Unit 2
Costs (Ch. 7)

ECON 323 – MICROECONOMIC THEORY – DR. STRICKLAND

Introduction

Costs are key to a firm's production decisions

In this chapter we will explore firms' costs:

- Types of costs
- Costs in the short run versus long run

Costs

Accounting cost: the **explicit** or **direct** costs of a business

Economists also care about **opportunity cost**

Economic cost = accounting cost + opportunity cost

- Economic profit ≠ accounting profit

Let's practice!

Samuel quit his manufacturing job, which earned him $50,000, and started his own company making toy planes. It cost Samuel $40,000 for the supplies necessary to make the toy planes, and he spent $10,000 on shipping costs. Samuel's total revenue from his toy plane sales this past year was $100,000. What is Samuel's **economic profit**?

ACCT. COST = 40,000 + 10,000 = $ 50,000

TOTAL REV = $ 100,000

ACCT PROFIT (π) = 100,000 - 50,000 = $ 50,000

ECON π = $ 50,000 - 50,000 = $ 0

OPP COST (SALARY)

Costs

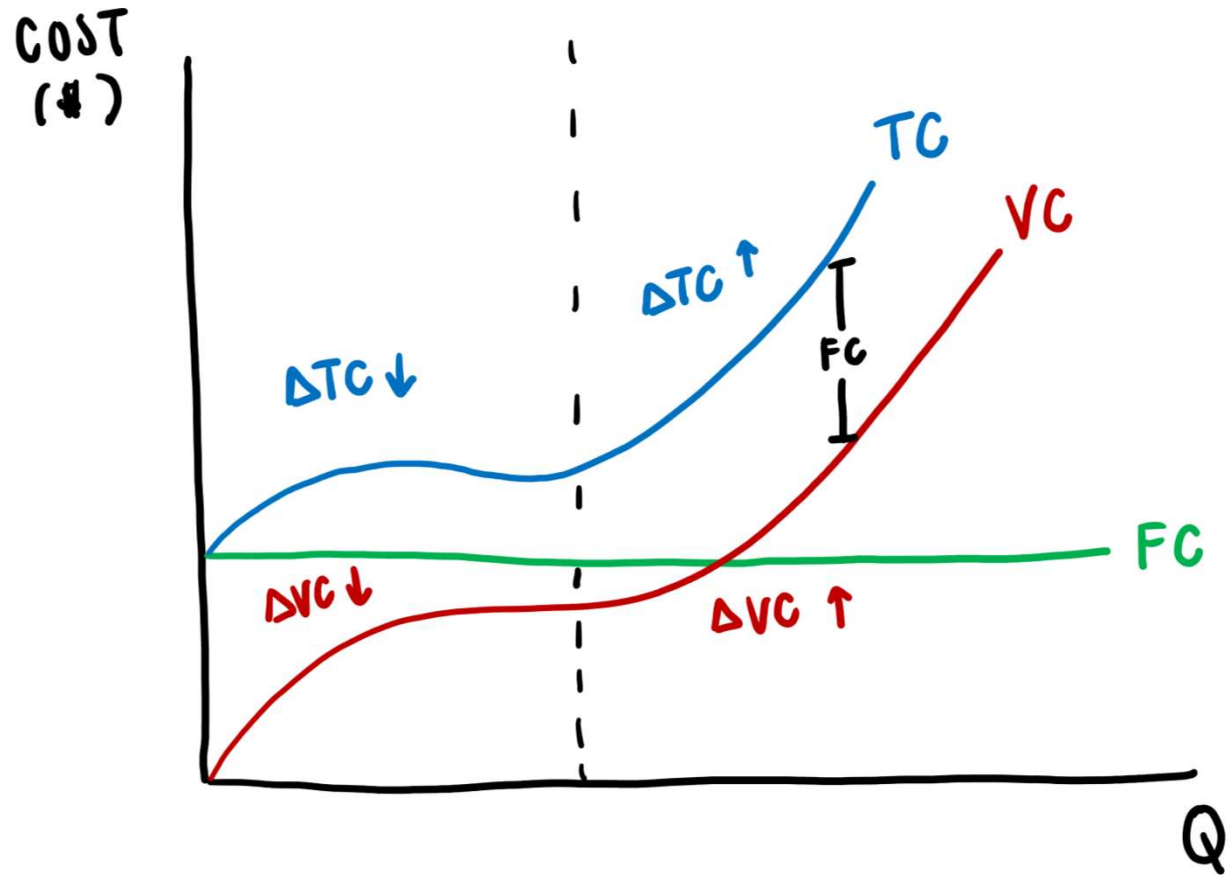
Total (economic) **cost** is the sum of **fixed costs** and **variable costs**

- Special type of fixed costs: **sunk costs**

Other cost metrics:

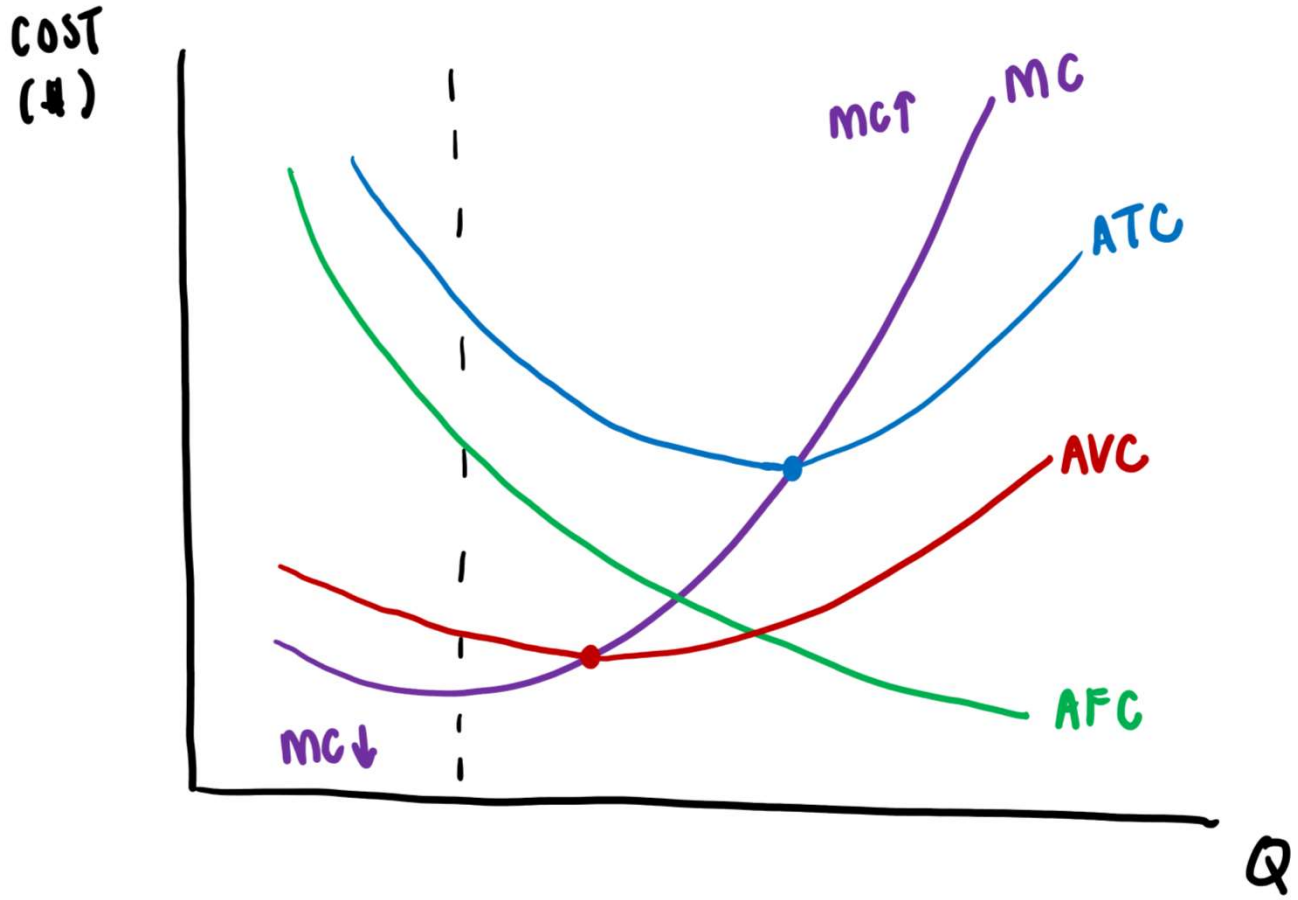
- **Average cost** $ATC = \frac{TC}{Q}$, $AFC = \frac{FC}{Q}$, $AVC = \frac{VC}{Q}$
- **Marginal cost** $MC = \frac{\Delta TC}{\Delta Q} = \frac{\Delta VC}{\Delta Q}$

Total Cost Curves



MC IS SLOPE OF VC AND TC

Average and Marginal Cost Curves



MC ↓ OR ↑:
DIMINISHING
MARGINAL
PRODUCT

Let's practice!

Suppose a firm's total cost is $\mathrm{TC} = 10Q^2 + 6Q + 60$ and marginal cost is $\mathrm{MC} = 20Q + 6$.

Answer the following:

a. Find expressions for the firm's fixed cost, variable cost, average total cost, and average variable cost.

b. Find the output level that minimizes average total cost.

$$\text{TC} = 10Q^2 + 6Q + 60;\ \text{MC} = 20Q + 6$$

(a) FC=? VC=? ATC=? AVC=?

ATC = AVC + AFC

$TC = FC + VC$

$\boxed{FC = 60}$

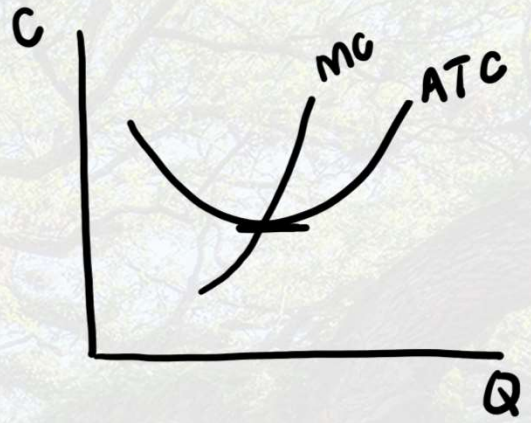
$\boxed{VC = 10Q^2 + 6Q}$

$ATC = \frac{TC}{Q} = \frac{10Q^2 + 6Q + 60}{Q}$

$\boxed{ATC = 10Q + 6 + \frac{60}{Q}}$

$AVC = \frac{VC}{Q} = \frac{10Q^2 + 6Q}{Q} = \boxed{10Q + 6}$

(b) Q THAT MINIMIZES ATC=?



ATC = MC

$10Q + 6 + \frac{60}{Q} = 20Q + 6$

$\frac{60}{Q} = 10Q$

$60 = 10Q^2$

$Q^2 = 6$

$\boxed{Q = \sqrt{6} \approx 2.45}$