computed by dividing its traceable fixed expenses by its contribution margin ratio.

Segmented Income Statements—Break-even Analysis – Part 5

Income Statement	Company	Television	Computer
Sales	$ 500,000	$ 300,000	$ 200,000
Variable expenses	230,000	150,000	80,000
CM	270,000	150,000	120,000
Traceable FC	170,000	90,000	80,000
Division margin	100,000	$ 60,000	$ 40,000
Common expenses	25,000		
Net operating income	$ 75,000		

Notice the $25,000 of companywide common fixed expenses are excluded from the segment break-even calculations because the common fixed expenses are not traceable to segments and are not influenced by segment-level decisions.

Omission of Costs

Costs assigned to a segment should include all costs attributable to that segment from the company's entire **value chain**.

Business Functions Making Up The Value Chain

R&D	Product Design	Manufacturing	Marketing	Distribution	Customer Service

Inappropriate Methods of Allocating Costs Among Segments

- **Failure to trace costs directly**
  - Costs that can be traced directly to specific segments of a company should not be allocated to other segments.
- **Inappropriate allocation base**
  - Some companies allocate costs to segments using arbitrary bases. Costs should be allocated to segments only when the allocation base actually drives the cost being allocated.

Common Costs and Segments

Common costs should not be arbitrarily allocated to segments based on the rationale that "someone has to cover the common costs" for two reasons:

1. **This practice may make a profitable business segment appear to be unprofitable.**
2. **Allocating common fixed costs forces managers to be held accountable for costs they cannot control.**

Concept Check 2

Income Statement			
	Hoagland's Lakeshore	Bar	Restaurant
Sales	$ 800,000	$ 100,000	$ 700,000
Variable expenses	310,000	60,000	250,000
CM	490,000	40,000	450,000
Traceable FC	246,000	26,000	220,000
Segment margin	244,000	$ 14,000	$ 230,000
Common expenses	200,000		
Net operating profit	$ 44,000		

Assume that Hoagland's Lakeshore prepared its segmented income statement as shown.

Concept Check 2a

How much of the common fixed expense of $200,000 can be avoided by eliminating the bar?

a. None of it.

b. Some of it.

c. All of it.

Concept Check 2b

How much of the common fixed expense of $200,000 can be avoided by eliminating the bar?

a. None of it.
b. Some of it.
c. All of it.

Common fixed expenses cannot be eliminated by dropping one of the segments.

Concept Check 2c

Suppose square feet is used as the basis for allocating the common fixed expense of $200,000. How much would be allocated to the bar if the bar occupies 1,000 square feet and the restaurant 9,000 square feet?

a. $20,000

b. $30,000

c. $40,000

d. $50,000

Concept Check 2d

Suppose square feet is used as the basis for allocating the common fixed expense of $200,000. How much would be allocated to the bar if the bar occupies 1,000 square feet and the restaurant 9,000 square feet?

a. $20,000

b. $30,000

c. $40,000

d. $50,000

The bar would be allocated $^{1}/_{10}$ of the cost or $20,000.

Concept Check 2e

If Hoagland's allocates its common fixed expenses to the bar and the restaurant, what would be the reported profit of each segment?

Concept Check 2f

Income Statement	Hoagland's Lakeshore	Bar	Restaurant
Sales	$ 800,000	$ 100,000	$ 700,000
Variable expenses	310,000	60,000	250,000
CM	490,000	40,000	450,000
Traceable FC	246,000	26,000	220,000
Segment margin	244,000	14,000	230,000
Common expenses	200,000	20,000	180,000
Net operating profit (Loss)	$ 44,000	$ (6,000)	$ 50,000

Concept Check 2g

Income Statement

	Hoagland's Lakeshore	Bar	Restaurant
Sales	$ 800,000	$ 100,000	$ 700,000
Variable expenses	310,000	60,000	250,000
CM	490,000	40,000	450,000
Traceable FC	246,000	26,000	220,000
Segment margin	244,000	14,000	230,000
Common expenses	200,000	20,000	180,000
Net operating profit (Loss)	$ 44,000	$ (6,000)	$ 50,000

Do you think the Bar should be eliminated?

a. Yes

b. No

Concept Check 2h

Should the bar be eliminated?

a. Yes

b. No

The profit was $44,000 before eliminating the bar. If we eliminate the bar, profit drops to $30,000!

Income Statement

	Hoagland's Lakeshore	Bar	Restaurant
Sales	$ 700,000		$ 700,000
Variable expenses	250,000		250,000
CM	450,000		450,000
Traceable FC	220,000		220,000
Segment margin	230,000		$ 230,000
Common expenses	200,000		200,000
Net operating profit (loss)	$ 30,000		$ 30,000

Companywide Income Statements

Both U.S. GAAP and IFRS require absorption costing for external reports.

Since absorption costing is required for external reporting, most companies also use it for internal reports rather than incurring the additional cost of maintaining a separate variable cost system for internal reporting.

Segmented Financial Information

Both U.S. GAAP and IFRS require publically traded companies to include segmented financial data in their annual reports.

1. **Companies must report segmented results to shareholders using the same methods that are used for internal segmented reports.**
2. **This requirement motivates managers to avoid using the contribution approach for internal reporting purposes because if they did they would be required to:**
   a. **Share this sensitive data with the public.**
   b. **Reconcile these reports with applicable rules for consolidated reporting purposes.**