



# Costs and Revenues Behavior

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Session 3  
21 March 2019



# Cost Terminology

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- ❑ Cost object:  
Managerial object for which cost is desired  
(product, plant, division, customer, ...)
- ❑ Cost behavior, with respect to output volume:  
Variable, Fixed, Mixed, Step.



# Cost Terminology

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- Long run vs. short run cost behavior
- Relevant range
- Cost assignment: Direct vs. Indirect
- Direct costs (specific costs) can be traced to cost object in a non-arbitrary and cost-effective manner.
- Indirect costs (common costs) are also called overhead: these are non-traceable costs.



# Cost Classification

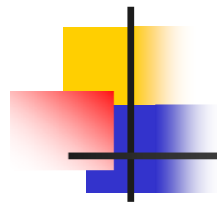
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Costs may be classified as:

## **VARIABLES OR FIXED**

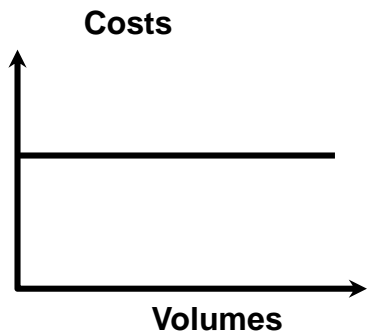
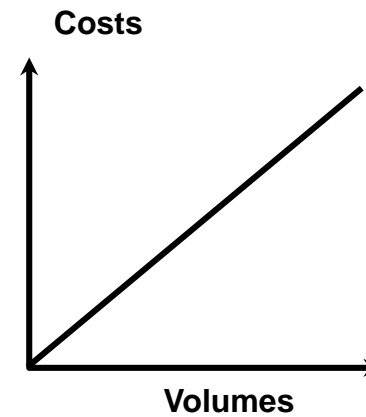
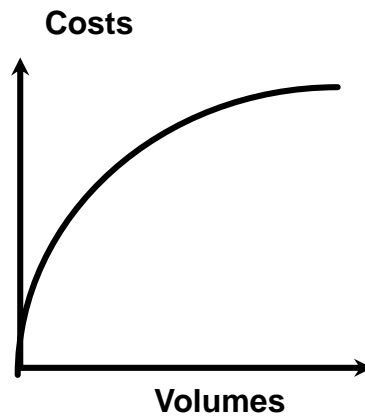
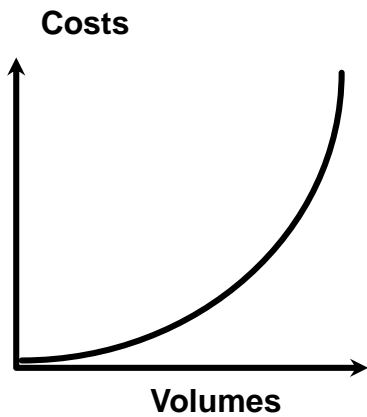
### **with respect to output volume**

- ❑ The single cost element can be classified as variable cost when its total amount varies for small variations in activity levels (sales and production volumes)
- ❑ The single cost element can be classified as fixed cost when its total amount not varies to change activity levels (at least within the maximum production capacity given)



# Cost Classification

## VARIABLES COSTS



## FIXED COSTS



# Cost Classification

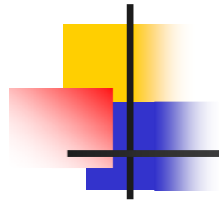
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Costs may be classified as:

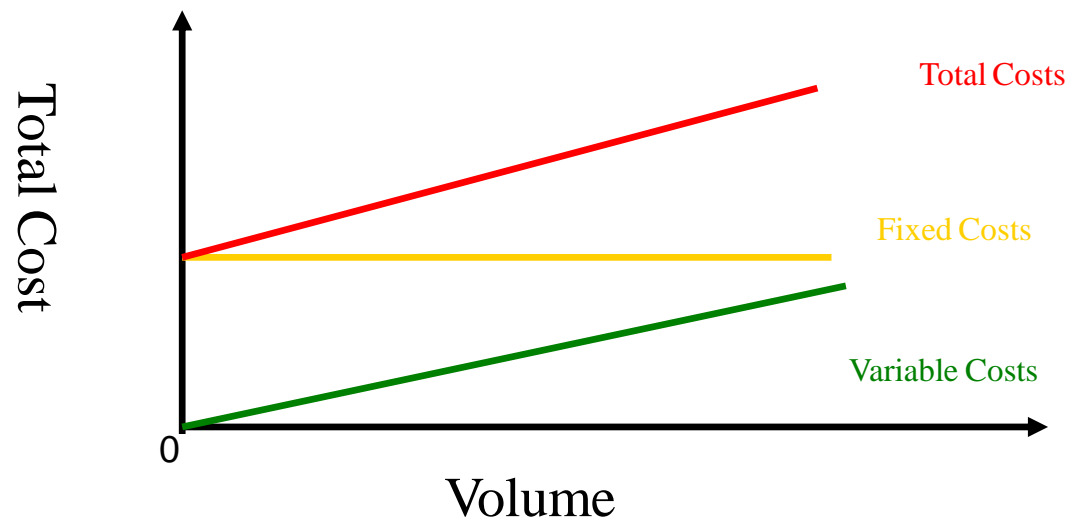
## **SPECIFIC (TRACEABLE) OR COMMON (NON-TRACEABLE)**

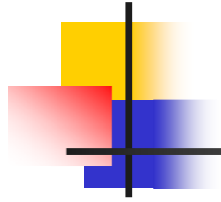
**as compared to the object you want to know the cost  
(product or action)**

- ❑ Traceable costs are related to production factors linked by unique and objective causal relationships to the cost calculation object
- ❑ Non-Traceable costs are related to production factors not connected to the cost calculation object from objective and unambiguous causal relationships

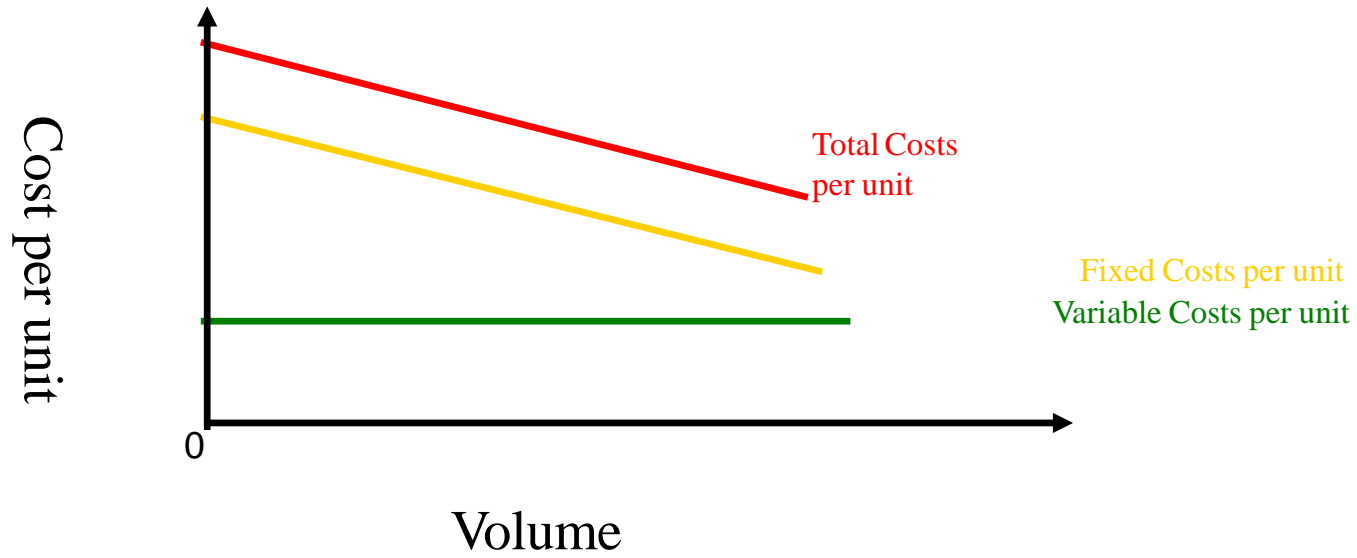


# Cost Behavior

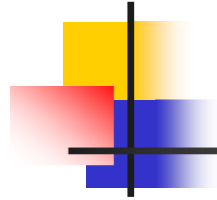




# Per unit costs







# Cost Classification: Service Sector

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- Consumer Focus is a marketing research firm that organizes focus groups for consumer-product companies.
  - Each focus group has eight individuals who are paid \$50 per session to provide comments on new products.
  - These focus groups meet in hotels and are led by a trained, independent, marketing specialist hired by Consumer Focus.
  - Each specialist is paid a fixed retainer to conduct a minimum number of sessions and a per session fee of \$2,000.
  - A Consumer Focus staff member attends each session to ensure that all the logistical aspects run smoothly.



# Cost Classification: Service Sector

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- Classify each of the following cost items as:
  - Direct (traceable) or indirect (common or non-traceable) costs with respect to each individual focus group.
  - Variable or fixed costs with respect to how the total costs of Consumer Focus change as the number of focus groups conducted changes.

(If in doubt, select on the basis of whether the total costs will change substantially if there is a large change in the number of groups conducted.)



# Cost Classification: Service Sector

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- Cost Item:
  - Payments to individuals in each focus group to provide comment on new products.
    - Direct (Specific)
    - Variable
  - Annual subscription of Consumer Focus to Consumer Reports magazine.
    - Indirect (Common)
    - Fixed
  - Phone calls made by Consumer Focus staff member to confirm individuals will attend a focus group session (Records of individual calls are not kept).
    - Indirect
    - Variable



# Cost Classification: Service Sector

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- Cost Item:
  - Retainer paid to focus group leader to conduct 20 focus groups per year on new medical products.
    - Indirect
    - Fixed
  - Meals provided to participants in each focus group.
    - Direct
    - Variable
  - Lease payments by Consumer Focus for corporate office.
    - Indirect
    - Fixed



# Cost Classification: Service Sector

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- Cost Item:
  - Cost of tapes used to record comments made by individuals in a focus group session (These tapes are sent to the company whose products are being tested).
    - Direct
    - Variable
  - Gasoline costs of Consumer Focus staff for company-owned vehicles (staff members submit monthly bills with no mileage breakdowns).
    - Indirect
    - Variable



# Cost Classification

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- Takeaways:
  - In classifying costs as direct (traceable) or indirect (common), keep cost object in mind;
  - Immaterial (small) costs can be classified as indirect;
  - One rule of thumb for classification: ask who should pay (e.g., overtime premium, machine downtime)?



# Cost Classification: Manufacturing Sector

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- The Fremont, California, plant of New United Motor Manufacturing, Inc. (NUMMI), a joint venture of General Motors and Toyota, assembles two types of cars (Corollas and Geo Prisms).
  - Separate assembly lines are used for each type of car.
- Classify each of the following cost items as:
  - Direct or indirect (D or I) costs with respect to the total number of cars each type assembled (Corolla or Geo Prism).
  - Variable or fixed (V or F) costs with respect to how the total costs of the plant change as the total number of cars of each type assembled changes.



# Cost Classification: Manufacturing Sector

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- Cost Item:
  - Cost of tires used on Geo Prisms.
    - Direct
    - Variable
  - Salary of public relations manager of NUMMI plant
    - Indirect
    - Fixed
  - Annual awards dinner for Corolla suppliers.
    - Direct
    - Fixed





# Cost Classification: Manufacturing Sector

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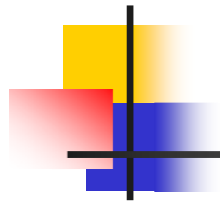
- Cost Item:
  - Salary of engineer who monitors design changes on Geo Prism.
    - Direct
    - Fixed
  - Freight costs of Corolla engines shipped from Toyota City, Japan, to Fremont, California.
    - Direct
    - Variable
  - Electricity costs of NUMMI plant (single bill covers entire plant).
    - Indirect
    - Variable



# Cost Classification: Manufacturing Sector

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- Cost Item:
  - Wages paid to temporary assembly-line workers hired in periods of high production (paid on hourly basis).
    - Direct
    - Variable
  - Annual fire-insurance policy cost for NUMMI plant.
    - Indirect
    - Fixed



# Cost Concepts

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- Contribution margin (CM) = total revenue – total variable cost
  - Contribution margin per unit (UCM)
- Gross margin (GM) = total revenues (TR) – cost of goods sold (COGS)
- Manufacturing costs are direct materials, direct labor and manufacturing overhead.
- Marketing, selling and administrative costs are not manufacturing costs.

These are operating costs.

- Operating income (OI) = GM – operating costs = CM – fixed costs (FC)
- Breakeven quantity or revenue is units sold, or revenues earned, such that  $OI = 0 = (UCM * q) - FC$ 
  - $q = FC / UCM$