Business Costs and Production

Total Revenue - total from selling goods and services
Total Cost - cost spent to produce goods and services

Profit / Loss = total revenue - total cost

Easy to calculate
Explicit costs - tangible expenses (like bills, advertising)
- insurance
- wages
out-of-pocket expenses

Hard to calculate
Implicit costs - opportunity costs of doing business
- opportunity costs of capital
- opportunity cost of owner's time above salary paid
use of personal cars/equipment

Doesn't take into account implicit costs
Accounting Profit = Revenues - Explicit costs

Considers all costs
Economic Profit = Revenues - All costs

Example table

Revenues		8000	
Workers' wages	Explicit	4000	7500
Insurance and Rent	Explicit	2500	
Food ingredients	Explicit	1000	

8000 - 7500 Accounting Profit = 500

OC

Owner's time	Implicit	300
Owner's capital	Implicit	400

Economic Profit = -200

8000 - (7500 + 700)

Economic profit = Revenue - (explicit + implicit)

Input			Output
Capital (K) Labour (L) Sometimes Materials (M)	} Factors of Production →	Firm's production process →	Firm's product

Production function - relationship between inputs and outputs
How many inputs to create output

Quantity of output is a function of capital and labour input

$$Q = f(K, L)$$

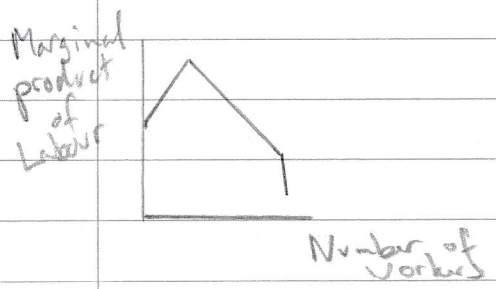
Marginal Product of Labour

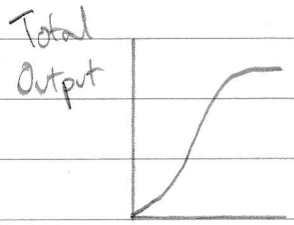
$$MPL = \frac{\Delta Q}{\Delta L}$$

Marginal Product of Capital

$$MPK = \frac{\Delta Q}{\Delta K}$$

Δ = change





Diminishing marginal product - if ↑ input, output ↑ slower
Assuming K is fixed, eventually get to point where L adds less value to previous worker

MC curve U-shape

L3 ↑ output by 15
L4 ↑ output by 12 e.g. Too many cooks in a kitchen
L5 ↑ output by 10

If MPL ↑, output ↓

If prod. ↑ from specialization, MC ↓ at ↓ rate

Short run curves tell cost-minimizing level of output

Costs in Short Run

show lowest-cost level of output

ATC = U-shaped because MC < ATC first, then above it

VC - Variable Costs
Costs related to rate of output
- Worker wages, bills, food ingredients

$$AVC = \frac{TVC}{Q}$$

FC - Fixed Costs
Costs that do not vary with output
Exists even if output == 0
- Building rent, insurance

Will always ↓ as output ↑ "spreading overhead"

$$AFC = \frac{TFC}{Q}$$

TC - Total Costs
Sum of VC + FC
Cost per unit

$$TC = TVC + TFC$$

$$ATC = \frac{AVC + AFC}{Q}$$

MC - Marginal Cost
The increase in total cost that occurs from producing additional output

$$MC = \frac{\Delta TC}{\Delta Q}$$

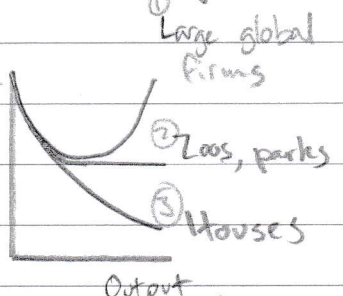
Costs in Long Run

Scale - size of production increase
Efficient scale - level of output where ATC minimized
MC curve passes through minimum of ATC curve

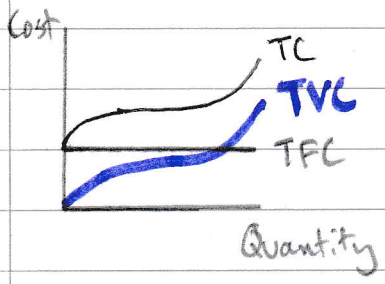
① **Diseconomies of Scale** (upward sloping, not U-shaped)
ATC ↑ as production ↑
Very large firms deal with additional
- management
- coordination
- logistics expenses

② **Constant returns to Scale**
ATC same as production ↑

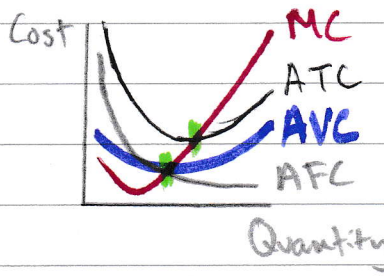
③ **Economies of Scale** - savings ↑ by production ↑
ATC ↓ as production ↑. Larger firms more efficient than smaller firm.



Total Cost Curve



Cost Curves



ATC downward sloping, MC below ATC

Efficient scale

Gap between ATC and AVC = AFC

Average follows the margin
If the margin is above average, average ↑
If the margin is below average, average ↓

If firm ↓ costs by ↑ production, firm wants ↑ profits