Gen. = Generally
MR. = marginal revenue
MC. = marginal cost
Prof. max. = profit maximization
Q.D = Quantity Demanded
Pmt. = payments
LR= long-run
SR=short-run
SMC=short-run marginal cost
LMC = long-run marginal cost
MP = marginal productivity

"TOPICS IN DEMAND & SUPPLY ANALYSIS"

1. INTRODUCTION

This reading explores how buyers & sellers interact to determine transaction prices & quantities.

2. DEMAND ANALYSIS

2.1 Demand Concepts

Law of Demand: As the price of good ↑ (↓), buyers buy ↓ (↑).
Demand Function: $Q^d_x = f(Px, I, Py)$
Demand Curve: Highest quantity purchased at given price or highest price paid at given quantity.

2.2 Own-Price Elasticity of Demand

$$= \frac{\%\Delta \text{ in Q.D of x}}{\%\Delta \text{ in price of x}}$$

(other factors constant)

- when the magnitude of elasticity is:
  i. >1, demand is elastic.
  ii. < 1, demand is inelastic.
  iii. =−1, demand is unit elastic.

2.2.1 Extremes of Price Elasticity

Vertical Demand Curve: Same Q.D regardless of price (inelastic demand)
Horizontal Demand Curve: A slight ↑in price will cause 0 demand (perfectly elastic demand).

2.2.2 Predicting Demand Elasticity

Gen. Own-Price Elasticity of Demand will be ↑ (more sensitive) for items that:

- have close substitutes.
- occupy large portion of total budget.
- are optional
- have longer adjustment times.

2.2.3 Elasticity & Total Expenditure

When demand is elastic (inelastic):

- Price & total expenditure (PxQ) move in opposite (same) direction.

2.3 Income Elasticity of Demand

$$= \frac{\%\Delta \text{ in Q.D of x}}{\%\Delta \text{ in Income}}$$

(other factors constant)

- income elasticity can be +ve, -ve, or zero.
- Normal goods [+ve income elasticity]
- Inferior goods [-ve income elasticity]

2.4 Cross-Price Elasticity of Demand

$$= \frac{\%\Delta \text{ in Q.D of x}}{\%\Delta \text{ in price of y}}$$

(other factors constant)

- if cross price-elasticity of two goods is:
- +ve goods are substitutes
- -ve goods are complements

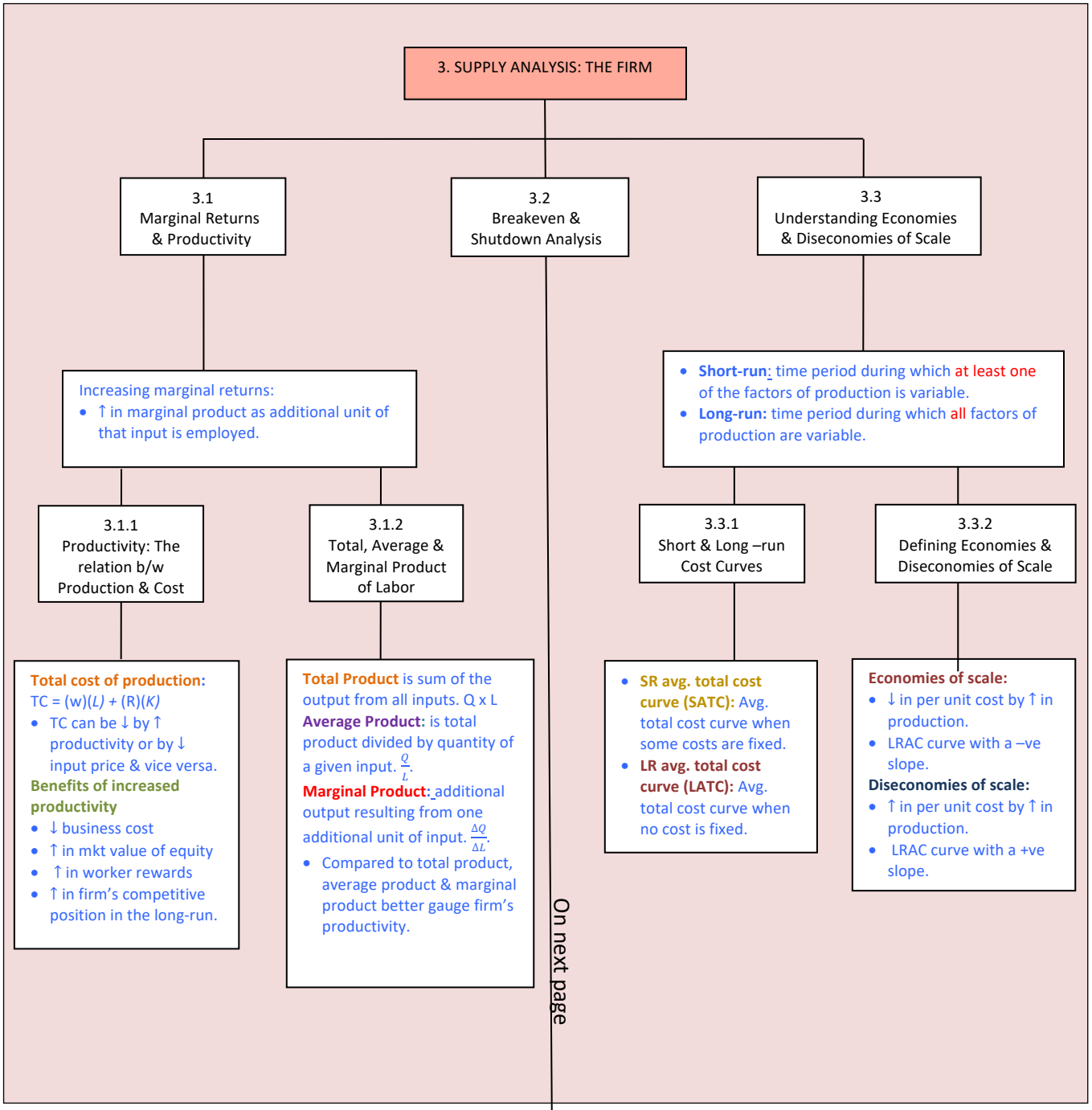
2.5 Substitution & Income Effects

Two reasons why demand is –vely sloped:
1) Substitution Effect: when price ↓, consumers purchase ↑.
2)Income Effect: ↓ in price of a good results in ↑ in consumer's real income & if it is normal good, more of it will be purchased.

2.6 Normal & Inferior Goods

- Substitution effect of a Δ in price of a good is always in the direction of buying more at a less price or buying less at more price.
- Same is true for Income effect for normal goods.
- For inferior goods, income effect & substitution effect work in opposite directions.

Giffen Goods: Inferior goods that consumer more (less) as price rises (fall) i.e. income effect overwhelms their substitution effect.
Veblen Goods: High status goods that ↑ in desirablility with ↑ in price.



3.2.1 Economic Cost vs. Accounting Cost

Accounting cost: Monetary value of economic resources used in business activity i.e. explicit out-of-pocket current pmts or allocation of historical pmts for resources.

Economic Cost: The sum of total accounting costs & implicit opportunity costs.

Accounting Profit: Income before tax on income statement.

Economic Profit: Accounting profit – implicit opportunity cost.

3.2.2 MR, MC & Profit Maximization

$MR = \frac{\Delta TR}{\Delta Q}$

For a firm operating under:

- Perfect competition→MR = P
- Imperfect competition→MR < P

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

SMC: additional incurred cost of variable input to ↑ 1 unit of output.

LMC: additional incurred cost of all inputs to ↑ the level of output.

Law of diminishing returns: additional output must fall as more and more labor is added to fixed capital.

For profit. maximization: firms should produce the level of output such that: i) MR = MC & ii) MC is not falling.

3.2.3 Understanding the interaction b/w Total, Variable, Fixed & MC & Output

- TC curve lies parallel to & above TVC by the amount of TFC.
- MC curve intersects both AVC & ATC at their min. points.
- If MC is ↓(↑) than AC, AC must ↓ (↑).
- The rate of Δ in TC mirrors the rate of Δ in TVC.
- Quasi-fixed cost: Cost that stays same over a range of production & then Δ when production moves outside of that range.
- AFC ↓ throughout the production span.

3.2.4 Revenue under conditions of Perfect & Imperfect Competition

Under perfect competition:

- Demand curve is horizontal.
- TR curve is linear with slope equal to price per unit.

Under imperfect competition:

- Demand curve is –vely sloped.
- TR curve rises in the range where MR is +ve & demand is elastic & then falls in the range where MR is –ve & demand is inelastic.

3.2.5 Profit-maximization, Breakeven & Shutdown Points of Production

Firm maximizes profit by producing Q where P = SMC & SMC is rising.

3.2.6 Breakeven Analysis

B.E.P →TR = TC, a point where a firm earns normal economic profit.

3.2.7 The Shutdown Decision

- Sunk costs must be ignored to continue to operate in the SR.
- A firm, covering its variable cost, should operate in the SR.
- Shutdown point→ min. AVC.
- Breakeven point:→min.ATC.

Rev. cost relation	SR Decision	LR Decision
TR = TC	Stay in mkt.	Stay in mkt.
TR = TVC but < TC	Stay in mkt.	Exit mkt.
TR < TVC	Shutdown production	Exit mkt.

Reference: Exhibit 22: CFA Institute's curriculum Reading 14