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Fulbright Economics Teaching Program
Academic year 2005-2006

Microeconomics

Syllabus

Fulbright Economics Teaching Program
Academic year 2005-2006
Fall Term

Sept. 06, 2005 Dec. 24, 2005

MICROECONOMICS

Teaching Team

Instructor: Dang Van Thanh, Thai Van Can

Guest lecturer: Vu Thanh Tu Anh

Tutor: Nguyen Ho Phuong Chi

Interpreter: Nguyen Quy Tam

Class Times

Monday: 8:30 11:00

Wednesday & Friday: 8:30 10:00

Office Hours

Dang Van Thanh: Thursday, from 18:00 to 21:00

Thai Van Can:
Nguyen Ho Phuong Chi:

Course Objectives

The course aims at providing students with fundamental concepts and tools in microeconomic analysis that can be applied for analysis and assessment of public policies or other economic issues. Upon completion of the course, students will have learnt: (1) the central concept of price mechanism resulting from supply and demand in the products and factor markets; (2) the principle of making optimal decision for efficient resource allocation as a consumer or producer of products, or as a supplier of factors of production; (3) the shortcomings of the market economy that justify government intervention; and (4) the criteria of welfare economics to help assess the optimality of economic policies in areas, such as public finance, trade, or rural development.

Course Description

This course examines the efficient allocation of scarce resources, resulting from decentralized decisions in a market economy. It analyzes how households decide on the quantity of labor to supply and products (goods and services) to consume, and how firms

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decide on the nature, the quantity of products to produce, and their production process under perfect and imperfect competition. The course shows the optimal efficiency that can be achieved under competitive general equilibrium and points out examples of market failures that justify government corrective measures.

The course consists of eight parts. Part one introduces the concepts of microeconomics and the basic model of supply and demand and the role of price mechanism; it also discusses the concepts of consumer and producer surpluses which are widely used, as criteria in welfare economics, to assess alternative policies. Part two reviews the theory of consumer behavior and its application, and derives demand curves for different markets. Part three discusses firm behavior, production theory, cost theory, and the profit maximization objective, and derives the supply curves for competitive firms and markets. Part four reviews the results of competitive markets in terms of efficiency and equity. Part five discusses the imperfect competition under monopoly, oligopoly, and monopolistic competition. Part six analyses the market for factor inputs; it examines the determination of input prices by deriving the supply and demand curves for inputs. Part seven explores the general equilibrium from all markets and its properties. The final part looks at market failures, such as asymmetric information, externalities, and insufficient investment in public goods, and government approaches to correcting these failures.

The course also includes reviews and several problem sets.

Course Outline

I. Introduction to Microeconomics and supply and demand curves

1. Definition of microeconomics
2. Demand, Supply and Market Equilibrium
3. Elasticities of Supply and Demand

II. Demand and consumer behavior

1. The Theory of Consumer Behavior
2. Individual Demand & Market Demand
3. Applications of Consumer Behavior Theory
4. Choice under Uncertainty, Game theory

III . Supply and decision of the firm

1. Theory of Production
2. Costs of Production
3. Profit Maximization and Competitive Supply
4. Long-run Equilibrium for Firms & Competitive Industry.
Industry Long-run Supply Curve

IV. Analysis of Competitive Markets

1. Supply behavior of competitive firms and industries

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2. Efficiency and equity of competitive markets

V. Imperfect competition

1. Market Power: Monopoly and monopsony
2. Monopoly Inefficiency & Control
3. Pricing with Market Power
4. Internal Transfer Pricing of Firm
5. Monopolistic Competition and Oligopoly

VI. Factor Markets

1. Labor market
2. Capital market and investment

VII. General Equilibrium & Economic efficiency

1. General equilibrium in all markets
2. Properties of a competitive general equilibrium

VIII. Market failures and the role of the government

1. Externalities and Public Goods

2. Asymmetric Information

Student obligations

Economics is an analytical subject. Students cannot master it by simple memorization, nor can they survive by last minute cramming. Students must understand concepts and develop the ability to apply them to resolve various problems. This ability takes practice and requires reading of the textbook and notes and study the materials as well as solve the problem sets. The course material is cumulative (new concepts build on old ones), so it is absolutely essential to keep up-to-date on a daily basis. To this end, students are expected to attend class regularly, read the required readings carefully prior to class meeting, actively participate in class discussions, and complete written assignment, including problem sets as scheduled.

Text Book and Required Readings

The required readings are in the course outline. It is very important that students complete the assigned readings prior to class discussion. Most readings will come from the main textbook and handouts.

The main textbook is Microeconomics, Fifth Edition, by Robert S. Pindyck and Daniel L. Rubinfeld, Prentice-Hall Publishers. This textbook has been selected because it provides a very clear exposition of modern microeconomic concepts and has the key advantage that its third edition is available in Vietnamese.

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The textbook has a website at:

<http://myphilip.pearsoncmg.com/cw/mpbookhome.cfm.vbookid=152> .

Optional Texts

N.Gregory Mankiw, Nguyn l Kinh t. h.c (volume 1), Statistics Publication, 2003.

Walter Nicholson, Microeconomic Theory, fifth edition, in English, is relatively more advanced.

Jack Hirshliefer and Amihai Glazer, Ly Thuyet Gia Ca Va Su Van Dung is in Vietnamese and appears to be rather basic.

Robert H. Frank, Microeconomics and Behavior, McGraw-Hill, 1997.

Students should also read newspapers, magazines, and articles on economic issues and try to apply what they have learned in class to current policy problems.

Problem sets

There are 10 problem sets in this course. They are

well as important concepts discussed in the lectures and assigned readings. Students must submit their solutions before 8:20 AM on the due date. It is illegal (i.e. cheating) for students to copy the answers to the problem sets from other students, and cheating will not be tolerated in any circumstances (see Regulations and Guidelines in the Students Handbook).

Grading:

The final grade will be based on the following weights:

Problem sets: 30%

Mid-term Exams: 30%

Final exam: 40%

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PROGRAM AND SCHEDULE

Week	Monday 8:30 -11:00	Wednesday 8:30-10:00	Friday 8:30-10:00
1	<p style="text-align: right;">5/9</p> <p>General Introduction to Microeconomics</p> <p><u>Reading:</u> Textbook: Pindyck & Rubinfeld, Ch. 1 Handout 1</p>	<p style="text-align: right;">7/9</p> <p>Demand, Supply and Market Equilibrium</p> <p><u>Reading:</u> Textbook: Pindyck & Rubinfeld, Ch. 2 Handout 2 <i>PS #1 assigned</i></p>	<p style="text-align: right;">9/9</p> <p>Elasticities of Supply and Demand</p>
2	<p style="text-align: right;">12/9</p> <p>The Theory of Consumer Behavior</p> <p><u>Reading:</u> Textbook: Pindyck & Rubinfeld, Ch. 3 Handout 3</p>	<p style="text-align: right;">14/9</p> <p>Individual Demand & Market Demand</p> <p><u>Reading:</u> Textbook: Pindyck & Rubinfeld, Ch. 4 Handout 4 <i>PS</i></p>	<p style="text-align: right;">16/9</p> <p>Review</p>

3	<p style="text-align: right;">19/9</p> <p>Applications of Consumer Behavior Theory</p> <p><u>Reading:</u> N.Gregory Mankiw, Nguyn l Kinh t. h.c, volume 1, ch. 21. Handout 5</p>	<p style="text-align: right;">#1 21/9</p> <p>Applications of Consumer Behavior Theory (contd)</p> <p><u>Reading:</u> N.Gregory Mankiw, Nguyn l Kinh t. h.c, volume 1, ch. 21. Handout 5</p> <p><i>PS #2 due, PS #3 assigned</i></p>	<p style="text-align: right;">23/9</p> <p>Review</p>
4	<p style="text-align: right;">26/9</p> <p>Choice under Uncertainty</p> <p><u>Reading:</u> Textbook: Pindyck & Rubinfeld, Ch. 5 Handout 6</p>	<p style="text-align: right;">28/9</p> <p>Choice under Uncertainty (contd)</p> <p><u>Reading:</u> Textbook: Pindyck & Rubinfeld, Ch. 5 Handout 6</p> <p><i>PS #3 due, PS #4 assigned</i></p>	<p style="text-align: right;">30/9.</p> <p>Review</p>

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5	3/10 Theory of Production <u>Reading:</u> Textbook: Pindyck & Rubinfeld, Ch. 6 Handout 7	5/10 Costs of Production <u>Reading:</u> Textbook: Pindyck & Rubinfeld, Ch. 7 Handout 8 PS #4 due, PS #5 assigned	7/10 Review
6	10/10 Profit Maximization and Competitive Supply <u>Reading:</u> Textbook: Pindyck & Rubinfeld, Ch. 8 Handout 9	12/10 Long-run Equilibrium for Firms & Competitive Industry. Industry Long-run Supply Curve <u>Reading:</u> Textbook: Pindyck & Rubinfeld, Ch. 8 Handout 9	14/10 Review

7	<p style="text-align: right;">17/10</p> <p style="text-align: center;">Analysis of Competitive Markets</p> <p>Reading: Textbook: Pindyck & Rubinfeld, Ch. 9 Handout 10</p>	<p style="text-align: right;">19/10</p> <p style="text-align: center;">Analysis of Competitive Markets (cont.)</p> <p>Reading: Textbook: Pindyck & Rubinfeld, Ch. 9 Handout 10</p> <p>PS #5 due</p>	<p style="text-align: right;">21/10</p> <p style="text-align: center;">Review</p>
8	<p style="text-align: right;">24/10</p> <p style="text-align: center;">Review for Mid-term Exam</p>	<p style="text-align: center;">Thursday 27/10</p> <p style="text-align: center;">Mid-term Exam 08:30 11:00</p>	<p style="text-align: right;">28/10</p> <p style="text-align: center;">Grading of Mid-term Exam</p>

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9	31/10 Market Power: Monopoly <u>Reading:</u> Textbook: Pindyck & Rubinfeld, Ch. 10 Handout 11	2/11 Monopoly Inefficiency & Control <u>Reading:</u> Textbook: Pindyck & Rubinfeld, Ch. 10 Handout 11 PS #6 assigned	4/11 Review
10	7/11 Pricing with Market Power <u>Reading:</u> Textbook: Pindyck & Rubinfeld, Ch. 11 Handout 12	9/11 Internal Transfer Pricing of Firm. Firm with Subsidiaries <u>Reading:</u> Textbook: Pindyck & Rubinfeld, Ch. 11 Handout 12 PS #6 due, PS #7 assigned	11/11 Review
11	14/11 Monopolistic Competition And	16/11 Game Theory	18/11 Review

	21/11	23/11	25/11
	Oligopoly <u>Reading:</u> Textbook: Pindyck & Rubinfeld, Ch. 12 Handout 13	<u>Reading:</u> Textbook: Pindyck & Rubinfeld, Ch. 13 Handout 14 <div style="border: 1px solid black; padding: 2px; display: inline-block;"><i>PS #7 due, PS #8 assigned</i></div>	REVIEW
12	Game Theory <u>Reading:</u> Textbook: Pindyck & Rubinfeld, Ch. 13 Handout 14	Game Theory <u>Reading:</u> Textbook: Pindyck & Rubinfeld, Ch. 13 Handout 14	Review

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13	28/11 Market for Factor Inputs (Labor Market) <u>Reading:</u> Textbook: Pindyck & Rubinfeld, Ch. 14 Handout 15	30/11 Market for Factor Inputs (Capital and Investment) <u>Reading:</u> Textbook: Pindyck & Rubinfeld, Ch. 15 Handout 16 PS #8 due, PS #9 assigned	2/12 Review
14	5/12 General Equilibrium & Economic efficiency <u>Reading:</u> Textbook: Pindyck & Rubinfeld, Ch. 16 Handout 17	7/12 Asymmetric Information <u>Reading:</u> Textbook: Pindyck & Rubinfeld, Ch. 17 Handout 18 PS	9/12 Review

15	12/12 Externalities and public goods <u>Reading:</u> Textbook: Pindyck & Rubinfeld, Ch. 18 Handout 19	#9 14/12 Externalities and public goods (cont) <u>Reading:</u> Textbook: Pindyck & Rubinfeld, Ch. 18 Handout 19	16/12 Review PS #10 due
16	19212 Review for Final Exam	Thursday 23/12 Final Exam 08:30 11:00	23/12 Grading of Final Exam

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Macroeconomics

Lecture 1

Microeconomics for Public Policy

Fulbright Economics Teaching Program
Fall Semester
2005 - 2006

What is Economics.

Starting point of economics: Universal law of scarcity

Law of scarcity: Conflict between unlimited human wants and their limited resources

Consequence of scarcity: Man must choose between wants and resource allocation

Two aspects of the choice: Objectives and constraints

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Macroeconomics

Lecture 1

What is Economics.

Conventional concept: Economics is a social science that studies the allocation of scarce resources to competing uses in order to maximize the benefit of individuals, organizations and economy.

A different perspective: Economics as a science studying markets (James Buchanan).

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Definition of Market

Market: Collection of buyers and sellers that, through their actual or potential interactions, determine the price of a product or set of products.

Extent of a market:

- Geography
- Product range

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Macroeconomics

Lecture 1

Basic Questions of Economics

What to produce.

How.

How much.

For whom.

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Solutions of Different Economic Systems

Centrally command economy	What to produce. How.
Decentralized market economy	How much. For whom.
Mixed economy	
Socialist market economy	

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Macroeconomics

Lecture 1

Microeconomics vs. Macroeconomics

Distinguishing Criteria: Unit of analysis

Macroeconomics: deals with the entire economy, including output, growth, inflation, unemployment v.v.

Microeconomics:

- Deals with individual economic units (consumers, workers, investors), private and public firms, governments (central and local)
- Studies how these economic units interact to form larger units (market, industry).

Relationship b/w microeconomics and macroeconomics

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Positive vs. Normative Economics

Positive Economics: What is.

- Uses economics theory, supported by mathematical and econometric models, to describe, explain economic phenomena and predict their outcomes that have been and will be happening in the real life as results of choices made by economic agents.

Normative Economics: What should be.

- Heavily directed by moral, social and cultural values
- Characterized by subjective judgments
- Source of disagreements among economists

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Macroeconomics

Lecture 1

Theories and Models

Microeconomic Analysis

Theories are used to explain observed phenomena in terms of a set of basic rules and assumptions. Theories are built upon assumptions, economic principles and logical operations.

For example

The Theory of the Firm

The Theory of Consumer Behavior

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Economics Models and Theories

Micro analysis

Verification of a theory

The validity of a theory is determined by the quality of its predictions and explanations, given assumptions.

To dismiss a theory, it is not enough to reject initial assumptions, but its predictions must be proved wrong or useless against observations.

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Macroeconomics

Lecture 1

Economics Models and Theories

Micro analysis

Model:

Mathematical representation of economics theory, and a popular tool of economists in explaining and forecasting what have been and will be happening.

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Theories and Models

Microeconomic Analysis

Evolving the Theory

Testing and refining theories is central to the development of the science of economics.

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Lecture 1

Economics and Public Policy

What is public policy. A course of government action (or inaction) taken in response to social problems [Kraft and Furlong, 2004:4]

Social problems are conditions the public widely perceives to be unacceptable and therefore requiring intervention (or renouncement of intervention).

A basic problem of public policy: How to optimize _____ decisions, i.e. to achieve stated objectives given resource constraints (information, human resources, financial resources etc.)

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A Public Policy Case: Killer Airbags

By relating the story of the so-called killer airbags in the US to the regulation on helmet wearing in Vietnam, what can be learned from the US experience. How do you evaluate Vietnams policy on transportation safety.

Under what circumstances is it appropriate to trade off human lives against money when making decision about safety.

Most people and without any government regulation requiring it have locks on their doors to protect them from intruders. If airbags/ helmets are so good at protecting people for injuries and death, why were government regulations *required to let them installed on automobiles/motorbikes.*

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Lecture 1

Economics and Public Policy Policy Analysis Process

1. Define and analyze the problem
2. Determine objectives of the policy
3. Construct policy alternatives
4. Develop evaluative criteria
5. Evaluate policy alternatives
6. Conclude and recommend

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Define and analyze problem

Question

What is the problem faced.
Where does it exist.
Who or what is affected.
How did the effect develop.
What are the major causes.
How might the caused be
affected by policy action.

Illustration

What is the current traffic
situation.
How not wearing helmet
relates to the probability and
seriousness of accidents.
Beside the reason of not
wearing helmet, are there
any other important causes.
How will new policy change
the probability and
seriousness of accident.

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Macroeconomics

Lecture 1

Determine Policy Objectives

Question

What are economic, political, cultural and social goals of the policy.

How are these goals specified.

Illustration

How much should motorbike-related accident be reduced.

Specific criteria: number of incidence, death toll, injury victims, etc.

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Construct Policy Options

Question

What policy options might be considered for dealing with the problem.

Illustration

Enforce helmet wearing regulation
on some roads
Increase punishment
Resettle residents along major roads
Build new roads far away from
residential areas
Increase the number of traffic patrol
police
Educate drivers
Limit speed shooting
v.v.

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Lecture 1

Develop Evaluative Criteria

Question

What criteria are most suitable to evaluate current problem and policy options.

Whats the cost of action.

Whats the likely effectiveness.

Economic, political, cultural and societal feasibility.

Equality.

Illustration

What are the most important criteria for regulating the wearing of helmet. Speed limit. Reorganizing traffic and resettlement.

What are the most effective measures in curbing traffic accidence.

Reaction toward speed limit and shooting.

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Evaluate Policy Options

Question

Which option is better.
What kind of analysis should be done to distinguish better policy.
Is there sufficient data for the analysis.
What extra data is needed.

Illustration

Punishment on non-helmet bikers vs. biker education campaign, which one is more effective.
What is the effectiveness of speed limit and speed shooting.
What is the data needed to answer these questions.

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Macroeconomics

Lecture 1

Conclusions and Recommendations

Question

Given current conditions,
what is the most desirable
policy.

What other factors should
be considered.

Illustration

Should people be allowed to
reside along the national
highways.

Can speed shooting solve
the fundamental problems.

Should punishment be
doubled.

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The Road Ahead

Two sectors of the
economy

- Production
- Consumption

Two sector markets

- Product market
- Factor market

Invisible hand (or the
role of the markets)

Visible hand (or the
role of the government)



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Microeconomics

Lecture 2

CHAPTER 2

**BASIS OF DEMAND
AND SUPPLY**

→



KEY ISSUES

- Supply
- Demand
- Market Equilibrium
- Change in Market Equilibrium
- Supply Demand Elasticities
- Producer and consumer surplus

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Microeconomics

Lecture 2

Supply

Supply curve

shows the amount of a good that producers are willing to sell at each price per unit of time (ceteris paribus)

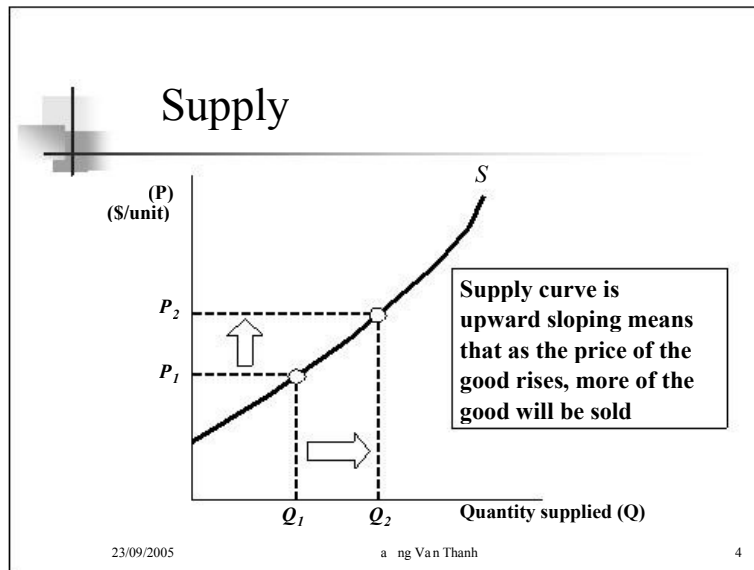
Supplied quantity - price relation is generally expressed as:

$$Q_s = Q_s(P)$$

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Demand

Demand curve

shows the amount of a good or service that consumers are willing to purchase at each price per unit of time holding all other factors constant

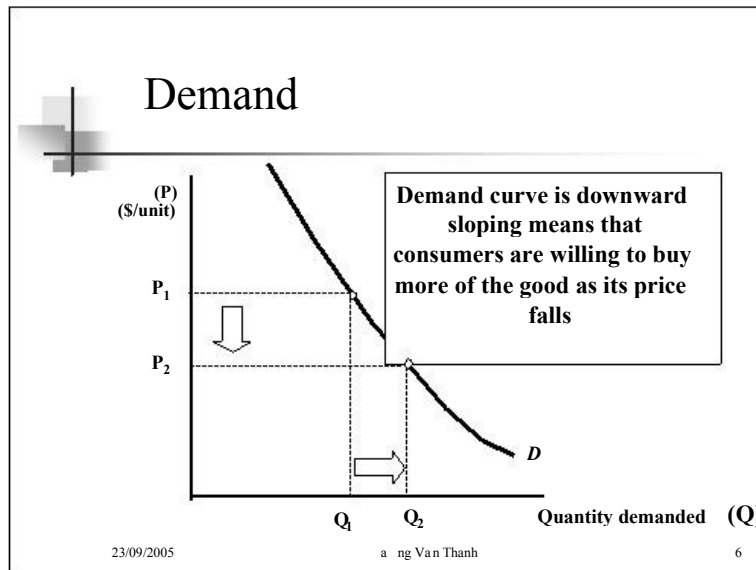
Demanded quantity - price relation is generally expressed as:

$$Q_D = Q_D(P)$$

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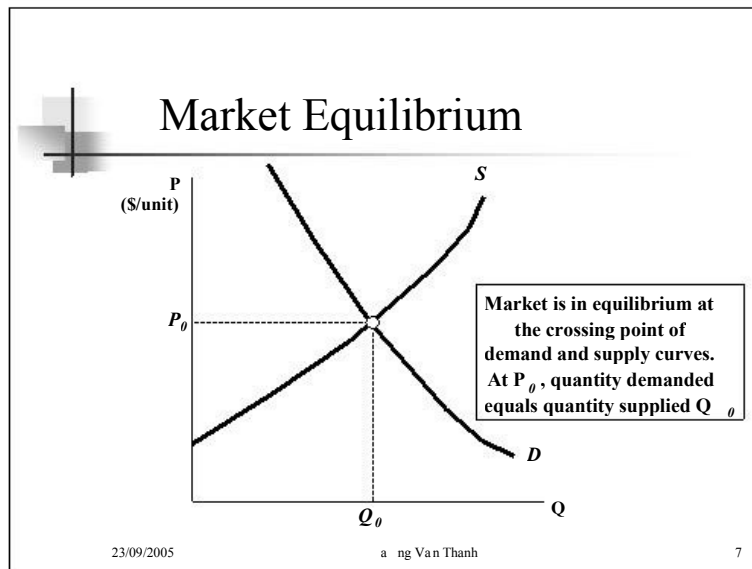


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Microeconomics

Lecture 2





Market Equilibrium

Characteristics of market clearing price:

$$Q_D = Q_S$$

No goods shortage

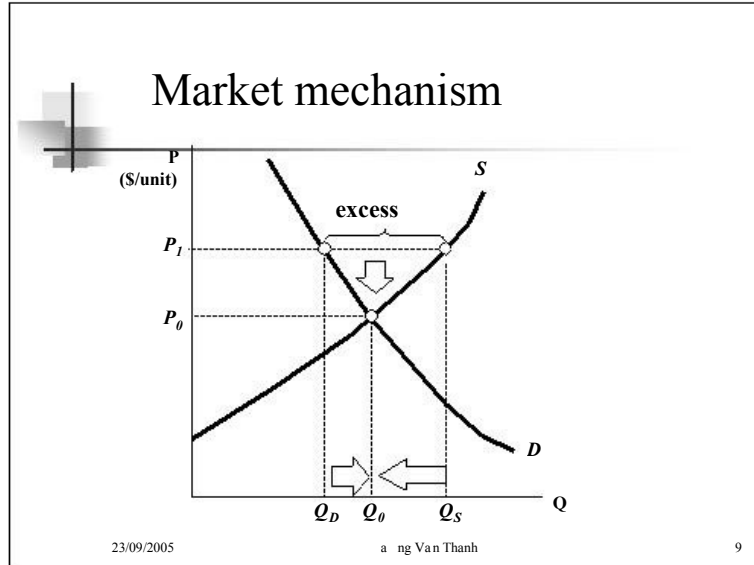
No excess supply

No pressure for price change

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Market mechanism

Excess

When market price is higher than equilibrium price:

- Supply is in excess

- Producer lowers price

- Quantity demanded increases and quantity supplied decreases

- Market continues adjusting until it reaches equilibrium price

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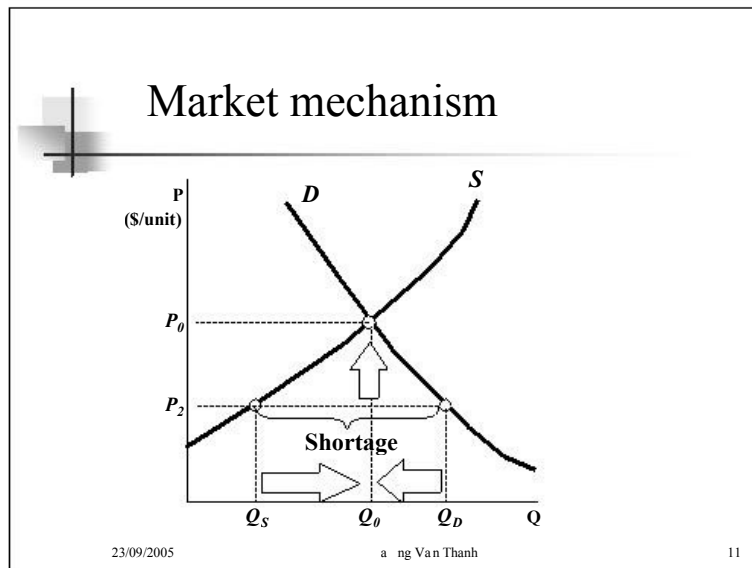
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Lecture 2





Market mechanism

Shortage

When market price is lower than equilibrium price:

There is shortage

Producer increases price

Quantity demanded decreases and quantity supplied increases

Market continues adjusting until it reaches equilibrium price.

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Market mechanism

Summary of market mechanism

- 1) Supply and demand interact and determine market equilibrium price.
- 2) When it is not in equilibrium, market will adjust the shortage or excess of goods until it reaches equilibrium.
- 3) Market should be perfectly competitive for this mechanism work.

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Change in Market Equilibrium

Market equilibrium changes over time due to:

Demand changes (demand curve shifts)

Supply changes (supply curve shifts)

Both supply and demand change

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Change in demand (demand curve shifts)

Change in demand is different from change in quantity demanded

Demand is determined by factors other than price such as income, prices of other related goods, preferences .

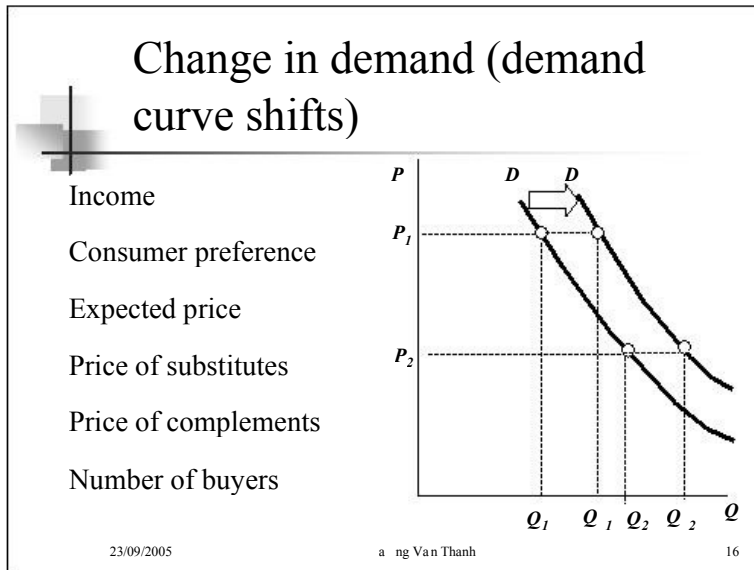
Change in demand shows by the shift of demand curve.

Change in quantity demanded shows by the movement along the demand curve.

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Change in supply (supply curve shifts)

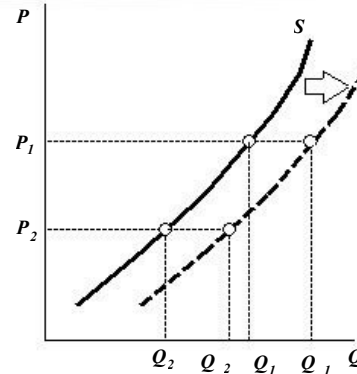
State of technology

Price of inputs

Expected price

Tax and subsidy policy

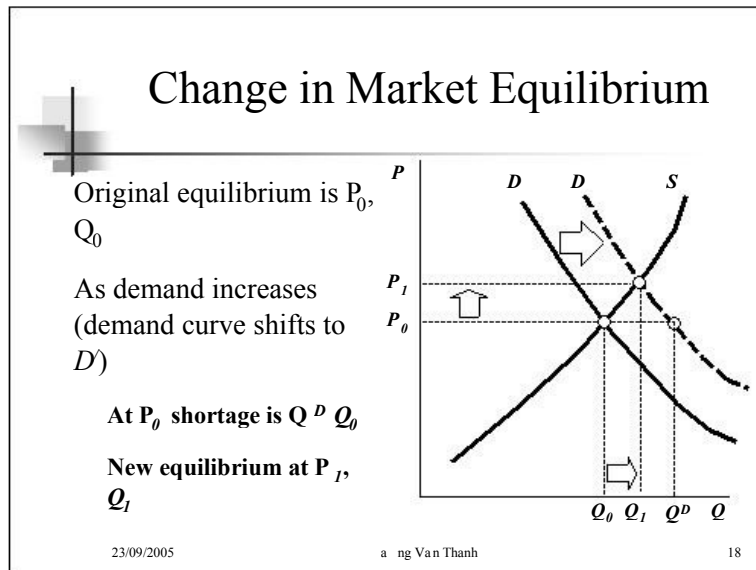
Natural environment



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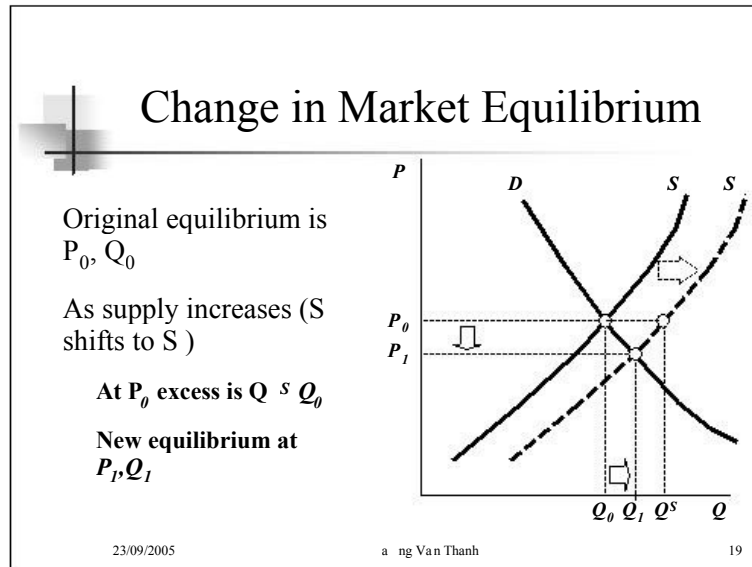


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Change in Market Equilibrium

Equilibrium price is determined by relationship between supply and demand.

Supply and demand are determined by specific values of their key factors.

Any change in one or many of these factors lead(s) to change in equilibrium price and quantity.

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Change in Market Equilibrium

Comment

To forecast future price of a good or service, it is needed to look at future change in supply and demand.

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Supply and Demand Elasticities

Elasticity is defined as a measure of responsiveness, it looks at how a change in one variable affects a change in another.

Elasticity is the percentage change in one variable with respect to a percentage change in another.

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Demand Elasticity

Price elasticity of demand

Shows the responsiveness of quantity demanded to a change in price.

is the percentage change in quantity demanded with respect to a percentage change in the price of the good.

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Demand Elasticity

Formula for price elasticity of demand:

$$E_P = (\% \Delta Q) / (\% \Delta P)$$

$$E_P = \frac{\Delta Q / Q}{\Delta P / P} = \frac{\Delta Q}{\Delta P} * \frac{P}{Q}$$

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Demand Elasticity

Comment

- 1) P and Q are negatively related, thus

$$E_P < 0.$$

- 2) No calculation unit for E_P



Demand Elasticity

Special cases of price elasticity

If $E_p < -1$: % change in quantity demanded larger than % change in price. Demand is referred to as being relatively elastic.

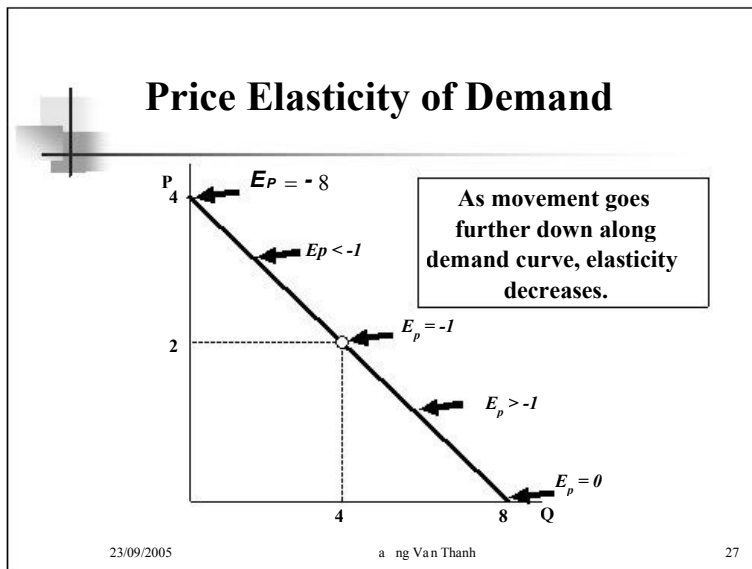
If $E_p > -1$: % change in quantity demanded less than % change in price. Demand is referred to as being inelastic

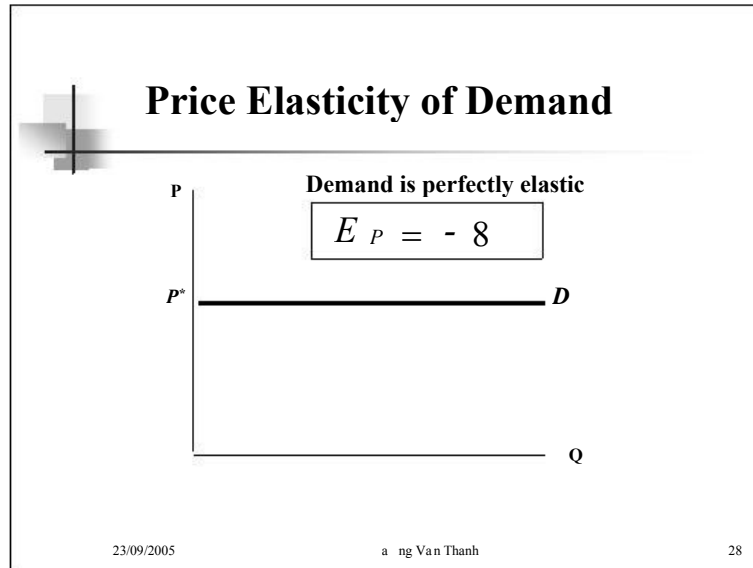
If $E_p = -1$: % change in quantity demanded equal % change in price. Demand is referred to as being unitary elastic.

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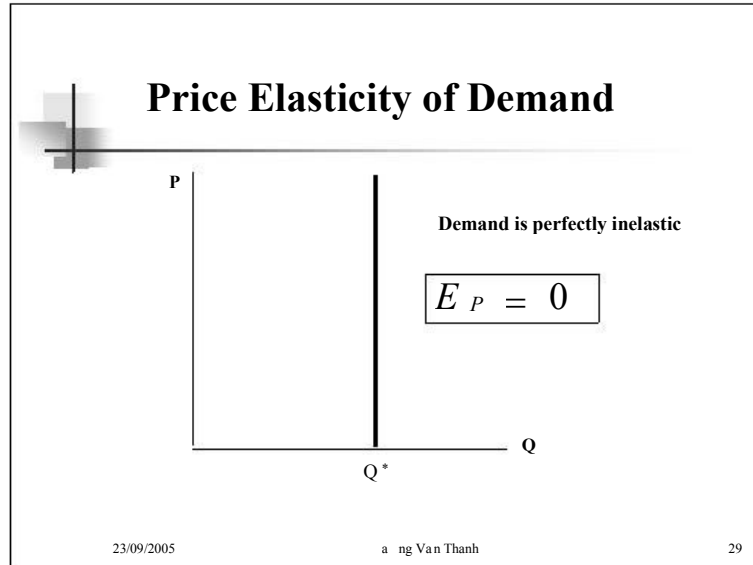


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Price Elasticity of Demand

Price elasticity of demand

Factors that affect the price elasticity of demand.

Substitution of goods.

Spending on the good as % of budget

Time

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Price Elasticity of Demand

Relationship between total revenue and sale price

$E_p < -1$: TR negatively related to P (positively related to Q)

$E_p > -1$: TR positively related to P (negatively related to Q)

At the selling price and quantity where $E_p = -1$, what is TR.

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Income Elasticity of Demand

Income elasticity of demand is % change in quantity demanded as income changes 1%.

$$E_I = (\% \cdot Q) / (\% \cdot I)$$

$$E_I = \frac{\cdot Q/Q}{\cdot I/I} = \frac{\cdot Q}{\cdot I} * \frac{I}{Q}$$

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Income Elasticity of Demand

$E_1 < 0$: inferior goods

$E_1 > 0$: normal goods

$E_1 < 1$: essential goods

$E_1 > 1$: luxury goods



Cross Elasticity of Demand

Cross elasticity of demand shows % change in quantity demanded of one good with respect to a percentage change in the price of another good

$$E_{XY} = (\% \Delta Q_X) / (\% \Delta P_Y)$$

$$E_{XY} = \frac{\frac{\Delta Q_X}{Q_X}}{\frac{\Delta P_Y}{P_Y}} = \frac{\Delta Q_X}{\Delta P_Y} \cdot \frac{P_Y}{Q_X}$$

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Cross Elasticity of Demand

$E_{XY} = 0$: X and Y are not related

$E_{XY} < 0$: X and Y are complements

$E_{XY} > 0$: X and Y are substitutes

What is the relationship between two firms.

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Elasticity of supply

Price elasticity of supply is % change in quantity supplied as price changes 1%.

Elasticity of supply has plus sign as price and quantity supplied are positively related

$$E_s = (\% \Delta Q) / (\% \Delta P)$$

$$E_s = \frac{\Delta Q / Q}{\Delta P / P} = \frac{\Delta Q}{\Delta P} * \frac{P}{Q}$$

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Elasticity of supply

$E_S > 1$: supply is relatively elastic

$E_S < 1$: supply is relatively less elastic

$E_S = 1$: supply is unitary elastic

$E_S = 0$: supply is inelastic

$E_S = \infty$: supply is perfectly elastic

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Short term Elasticity vs. long term Elasticity

Demand

For most of goods and services:

Short term elasticity is less than long term elasticity. (e.g., gasoline)

For durable goods

Short term elasticity is greater than long term elasticity. (e.g., cars)

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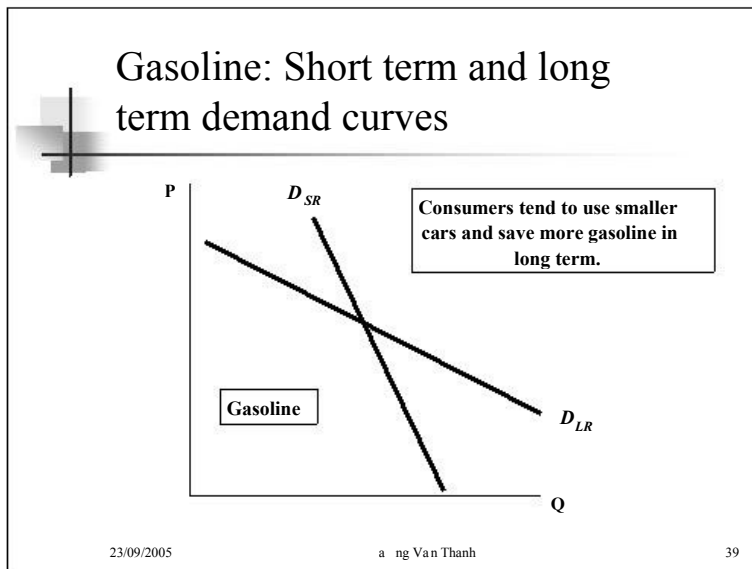
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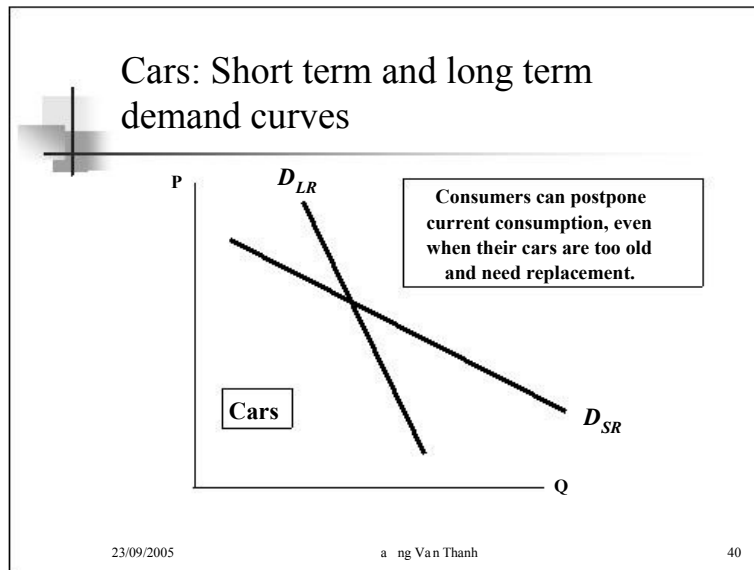
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Short term Elasticity vs. long term Elasticity

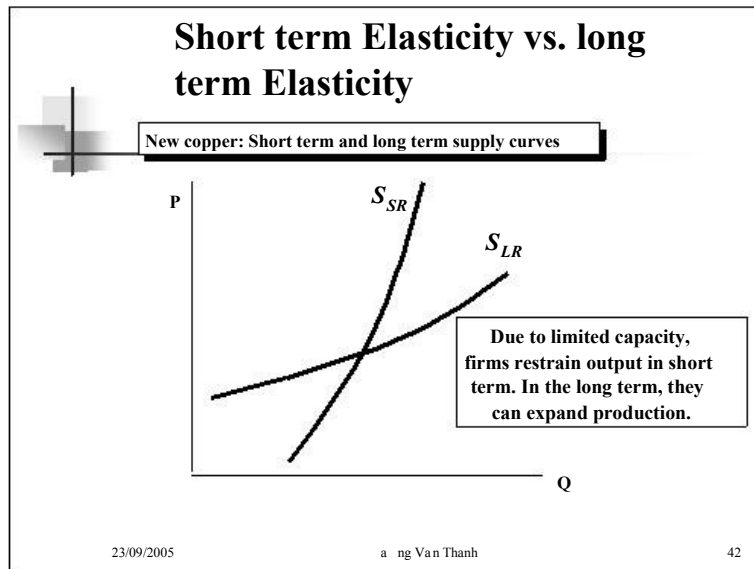
Supply

For most of goods and services:

Price elasticity of supply in long term is greater than in short term.

For others (durables, recycles):

Price elasticity of supply in long term is less than in short term.

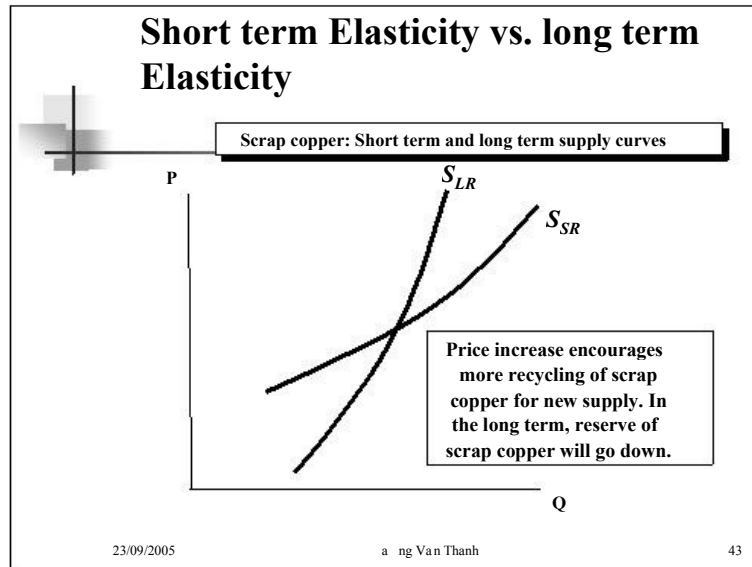


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Short term Elasticity vs. long term Elasticity		
Supply of copper		
Price elasticity:	Short term	Long term
Major supplier	0.20	1.60
Minor supply	0.43	0.31
Total supply	0.25	1.50

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Short term Elasticity vs. long term Elasticity

Climate in Brazil and coffee price in New York

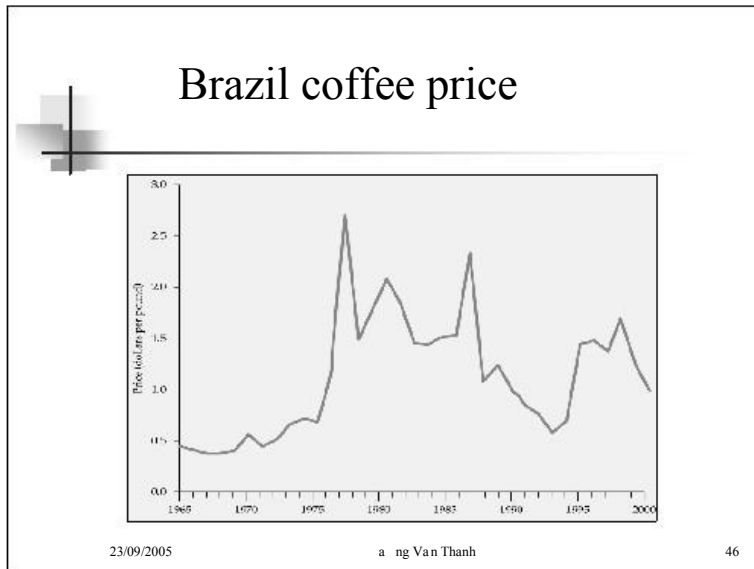
Elasticity explains why coffee price fluctuates greatly.

Due to differences between long term and short term elasticities of supply.

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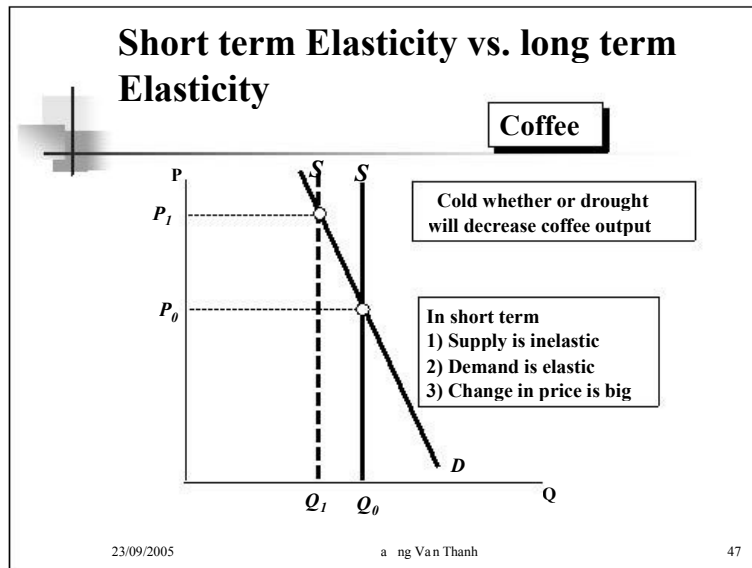


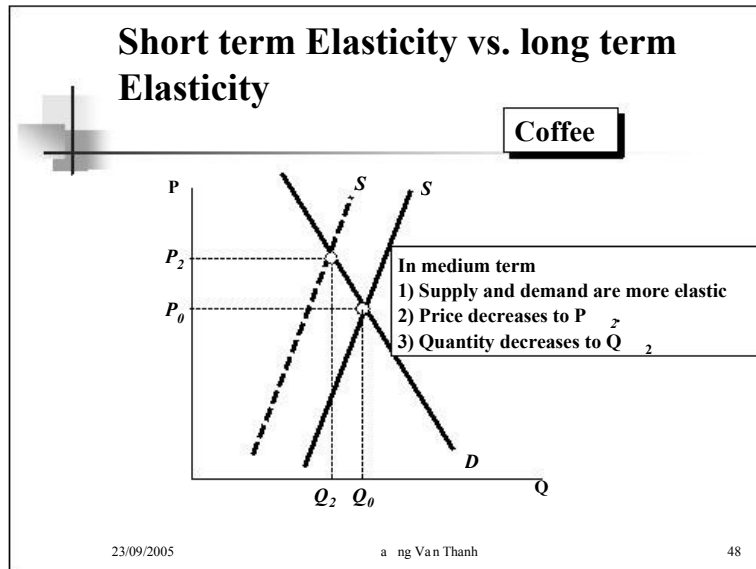
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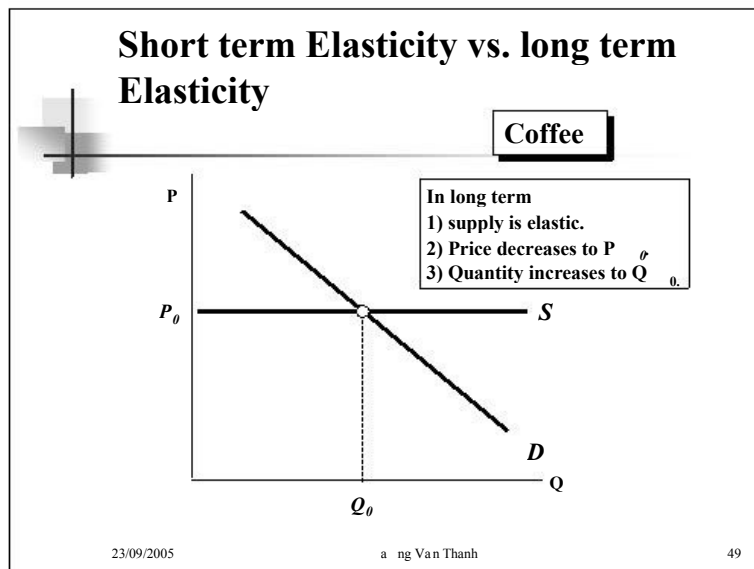


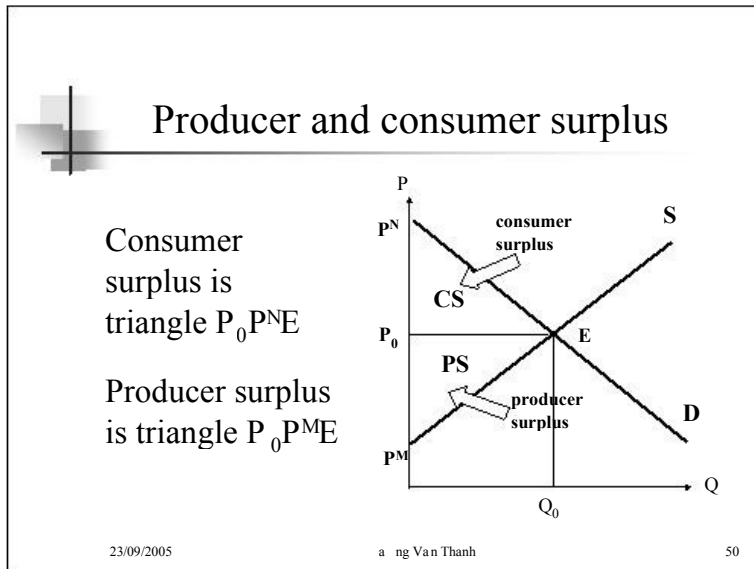
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Producer and consumer surplus

Consumer surplus is the sum of differences between the price that consumers are willing to pay and the price that they actually paid.

Producer surplus is the sum of differences between the price that producers sold and the price that they are willing to sell.

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END OF CHAPTER 2

BASIS OF DEMAND

AND SUPPLY

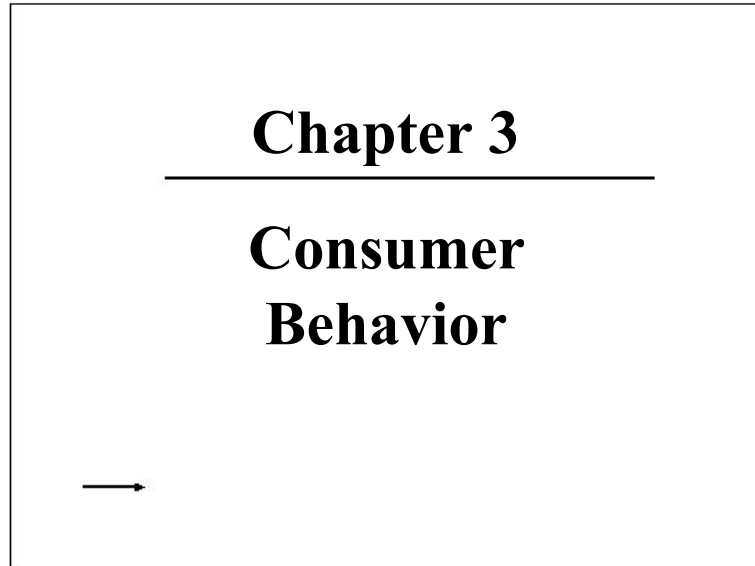


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Chapter 3

**Consumer
Behavior**

→



Discussion topics

- Consumer preferences
- Budget constraints
- Consumer choice
- Revealed preference
- Marginal utility and Consumer choice

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Consumer behavior

Three steps to study consumer behavior

Step 1) Study consumer preferences
(indifference curve).

In order to explain how and why consumer prefers this
bundle of goods to other bundles.

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Consumer behavior

Three steps to study consumer behavior

Step 2) look at *consumers ability*
(budget line).

Incomes of consumers are limited.

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Consumer behavior

Three steps to study consumer behavior

Step 3) Finally, combine consumer preferences and Budget constraints to determine Consumer choice.

What combination of goods consumer will buy in order to maximize her satisfaction.

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Consumer preferences

Bundles

A market bundle of goods is a combination with specific quantities of one or more goods.

A bundle can be preferred to other bundle because of its different combination of goods and quantity.

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Consumer preferences

Three basic assumptions on consumer preferences

- 1) Preference is complete.
- 2) Preference is transitive.
- 3) Consumer always prefers more to less

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Consumer preferences

Bundle	Unit of foods	Unit of clothing
A	20	30
B	10	50
D	40	20
E	30	40
G	10	20
H	10	40

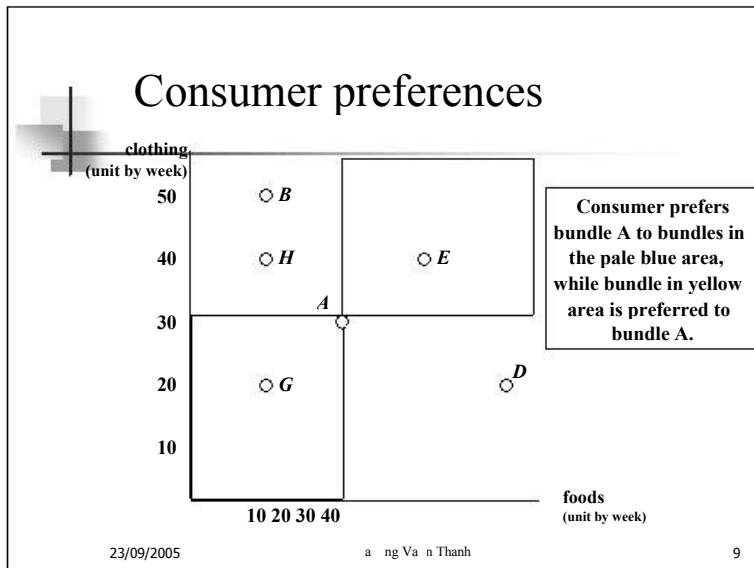
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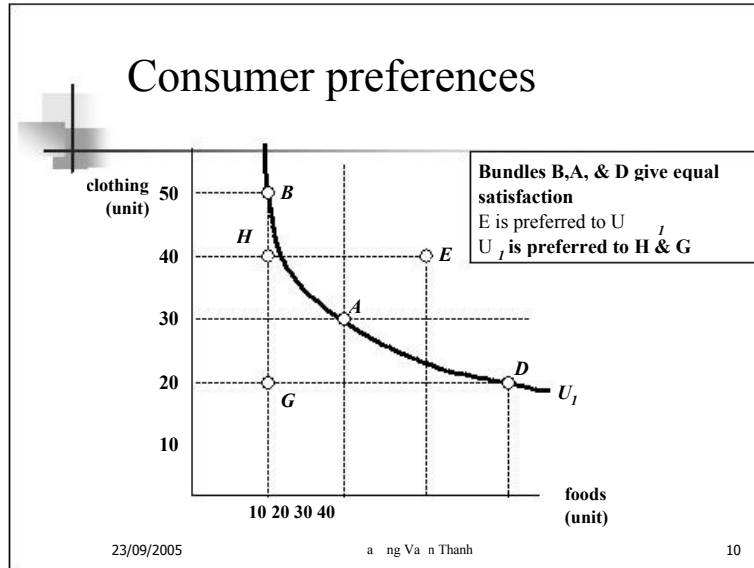
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Consumer preferences

Indifference curve

Indifference curve is representing all combinations of goods and services (bundles) that give a consumer with the same level of satisfaction (utility).

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Consumer preferences

Indifference map (collection of indifference curves)

Indifference map: set of indifference curves showing the market baskets among which a consumer is indifferent.

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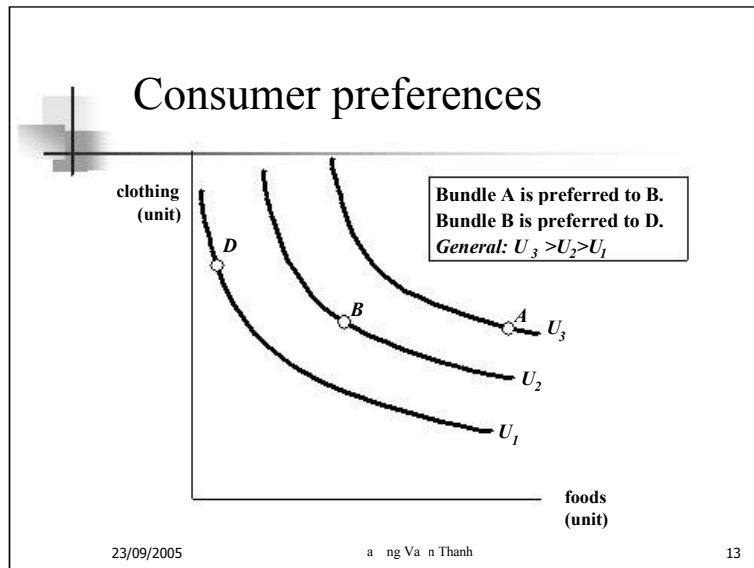
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consumer preferences

Characteristics of indifference curve

Indifference curve is downward sloping from left to right.

Indifference curves can never cross each other.

If indifference curves are upward sloping or touch each other, the assumption of more is better would be violated.

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consumer preferences

Marginal rate of substitution

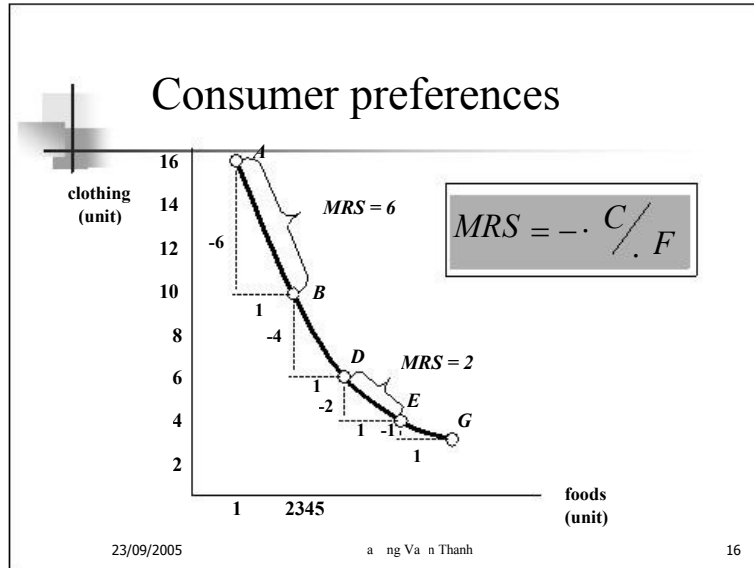
Marginal rate of substitution (MRS) is the amount of a good a consumer is willing to give up in order to obtain one more unit of another good.

MRS is the slope of indifference curve.

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Consumer preferences

Marginal rate of substitution

Along indifference curve, marginal rate of substitution is subject to the law of diminishing.

MRS between two points AB is 6

While MRS between DE is 2.



Consumer preferences

Characteristics of indifference curve

Indifference curves are convex
from the origin

If it is concave from the origin, the law of
diminishing MRS will be violate

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Consumer preferences

Perfect Substitution and Perfect Complement

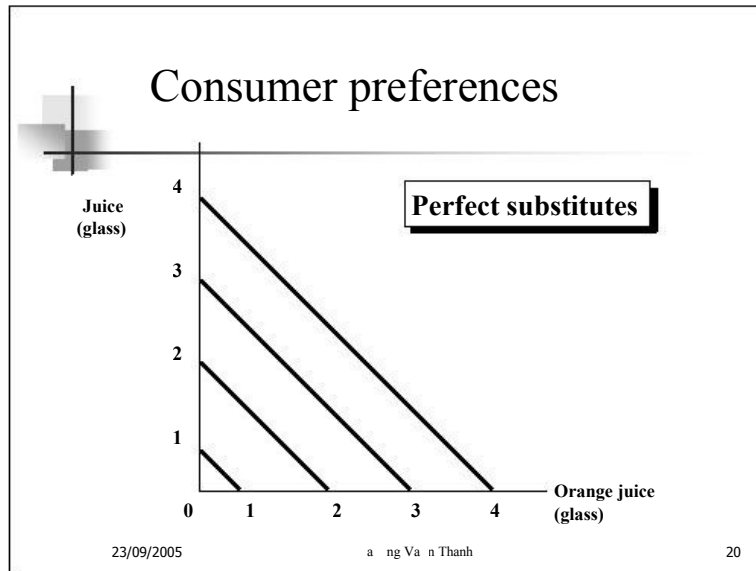
Two goods are said perfect substitutes when the marginal rate of substitution of one for another is a constant. $MRS : \text{const}$

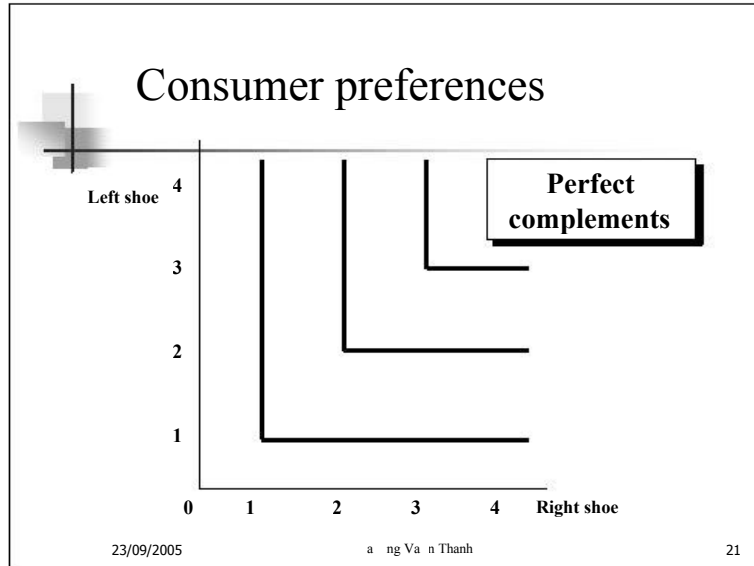
Two goods are said perfect complements when the indifference curves are shaped as right angles. $MRS = 0$


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Consumer preferences

Bads

Good for which less is preferred rather than more

E.g.

Air pollution

Poison

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Consumer preferences

What do you think.

How should we look at the bads when
analyzing consumer preferences.

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Consumer preferences

Design a new car model(I)

Car production executives often decide the appropriate time to introduce new models to market and the necessary investment in restyling.

Consumer preferences analysis helps executives in timing and whether they should change car styles or not.

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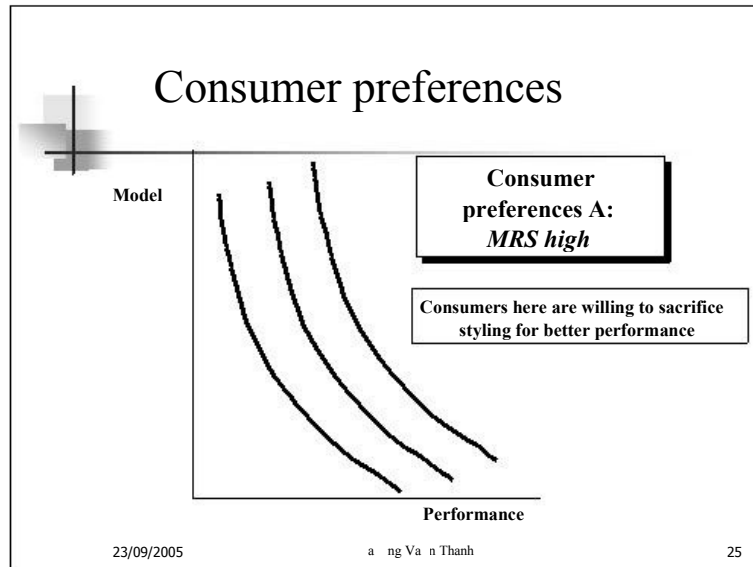
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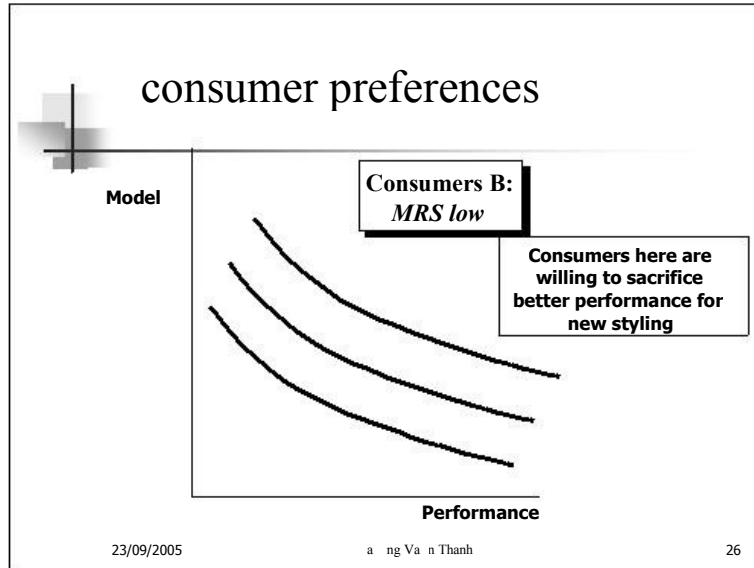
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consumer preferences


Design a new car model(I)

One study of automobile demand in the US shows that over the past two decades, most consumers have preferred styling over performance.

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Consumer preferences

Utility

Utility: represents the satisfaction that a consumer gets from a given market bundle.

If the purchase of 3 microeconomics textbooks makes you happier than buying one shirt, it can be said that the books give you higher utility.

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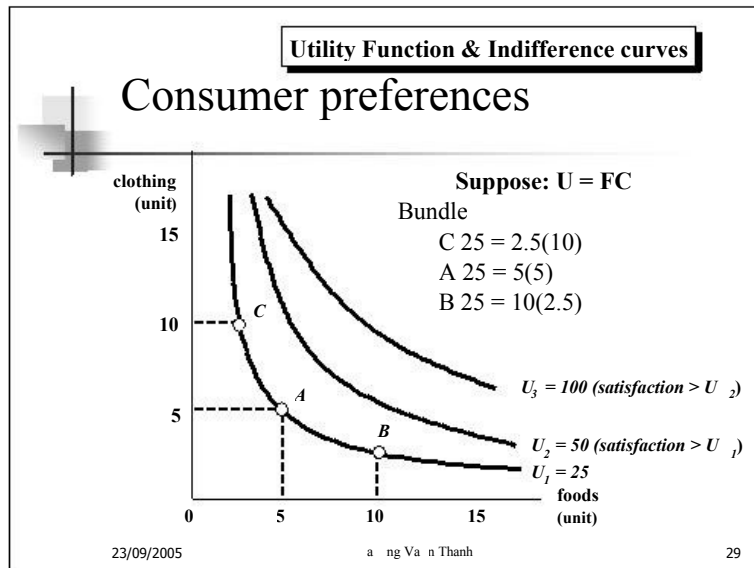
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Consumer preferences

Ordinal versus Cardinal Utility

Ordinal utility: places market bundles in the order of most to least preferred. However, it does not indicate by how much one is preferred to another.

Cardinal utility function: describing by how much one market bundle is preferred to another.

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Consumer preferences

Ordinal vs. Cardinal

Measuring unit of utility is not important.

Thus, ordinal utility functions are enough to understand how individual consumer decisions are made .

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Budget constraints

Preferences can not explain all consumer behaviors.

Budget constraints: Constraints that consumers face as a result of limited incomes.

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Budget constraints

Budget line

Budget line: all combinations of goods for which the total amount of money spent is equal to income.

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Budget constraints

Budget line

Let F be the amount of food purchased and C the amount of clothing.

Price of food = P_f and clothings = P_c

Thus, $P_f F$ is *the amount of money spent on food* and $P_c C$ *the amount of money spent on clothing*.

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Budget constraints

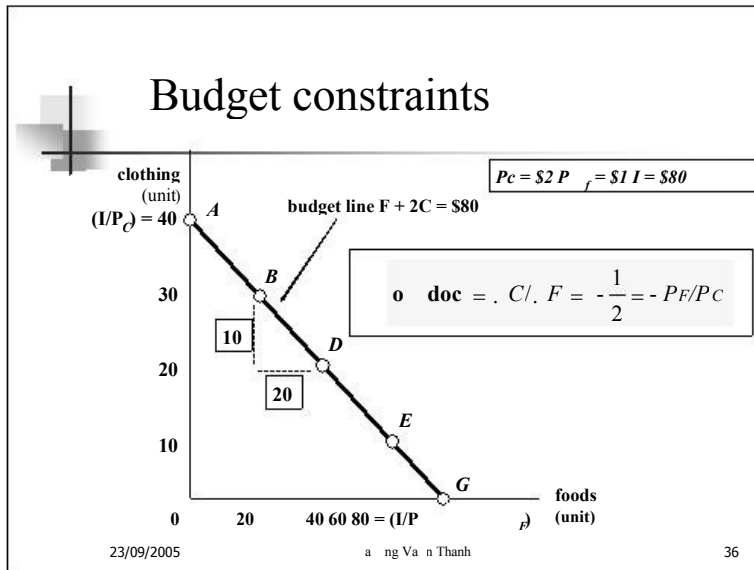
Budget line can be expressed as:

$$P_F F + P_C C = I$$

Or:

$$C = I/P_C - (P_F/P_C)F$$

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Budget constraints

Budget line

The slope of the budget line is the negative of the ratio of the prices of the two goods.

The slope of the budget line tells us relative prices of the two goods.



Budget constraints

The effects of changes in income and prices

Income changes

An increase (fall) in income causes the budget line to shift outward (inward) parallel to the original budget line.

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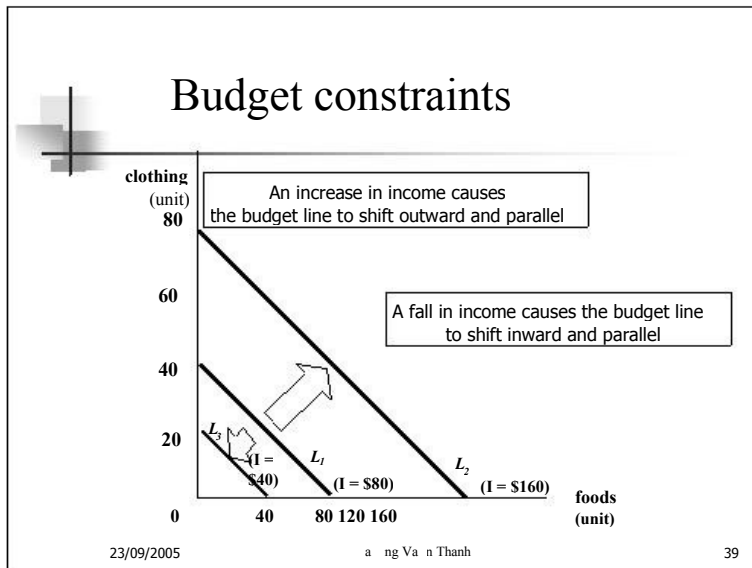
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Budget constraints

The effects of changes in income and prices

Price changes

An increase (fall) in price of one good causes the budget line to rotate inward (outward), pivoting from one intercept.

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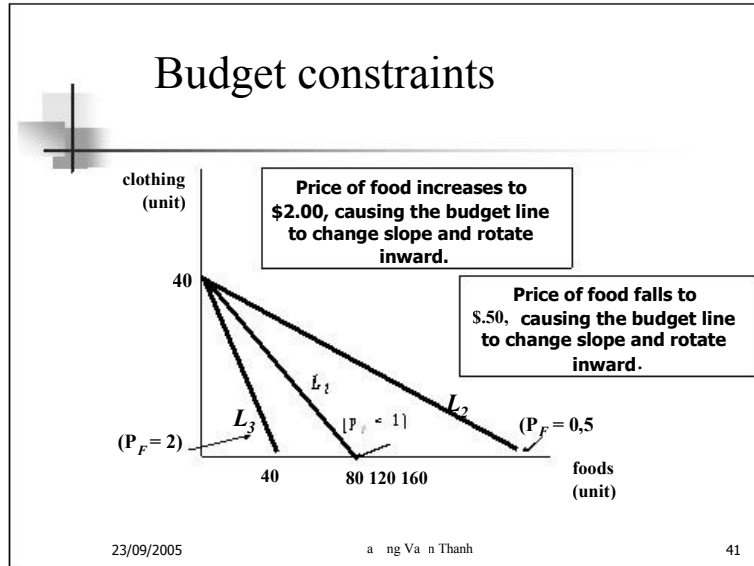
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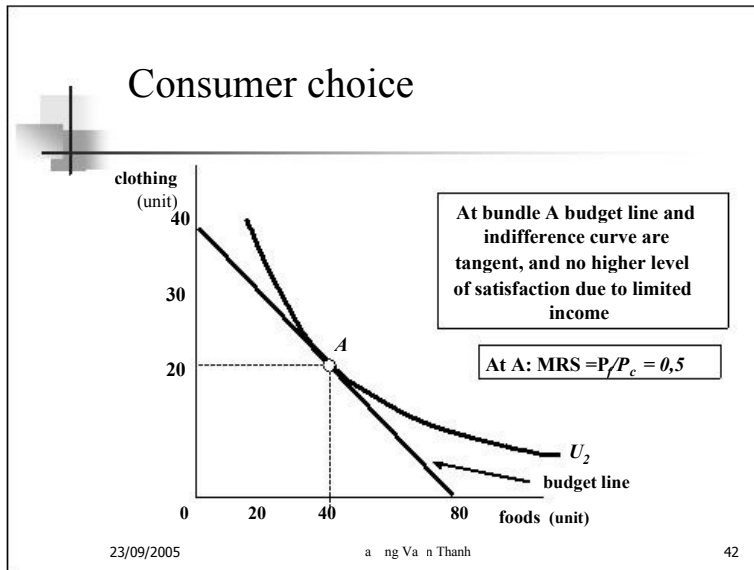
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Consumer choice

Bundle maximizing satisfaction of consumer
(optimal bundle) must satisfy two conditions:

- 1) It must be located on the budget line.

$$(P_F F + P_C C = I)$$

- 2) It must lie on the highest indifference curve.

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Consumer choice

Maximizing market bundle:

The point of tangency between
indifference curve and budget line.

It is where the slope of the indifference
curve is exactly equal the slope of the
budget line

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Consumer choice

Optimal bundle:

Slope of the indifference curve = Slope of the budget line

$$\frac{\partial C}{\partial F} = - \frac{P_F}{P_C}$$

As $MRS = - \frac{\partial C}{\partial F}$

Thus, we can say that consumer reach maximum utility at:

$$MRS = \frac{P_F}{P_C}$$

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Consumer choice

Design a new car model (II)

Consider two group of customers, each member wishes to spend \$10,000 on the styling and performance of a car.

Each group has different preferences for styling and performance.

By finding the point of tangency between a typical individuals preference curve and the budget constraint, an automobile company can design a production and marketing plan.

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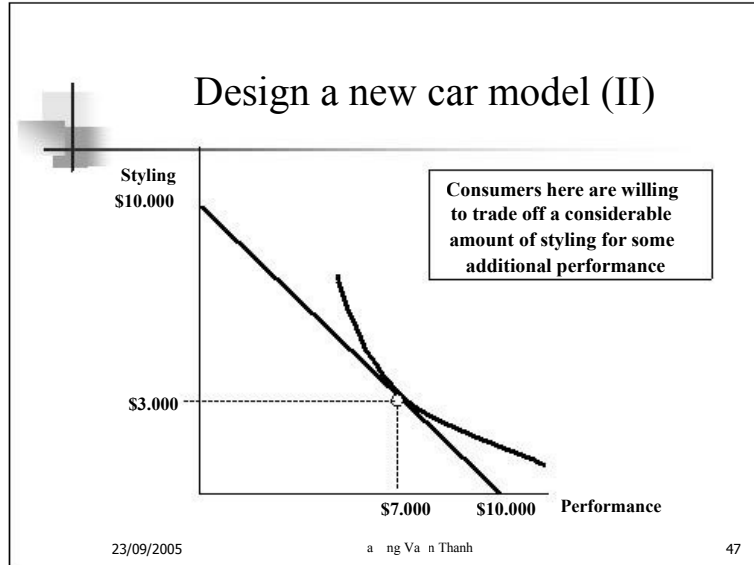
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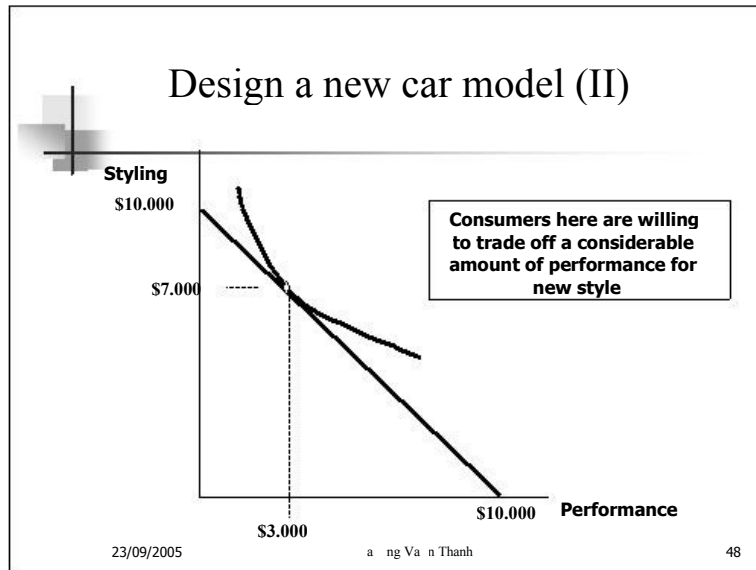
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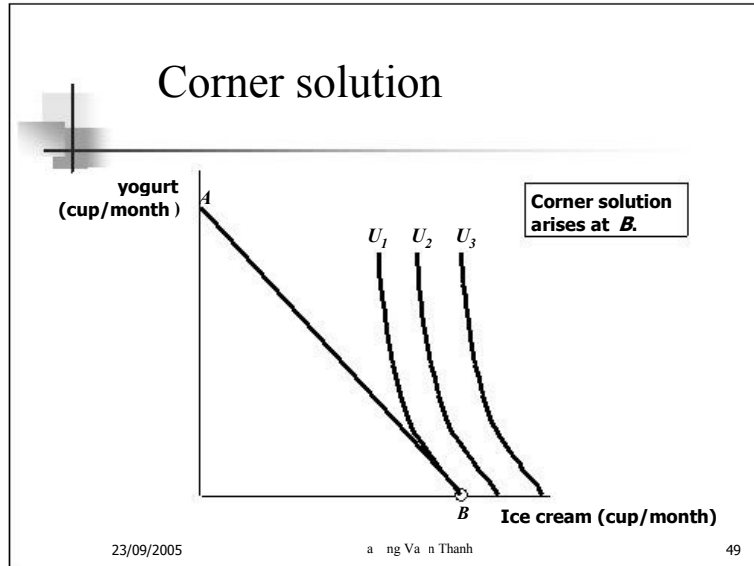
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Consumer choice

Corner solution

Corner solution arises when the consumer consumes only one of the two goods.

Corner solution emerges as the indifference curve is tangent with either intercepts.

$$MRS \cdot P_X / P_Y$$

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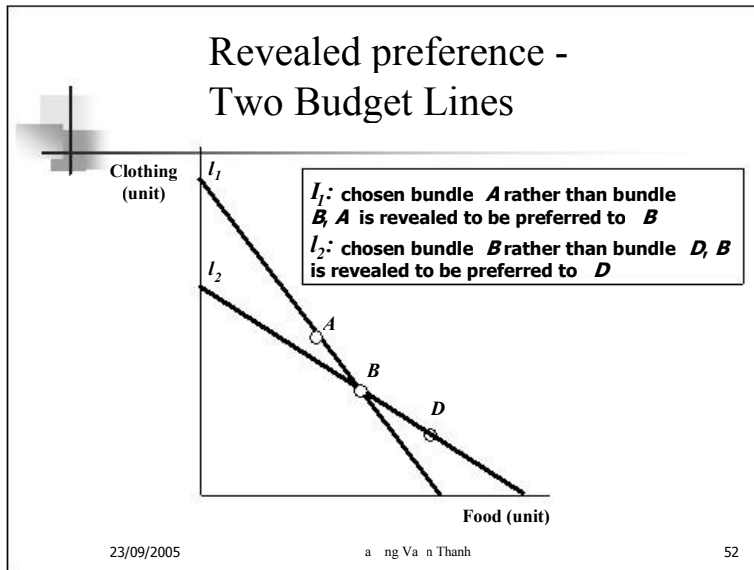
Revealed preference

If we have information about a sufficient number of choices that have been made when prices and income varied, then we can determine a consumers preferences.

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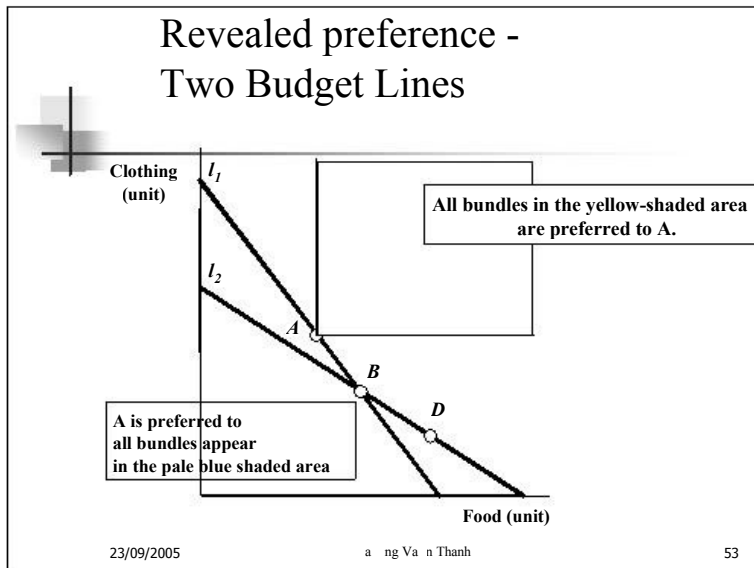


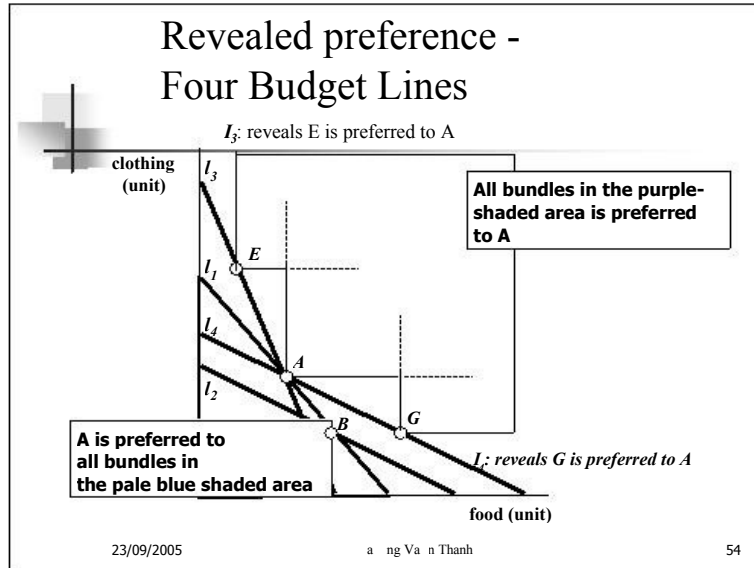
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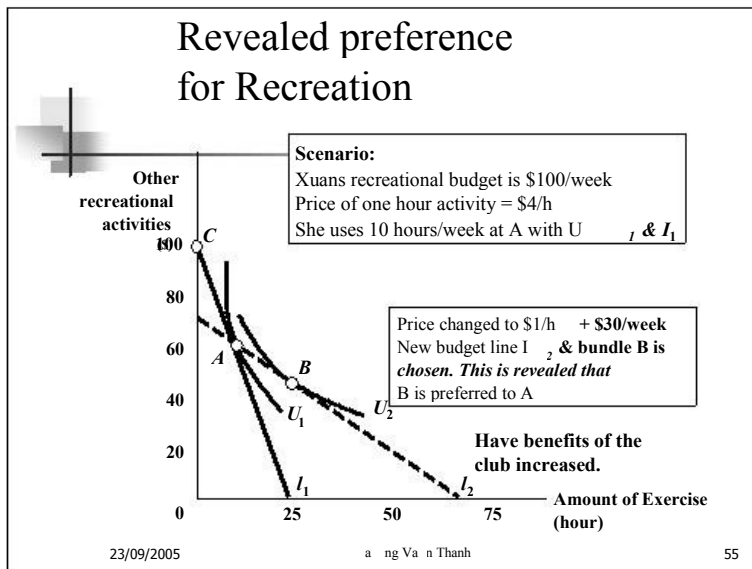


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Marginal utility and Consumer choice

Marginal utility additional satisfaction
obtained from consuming one
additional unit of a good.

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Marginal utility and Consumer choice

E.g.:

Comment:

*Marginal utility is
subject to the law of
diminishing*

X	U_X	MU_X
1	9	9
2	16	7
3	21	5
4	24	3
5	25	1

Marginal utility and Consumer choice

Marginal utility and indifference curve
when consumer consumes along the
indifference curve, increase in utility
due to increased consumption of the
good must be equal to the fall in
utility as the other good is consumed
less.

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Marginal utility and Consumer choice

Formula:

$$0 = MU_F(\cdot, F) + MU_C(\cdot, C)$$

Rearrange:

$$-(\cdot, C / \cdot, F) = MU_F / MU_C$$

as:

$$-(\cdot, C / \cdot, F) = MRS$$

Therefore:

$$MRS = MU_F / MU_C$$

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Marginal utility and Consumer choice

Consumer reaches maximum utility at:

$$MRS = P_F/P_C \quad (1)$$

since: $MRS = MU_F/MU_C$

The optimal condition can be expressed as:

$$MU_F/MU_C = P_F/P_C \quad (2)$$

Or:

$$MU_F / P_F = MU_C / P_C \quad (3)$$

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Marginal utility and Consumer choice



Utility is maximized when the consumer has equalized the marginal utility per dollar of expenditure across all goods.

It is called equal marginal principle.

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End of Chapter 3

Consumer behavior



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Lecture 4

Chapter 4

**Individual and
Market Demand**





Topics

- Individual Demand
- Income and Substitution Effects
- Market Demand
- Network Externalities

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Individual Demand

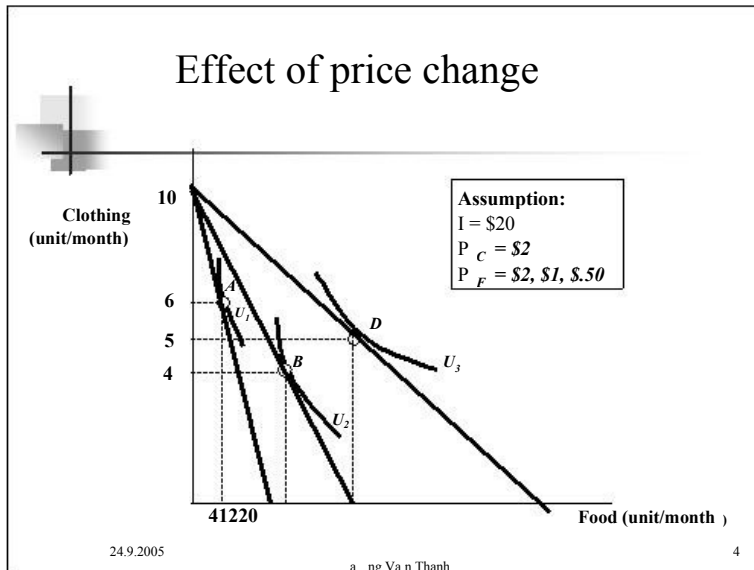
Individual Demand curve: Curve relating the quantity of a good that a single consumer will buy to its price (*ceteris paribus*)

Are they negatively related as expected.

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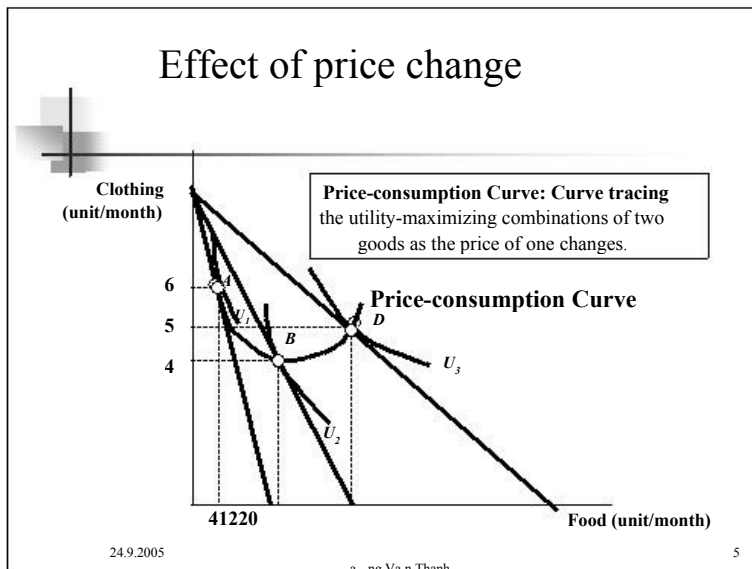
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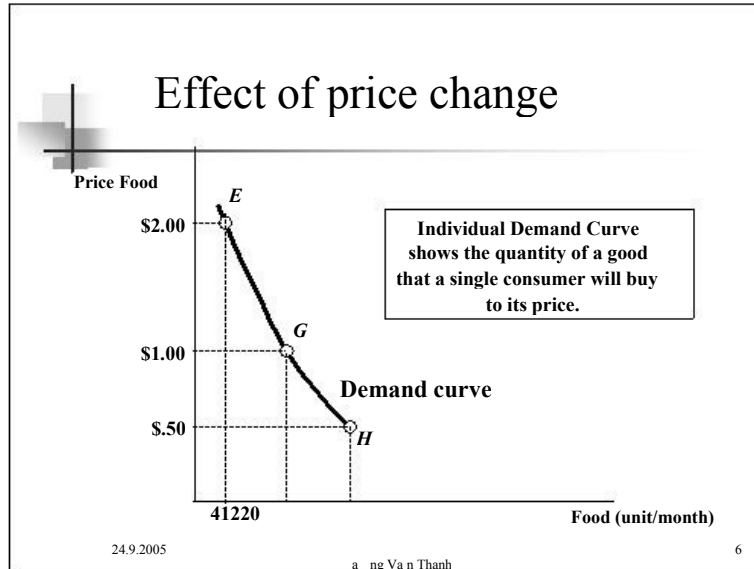
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Effect of price change

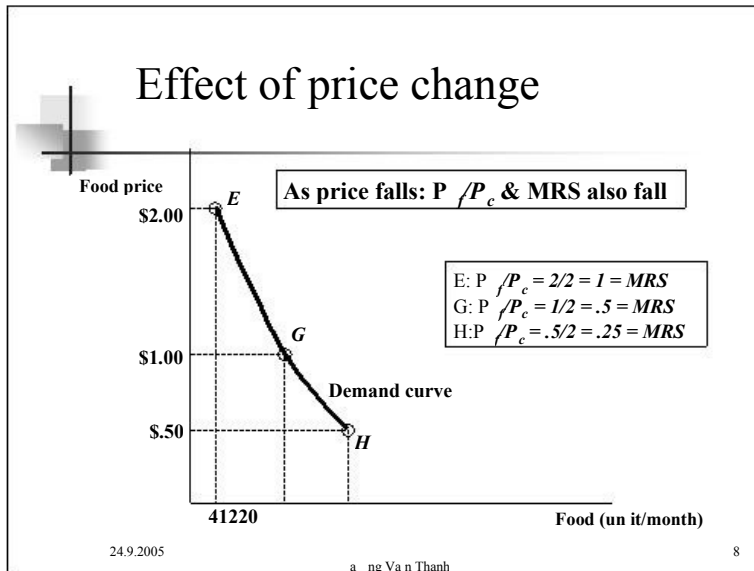
Two important properties of demand curve

- 1) The level of utility that can be attained changes as we move along the curve.
- 2) At every point on the demand curve, the consumer is maximizing utility by satisfying the condition that the marginal rate of substitution *MRS of food for clothing equals the ratio of the prices of food and clothing.*

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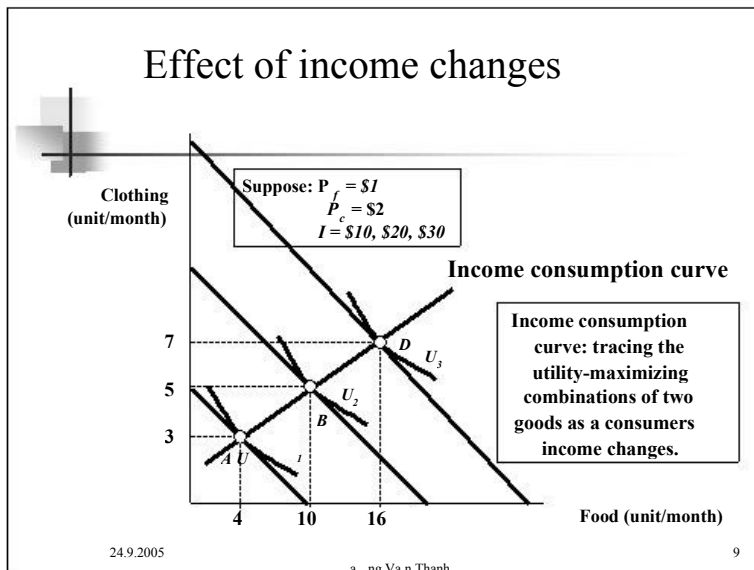
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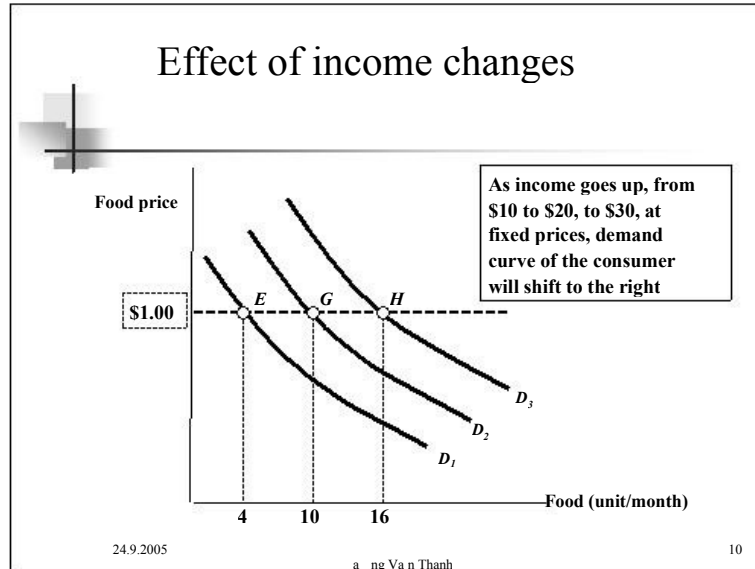
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Individual Demand

Income changes

Increase in income shifts budget curve to the right, consumption goes up along the income consumption curve.

At the same time, income increase will shift demand curve to the right.

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Individual Demand

Normal good - Inferior good

When the income-consumption curve has a positive slope:

The quantity demanded increases with income.

Income elasticity of demand is positive.

The goods are described as normal.

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Individual Demand

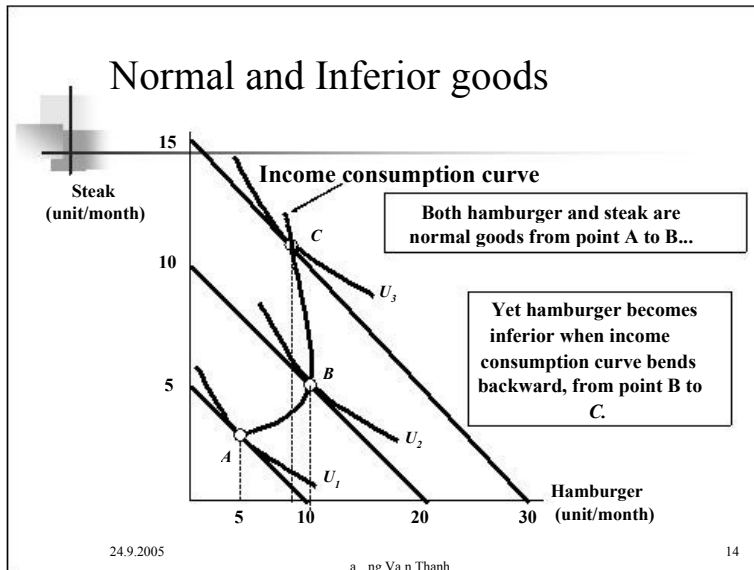
Normal good - Inferior good

When the income-consumption curve has a negative slope:

The quantity demanded falls as income increases.

Income elasticity of demand is negative

The goods are described as inferior.



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Individual Demand

Engel Curve

Engel curve: Relating the quantity of a good consumed to income.

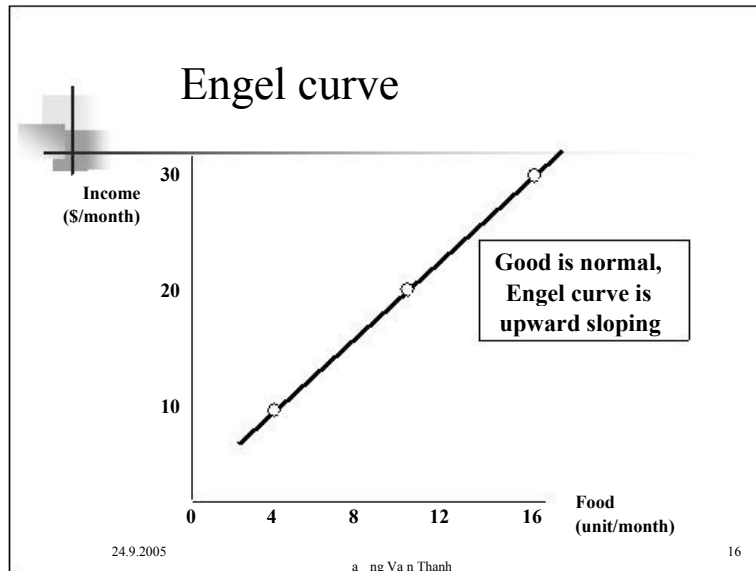
Good is normal, Engel curve is upward sloping.

Good is inferior, Engel curve is downward sloping.

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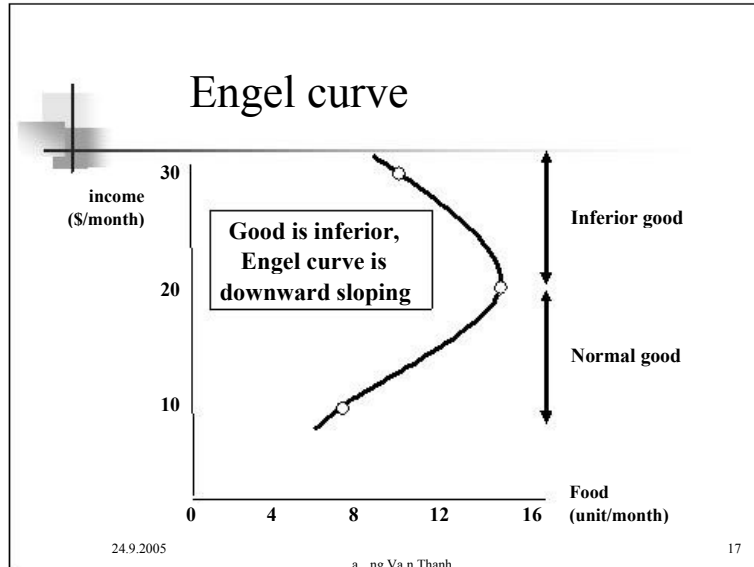
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Individual Demand

Substitutes and Complements

- 1) Two goods are substitutes if an increase (fall) in the price of one leads to an increase (fall) in the quantity demanded of the other.
- 2) Two goods are complements if an increase (fall) in the price of one good leads to a decrease (increase) in the quantity demanded of the other.

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Individual Demand

Substitutes and Complements

When the Price consumption Curve is downward sloping, two goods are substitutes.

When the Price consumption Curve is upward sloping, two goods are complements.

Two goods can be both complements and substitutes!

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Income and Substitution Effects

A fall in the price of a good has two effects:

Substitution & income

Substitution effect

Consumers will tend to buy more of the good that has become cheaper and less of those goods that are now relatively more expensive.

Income effect

Because one of the goods is now cheaper, consumers enjoy an increase in real purchasing power.

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Income and Substitution Effects

Substitution effect

Substitution effect: Change in consumption of a good associated with a change in its price, with the level of *utility held constant*.

When the price of one good declines, the substitution effect always leads to an increase in the quantity demanded of the good.

Income and Substitution Effects

Income effect

Income effect: Change in consumption of a good resulting from an increase in purchasing power, with relative price held constant.

When real income increases, quantity demanded can increase or decrease.

Even with inferior goods, the income effect is rarely large enough to outweigh the substitution effect.

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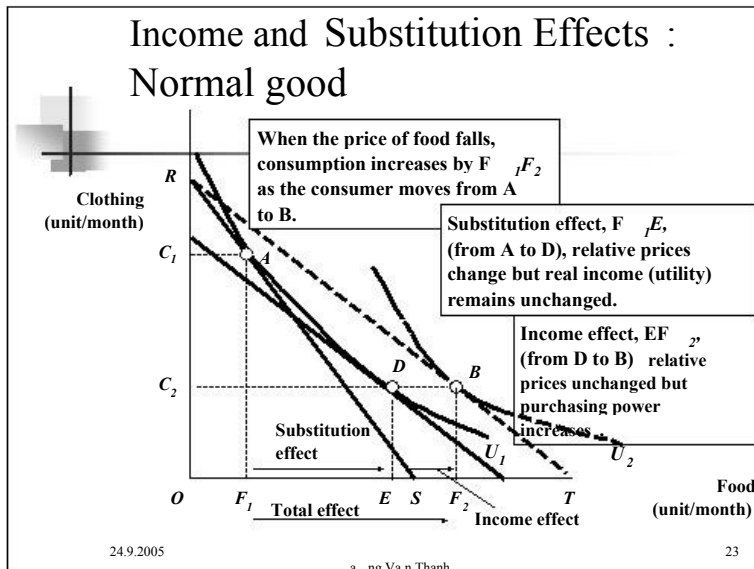
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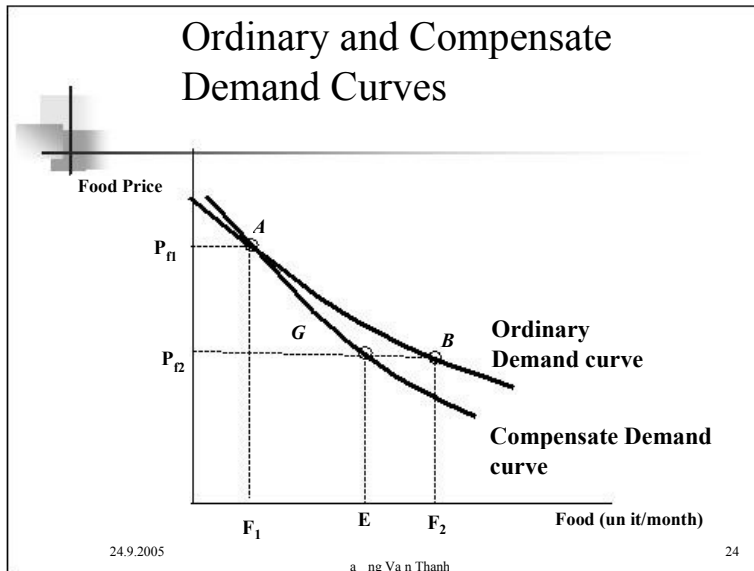
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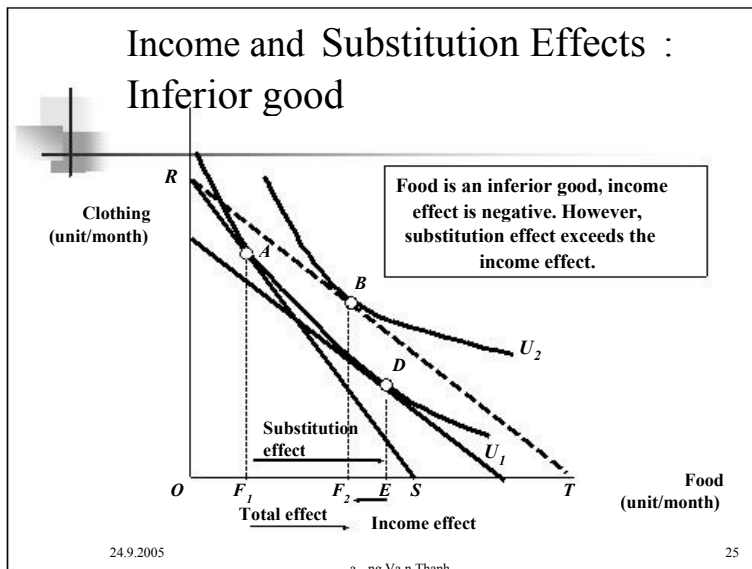
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Income and Substitution Effects

A special case the Giffen Good

Theoretically, the income effect may be large enough to cause the demand curve for a good to slope upward.

This case is rarely of practical interest.

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Effect of a Gasoline Tax with a rebate

Suppose:

Income = \$9,000/year

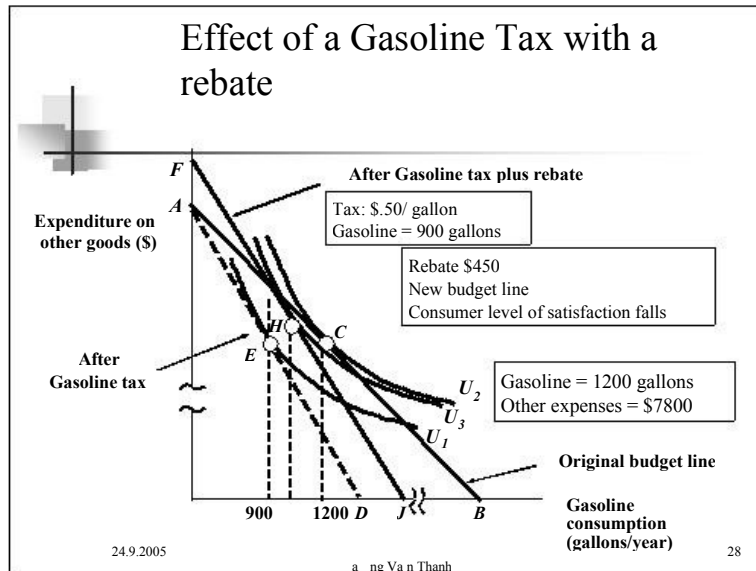
Price of gasoline = \$1/gallon

$t = \$0.5/\text{gallon}$

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Market demand

From Individual to Market Demand

Market demand curve

Curve relating the quantity of a good that all consumers in a market will buy to its price.

The sum of the individual demand curves

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Determine market demand curve

Price (\$)	Individual A (units)	Individual B (units)	Individual C (units)	Market (units)
1	6	10	16	32
2	4	8	13	25
3	2	6	10	18
4	0	4	7	11
5	0	2	4	6

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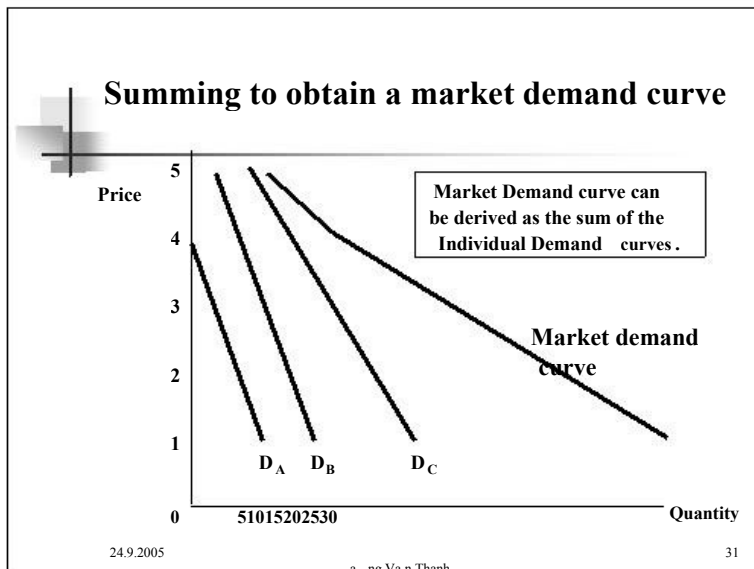
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Market demand

Two important points

- 1) The market demand curve will shift to the right as more consumers enter the market.
- 2) Factors that influence the demands of many consumers will also affect market demand.

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Network externalities

So far, we have assumed that peoples demand for a good are independent of one another.

In fact, a persons demand may be affected by the number of other people who have purchase the good.

If this is the case, there exists a network externality.

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Network externalities

Positive network externality exists if the quantity of a good demanded by a typical consumer increases in response to the growth in purchases of other consumers.

Negative network externality is the reverse case.

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Network externalities

The Bandwagon effect

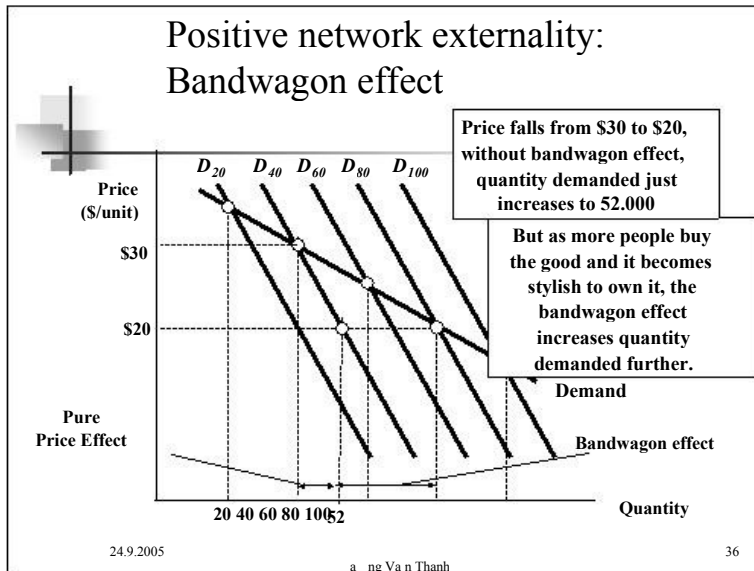
Wishes to possess a good in part because other do.

Exploiting this effect is a major objective in marketing campaigns (advertising toys, clothing)

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Network externalities

The Snob Effect

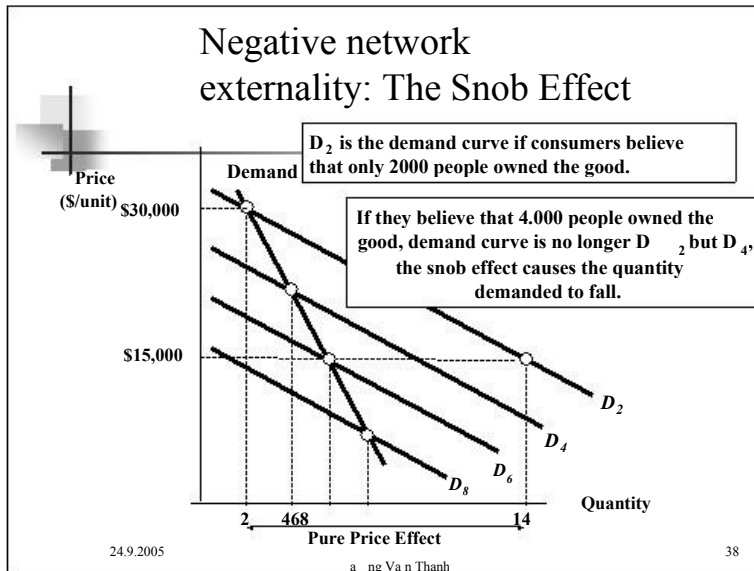
Wishes to own an exclusive or
unique good

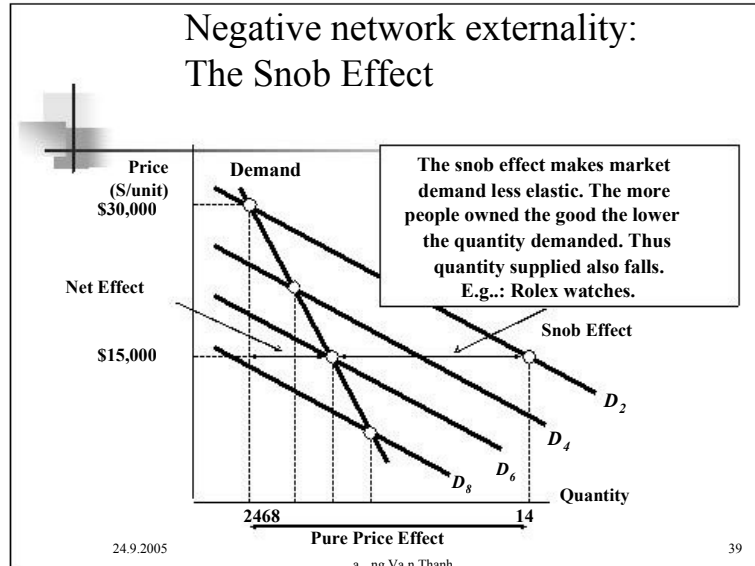
The quantity demanded of a snob
good is higher the fewer the people
who own it.

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End of Chapter 4

Individual and Market demands



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Lecture 5

Lecture 5

Some applications of the theory of consumer behavior





Discussion subjects

Measure consumer loss (benefit) when the price increases (decreases)

Types of subsidy

Labor-rest model and labor curve

Intertemporal consumption model

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Lecture 5



Measuring the change in consumer welfare when the price changes

Compensating variation (CV).

Equivalent variation (EV).

Change in consumer surplus

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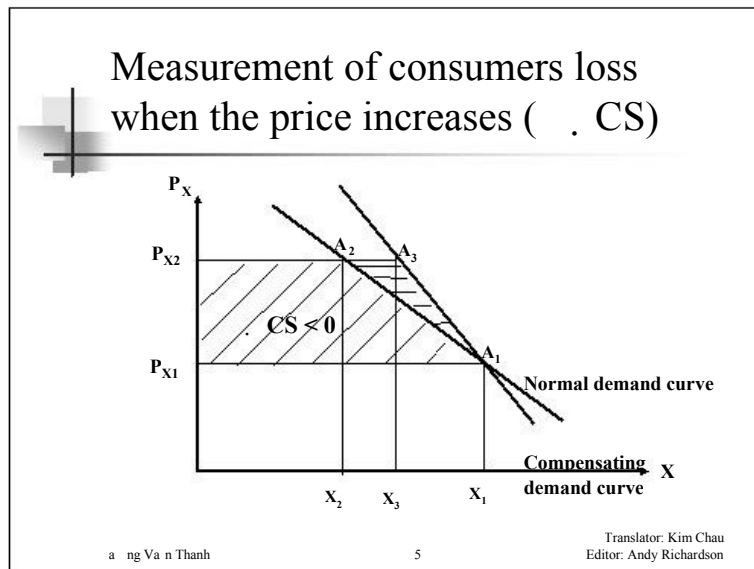
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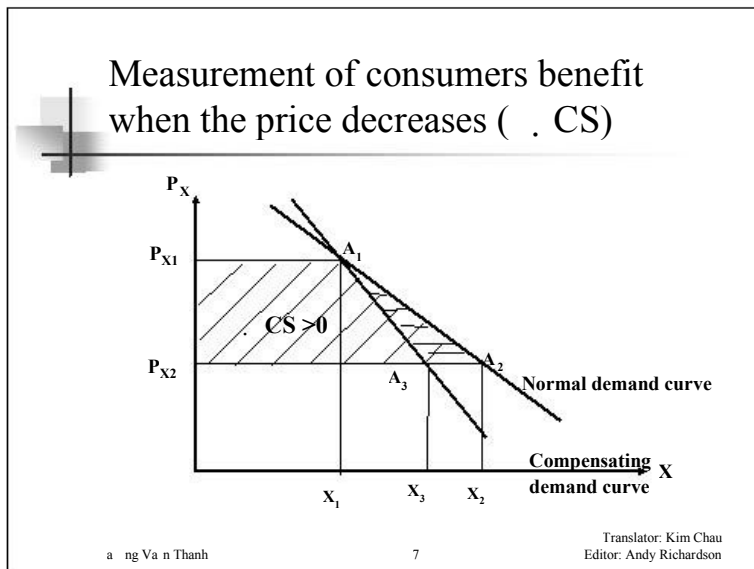
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Lecture 5





Different kinds of subsidy

Price subsidy (partial subsidy) and cash subsidy.

Direct consumption subsidy and cash subsidy.

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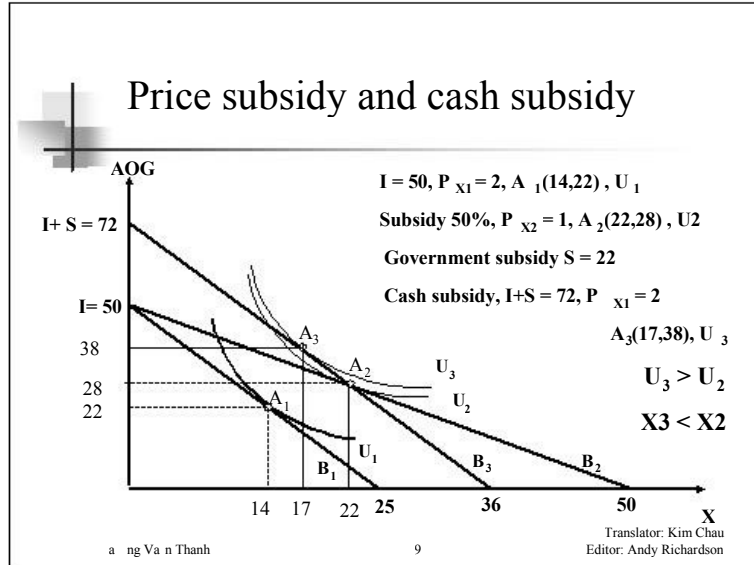
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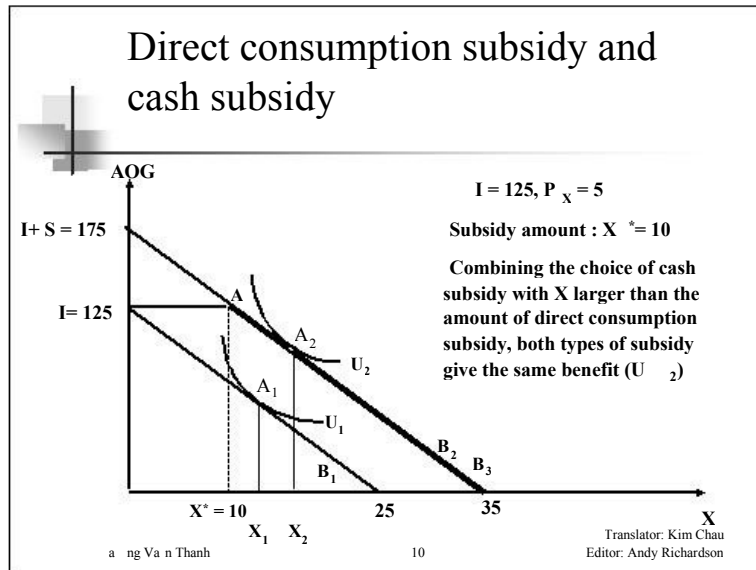
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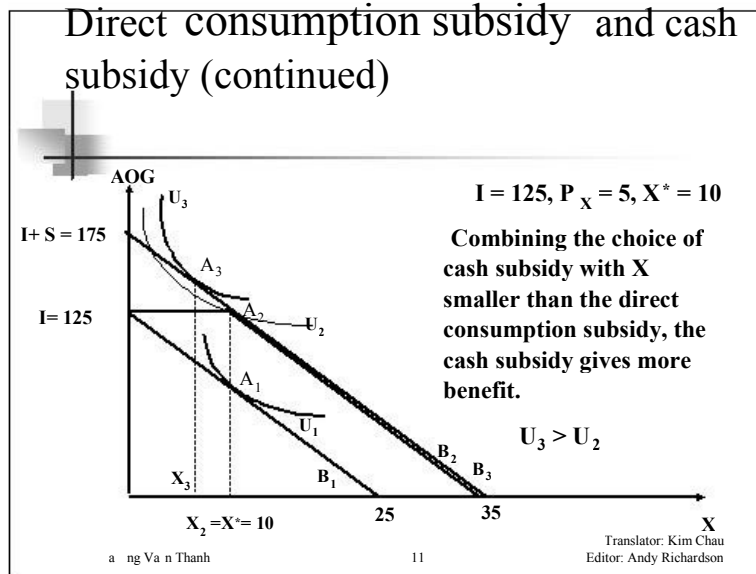
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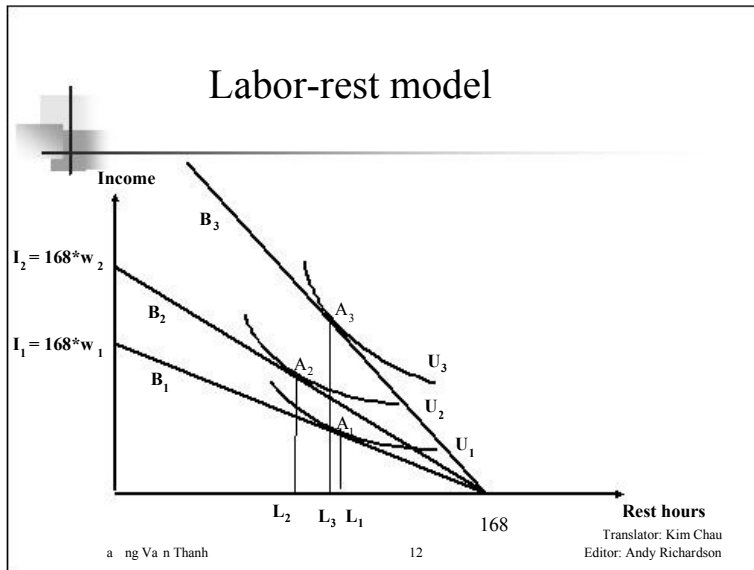
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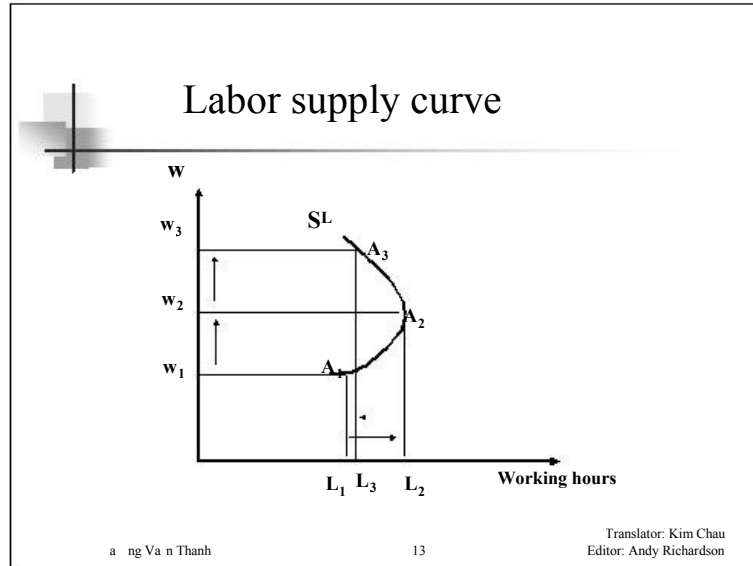
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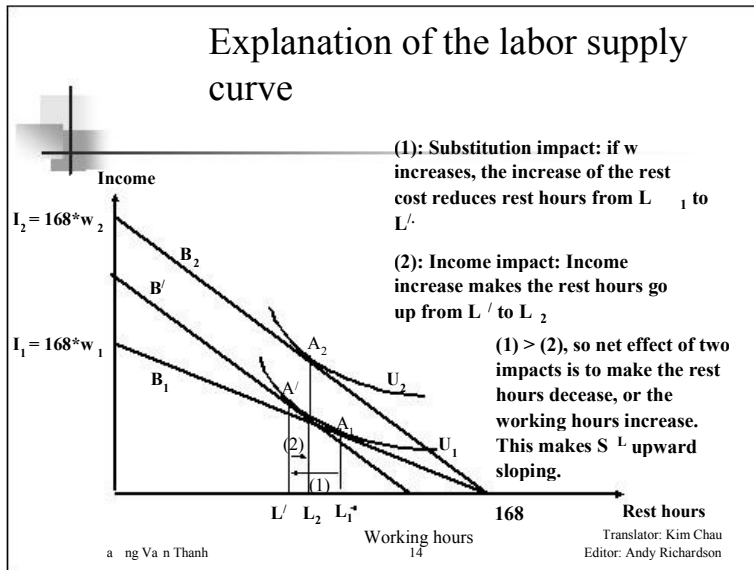
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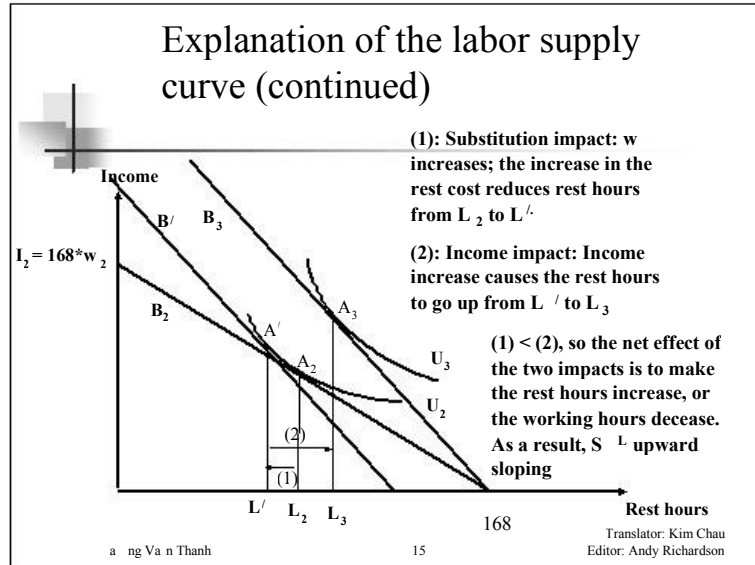
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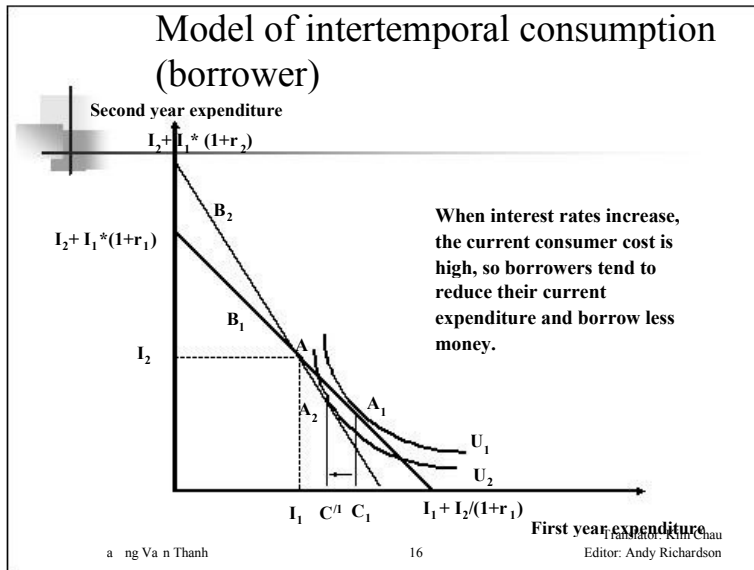
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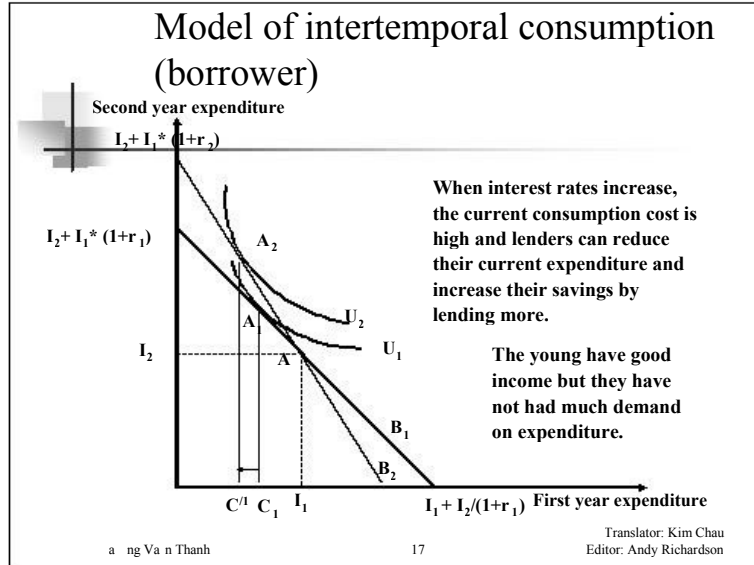
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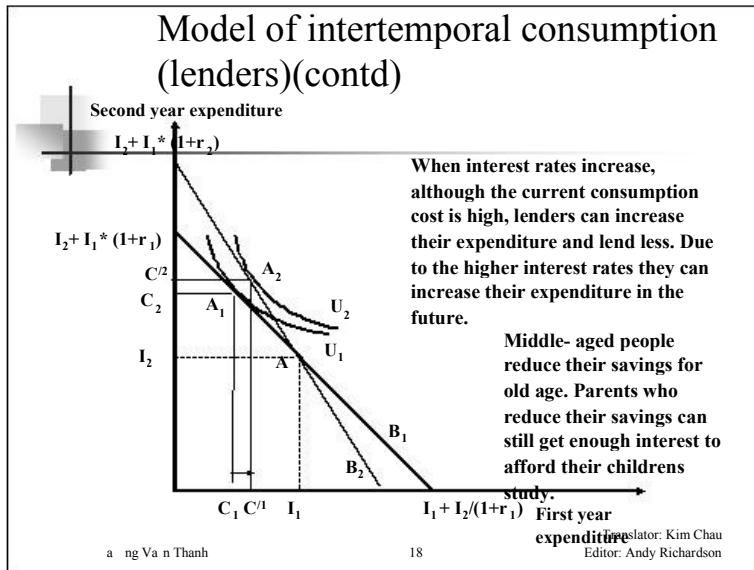
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When interest rates increase, although the current consumption cost is high, lenders can increase their expenditure and lend less. Due to the higher interest rates they can increase their expenditure in the future.

Middle- aged people reduce their savings for old age. Parents who reduce their savings can still get enough interest to afford their childrens

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Lecture 6



CHOICE UNDER UNCERTAINTY

Example 1 (ELLSBERG)

300 balloons: 100 white, 200 either red or blue but we don't know the exact quantity of each

Game rule: choose 1 of the 2 games below:

- (1) Win 100,000 dong if a white balloon is taken out
- (2) Win 100,000 dong if a red balloon is taken out

Change the game rule: choose 1 of the 2 games below :

- (1) Win 100,000 dong if the balloon taken out is not white
- (2) Win 100,000 dong if the balloon taken out is not red

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Lecture 6

Comments:

People normally are not risk-loving

Peoples risk preferences are different

In life, we often have to make choice under uncertainty
(risk)

Looking again at the basic problem:

The new problem is:

- (i) Evaluate the level of attractiveness and the risk of each scenario.
- (ii) Evaluate individual risk preferences
- (iii) Study decisions made in situations of risk

Terminology:

Risk

Uncertainty

In this chapter, since we do not need to differentiate between these terms we can regard them as equivalent

Subjective and objective probability

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Evaluate the level of attractiveness and risk of each scenario.

Example: Flipping a coin

Bet 10,000 dong on whether a coin will land heads or tails.

If correct, receive 20,000 dong; if incorrect, lose the money.

If correct, receive 5,000 dong; if incorrect, lose the money.

If correct, receive 10,000 dong; if incorrect, lose the money.

Evaluate the level of attractiveness : expected value

Calculating formula of expected value:

$$\bar{X} = p_1 X_1 + p_2 X_2 + p_3 X_3 + \dots + p_m X_m$$

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Example 2: Evaluate the level of risk

Flipping a coin (continued)

Bet 100,000 dong on whether a coin will land heads or tails.

If correct, receive 100,000 dong; if incorrect, lose the money.

Example 2 (continued)

Comments:

In life there are many similar cases: life insurance, social insurance, health insurance, fire insurance, transportation insurance

Q: Why do we buy insurance.

A: To reduce fluctuations in consumption

The highest acceptable price for insurance is different for everyone, reflecting different risk preferences

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Different Preferences Regarding Risk

Definitions:

A risk averse agent is one who, given a choice between a certain and an uncertain case with equivalent expected value, will choose the certain case.

A Risk lover is the opposite

Someone who is risk neutral is only interested in the expected value of a situation and does not pay attention to the risk.

What can we say about the utility functions of these three groups.

Evaluating attitudes toward risk

Utility function of the risk averse agent

Someone who is risk averse will always _____
choose the certain case when certain and
uncertain cases have a similar expected
value.

Convention:

- Money is a means to satisfy consumption
- Expected utility function (von Neumann
Morgenstern utility)

Look at and explain it from a mathematical
perspective:

Risk premium:

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Evaluate attitudes towards risk

Utility function of a risk lover _____

Utility function of a risk neutral agent

STATE PREFERENCE APPROACH

Choice in a risky situation

- ◆ **Problem: I = 100 dong can be used for two purposes:**
to consume or to gamble

Game:

- Kim bets a dong. The dealer takes out a card at random
- If it is a spade Kim will lose the bet (a dong)
- If it is a heart, a diamond, or a club Kim will win 40 xu for each dong that she bets (i.e. she wins $0.4a$).
- The question is how much should Kim bet.

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STATE PREFERENCE APPROACH

Budget line

- ◆ **Assume that Kim bets 10 dong: What is her expenditure when she wins or loses.**
- ◆ **Kim's consumption budget depends on 2 factors.**

1) Probability of a spade - objective

2) The bet a - subjective

Therefore when choosing the level of bet, Kim actually chooses two levels of expenditure C_W and C_L .

Main difference compared with basic problem: 2 goods (C_W and C_L) are contingent commodities

The value of contingent commodities depends on what events actually happen

- ◆ **Budget line**

STATE PREFERENCE APPROACH

Indifference curve

- ◆ **Indifference curve: Have to compare Kims choices in situations that have equal expected income but different levels of risk.**
- ◆ The fair odds line is where every point has an **equal expected income which is equal to the income at the beginning.**
- ◆ How is this line determined.
- ◆ X is any point on the fair odds line

$$(1) . C_w^X = C_L^X \quad (1) . C_w^E = C_L^E \quad 100$$

$$\frac{C_w^{XE}}{C_L^{XE}} = \frac{.}{1 .}$$

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STATE PREFERENCE APPROACH

Indifference curve (continued)

A risk averse person will always choose the certain case when a certain and an uncertain case have similar expected value . and will not bet even when the game is fair.

Certainty curve: is the locus of all points that have certain **consumption**.

Combine the fair odds line and the certainty curve to draw qualitatively the indifference curve for the risk averse agent

Risk lover

Risk neutral

State preference approach
Equilibrium (consumer choice)

At the equilibrium: $MRS =$ the slope of the
budget line

A risk averse person never takes part in a fair bet

How about risk loving and risk neutral players.

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Some applications

Risk premium

Investment diversifying (Dont put all your eggs
in one basket)

Risk dispersion (revolving funds, the role of the
stock market, supply demand of insurance)

Risk-sharing: in agriculture, grapefruit peasants
and traders in the Mekong Delta

Insurance

Conservative tendency in policy change

Vu Thanh Tu Anh

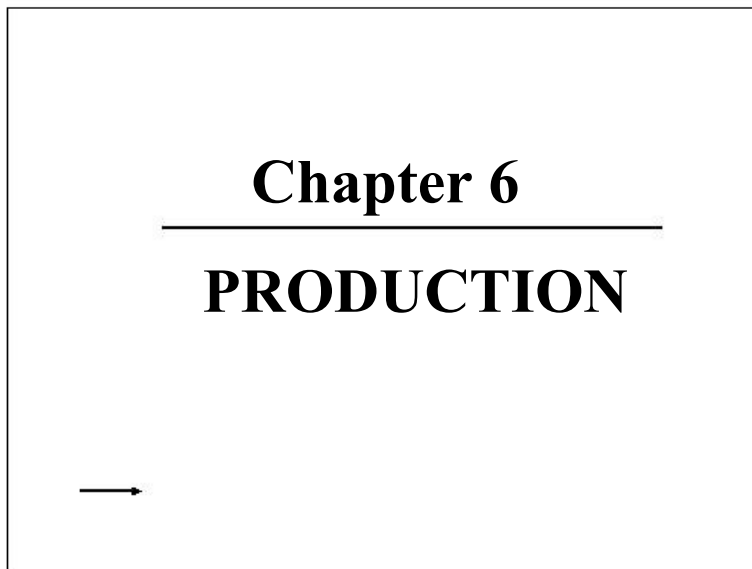
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Chapter 6

PRODUCTION

→



Topics

The technology of production

Production with one variable input

Production with two variable inputs

Returns to scale

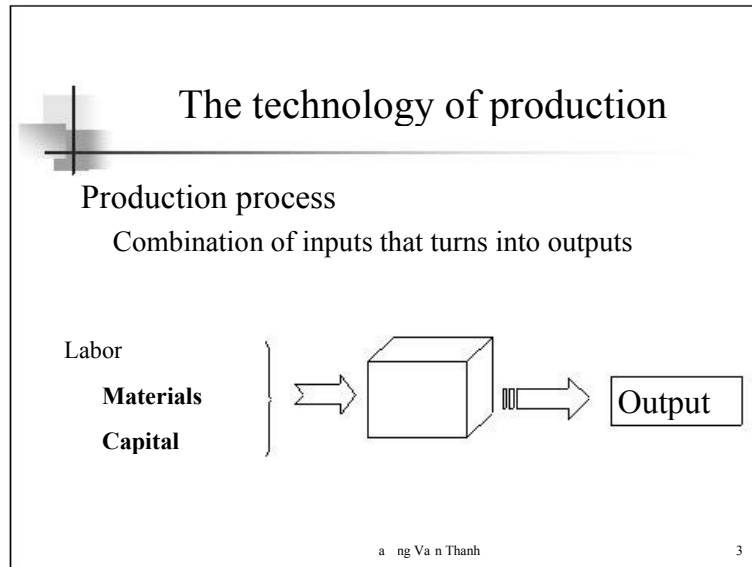
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The technology of production

The production function:

Function showing the highest output that a firm can produce for every specified combination of inputs.

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The technology of production

The production function

$$Q = F(x_1, x_2, \dots, x_n)$$

COBB-DOUGLAS production function

$$Q = F(K, L) = A \cdot K^a L$$

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The production function

		Labor				
Capital 1		2	3	4	5	
1	20	40	55	65	75	
2	40	60	75	85	90	
3	55	75	90	100	105	
4	65	85	100	110	115	
5	75	90	105	115	120	

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Short run and Long run

Short run:

Period of time in which quantities of one or more production factors cannot be changed.

Long run

Amount of time needed to make all production inputs variable.

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Production with one variable input				
Labor (L)	Capital (K)	Output (Q)	Ave. product (AP _L)(MP _L)	Marg. product (MP _L)
0	10	0	---	---
1	10	10	10	10
2	10	30	15	20
3	10	60	20	30
4	10	80	20	20
5	10	95	19	15
6	10	108	18	13
7	10	112	16	4
8	10	112	14	0
9	10	108	12	-4

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Production with one variable input

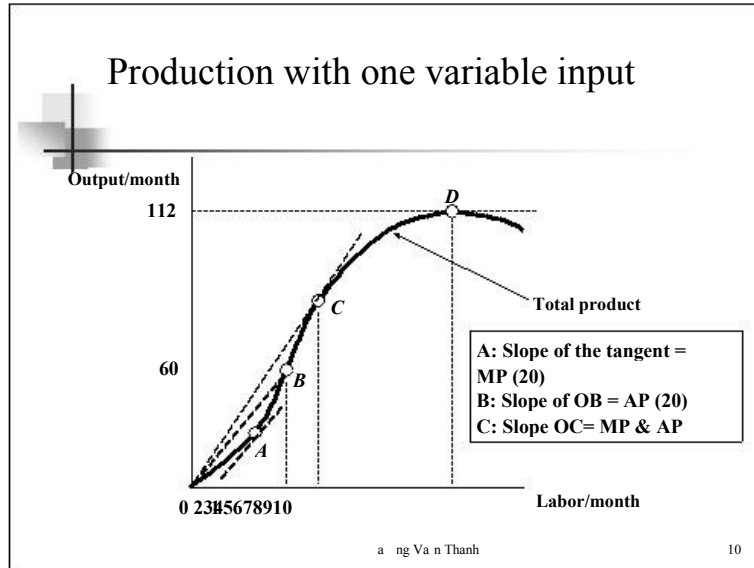
Average product of labor

$$AP_L = Q/L$$

Marginal product of labor

$$MP_L = \partial Q / \partial L$$

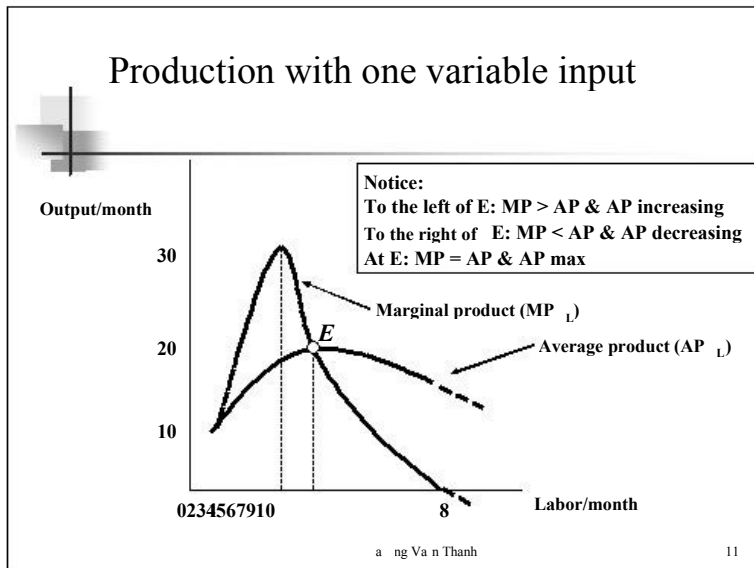
Marginal product is subject to the law of diminishing return

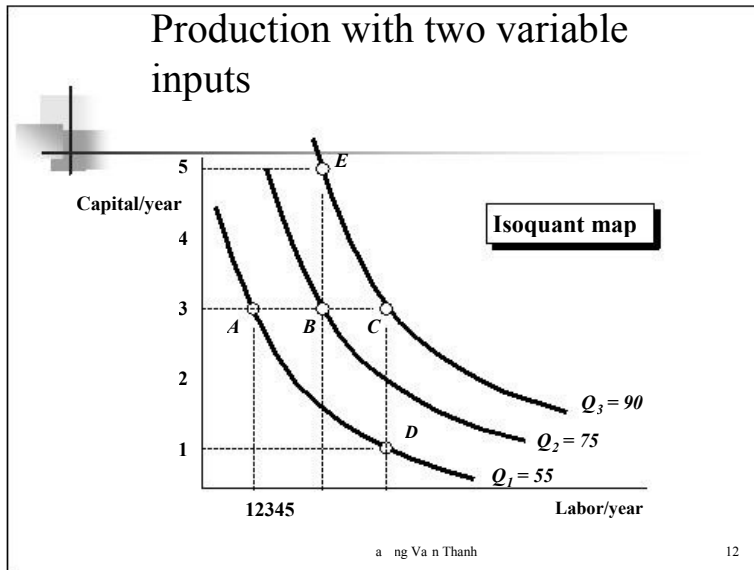


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Isoquants

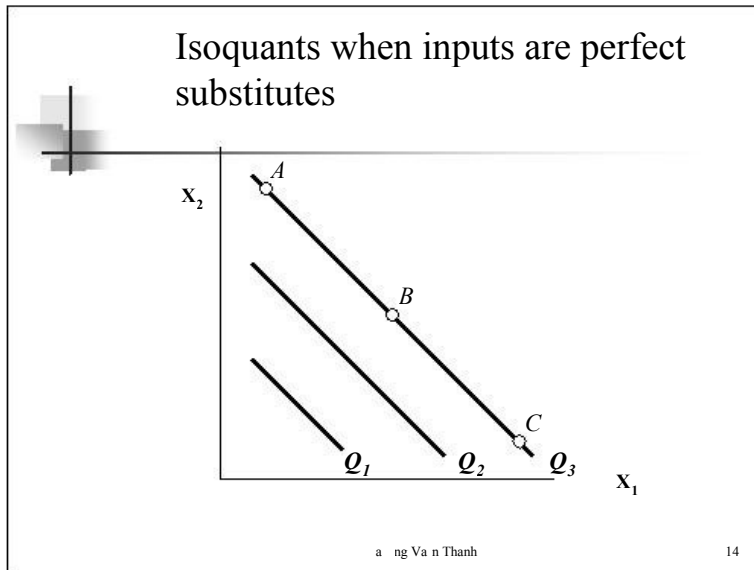
Isoquant Curve showing all possible combinations of inputs that yield the same output.

The slope of isoquant is the marginal rate of technical substitution of one input for another.

$$MRTS_{LK} = - \cdot K / L$$

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Isoquants when inputs are perfect substitutes

E.g.

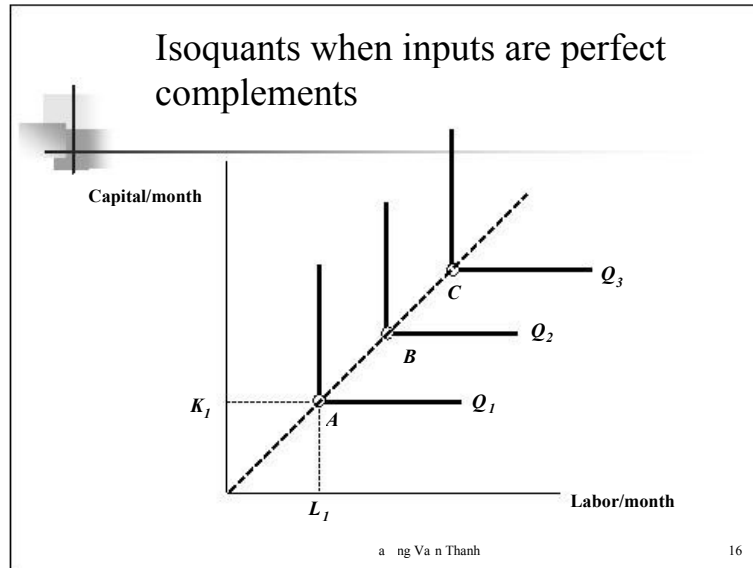
2 different cars of a taxi company

Toll collector and toll machine

The production function

$$Q = F(K,L) = 2K + 4L$$

MRTS = const



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Isoquants when inputs are perfect complements

E.g.

Cleaner and broom

Bricklayer and trowel

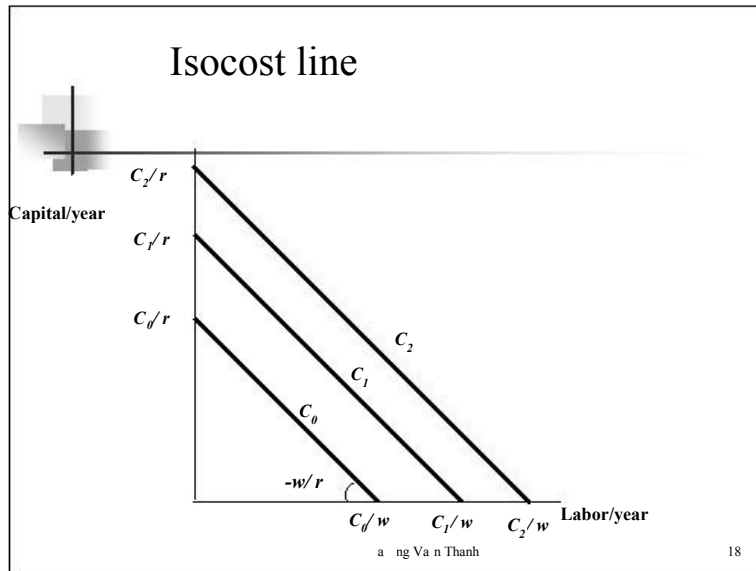
The production function

$$Q = F(K,L) = \text{Min}(K, L)$$

$$\text{MRTS} = 0$$

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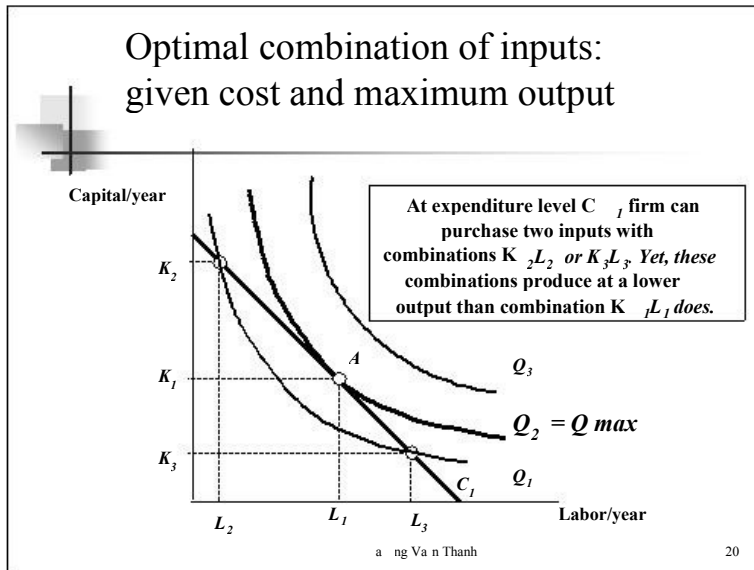
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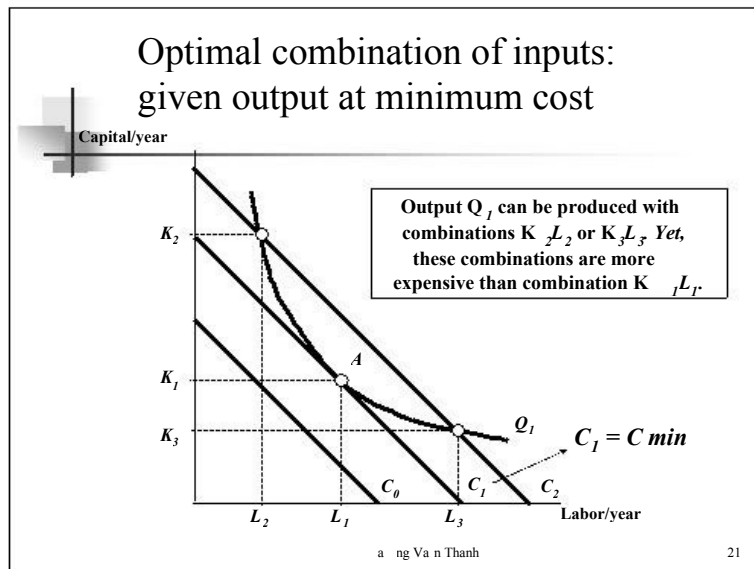


Isocost line

Isocost line: Graph showing all possible combinations of two inputs that can be purchased for a given total cost.

Slope of isocost line is the ratio of one input to another with a minus sign = $-w/r$







Optimal combination of inputs

Optimal combination:

The combination at which the isocost line is tangent to the isoquant.

The combination at which the slope of the isoquant is equal the slope of the isocost line

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Optimal combination of inputs

Optimal combination :

Isoquant slope = slope of isocost line

$$-K/L = -w/r$$

as $MRTS_{LK} = -K/L$

Thus, producer chooses optimal combination of inputs where:

$$MRTS_{LK} = w/r$$

Marginal product and Optimal combination of inputs

Marginal product and Isoquants

If produced along the isoquant, the increase in output due to additional use of one input must be equal to the decrease in output due to the reduction of other input.

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Marginal product and Optimal combination of inputs

Formula:

$$0 = MP_L(\cdot, L) + MP_K(\cdot, K)$$

Rearranging:

$$-(\cdot, K / \cdot, L) = MP_L / MP_K$$

As:

$$-(\cdot, K / \cdot, L) = MRTS_{LK}$$

Result:

$$MRTS_{LK} = MP_L / MP_K$$

Marginal product and Optimal combination of inputs

When inputs are in optimal combination:

$$MRTS_{LK} = w/r \quad (1)$$

As: $MRTS_{LK} = MP_L / MP_K$

Optimal condition:

$$\left[MP_L / MP_K = w / r \right] \quad (2)$$

Or:

$$MP_L / w = MP_K / r \quad (3)$$

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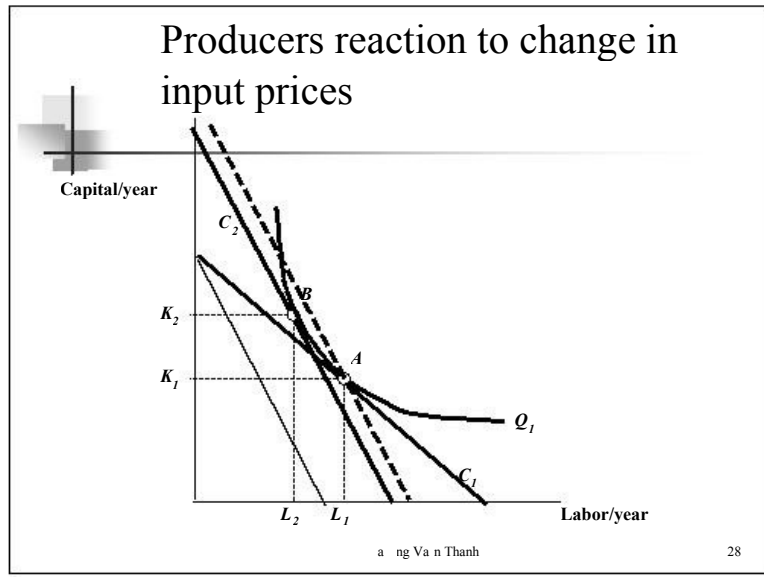
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Marginal product and Optimal combination of inputs

To achieve max output, producer must allocate his limited investment on quantity of each input such that marginal products *per dollar of investment across all inputs must be the same.*

This is called equal marginal principle.



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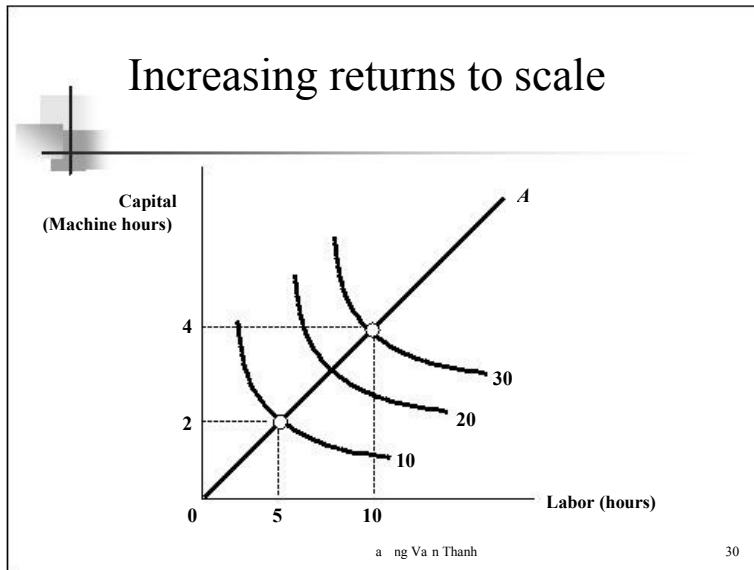
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Returns to scale

Rate at which output increases as inputs are increased proportionately.

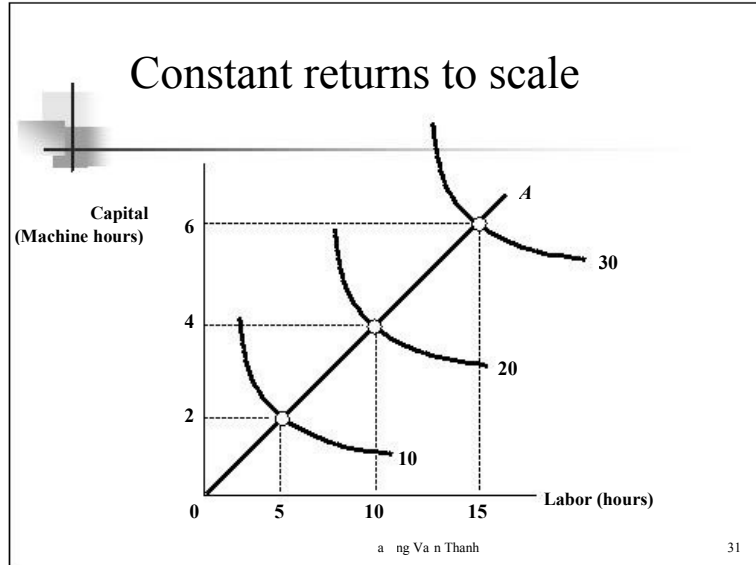
- 1) Increasing returns to scale: Output more than doubles when all inputs are doubled.
- 2) Constant returns to scale: Output doubles when all inputs are doubled.
- 3) Decreasing returns to scale: Output less than doubles when all inputs are doubled.

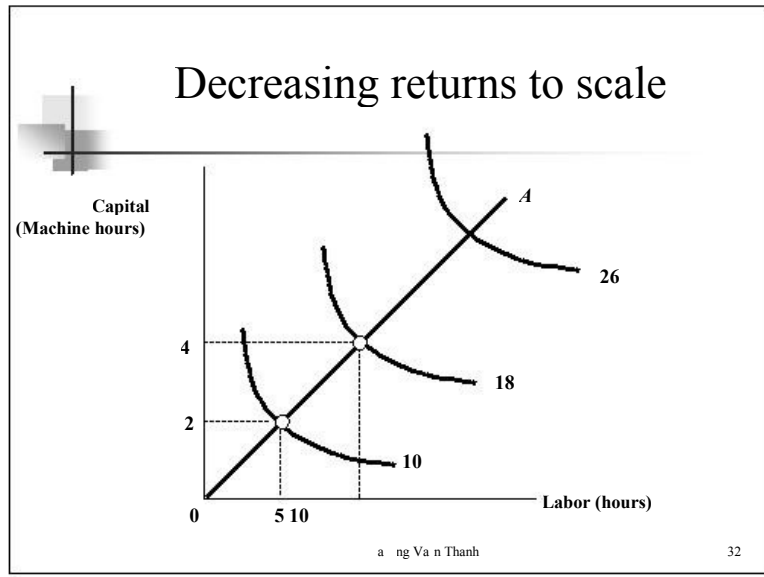


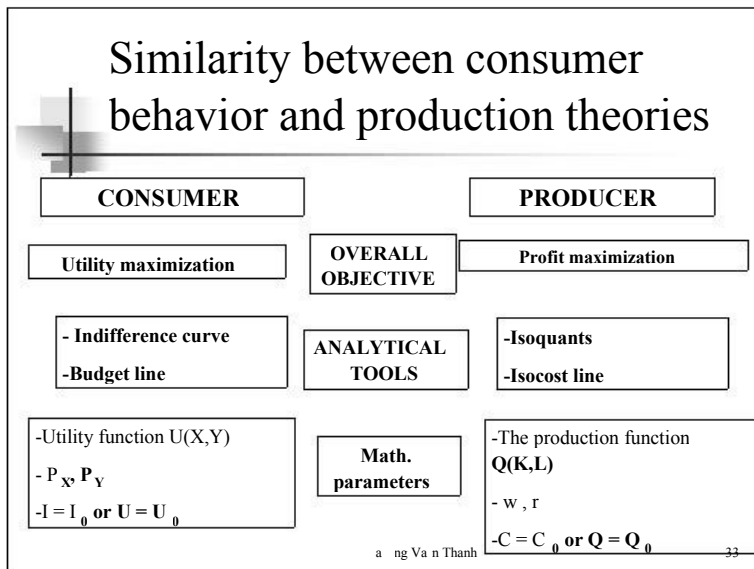
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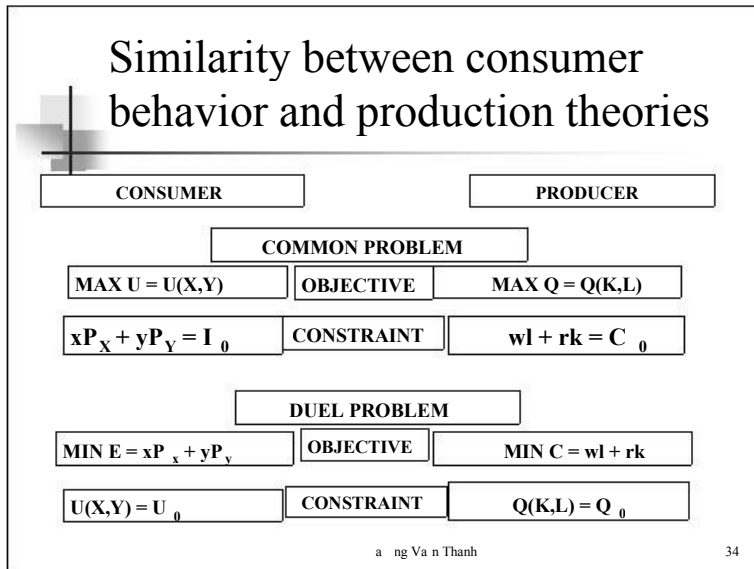
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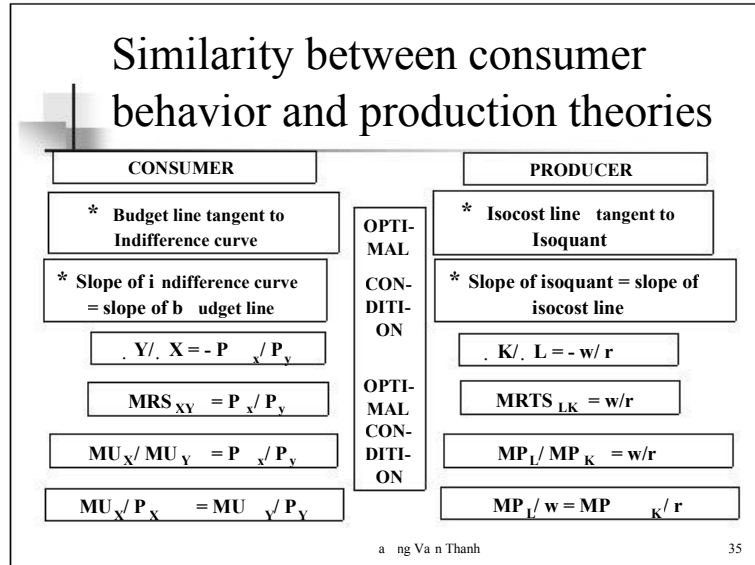
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End of Chapter 6

Production theory




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Chapter 7

The cost of production





Topics

Measuring cost: which costs matter.

Cost in the short run

Cost in the long run

Production with two outputs Economies of scope

Dynamic changes in costs The learning curve

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Measuring cost: which costs matter.

Economic and accounting costs

Accounting cost: actual expenses plus depreciation charges for capital equipment.

Economic cost: cost to a firm of utilizing economic resources in production, including opportunity cost.

Measuring cost: which costs matter.



Opportunity cost

Cost associated with opportunities that are foregone when a firm's resources are not put to their highest-value use.

Example: a firm that owns a building and therefore pays no rent for office space.

Does this mean that the cost of office space is zero.

Measuring cost: which costs matter.



Sunk cost

Expenditure that has been made and cannot be recovered.

Should be ignored when making future economic decisions.

Cost in the short run

Fixed cost and variable cost

Total output is a function of fixed and variable inputs.

Thus: $TC = TFC + TVC$

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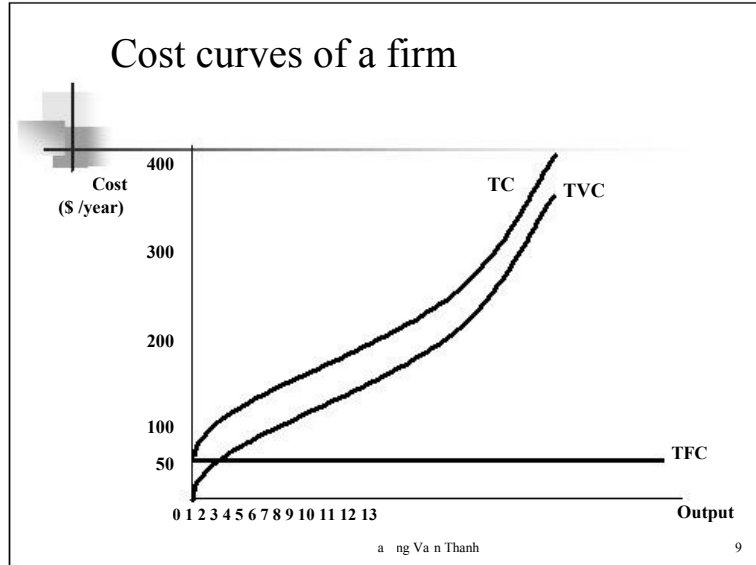
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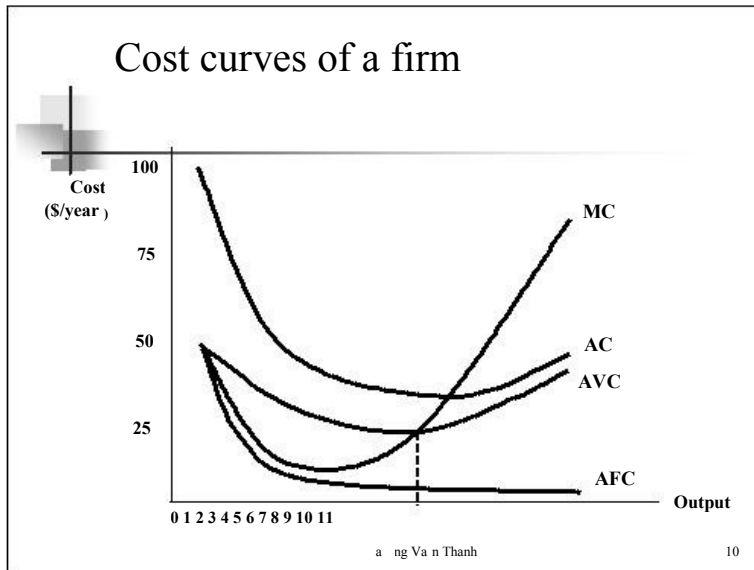
Short run cost of firm (\$)							
Output	Fixed cost (TFC)	Variable cost (TVC)	Total cost (TC)	Marginal cost (MC)	Average fixed cost (AFC)	Average variable cost (AVC)	Average total cost (AC)
0	50	0	50	---	---	---	---
1	50	50	100	50	50	50	100
2	50	78	128	28	25	39	64
3	50	98	148	20	16.7	32.7	49.3
4	50	112	162	14	12.5	28	40.5
5	50	130	180	18	10	26	36
6	50	150	200	20	8.3	25	33.3
7	50	175	225	25	7.1	25	32.1
8	50	204	254	29	6.3	25.5	31.8
9	50	242	292	38	5.6	26.9	32.4
10	50	300	350	58	5	30	35
11	50	385	435	85	4.5	35	39.5

Cost in the short run

Marginal cost (MC) increase in cost resulting from the production of one extra unit of output.

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







Cost in the short run

Relationships between average product and average variable cost; marginal product and marginal cost

When AP_L (MP_L) is rising, AVC (MC) is *decreasing*

When AP_L (MP_L) is decreasing, AVC (MC) is *rising*

Cost in the short run

Relationship between production function
and cost function in the short run

$$Q = f(K, L). \text{ Where } K = K_0 \Rightarrow Q = f(L)$$

$$\text{or } L = f(Q) \quad (1)$$

$$C = rK_0 + wL \Rightarrow C = f(L) \quad (2)$$

$$\text{Put (1) in (2)} \Rightarrow C = f(Q)$$

Cost in the long run

The cost-minimizing input choice

Assumptions

Two inputs: labor (L) & capital (K)

Labor price: wage (w)

Capital price

$$R = \text{depreciation rate} + \text{interest rate}$$

Cost in the long run

The cost-minimizing input choice

Optimal condition: $C = wL + rK$

$$MP_L / w = MP_K / r$$

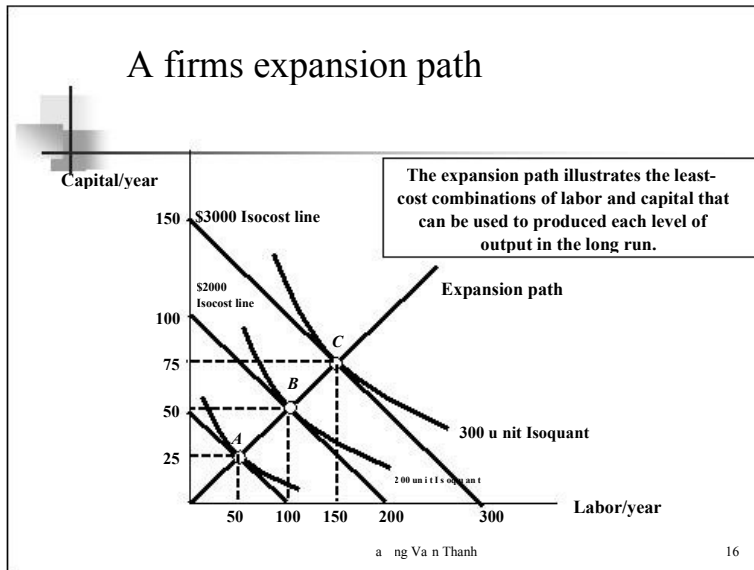
*Derive cost curve in the long run LRTC
= $f(Q)$ from the production function
 $Q = Q(K, L)$*

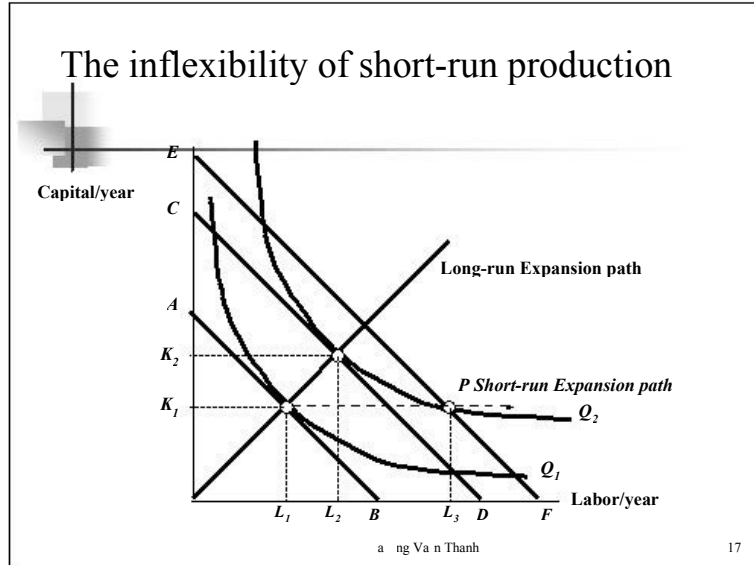


Cost in the long run

Cost minimization with varying output levels

Expansion path describes the combinations of labor and capital that the firm will choose to minimize costs at each output level.

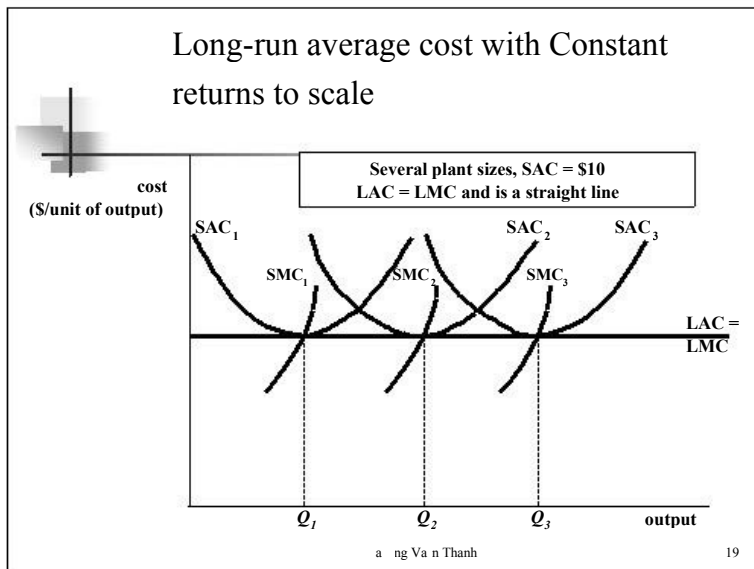


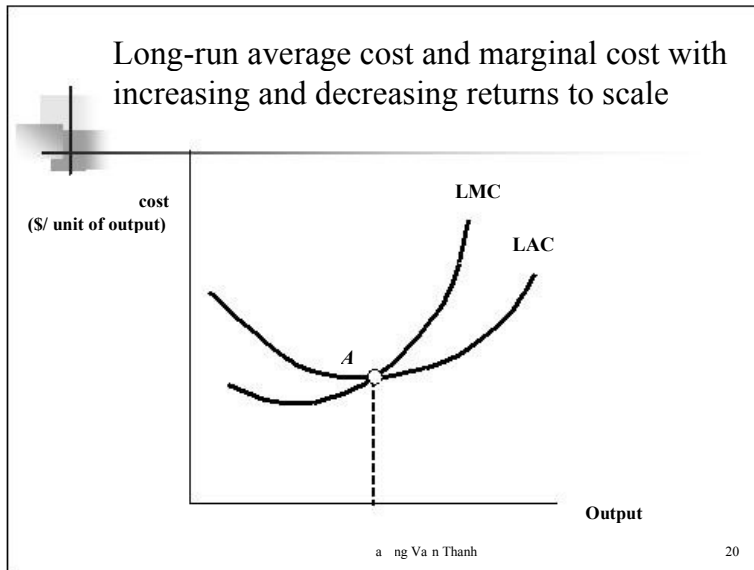


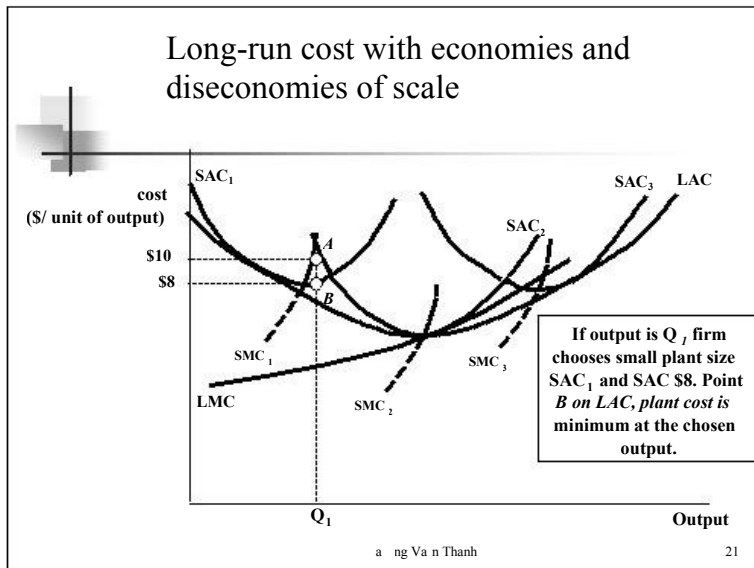
Long-run cost curve

Shape of long-run average cost (LAC) in the following cases:

- Increasing returns to scale
- Constant returns to scale
- Decreasing returns to scale







Long-run cost

What is long-run cost curve of a firm.

In the long-run, firms can change output scale.

Long-run cost curve comprised of minimum costs at each output levels.

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Production with two outputs Economies of scope

E.g.

Chicken farm poultry and eggs

Automobile company automobiles and
trucks

University teaching and research

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Production with two outputs Economies of scope

Economies of scope are present when the joint of a single firm is greater than the output that could be achieved by two different firms each producing a single product.

Benefit of joint-production.

Car tractor company example

Production with two outputs

Economies of scope

Advantage

- 1) Use similar capital and labor
- 2) Share management resources.
- 3) Use similar machinery and skilled labor

Production with two outputs Economies of scope

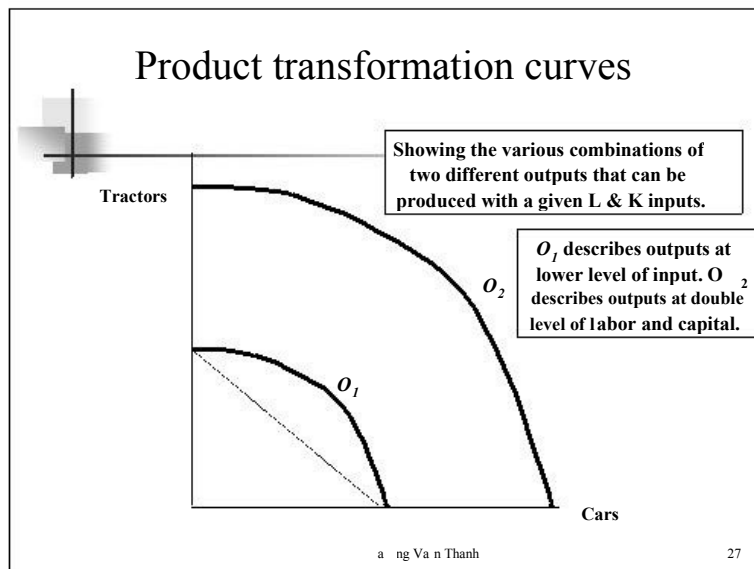
Production:

Firm chooses output level for each product
Use product transformation curves to illustrate
the combinations.

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Production with two outputs Economies of scope

Note

Product transformation curves have negative slopes.

Product transformation curves are bowed outward, should it be joint production.

Production with two outputs Economies of scope

Note

No direct relationship between economies of scope and economies of scale.

Economies of scope can exist with diseconomies of scales.

Economies of scales can exist but not with economies of scope.

Production with two outputs

Economies of scope

Degree of economies of scope measures savings in cost:

$$SC = \frac{C(Q_1) + C(Q_2) - C(Q_1, Q_2)}{C(Q_1, Q_2)}$$


$C(Q_1)$: Cost of producing output Q_1

$C(Q_2)$: Cost of producing output Q_2

$C(Q_1, Q_2)$: Joint cost of producing both outputs

If $SC > 0$ Economies of scope

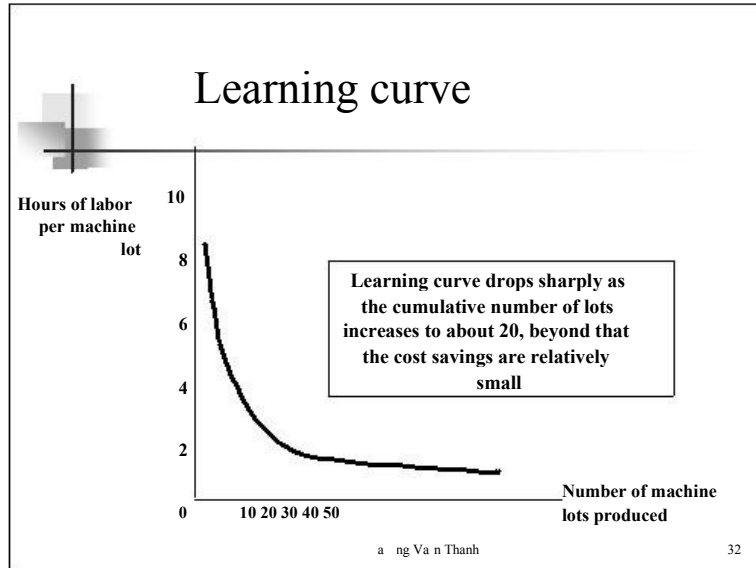
If $SC < 0$ Diseconomies of scope



Changes in costs - learning curve

Learning curve measures impact of labor experience on cost of production.

Describes the relationship between a firm's cumulative output and the amount of inputs needed to produce each unit of output.



Changes in cost -- learning curve

Learning curve is based on the relationship:

$$L = A + BN^{-b}$$

N = Cumulative units of output produced

L = Labor input per unit of output

A, B and b = constants

A & B positive and between 0 and 1

Changes in cost -- learning curve

When $N = 1$

$L = A + B$ or the labor input required to produce the first unit of output

When ∞

Labor input per unit of output remains the same as the cumulative level of output increases, there is no learning.

Changes in cost -- learning curve

If $\gamma > 0$ and N gets larger

L gets closed to *A*, *A* represents the minimum labor input per unit of output after all learning has taken place.

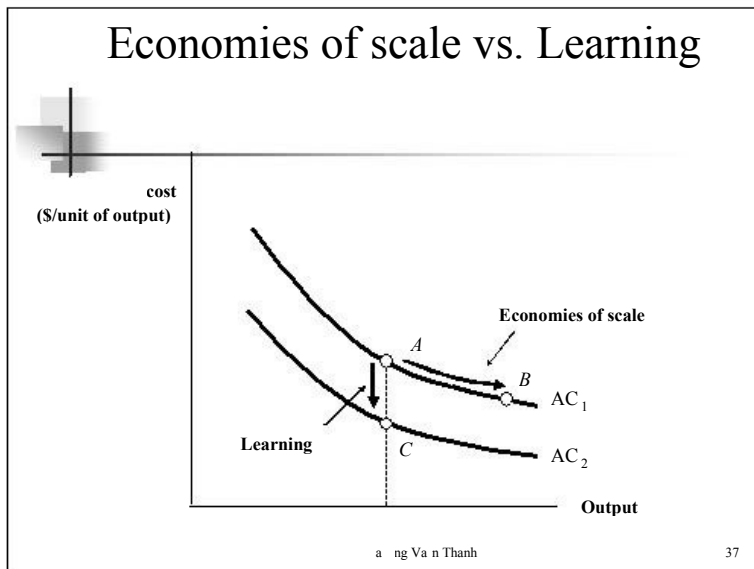
The larger is

The more importance is the learning effect

Changes in cost -- learning curve

Note:

- 1) For new firms, efficiency comes from learning not economies of scale.
- 2) For mature firms, effect of learning is relatively low.



Predicting the labor requirements of producing a given output		
Cumulative output (N)	Per-unit labor requirement for each 10 units of output (L) requirement	Total labor
10	1.00	10.0
20	.80	18.0 (10.0 + 8.0)
30	.70	25.0 (18.0 + 7.0)
40	.64	31.4 (25.0 + 6.4)
50	.60	37.4 (31.4 + 6.0)
60	.56	43.0 (37.4 + 5.6)
70	.53	48.3 (43.0 + 5.3)
>80	.51	53.4 (48.3 + 5.1)

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End of Chapter 7

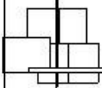
Cost of production



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Chapter 8

Profit maximization and competitive supply



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Topics

Perfectly competitive market

Demand curve, total and marginal revenues

Profit maximization and loss minimization

Firms short-run supply

The industrys short-run supply curve (Market)

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Topics

Profit maximization in the long run

The industrys long-run supply curve

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Perfectly competitive market

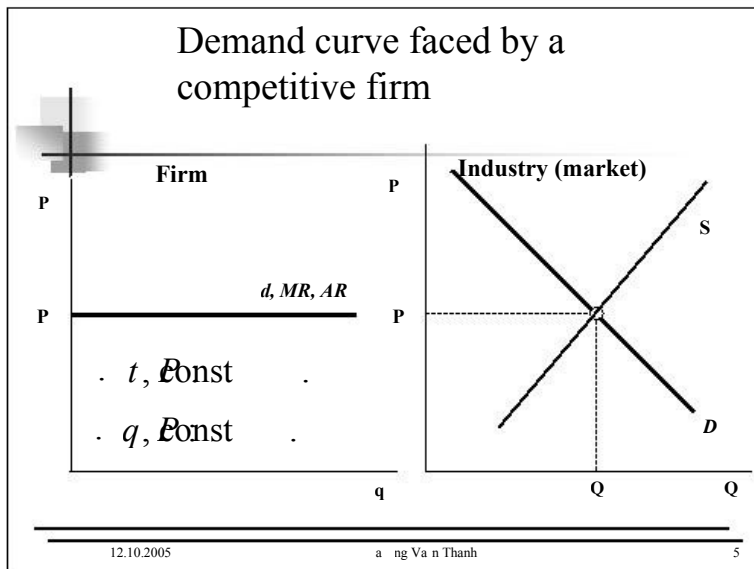
Characteristics of the perfectly competitive market

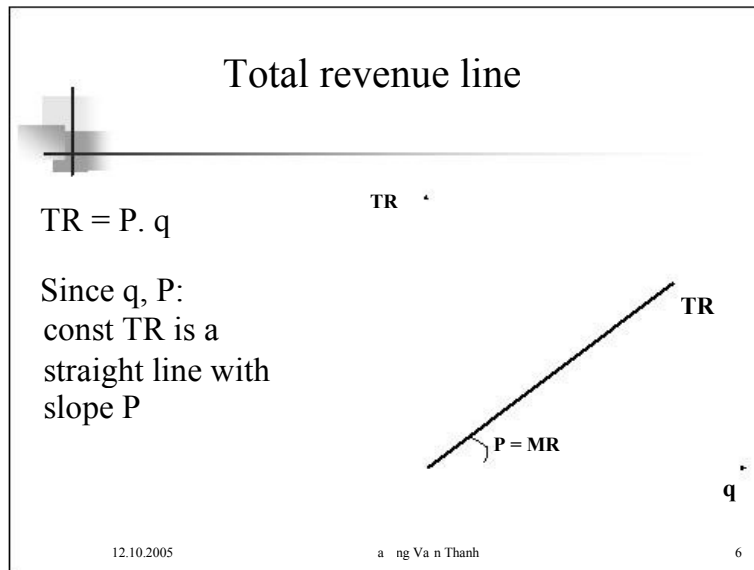
- 1) Product homogeneity
- 2) Many participants
- 3) Perfect information
- 4) Free entry and exit

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Marginal revenue

Marginal revenue change in revenue resulting from a one-unit increase in output.

$$MR = \Delta TR / \Delta Q = dTR/dQ$$

Competitive firm: $MR = P$

MR, d and AR are identical



Profit maximization

Clue: $q : TR > TC$
or $P > AC_{\min}$

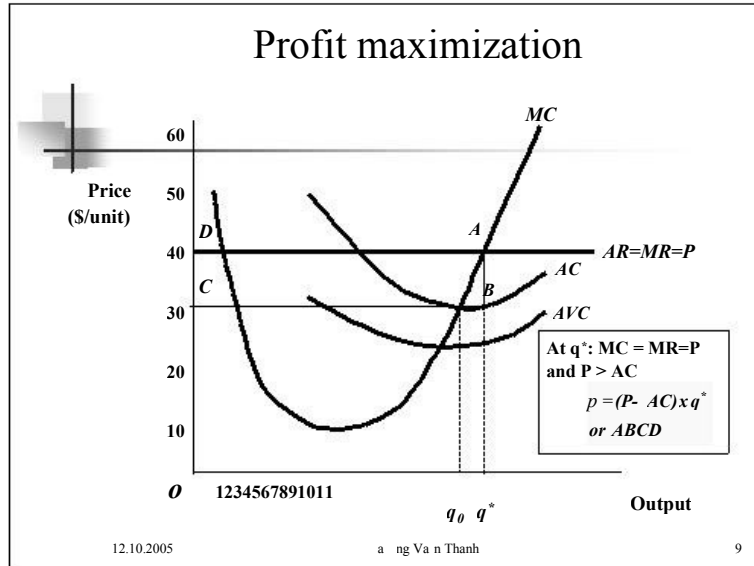
Principle: Produce at q^* : $MC = MR = P$

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Loss minimization

Clue:

$q : TR < TC$
or $P < AC_{\min}$

Options:

- 1) Keep producing
- 2) Close down (stop producing)

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Loss minimization (cont)

1) Keep producing

Clue:

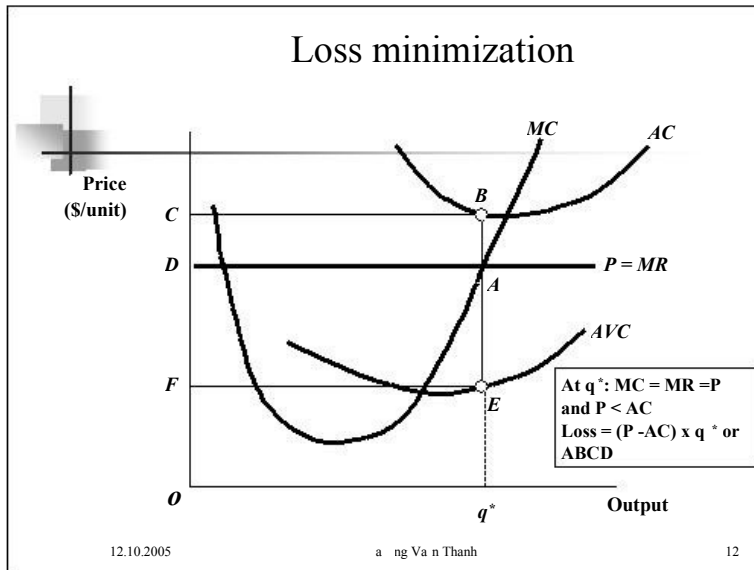
$$. q : TR = TVC$$

or $P = AVC_{\min}$

Principle:

$$\text{Produce at } q^* : MC = MR = P$$

$$\text{Loss} = TFC$$



Loss minimization


2) Close down

Clue:

$$q : TR < TVC$$
$$\text{or } P < AVC_{\min}$$

$$\text{Loss} = TFC$$

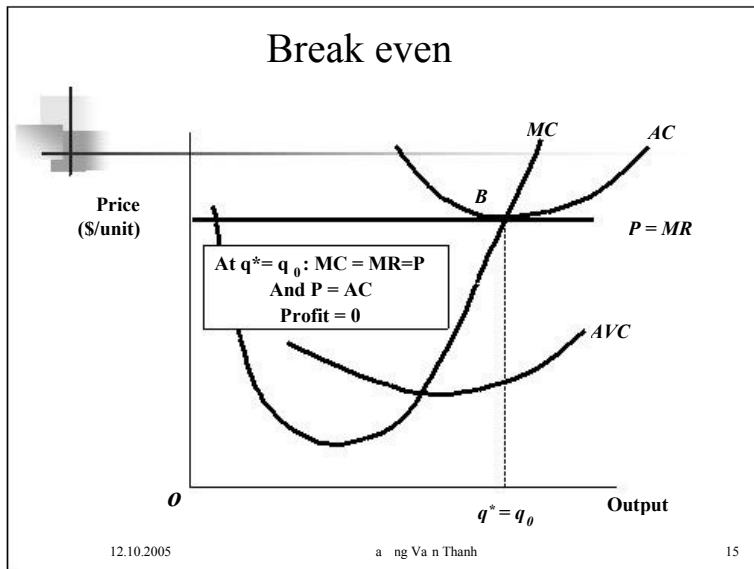
Break even



Clue: $q = q_0 : TR = TC$
or $P = AC_{\min}$

Principle: Produce at $q^* = q_0 : MC = MR = P$

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Choosing Output in the Short run

Summary of production decision

Maximized profit (minimized loss) when $MC = MR = P$

If $P > AC_{min}$ firm is profitable.

If $P = AC_{min}$ firm is break even.

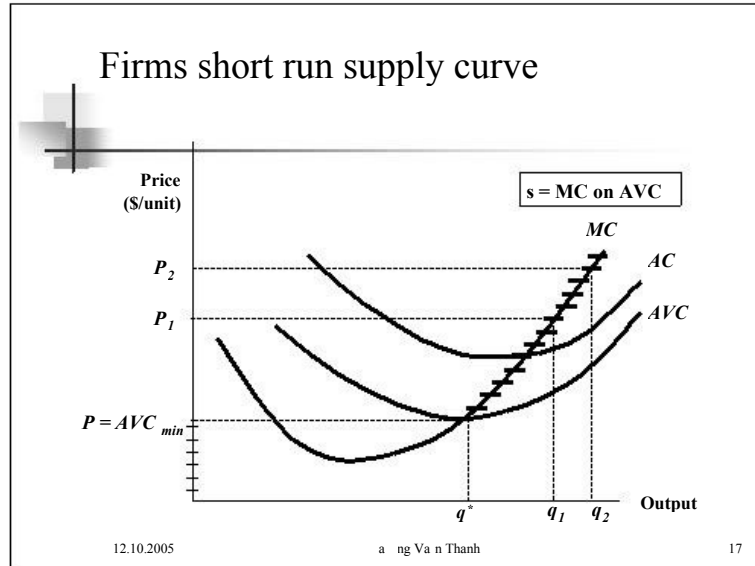
If $AVC_{min} < P < AC_{min}$ firm keeps producing at a loss.

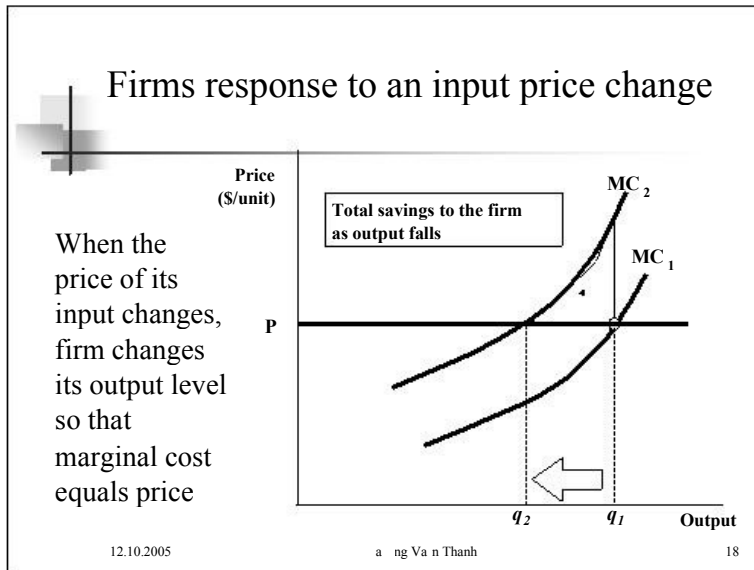
If $P < AVC_{min} < AC$ *firm shuts down.*

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The short-run market supply curve

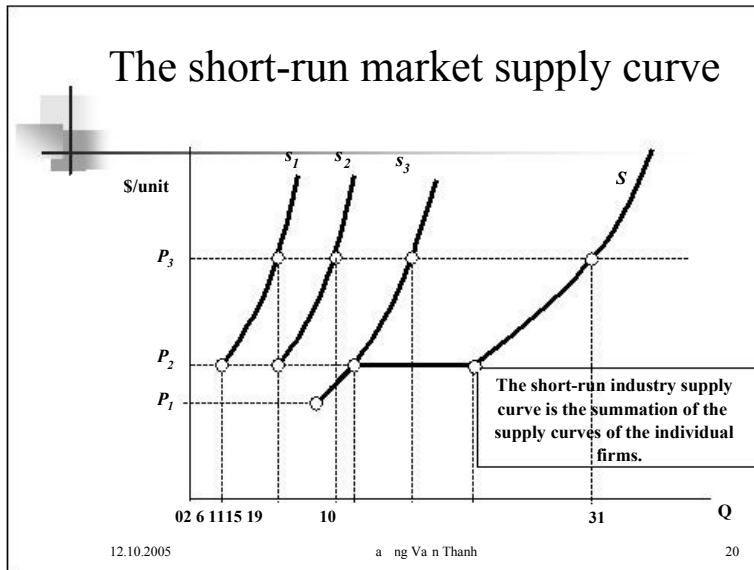


Shows the amount of output that the industry will produce in the short run for every possible price.

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Producer Surplus

Producer Surplus in the Short Run

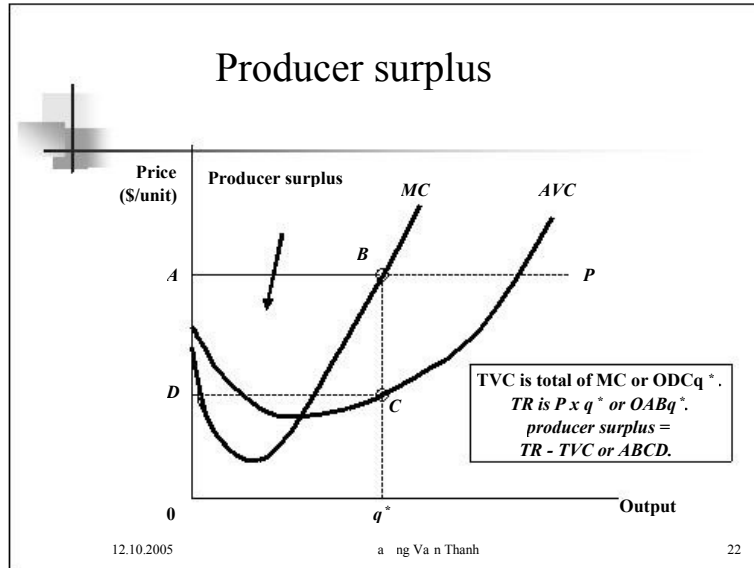
Firm earns a surplus on all but the last unit of output.

Producer Surplus sum over all units produced by a firm of differences between market price of a good and a marginal costs of production.

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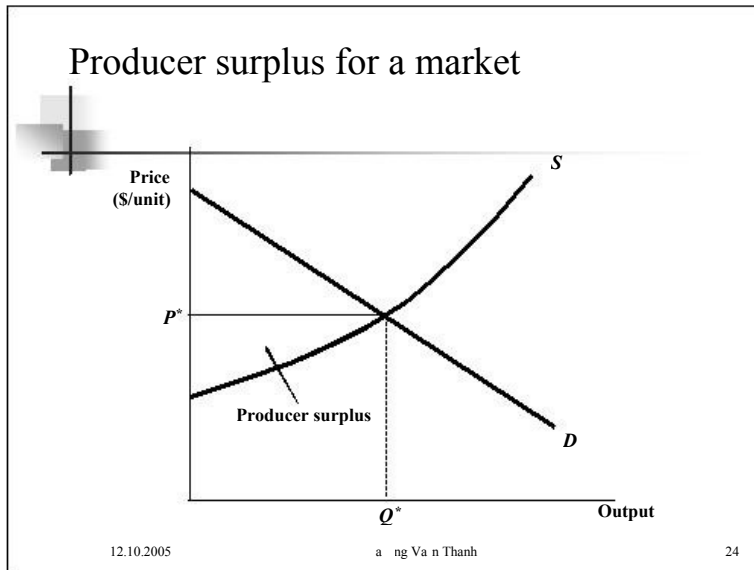


Producer surplus

Producer surplus in the short run versus profit

$$\text{PS} = \text{TR} - \text{TVC}$$
$$p = \text{TR} - \text{TVC} - \text{TFC}$$
$$\text{PS} > p$$

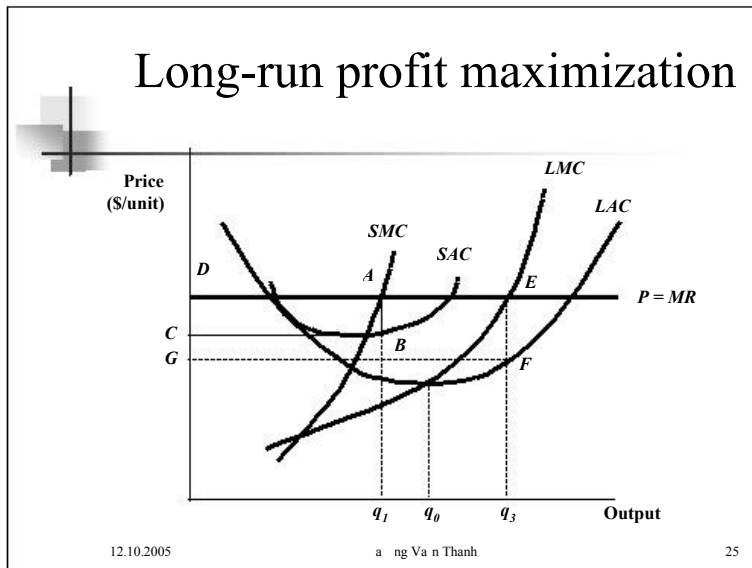
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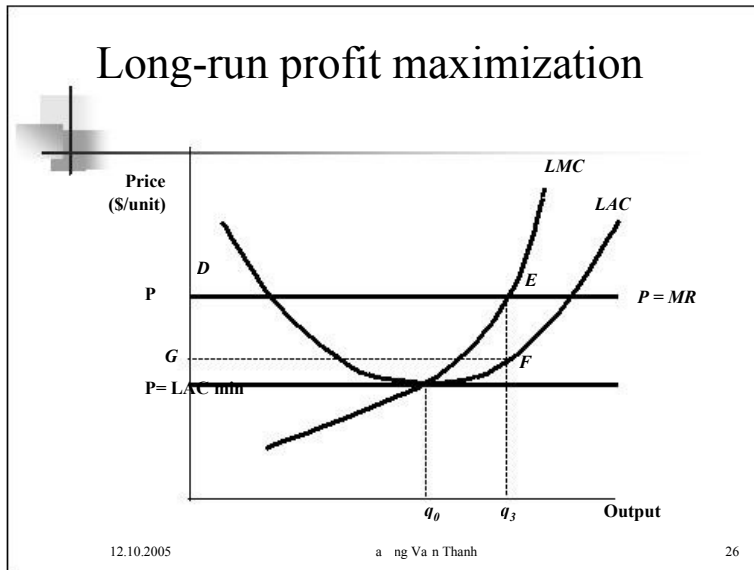


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Long-run profit maximization

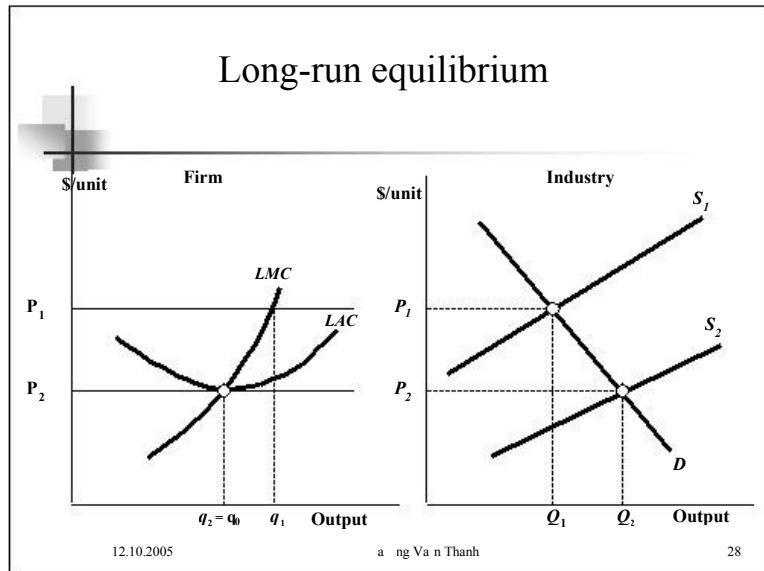
Long-run competitive equilibrium

Zero economic profit

If $TR > wL + rk$, firm earns economic profit and is a new business

If $TR = wL + rk$, economic profit is zero, yet firm earns normal profit; the industry is competitive

If $TR < wL + rk$, firm goes out of business



Long run equilibrium in a competitive market


1) $MC = MR = P$

2) $P = LAC$

No incentive to leave or enter the
industry

Profit = 0

3) Market equilibrium price



Economic rent

Economic Rent


Amount that firms are willing to pay for an input less the minimum amount necessary to obtain it.

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The industrys long-run supply curve

To determine long-run supply, we assume:

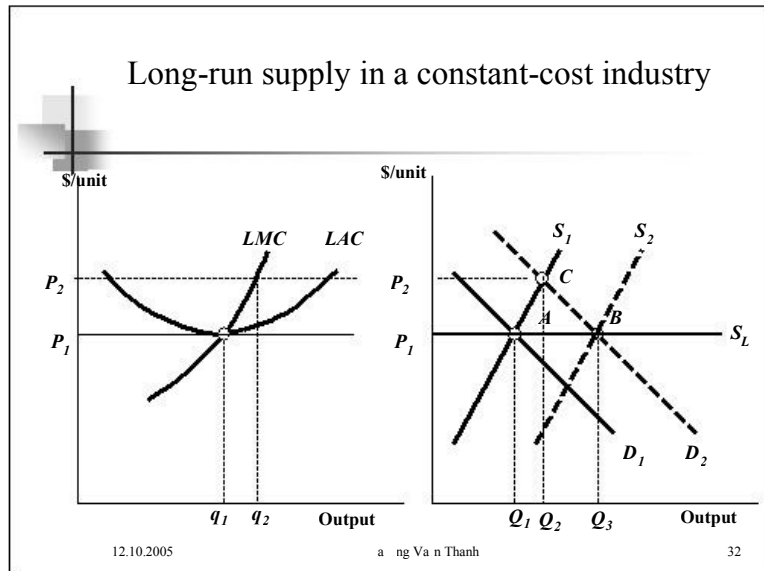
All firms have access to the available
production technology.

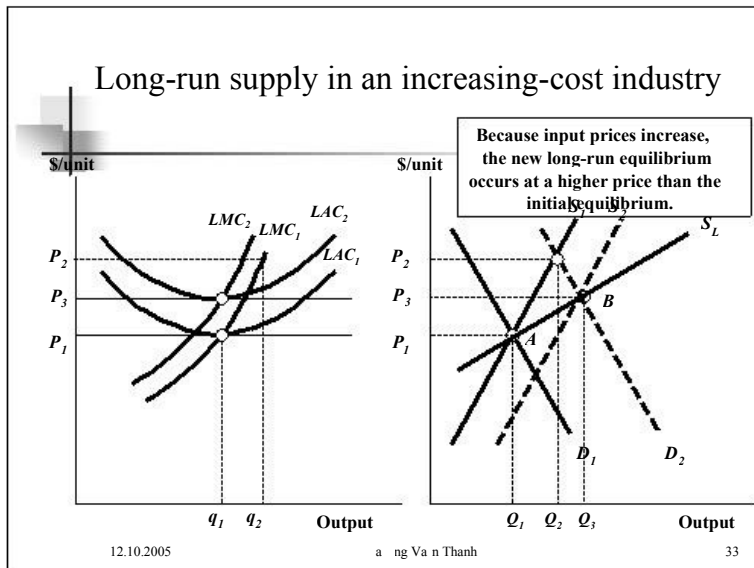
Output is increased by using more inputs, not
by invention.

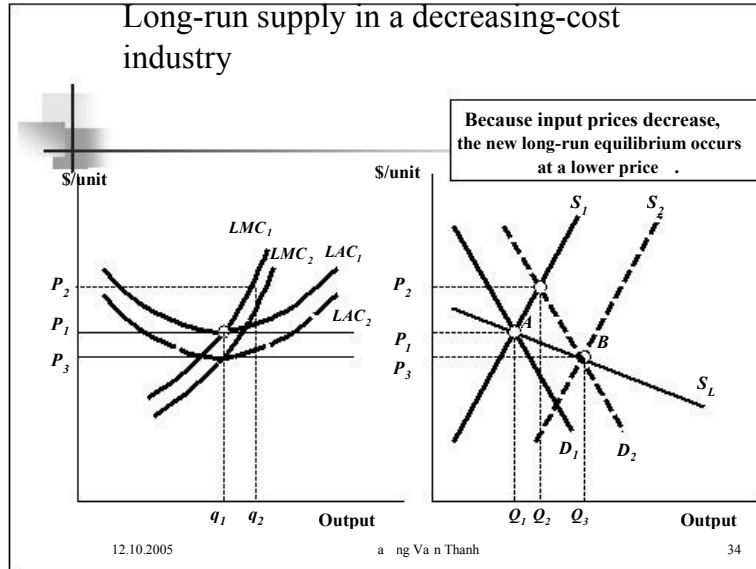
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The industry's long-run supply curve

Effects of a tax

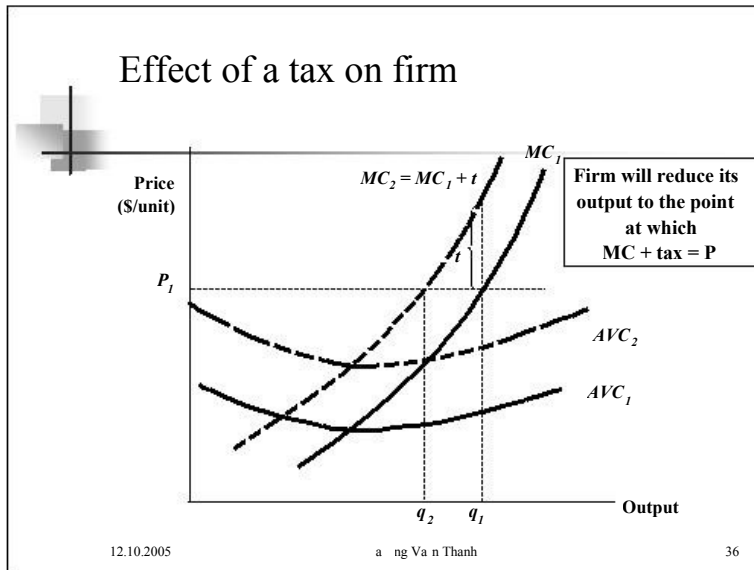
Previously, we saw firms response to tax on inputs.

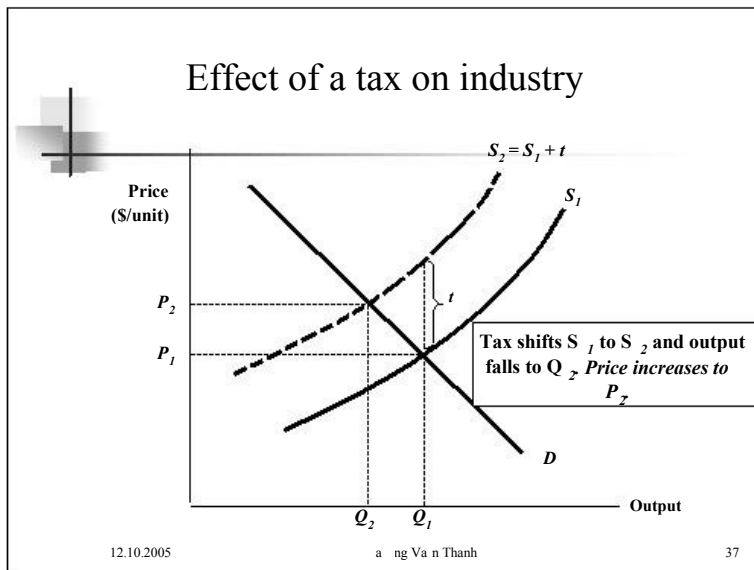
Now, we look at how they respond to a tax on their outputs.

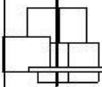
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End of Chapter 8

Profit maximization and competitive supply

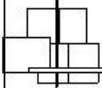
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Chapter 9

The analysis of competitive markets

12.10.2005 a ng Va n Thanh 1



Topics

The efficiency of a competitive market

Price controls: minimum and maximum prices

Price supports and production quotas

The impact of a tax or subsidy

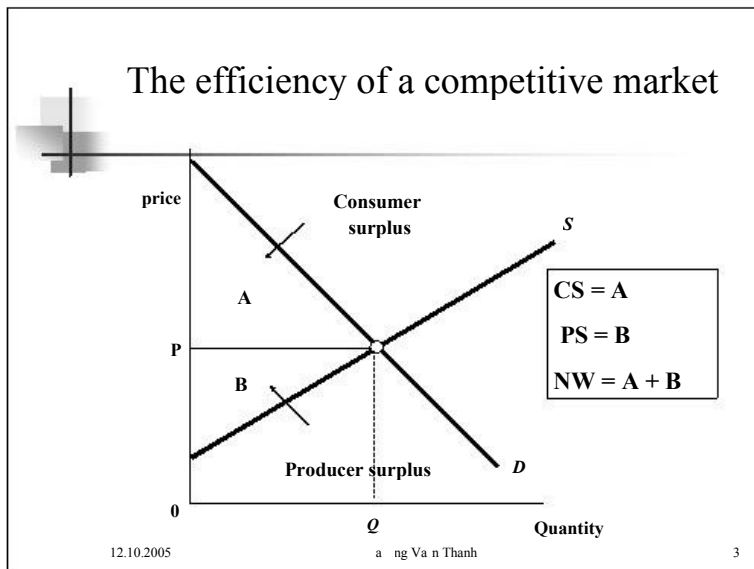
Import quotas and tariffs

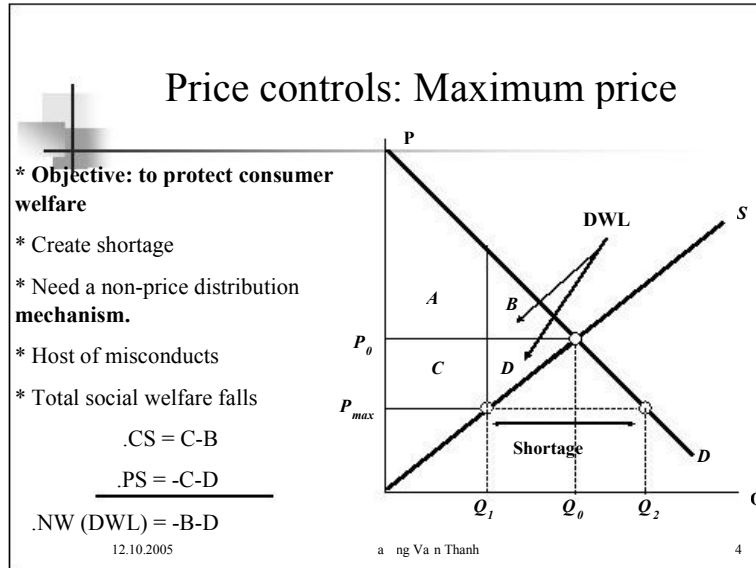
Export quotas and tariffs

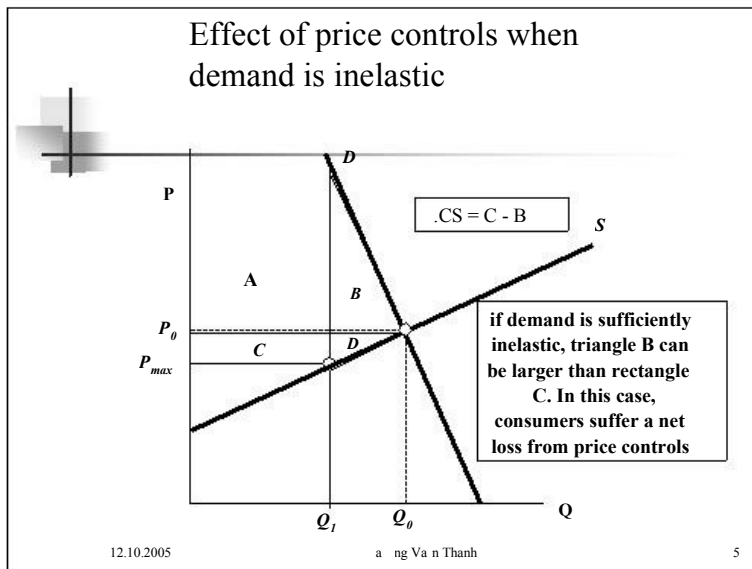
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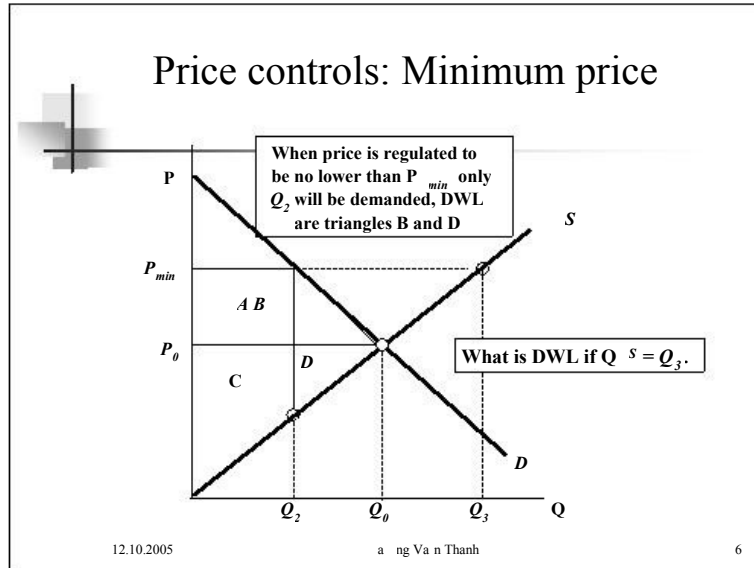
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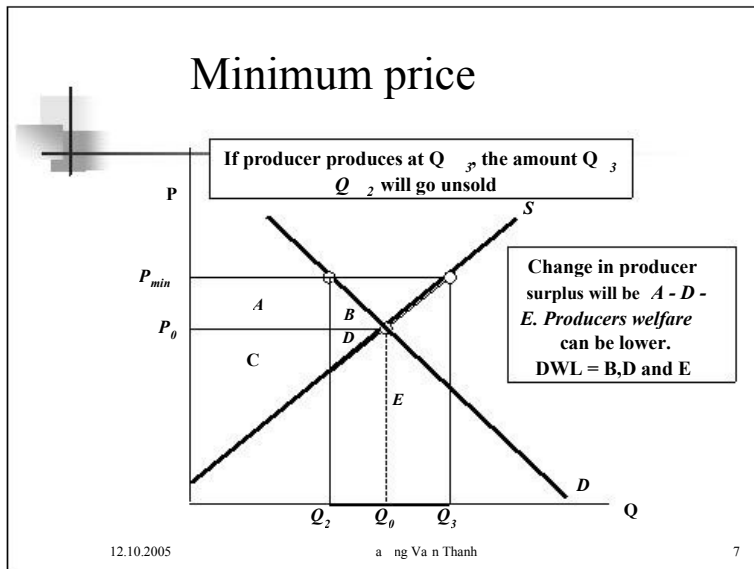


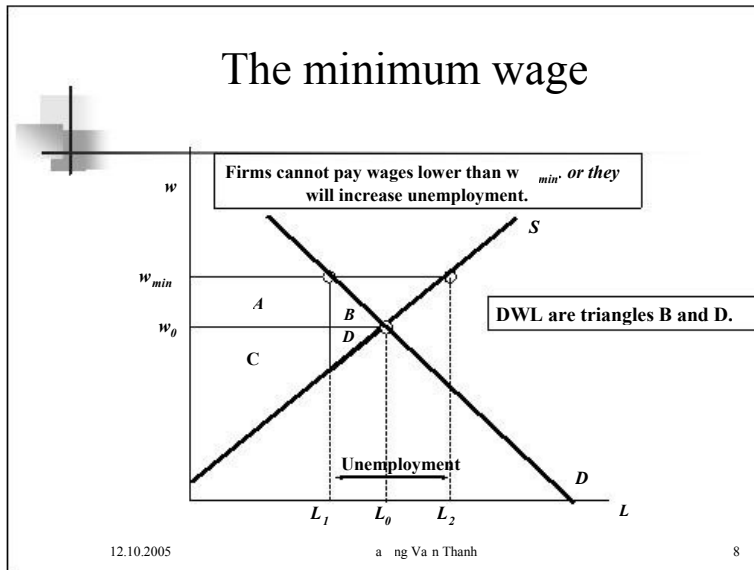


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Price supports and production quotas



Much of agricultural policy is based on a system of price supports.

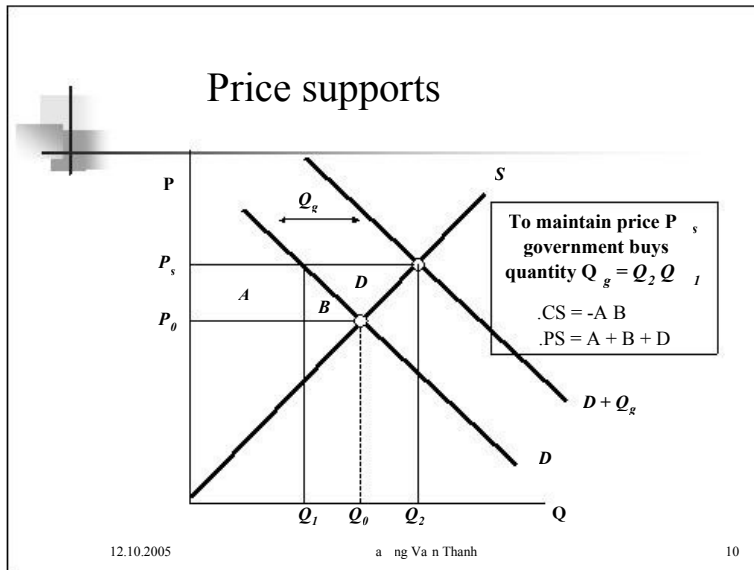
Price set by government above free-market level and maintained by governmental purchases of excess supply.

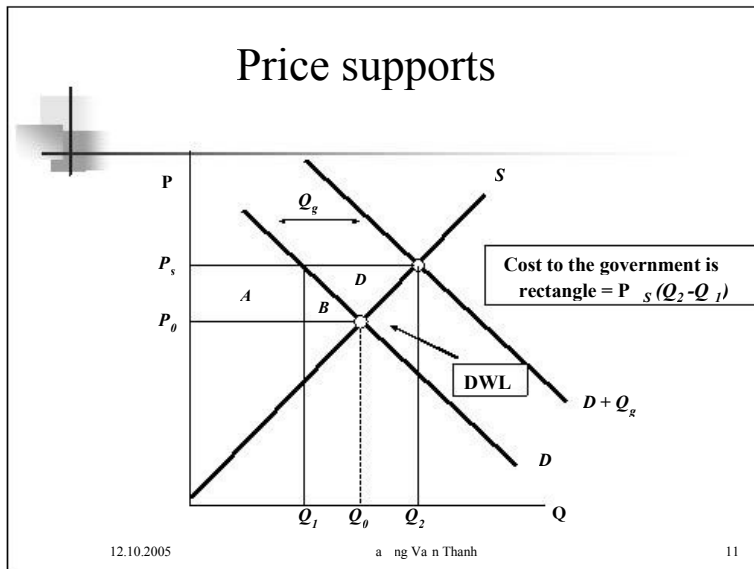
This policy can go hand in hand with restriction of production.

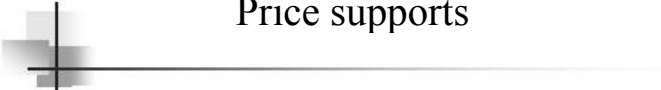
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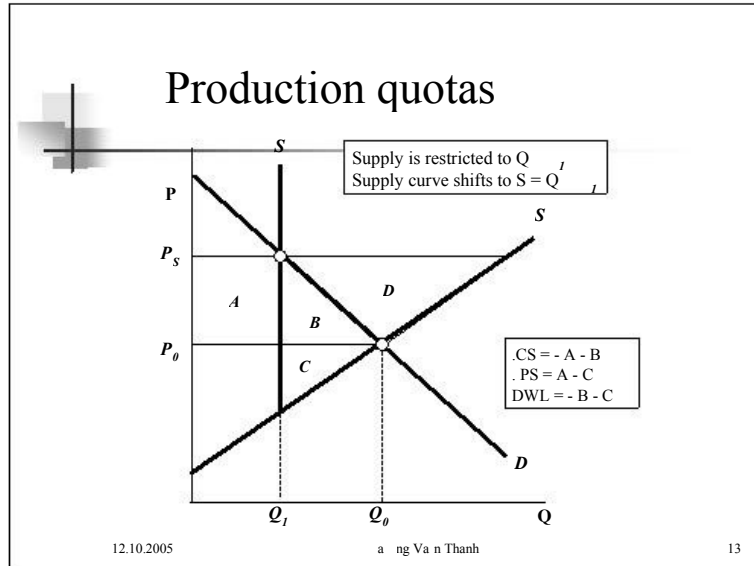


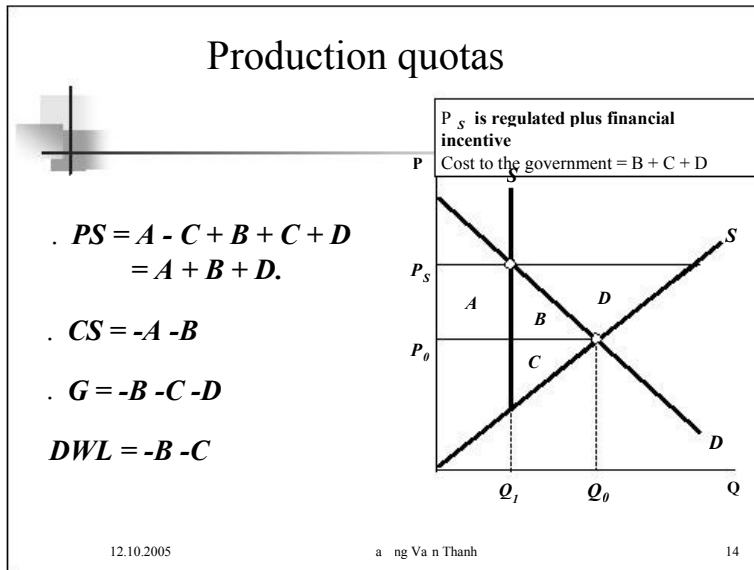


Price supports

Is there an efficient way that can increase farmers incomes equal to $A + B + D$.

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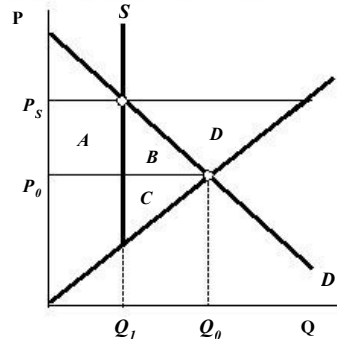





Production quotas

Question:

What policy the government can apply in order to cut cost and support farmers.
Which policy is more expensive: subsidy or acreage limitation.





The impact of a tax or subsidy

When government levies indirect tax on producers, who will bear the tax.

When government taxes consumers, who will bear the tax.

When government gives subsidy to producers based on production output, who will benefit.

When government gives subsidy to consumers based on quantity of specific goods consumed, who will benefit.

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The impact of a tax or subsidy

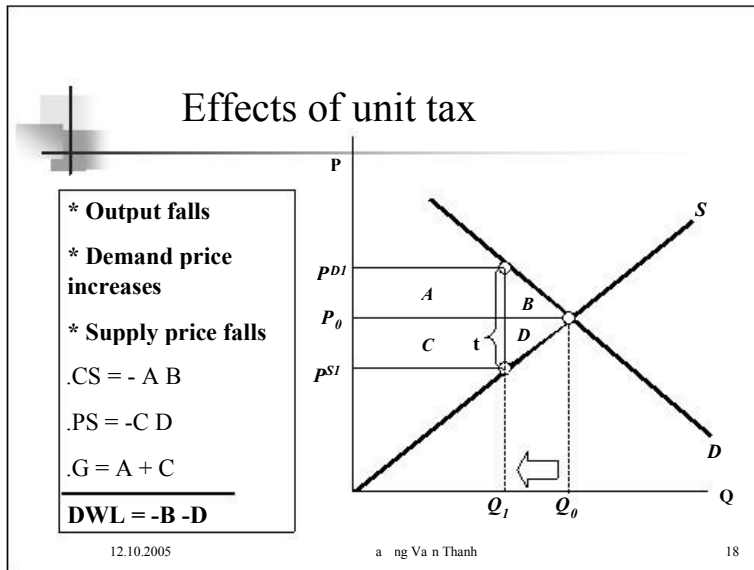
Tax burden (or benefit of subsidy) is shared between consumers and producers.

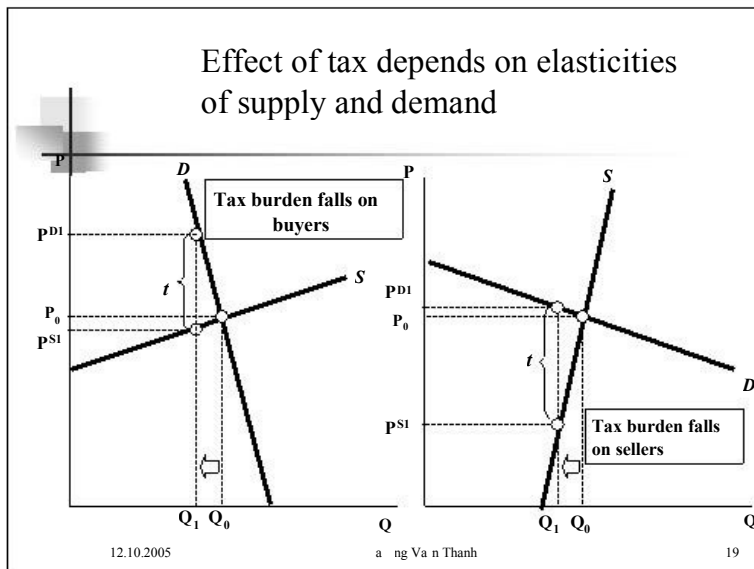
We look at a specific tax called unit tax.

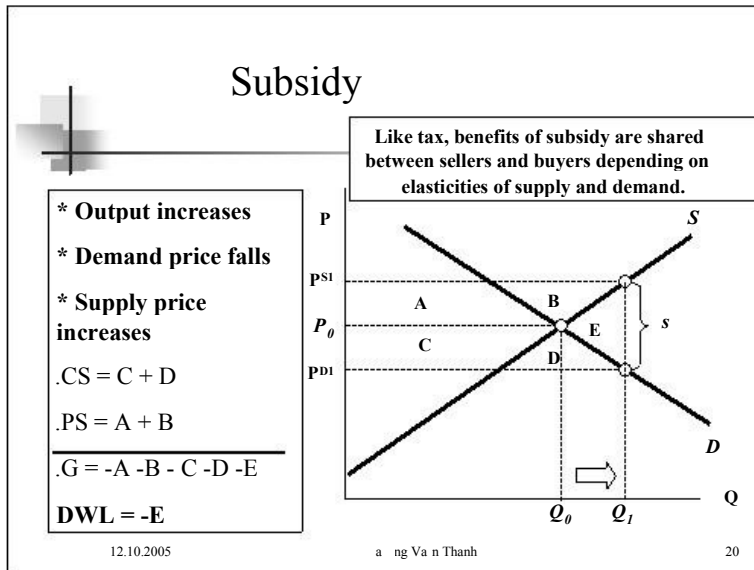
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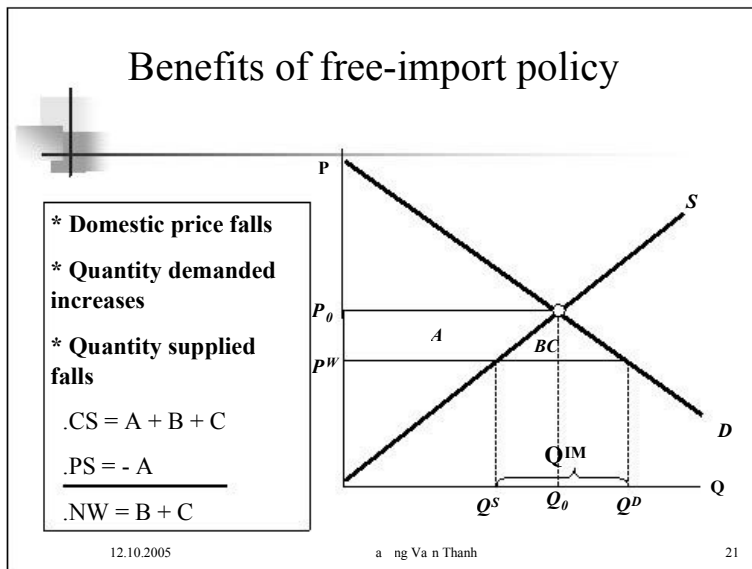
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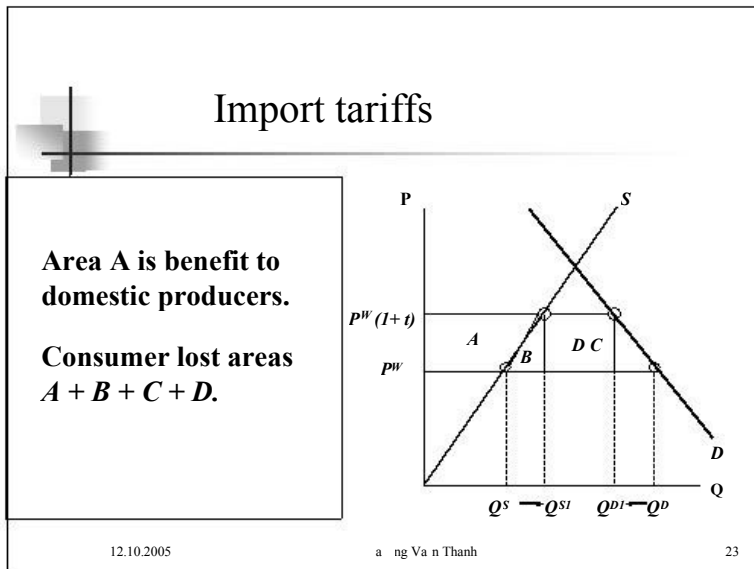


Import quotas and tariffs

Objective:

- Protect domestic industries
- Economic tools to promote or restrict production and consumption
- Create revenue

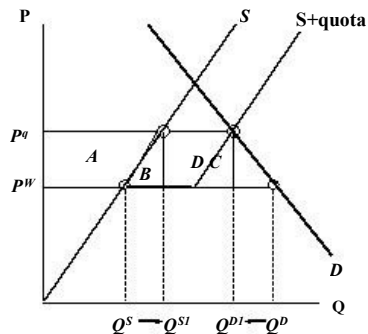
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Import quotas

If the government imposes a tariff, it will gain D, thus net domestic loss is B + C.

If a quota is used, rectangle D becomes part of the profits of importers, and net domestic loss is B + C



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Import quotas vs. tariffs

Similarity:

Main objective: to protect domestic producers.

Both have effects that:

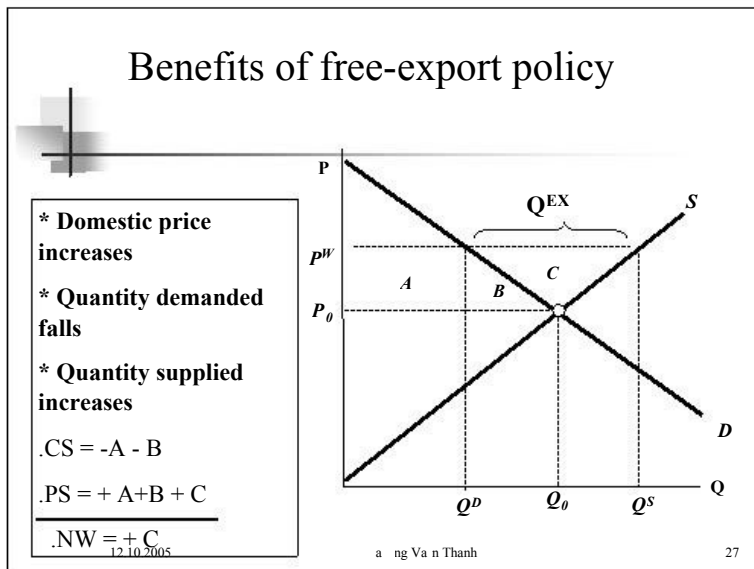
increase domestic price.

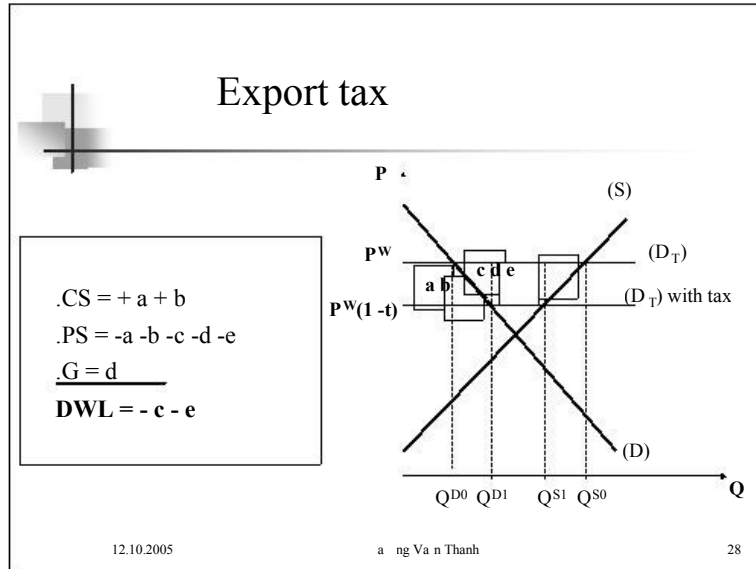
increase domestic quantity supplied.

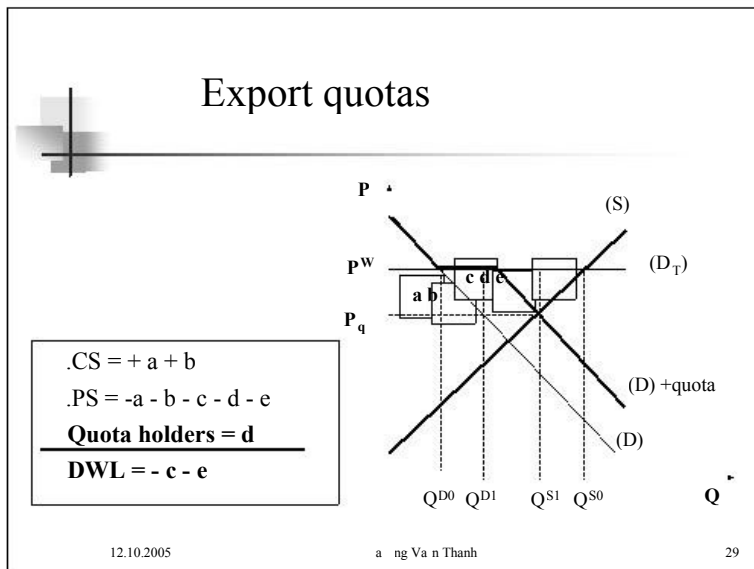
reduce domestic quantity demanded.

reduce imports.

Import quotas vs. tariffs		
Differences:		
	Quota	Tax
Volume and foreign exchange for import	Know	Not know
Beneficiary beside producers	Quota holders	Government budget
Increase in Domestic demand	Domestic prices increases, local producers benefit	Domestic prices unchanged, local producers not benefit
Change in world price	Unchanged Domestic prices	Changed Domestic prices
Domestic monopoly	Monopolistic power	No monopolistic power
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Export quotas vs. Export tax

Similarity:

Both have impact to:

reduce domestic price.

reduce domestic quantity supplied.

increase domestic quantity demanded.

reduce volume of exports.

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<h2>Import quotas vs. tariffs</h2>		
Differences:		
	Quota	Tax
Volume and foreign exchange for export	Know exactly	Not sure
Beneficiary beside consumer	Quota holders	Government budget
Increase in Domestic demand	Domestic prices increases, local producers benefit	Domestic prices unchanged, local producers not benefit
Change in world price	Unchanged Domestic prices	Changed Domestic prices
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Summary

Simple demand and supply models can be used to analyze different government policies.

In each case, consumer and producer surplus are used to evaluate losses and gains to consumers and producers.

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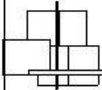


Summary

When government imposes a tax or subsidy, price usually does not rise or fall by the full amount of the tax or subsidy.

Government intervention generally leads to a deadweight loss (DWL).

Government intervention in a competitive market is not always bad.



End of chapter 9

The analysis of competitive markets

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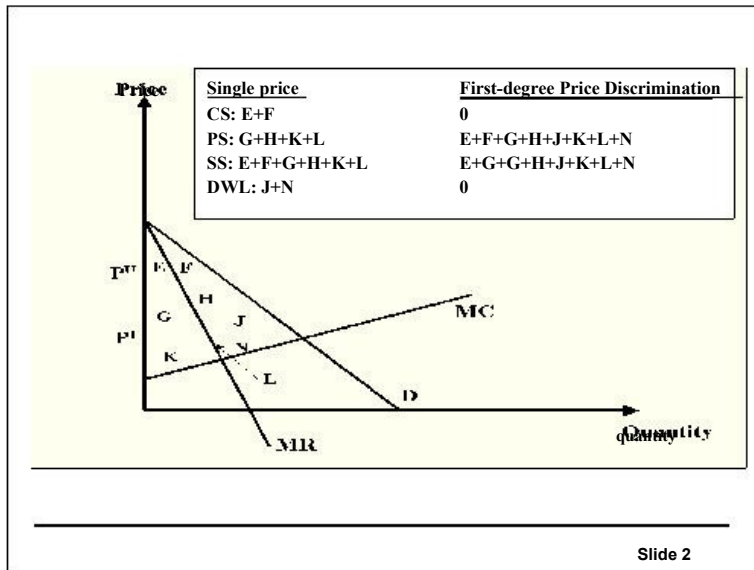
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Lesson 11

Pricing with Market Power

Slide 1



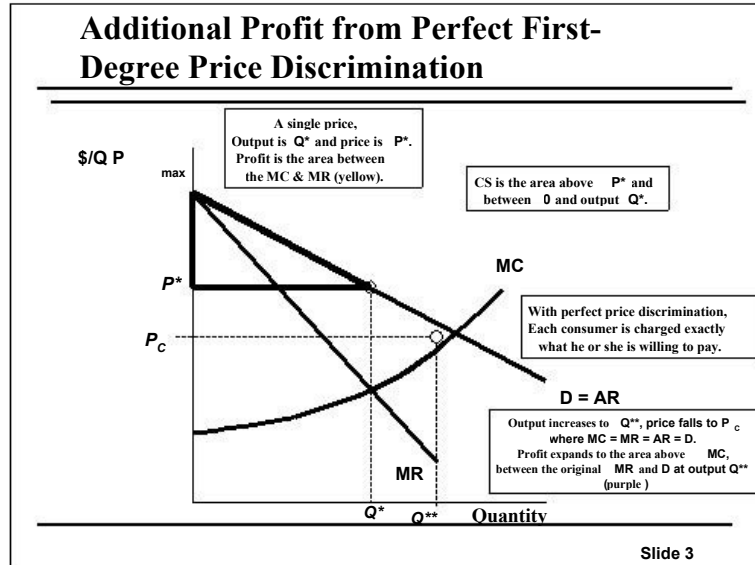
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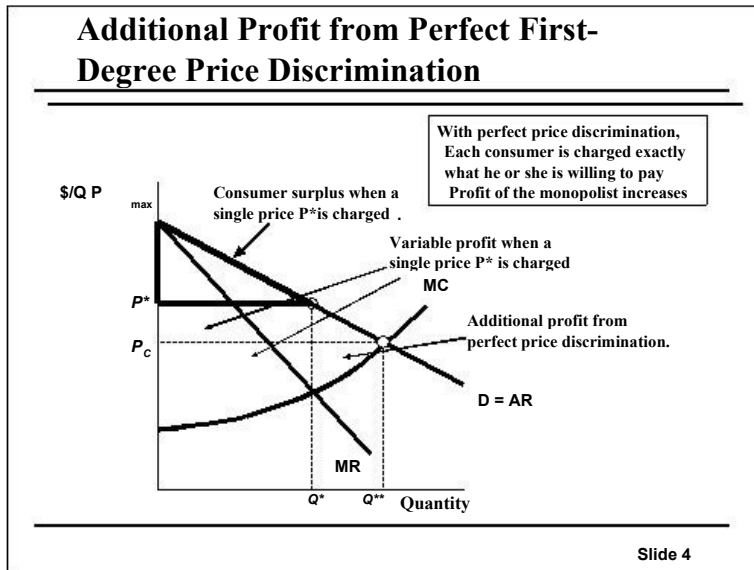
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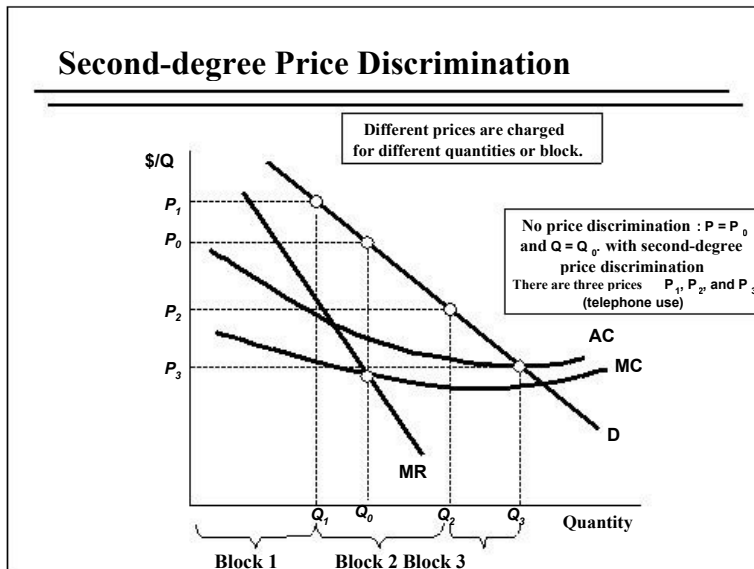
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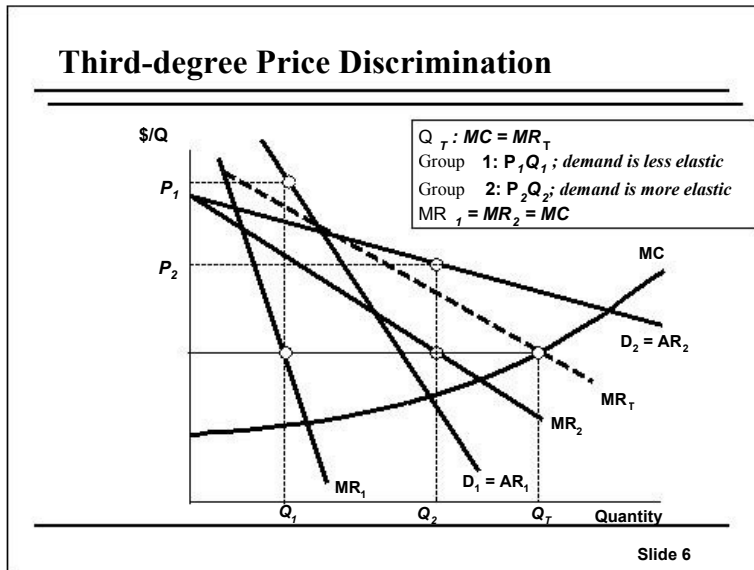
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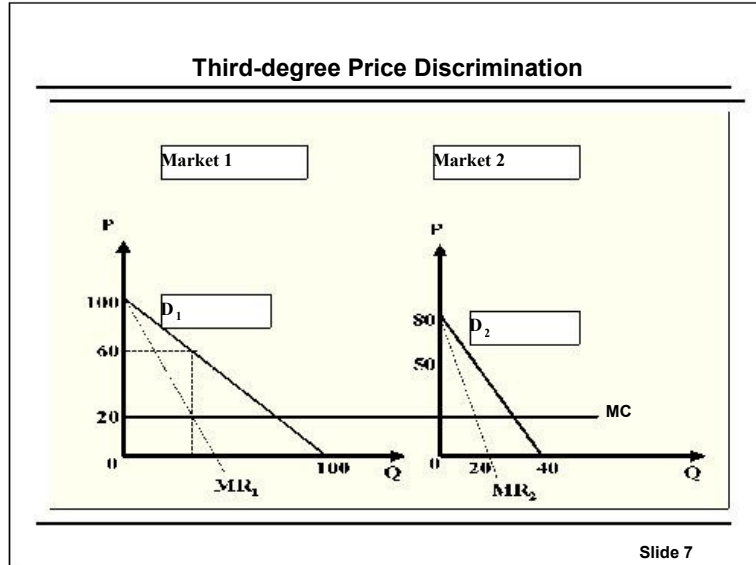
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Intertemporal Price Discrimination and Peak-Load Pricing

Intertemporal Price Discrimination

Newly launched products, demand is inelastic

Book

Movie

Computer

Once obtained max profit from the market, firms will lower the price to capture mass market with more elastic demand

Paperback edition of a book

Discounted movie

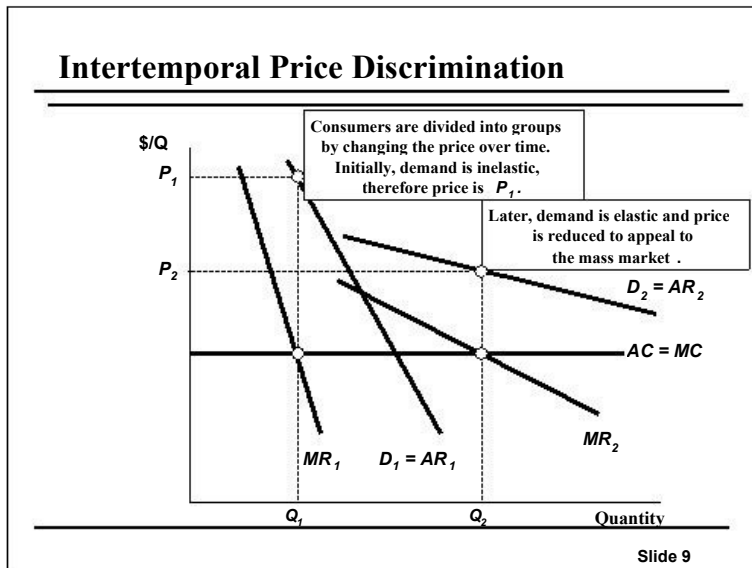
Discounted computer

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Intertemporal Price Discrimination and Peak-Load Pricing

Peak-Load Pricing

For some goods and services, demand peaks at particular times.

Traffic during peak time

Electricity in hot summer nights

Train during holidays, Tet

Capacity limitation also increases MC .

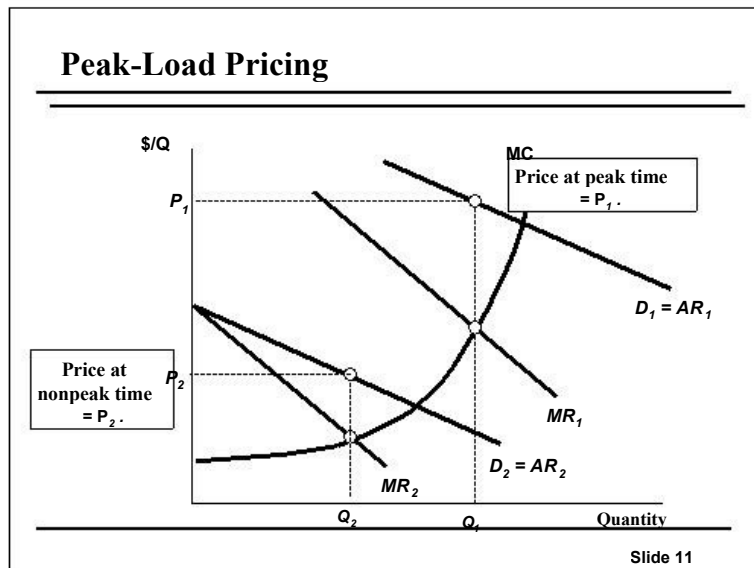
Increases in MR and MC mean price is higher. In each market MR is not equal since it does not influence the other .

Slide 10

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MICROECONOMICS

Lecture Note

**Limiting Monopoly Power and
Promoting Competition**

A. Why limiting monopoly power.

Monopoly leads to economic inefficiency because of lack of competition.

Main interrelated consequences:

1. Monopoly price (P_m) higher than competitive price (P_c) and marginal cost (MC).
- 2 Monopoly output lower than competitive output ($Q_m < Q_c$) .
Competitive market requires $MC=MR=P$.
3. Higher price leads to excess profits, raising

issue of Monopoly and equity. Monopolist receives excess profits at the expenses of consumers.

Note: Normal profits already include in the cost of production.

4. Social costs: Deadweigh loss (DWL).

- a. Consumer surplus loss due to higher prices.
- b. Producer surplus loss due to output lower than under competitive market.

B. What are the objectives of limiting monopoly power.

Objective: Increase economic efficiency by limiting monopoly power, thus favoring competition, innovation and growth.

- Lower monopoly price, P_m , toward competitive prices, P_c .
- Raising output to Q_c .
- Reduce excess profits.
- Reduce social costs of DWL.

C. How to limit market power. Three possible approaches:

Tax and redistribute the excess profits, regulation, and anti-trust laws.

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D. 1st Approach: Shall excess profits be taxed and redistributed to innjured parties. Not feasible.

1. Difficulty to calculate excess profits.
2. Difficult to identify consumers hurt to return profits to them.

E. 2nd Approach: Regulation of monopoly

E.1. Price regulation for natural monopoly

Natural monopoly has long term declining average and marginal costs as output expands. The average cost is higher than MC.

Objective: Set ceiling for regulated price, Pr , lower than Pm , and expand regulated output, such that $Qr > Qm$

- a. Set maximum price based on expected ROR that a firm will earn

$$P = AVC + (Depr + Tax + sK)/Q$$

Depr= depreciation

s = fair rate of return

K = capital stock of the firm

Q= firm output

- b. Set maximum price according to

$$P_{\max}(t) = P(t-1)(1 + \text{Inflation} + \text{Productivity})$$

E.2. Challenges to regulation

Difficulties in determining costs and benefits of regulation.
 High compliance costs to administer regulation
 Economies of scale have largely exhausted.
 Technological changes make entry relatively easier.

E.3 Deregulation: the US experience

Deregulation of railroad (1976), airline (1978), trucking industries (1980), , telephone service and long distance (1982, settlement of ATT and anti trust case), natural gas, electricity generation.

E.3.1. Positive results: Cases

- a. Airline fare declined on average by about 30 % between late 70s and 90s; passenger traffic rose from 250 millions to about 500 million in the same period.**

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b. Local telephone charges rose while long distance charges declined.

Long distance call minutes rose substantially.

E.3.2. However, some negative effects: Cases

a. Airline fare increased by 30%-55% if 1 or 2 airlines going out of business in a given route, following increased competition deregulation.

Fewer remaining airlines become dominant, leading to entry difficulties because they:

- (i) Own long term lease of limited gates at airports (No gates for planes to pick up or discharge passengers);
- (ii) Capture market with their frequent flyer programs;
- (iii) Own the electronic reservation systems that channel potential flyers to them.

- b.
Increased
inconvenience for
customers
- (i) Airlines: lost luggage, flight delays, cancellation
 - (ii) Telecommunications: difficulties to change companies
 - (iii) Electricity: higher prices and black out in California.

E.3.3. Current movement

Some groups advocate for a return to some regulation

F. 3rd Approach: Anti Trust Laws (Competitive Laws)

Objectives: Set rules and regulations to limit or prohibit:

1. *The use of existing market power; acquisition of market power; and*
2. *Conduct of firms that tend to lessen competition.*

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F.1. Anti-Trust Laws: the US Experience

The main law is Sherman Act (1890), complemented and amended by Clayton Act (1914), Federal Trade Commission (1914); Robinson-Putnam Act (1936), Wheeler-Lea Act (1936), and Celler - Kefauver Antimerger Act (1950).

Note: However, exceptions for firms may be granted in case of easy entry, existence of substantial foreign competition, or for mergers leading to economy of scale, or preventing financial failure of a merged company..

F.1.1. Sherman Act (1890)

a. Sherman Act, Sec. 1 prohibits:

- i. Any actions, including contracts, conspiracies, to restrain trade in the US and in trade with foreign nations. Example: An agreement among producers to restrict output and to fix prices is prohibited (an offense).

- ii. Explicit and implicit collusion.
Implicit collusion: parallel conduct whereby a firm consistently follows actions of another firm.

b. Sherman Act, Sec 2, prohibits:

- i. Attempts to monopolize trade in the US or in trade with foreign nations
- ii. Mergers into larger firms that tend to substantially lessen competition.
- iv. Different prices for essentially the same products to injure competition.

Case:

Microsoft Co.held over 90 % of the world market for PC operating system and office productivity system (Word, Excel, etc). In October 1998, DOJ sued Microsoft. The District Court found Microsoft had monopoly power in operating system and engaged in anticompetitive practices to protect that monopoly(June 1991), Microsoft appealed to the Circuit Court of Appeals for the District of Columbia. The

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Appellate supported the District Courts decisions (June 2001). The government case is essentially completed. Its success has triggered private civil suits from competitors and consumers, some of which are still pending .¹

F.1.2. Clayton Act (1914) prohibits:

Price discrimination, exclusive and tying contracts, intercorporate stock holdings, and interlocking directorates.

F.1.3. Federal Trade Commission (1914 and subsequent amendments, latest being in 1995) prohibits:

- a. Unfair and anticompetitive practices, such as false and misleading advertising and labeling,
- b. Enforcement by administrative proceedings, thus reaching further than those of other antitrust laws.

F.1.4. Robinson- Patman Act (1936) prohibits:

Predatory pricing, which is practices of pricing aiming at driving competitors out of market and discourage new

entrants.

F.1.5. Wheeler-Lea Act (1936) prohibits :

False and deceptive advertisement

F.1. 6 Celler - Kefauver Antimerger Act (1950) prohibits

All types of mergers, horizontal, vertical, conglomerates, if their effects are to lessen competition and tend to create monopoly

F.2. Who may initiate legal actions against monopolist.

1. Government: Department of Justice (DOJ).
2. FTC.
3. Any interested parties, most plaintiffs are consumers.
Competitors may also sue.

F.3. What is the division of competence for legal actions against monopolist.

¹Pindyck, Robert and D. Rubinfeld, 2005, Microeconomics, 6th Ed., (New Jersey: Pearson), pp.376-77.

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a. DOJ for criminal cases.

b. FTC for civil cases.

F.4. How are anti-trust laws resolved.

Resolutions by:

1. Dissolution or divestiture, resulting from court trial.
2. Injunction from court requires defendant to restrain from anticompetitive actions, resulting from court trial.
3. Consent decree: defendant agrees to observe the business behavior set down in the decree with DOJ or FTC, without court trial. Consent decree may cover any decisions that could have been taken, resulting from court trial.

Case: In 1974, DOJ sued ATT for illegal practices aiming at eliminating competitors in telephone equipment and long distance markets.²

The case was settled by consent decree in 1982. ATT was broken into 22 local companies representing 2/3 of its original

assets and lost

its on the Bell Laboratory (research), Western electric
 on its manufacturing of telephone equipment), and was allowed to
 enter into cable TV, electronic data transmission,
 telecommunications, and computers (1982).

The case cost the government US\$25 million and ATT, US\$
 360 million

F.5. What are the penalties.

1. Violation of antitrust laws is a felony
2. Fine, or prison, or both.
3. Payments for punitive and compensatory damages to plaintiff may be added.

Fine US 1 million for corporation

US\$ 100,000 and up to 3 years in prison for individuals

Punitive damages to punish for violation of the law

²The cases are from Salvatore, Dominick, 1993, Managerial Economics, (Singapore: McGraw Hill),pp.519-29

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Compensatory damages for the losses incurred by plaintiff (e.g. consumers) because of violation of the law (against monopoly).For deterrence, compensatory damages are tripled.

Case: Electrical Machinery Conspiracy (1961) among
General Electric, Westinghouse, and other electric producers guilty of price fixing and market division.

Penalties: .US\$ 2 million in fine; US\$ 400 million in total damages; 7 executives in jail, 23 others suspended sentences.

F. 6. How to compute compensatory damages .

The starting point to determine the amount of compensatory damages is the excess profit plus DWL. Variations from this benchmark depend on the facts of the case to arrive at the final amount.³

F.7. How are Anti-trust laws in the EU.

Essentially the same as the US laws

Differences:

- a. Easier to show dominant position under the EU than the US law
- b. Civil penalties in Europe but civil and criminal penalties in the US

G. How to measure monopoly power.

G.1. Lerner index: $L = (P - MC)/P = -1/E_d$

G.2. Concentration ratio, C4: ratio of sales of a few firms (4) over total sales:

$$C4 : (S_1 + S_2 + S_3 + S_4) / S_t$$

G.3. Herfindhal-Hirshman Index, calculated for the whole country (USA) for a given product belonging to a given industry.:

$$HHI = 10\,000 \sum w_i^2$$

where:

³See Posner, Richard, A., 1992, Economic Analysis of Law, (Boston: Little and Brown Company}, pp. 315-22

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$$W_i = S_i / S_t$$

S_i = sales of firm i

S_t = total sales of the measured industry

Difference between C4 and HHI: the latter is based on all firms in the industry (more than 4 firms of C4) and on the squares of the market shares of firms.⁴

G.4. Caution on the use of HHI

G.4.1. Attention to the relevant market

1. It tends to overestimate the true degree of monopoly, if the economy is open with additional competition from foreign firms(eg beer market);
2. It tends to underestimate the true degree of monopoly, if the firm subject to scrutinization, operates in local or regional markets;

G. 4. 2 Attention to the relevant industry classification

1. HHI varies according to industry definition and product classes
(North

ANSWER

Number: 1
 Answer: For a given product, the degree of monopoly varies, depending on the industry under which it is classified
 Classification

2. How does one know what products belong to which industries.
 with 6 digit code.

Close substitutes , products with large positive cross elasticities are classified under the same industry class

Case

DOJ sued Dupont Company on monopolizing the market for *cellophane*. Dupont successfully argued that the relevant market was not cellophane but a larger market of flexible packaging materials, including waxed paper, aluminum foils and other materials, based on high cross elasticity of demand between cellophane and those other materials. Since Dupont had less than 20% of this market, the Supreme Court ruled that Dupont had not monopolized the market (1953).

⁴See Baye, Michael; 2005, 2005, Managerial Economics and Business Strategy, 5thEd, (New York: McGraw Hill), pp. 240-48.

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3. How has the HHI been actually used This index has been used by the DOJ to start reviewing the monopoly structure of industry or approval of mergers.
- a. If post merger $HHI < 1000$; DOJ may not challenge.
 - b. If pre merger: $1000 < HHI < 1800$ and post merger HHI increases by more 100, DOJ may challenge.
 - c. If pre merger: $HHI > 1800$ and post merger HHI increases by more than 50, DOJ may challenge.

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Fulbright Economics Teaching Program
Academic year 2005-2006

Microeconomics

Problem 1

Fulbright Economics Teaching Program

Fall Semester

05/09/2005 23/12/2005

MICROECONOMICS

Assignment 1

Distributed: 7/09/2005

Due: 14/09/2005

Question 1.

The increases in world crude oil prices of 55% last year made the prices of gasoline and oil increase in many places around the world. The price of gasoline in the U.S. has risen to USD 3 per gallon, equivalent to 12,700 VND/liter. Vietnam is no exception. The Vietnamese government cannot avoid raising the prices of gasoline and oil domestically because the state budget cannot cover a large amount of subsidies, amounting to billions of dong every year. In 2005 the government has already had to increase the prices of gasoline and oil three times, the first time at the end of March (3/29), the second time at the beginning of July (7/3), and the third time in the middle of August (8/17).

- a) Analyze the impact of increased prices of gasoline and oil on other goods that need to use gasoline and oil as either a direct or indirect input (through the transportation cost). Use a graph showing supply and demand curves to illustrate your answer.
- b) On the one hand the government has been forced to increase gasoline and oil prices, yet on the other hand the government is worried that the impact of increased prices will push the inflation rate for the year 2005 into double figures. Therefore, the Prime Minister and the Ministry of Finance have instructed the relevant local and national authorities to intensify control so as to keep prices stable. According to you, in an economy operating under market principles where the majority of local enterprises are not monopoly and not state-owned, can the leaders of local and national government implement the above demand. Explain.
- c) Some people are anxious that enterprises will take advantage of the increased prices of gasoline and oil to increase selling prices by a ***much greater degree than the cost increase, creating difficulties for*** consumers. According to you, are there grounds for the above concern, given that most enterprises in a market economy operate in an environment of strong competition. Explain, giving examples to illustrate your answer where possible.

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Academic year 2005-2006

Microeconomics

Problem 1

Question 2.

Viettel, the military telecommunications corporation, is a new provider of mobile phone services. Besides its cheaper tariffs compared to its competitors, the method of calculating charges after the first minute is also advantageous for customers with 6-second blocks (S phone: 10 seconds, Vinaphone and Mobiphone: 30 seconds). Therefore Viettels subscriber base has increased quickly to 1 million. Its customers include two groups. The first have never used mobile phones before, the second have switched from other providers.

Observe and compare the price elasticity of demand of these two groups of customers.

Question 3.

Avian flu broke out in Vietnam in the last few months of 2003 and at the beginning of 2004, and reappeared during the last few months of 2004. Did it have an impact on the prices of other kinds of food at that time. Use a graph of the supply and demand curves to illustrate your answer.

Question 4.

The market supply and demand function of product X is estimated as follows:

(D) : $D_{=}$ D_{+}

$P^D = 1000 - 2Q$
 $P^S = 200 + 2Q$
 (the unit for Q is 1,000 tonnes, and the unit for P^D, P^S is 1,000 VND/tonne)

- Determine the equilibrium price and quantity of product X.
- Determine the consumer surplus and producer surplus, and the total surplus of society.
- Determine the elasticity of demand at the equilibrium price. If the producers act together to decrease the selling price a little more will the total expenditure of all customers on this product increase or decrease.
- Now, if the government levies VAT of 10% on industry X what is the equilibrium quantity, how much do buyers have to pay and how much do the sellers receive after paying tax.
- Who bears the tax and how much tax is on each tonne. Calculate the duty revenue that the government receives from product X.
- Calculate the changes in the consumer surplus, the producer surplus and the total surplus of society.

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Academic year 2005-2006

Microeconomics

Problem 2

**Fulbright Economics Teaching Program
Fall Semester**

05/09/2005 23/12/2005

MICROECONOMICS

Assignment 2

Distributed: 14/09/2005

Due: 21/09/2005 (8:20am)

Question 1.

It was very hot today and Minh was very thirsty. The value of each bottle of water is shown below:

The value of the first bottle: 7,000 dong

The value of the second bottle: 5,000 dong

The value of the third bottle: 3,000 dong

The value of the fourth bottle: 1,000 dong

Based on this information, make a table of demand and draw Minhs demand curve for bottled water.

- a. How many bottles of water does Minh buy if it is 4,000 dong/bottle. How much is Minhs surplus. Show Minhs surplus in your graph.
- b. If the price goes down to 2,000 dong, what is the change in the demand quantity. What is the change in Minhs surplus. Show this change in your graph.

Question 2.

Assume that for Minh, beef is a normal good, in contrast to rice, which is a kind of low-level good. If the price of beef decreases how will Minhs consumption of rice change. How will Minhs consumption of beef change. Draw an appropriate graph to illustrate.

Question 3.

The price of 1kg of apples is 20,000 dong and 1kg of oranges is 10,000 dong.

One consumer first buys 10kg of apples and 5kg of oranges. At that time the consumers marginal utility of 1kg of apples is 3 units and 1kg of oranges is 1unit.

- a. Does this consumer achieve maximum utility. Why or why not.
- b. If your answer is no how should the consumer adjust the quantity of each kind of fruit to achieve the maximum utility.

Question 4.

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Academic year 2005-2006

Microeconomics

Problem 2

A big laundry in Ho Chi Minh City needs several hundred kg of detergent. The owner said, I think that OMO is as good as TIDE, and my shop normally just uses these two kinds of detergent. *She continued, However sometimes I buy only one of the two, and sometimes I buy both of them at random, just to get the quantity I need.*

- a. According to you, do her two sayings contradict each other. Briefly explain.

Based on the laundrys owners opinions, answer the following questions.

- b. What is the relationship between these two kinds of goods in consumption.
- c. According to you, what are the characteristics of the marginal rate of substitution (MRS) between these two products.
- d. According to you, in this case, can we write the equation for the indifference curve. If yes, what is the equation.
- e. Assume that the laundry owner needs 120 kg of detergent every day. When does she buy only OMO. Draw the indifference line, the budget line, and show where her optimal market basket lies.
- f. Now, assume that the laundry owner needs 140 kg of detergent every day. When does she buy both OMO and TIDE at random. Draw the indifference line. the budget line. and show where

.....
her optimal market basket can be found.

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Academic year 2005-2006

Microeconomics

Problem 3

Fulbright Economics Teaching Program

Fall Semester

05/09/2005 23/12/2005

MICROECONOMICS

Assignment 3

Distributed: 21/09/2005

Due: 28/09/2005 (8:20am)

Question 1.

The price of the world crude oil heats up making the prices of gasoline and oil increase a lot in most of the countries around the world. Indonesia, although is a member of the Organization of the Petroleum Exporting Countries (OPEC), has to import gasoline and oil because its domestic production cannot meet the needs. The Indonesian government decided to raise the prices of gasoline and oil to 50% in coming early October. This increased price will reduce the budgetary impact of subsidies. And the government wants the price be an efficient allocation of scarce resources, avoiding waste consumption. However, each policy often impacts differently on various parts of society. Economically it is reasonable to raise the domestic prices of gasoline and oil while the world price heats up, but then life of millions of poor people will be more

neats up, but then the millions of poor people will be more difficult to get to increase. A political pressure for the current government. Indonesian government decided to provide an oil subsidy for 15,5 million poor households

In order to provide a rational subsidy, meaning that it can ensure their living standard at **least as same as before the raise of the oil price, a group of researchers of the Statistics Department** collected the related data to the poor households as follows:

Average heads in each household: 4

Average income of each household: 18 USD/ month

Oil price before the raise: P $x_1 = 0,375$ USD/litre

Oil price after the raise: P $x_2 = 0,6$ USD/litre

Estimation of the utility function of each household in spending for oil and other goods:

$$U(X, Y) = 2X^{1/2}Y$$

where: X is the number of litres of oil used every month.

Y is the balance of income for other expenses

- a) By algebraic method, determine the number of litres of oil that each poor family bought every month before and after the price raise if there is no subsidy.

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Microeconomics

Problem 3

- b) On a graph with clear notes, use horizontal axis for oil, draw the budget line, the indifference line, and show where the optimal consumption lies. (Draw by EXCEL, not by hand)
- c) Calculate the price elasticity of demand of the poor household for oil.
- d) By algebraic method (then show on the graph) determine when the price raises, does the substitution make the purchasing power of the poor households decrease. How many litres. Does the income make the purchasing power increase or decrease. How many litres increase or decrease.
- e) For the poor households, is oil a normal or a low-level good. Briefly explain.
- f) Based on the informations in part a) and part d), draw the normal demand curve and the compensating demand curve. Assume that these demand curves are straight lines.
- g) Determind the minimum amount of subsidy for each poor household every month by consuming surplus on each kind of demand curve.
- h) Determine the minimum amount of subsidy for each poor household every month by compensating variation (CV) and show this amount of subsidy on the graph.

- i) By algebraic method, determine the minimum amount of subsidy for each poor household every month by equivalent variation (EV) and show this amount of subsidy on the graph.
- j) If Indonesian government raises the oil price and provides an amount of subsidy according to the compensating variation (CV) it is sure that the poor households utility is as same as it is before the increased price. Therefore some criticized that this was a helpless policy. They thought that it was better to keep the same price and did not have to spend money for the subsidy operation. Do you agree with the above comment. If not, show the important difference between these two ways to see the positiveness of this policy.
- k) In reality, Indonesian government provided a subsidy of 13 USD/month. Assume that the data collected by the Department of Statistics is exact, how many litres of oil did each poor household buy every month by this amount of subsidy. How much utility did they achieve. Did their welfare increase, decrease, or no change compared with the time when the price has not increased..
- l) Write the calculated results in the below table:

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Problem 3

	Oil bought every month (litre)	Amount of subsidy (USD)	Utility (unit)
When the price did not increase and no subsidy			
When the price increased and no subsidy			
When the price increased and subsidy provided by CV			
When the price increased and got a subsidy of 13 USD/month			

Question 2.

Fulbright Vietnam participants are forced to do their assignments on computer. In order to support them in printing their weekly assignments and researches the Director Board give them three options .

Option 1: Provide an amount of 60,000 dong/ month including in the scholarship for them to use as they want. And they have to pay 500 dong/page as market price.

Option 2: Provide free printing maximum 120 pages every month. If they exceed the limit they have to pay 500 dong.

Option 3: Provide a price subsidy of 50% of market price, it means that they have to pay only 250 dong/ page. The maximum price subsidy is 60,000 dong/ month.

Assume that each student consumes a fixed amount of

Assume that each student saves a fixed amount of 800,000 dong per month to spend for books, newspapers, learning materials, stationary and for printing the assignments and reseaches.

- a) In the same graph, use horizontal axis for number of printing pages, vertical axis for the balance to buy books, newspapers, learning materials, stationary. Draw the budget line without subsidy and 3 other budget lines with subsidy corresponding to the above three options.
- b) In what case do the students think that the first option is more benefit than the other two.
- c) In what case do the students think that the first and second options are the same and more benefit than the third.
- d) And in what case do the students think that three options are the same.
- e) If the Director Board asks the class monitor to pick one of three above options for the whole class for the whole year which option will you advise the monitor to pick.

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Academic year 2005-2006

Microeconomics

Problem 4

**Fulbright Economics Teaching Program
Fall Semester**

05/09/2005 23/12/2005

MICROECONOMICS

Assignment 4

Distributed: 29/09/2005

Due: 5/10/2005 (8:20am)

Question 1. Gambling with hurricanes

Every year its the same: right through the stormy season people in the central provinces have to struggle with hurricanes, to flee from hurricanes, and to clear up the mess they leave behind. Hurricanes cause great damage anyway, but if we are unlucky enough to see dikes breached the damage is immeasurable. Every year we see the same situation with the scenario of dikes capable of withstanding only a category 7 or 8 hurricane having to cope with category 11 or 12 hurricanes being repeated at many different locations in stormy areas.

Assume that the budget of province X is B and can be used for two purposes: taking precautions against hurricanes and spending for other public purposes. Assume that the probability of a dike being breached by a

hurricane every year is 20% and the damage caused by the dike being breached is L ($L < B$). Also assume (unrealistically) that provincial efforts to take precautions against hurricanes do not decrease the probability of a dike breach occurring, but can reduce the damage caused by the breach. Assume that in order to limit the damage having value I the province has to invest an amount of pI ($0 < p < 1$).

- a) Use a graph to determine qualitatively the optimal investment of province X in defenses against hurricanes.
- b) Does province X exert its maximum effort completely to protect against the danger of a breach in a dike occurring. There is no need for calculation: use your own intuition to explain the reason for this.
- c) Use the same assumptions as above but now, if the dike is breached, the province will receive an amount of relief S from the Center. Use a graph to determine qualitatively the optimal investment of province X in hurricane defenses. What comments do you have when comparing the result with the above question.

Question 2: Preventing corruption

Tac Lem is the cashier of a company. Although right from the beginning he accumulated a colossal fortune W , it is still hard for him to give up the habit of once in a while siphoning off the company money. The probability of being caught in the

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Problem 4

act of stealing for Tac Lem is p . If he is caught he has to pay a fine of a dong for each dong stolen by him.

- a) Use a graph to analyze the optimal amount of money Tac Lem should steal depending on p and a .
- b) Do you have any suggestions to reduce Tac Lems corruption (these suggestions are to be based only on the background and data given above).
- c) Assume $a = 3$. Calculate the lowest value of p that no more motivates Tac Lem to steal money.

Question 3: A constant assignment

The assumption from question 2 is used in this question, but now we solve the problem with concrete numbers.

Assume Tac Lems von Neumann Morgenstern utility function is $U(C) = \ln C$.

- a) Assume $p = 0.2$, $a = 3$. Calculate the maximum amount of money Tac Lem would steal and his expected utility, and analyse the dependence of these two values on p and a by algebraic methods.
- b) Now assume that Tac Lem can enter into collusion with the chief accountant so the probability of finding out decreases down to 0.1. In return, Tac Lem has to give the chief accountant a 50% cut. Furthermore, if discovered, Tac Lem has

to accept all the responsibility himself. Calculate the maximum amount of money stolen by Tac Lem and his expected utility in this case. Comparing this with the result in question (a) what comments do you have.

Question 4. Diversification

Imagine that (not true of course) on the morning of September 15th, 2005 you are given 10 million dong to solve some problems as follows:

- a) Choose a company quoted at the HCM City Securities Trading Center at random and calculate how many securities (round number) you could buy if on the morning of September 15th, 2005 you spent the whole 10 million dong to buy securities in this company.
- b) Considering the total value of all the securities you bought as a random variable, draw a graph to calculate the average value and variance of this random variable from September 15th to 30th.
- c) Repeat questions (a) and (b) for the securities of another optional company.
- d) Now assume that you are required to spend 5 million dong on each security. Analyse the variation of the total value of all your securities from September 15th to 30th. What are your comments on this variation compared with the two cases above.

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Microeconomics

Problem 4

(For these three questions, assume that when you choose a kind of security you will keep it from September 15th to 30th to observe the changes in price).

Vu Thnh T. Anh

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Translator: Le Viet Anh
Editor: Andy Richardson

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Fulbright Economics Teaching Program
Academic year 2005-2006

Microeconomics

Problem 5

Fulbright Economics Teaching Program

Fall Semester

05/09/2005 23/12/2005

MICROECONOMICS

Assignment 5

Distributed: 5/10/2005

Due: 19/10/2005 (8:20am)

Question 1

- a) Explain the difference between increasing returns to scale and economies of scale. Under what circumstances do increasing returns to scale lead to economies of scale and under what circumstances do increasing returns to scale lead to diseconomies of scale.
- b) Explain the difference between economies of scale and economies of scope. Illustrate by examples.

Question 2

The Processing Food ABC Company is a fairly large-scale operation. Its products are fresh, frozen and canned pork and beef. At the end of the 80s, the company lost its important markets in Russia and the East European countries. Previously, its products had mainly been exported but now they are mainly consumed domestically. The utilization of machinery is very low compared with the capacity.

Faced with the current production and business difficulties, staff in the commercial and technical departments have researched and proposed a scheme to diversify the products so as to exploit the fixed assets and make use of the management group more efficiently. In addition, this proposal would also stabilize workers jobs and wages. According to this scheme, besides the traditional products, the company would also produce fresh, dried, frozen and canned chicken and duck.

The company director was enthusiastic about the ideas of the research group and organized a meeting to get the views of key staff regarding the product diversification program. Before the meeting, the director thought that there would be unanimity in the group and he would be able to execute the plan immediately. The meeting went contrary to his expectations so he was perplexed as to how to make the final decision. Nearly half of those attending the meeting did not sympathize with the plan and chief of this group was the chief accountant. Those opposing the plan were convinced by his forceful arguments.

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Problem 5

According to detailed calculations by the chief accountant, based on expected sales of the new products and current sales of the traditional products, the annual fixed costs to be apportioned to the new products would be 40%; if this calculation was correct, the depreciation expense could be up to 20% of the entire cost of the new product. Therefore, it was certain that the cost price for the company would be higher than most of its competitors. Finally, the chief accountant concluded, ***If this plan is executed the profit for the new products will be low and they might even only just break even. An even worse scenario could occur, albeit with a low probability, that the company would lose money and that loss could be up to 15% of the whole cost.***

If you were the director of ABC Company responsible for making the final decision would you implement the project to diversify the product range. Apply the theory of Microeconomics to explain your decision convincingly.

Question 3

A perfectly competitive company currently produces at a level of output of q_1 units/month and the return is \cdot_1 (million dong). At output q_1 , the marginal cost of the enterprise is higher than the selling price. Does output q_1 bring the maximum return for the enterprise. Explain. If your answer is NO, should the enterprise increase or decrease its output compared with the current level.

Question 4

The production function of enterprise X is: $Q(K,L) = 2k^{1/2}l^{1/2}$. The unit price of capital is $r = 2$ and the unit price of labor is $w = 6$. At present enterprise X invests an amount of $k = k_0 = 100$ units.

- a) Write the total cost function and short-run marginal cost function corresponding to the output variable (Q).
- b) If the market price of the product is $P = 9$ and enterprise X is operating in a perfectly competitive industry, how many units of product does the enterprise produce. How much is the revenue.
- c) In the long run, the enterprise can adjust both its capital and labor. If enterprise X produces at same output level as in question b how much capital and labor does it use. How much is the profit. Is it higher or lower compared to the result for question b above.

Question 5

Assume that Vietnam has banned the import of electronic products, so the domestic equilibrium price is twice as high as the world price. In each case below, plot a graph with clear notes to show the change in the domestic equilibrium price; the changes in the quantity of demand, supply and imports; the change in consumer surplus, producer

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Problem 5

surplus, tax collected by the government and social surplus. And in each case, show clearly who gains and who loses.

- a) To protect domestic electronic production, the government levies a tax on imported electronic goods at a rate of 50% of the world price.
- b) Under pressure from consumers and to push domestic electronic companies to improve their production and management, to strengthen competition and to be ready for integration, the government reduces the import tax rate down to 20% of the world price.
- c) After reducing the import tax, domestic enterprises react strongly and the imported goods are made subject to a sales tax. The sales tax rate is 25% calculated on the world price including import tax.
- d) After reducing the import tax, the government imposes a sales tax at a rate of 25% calculated on the world price including import tax. The sales tax is imposed on both imported goods and domestic production.

Van Thanh

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Fulbright Economics Teaching Program
Academic year 2005-2006

Microeconomics

Problem 6

**Fulbright Economics Teaching Program
Fall Semester, 2005**

MICROECONOMICS

Problem Set 6: Market Power: Monopoly

Distribution date: November 2, 2005

Due date: November 11, 2005 at 8:20 a.m.

Monopoly Profits

1. A monopoly faces a demand curve $P = 300 - 4Q$, a constant average variable cost = 100, and fixed cost = 50.

What is the profit maximizing price and output. Explain

2. A monopoly must take into account the demand curve facing her firm for maximizing profit. She hears that the monopoly power is higher, the higher is the inelasticity of the demand curve. She consult you on whether her firm should produce an output that corresponds to a price on the demand curve where the elasticity $E = -0.5$. Explain your advice.

Deadweight Losses

3. A monopolist is characterized by the following: a demand curve : $P=180 - Q$;
MC: $60 + 2Q$. Calculate and draw a graph with appropriate labelling of variables to show the areas of DWL.

To achieve this, please compute the following:

- a. Monopoly price and output (P_m, Q_m);
- b. Price and output that would exist under competitive market (P_c, Q_c);
- c. Price and output that would exist at the intersection of $MC = MR = P_s$ (P_s, Q_s). Note that Q_s should be equal to Q_m , and
- d. Deadweight losses arisen from monopoly.

Tax under competitive and monopoly markets

4. The market for Ha Dong silk faces a demand curve, $P = 28 - 0.02Q$. Ms. Las old family business produces silk at the long run average total cost, which is also the marginal cost of 8 units (in thousands of constant VND) per meter.
- a. There are several small producers in the village, using the same technology and having similar costs as Ms. Las business. For this question and the

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Fulbright Economics Teaching Program
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Microeconomics

Problem 6

question (b) below, the market is considered to be under perfect competition. Compute the equilibrium price P_c and Q_c .

- b. A tax of 2 units (in thousands of constant VND) is introduced. Compute the price paid by the buyers, the sellers, and the produced quantity.
- c. Ten years later, Ms Las business is so successful, she bought all other silk businesses in her village and becomes a monopoly. Cost conditions remain the same as under perfect competition and without tax. Compute the new price P_m and Q_m .
- d. If a tax of VND 2 units(in thousands of constant VND) is introduced. Compute the monopoly price P_{mt} and Q_{mt} .

Regulation

5. A monopoly faces a demand curve given by $P = a - bQ$ and has a marginal cost by curve represented by $MC = e + fQ$. The government wants to regulate this monopoly.
 - a. What is the ceiling price that leads to the greatest reduction of DWL.
 - i. Draw the graph and indicate the appropriate labels, such as price

and quantity
~~under~~ competition are (P_c, Q_c) .

monopoly

- ii. Solve algebraically the ceiling price.
~~at (P_m, Q_m) and~~

b. Why a price below that ceiling will lead to inefficiency.
~~perfect~~

6. A natural monopoly (such as Electricity of Viet Nam) has economies of scale. Its average total cost declines as output rises. The average total cost is therefore larger than its marginal cost which also declines. It faces the demand curve $P = a - bQ$. Monopoly price P_m is higher than competitive price P_c .

In order to increase output, regulator has to set a ceiling price.

- a. May the ceiling (P_c) be set at the intersection (A) of the MC with the demand curve. Explain
- b. Where should the ceiling (P_r) be set to ensure that the monopoly can continue to operate and at possible highest output (Q_r).

Competitive Policies

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Microeconomics

Problem 6

7. Should the following activities be prohibited to promote competition, thus economic efficiency, and economic welfare. Support your reasoning with appropriate graphs to show the relevant factors, such as PC, Pm, Qc, Qm, MC, MR, DWL.
- Conspiring to fix prices
 - Merging firms aiming at creating monopoly
 - Obtaining a patent with the exclusive right to produce a good

8. Monopoly index

The Lerner's index of monopoly power is $L = (P - MC) / P$. This implies that:

- If $L = 0$, the firm is in a perfectly competitive market. Is this correct. Explain
- The value of L is between 0 and 1. Is this correct. Explain
- The larger L is, the higher the profits of the monopoly are. Is this correct. Explain.

Thai Van Can/ Nguyen Ho Phuong Chi

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Microeconomics

Suggested solution to Problem 1

**Fulbright Economics Teaching Program
Fall Semester**

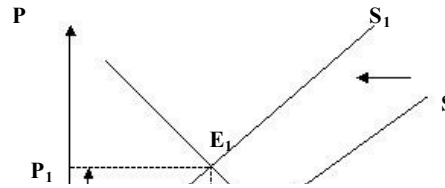
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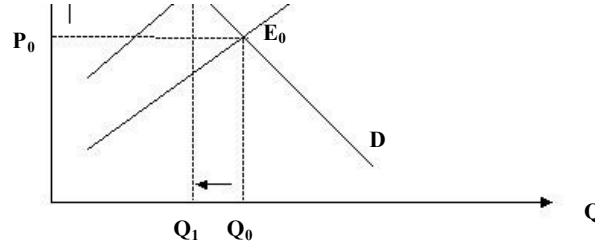
MICROECONOMICS

Suggested solution to Assignment 1

Question 1.

- a) When the price of gasoline and oil increases it will make the production cost of other goods that need to use gasoline and oil as either a direct and indirect input (through the transportation cost) increase. This means that the supply of these goods will decrease (the supply curve shifts to the left) with the result that the equilibrium price increases and the equilibrium production volume decreases.





- b) In an economy operating under market principles where the majority of local enterprises are not monopoly and not state-owned, nobody can forbid enterprises from adjusting the selling price when their costs increase. If the government intervenes by setting a ceiling price across the board it will contravene market principles. As a result, localities cannot keep the price stable (because they have neither the power nor the right). This shows that, when an economy integrates into the world economy, sometimes market power is stronger than the governments power). Even the price of electricity is not immune: the government is planning to increase it by about 40% between now and the year 2008.
- c) Some people are anxious that enterprises will take advantage of the increased prices of gasoline and oil to increase selling prices by a much greater degree

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Microeconomics

Suggested solution to Problem 1

than the cost increase, creating difficulties for consumers. In a market economy operating in an environment with strong competition, this anxiety is completely unfounded. When the cost increases, most enterprises, whether operating in an environment of competition or under monopoly conditions, and assuming the price was not under government control before, will mostly increase their prices by an amount lower than the cost increase in order to maximize their benefit (excluding products where the price was under government control before, when the enterprise might take advantage of the opportunity presented by the cost increase to request a higher price. However such enterprises are few and completely under government control).

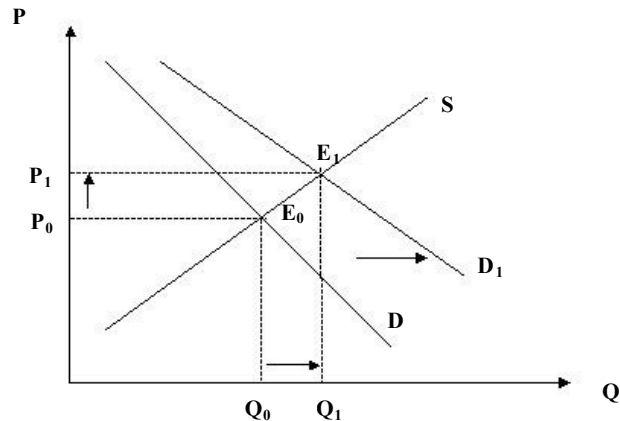
Below is an article from Thanh Nien newspaper, dated 09/12/2005 as an illustration for this suggested solution. Note that the article will be issued after this assignment.

Question 2.

Having a variety of different providers of mobile phone services is very good for subscribers. When the price of a provider decreases its demand will increase. However, Viettels subscribers are mainly new ones who have never used services from other providers. Subscribers who have used mobile phones from other providers for many years do not change their old numbers easily. This is for a variety of reasons including a high income and their relationships with customers, partners and friends. Therefore, the price elasticity of demand of this group of subscribers will be less than that of the new group.

Question 3.

Avian flu broke out in Vietnam in the last few months of 2003 and at the beginning of 2004, and reappeared during the last few months of 2004. This had the effect of increasing demand for other goods (the demand curve shifted to the right) and the prices of items like pork, beef and fish increased during this time.



Van Thanh

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Editor: Andy Richardson

Question 4.

Market supply and demand functions of the good X is estimated as follows:

(D): $P^D = -(1/2)Q^D + 110$.

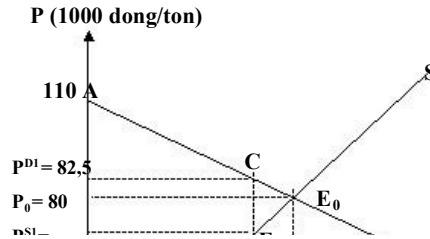
(S): $P^S = Q^S + 20$

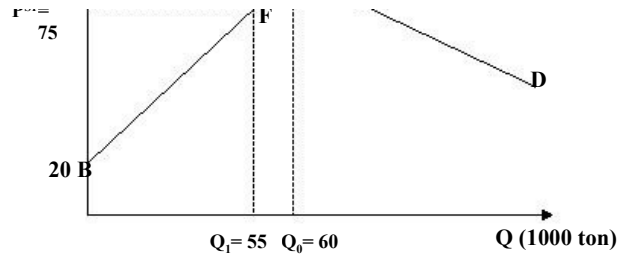
(the unit for Q^D, Q^S is 1,000 tonnes, and the unit for P^D, P^S is 1,000 VND/tonne)

a) The market is balanced when $Q^S = Q^D = Q_0$ and $P^S = P^D = P_0$

$$\Rightarrow Q_0 + 20 = -(1/2)Q_0 + 110$$

$$3/2 Q_0 = 90 \Rightarrow Q_0 = 60 \text{ thousand tonnes and } P_0 = 80 \text{ thousand dong/tonne}$$





- b) Consumer surplus is the area of triangle AP_0E_0

$$CS = *60*(110-80) = 900 \text{ million VND}$$

Producer surplus is the area of triangle BP_0E_0

$$PS = *60*(80 - 20) = 1,800 \text{ million VND}$$

$$\text{Total social surplus} = CS + PS = 2,700 \text{ million VND}$$

- c) The price elasticity of demand at the equilibrium price.

$$E_p = (dQ/dP) * (P/Q) = -2 * (80/60) = -8/3$$

$E_p < -1$: Demand is highly elastic, total consumption is contra-variant to the price so from this price level, if the producers act together to decrease the selling price a little more the total expenditure of all customers on this product will increase.

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Microeconomics

Suggested solution to Problem 1

d) If with VAT, market is balanced when: $Q^S = Q^D = Q_1$ and $P^{S+tax} = P^D$

$$P^{S+10\%} = P^S = P^D \text{ or } 1.1 P^S = P^D$$

$$1,1(Q_1 + 20) = -(1/2)Q_1 + 110$$

$$1,6 Q_1 = 88 \Rightarrow Q_1 = 55 \text{ thousand tonnes}$$

The amount the buyer has to pay is $P^D = -(1/2)55 + 110 = 82.5$ thousand dong/tonne

The amount the seller receives after paying tax $P^S = 55 + 20 = 75$ thousand dong/ton

e) The consumer pays 2.5 thousand dong of tax (82.5 - 80) and the producer pays 5 thousand dong of tax (80 - 75) on each tonne of product.
Total tax gained by the government from the industry X is: $7.5 * 55 = 412.5$ million dong

f) Consumer surplus decreases
 $.CS = - * (60+55)*(82,5-80) = - 143.75$ million dong
 Producer surplus decreases
 $.PS = - * (60+55)*(80 - 75) = - 287.5$ million dong
 (on the graph it is the area of trapezium $P^S_1FE_0P_0$)
 The tax gained by the government is
 $.G = 7.5 * 55 = 412.5$ million dong
 (on the graph it is the area of the rectangle $P^D_1CFP^S_1$)

Total social surplus decreases
(this decrease is called
deadweight loss)
(on the graph it is the area of triangle CFE0)

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Microeconomics

Suggested solution to Problem 1

Mai Phuong - Thanh Xuan

Van Thanh

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Academic year 2005-2006

Microeconomics

Suggested solution to Problem 1

Industrial goods prices up in Vietnam



The cost of industrial goods is expected to rise in Vietnam, fueled by steep increases in crude oil and production materials, along with interest rates, according to manufacturers.

Steel and plastics prices are like to increase first in Vietnam, following soaring production material costs, manufacturers said.

Local steel makers said their prices will go up, based on a US\$30 per ton increase for steel ingots since early June, sending the cost of doing business per month soaring by as much as \$25,000.

The plastics industry has been directly hit by soaring oil prices, as plastic is a byproduct oil processing.

For tens of years working in the industrial sector, I have never seen material costs this high, says Phan Van Thanh, director of a Ho Chi Minh City-based plastics maker.

In the second quarter of 2004, the cost of imported PEHD, a precursor plastics material, was

\$0.5-0.6 per kilo, but has topped \$1-1.1 per kilo in the second quarter of this year.

So far, the prices of plastics have surged by 10 to 15% this year, and manufacturers say further increases are unavoidable.

Rising interest rates

Manufacturers also expressed concern over the fact that they are shouldering the increased burden of rising interest rates.

Almost all local companies borrow money from banks, thus they are now hit by higher interest rates, says analysts and financial experts.

So far, banks have raised rates for loans in Vietnamese dong to 0.85% per month, up from 0.75% per month. Meanwhile, the cost of borrowing US dollars is up by roughly 2.2% per month to 5.2% per month.

If manufacturers increase their prices by 5%, then 2% of the increase is driven up by rising interest rates, according to analysts.

Reported by Mai Phuong & Thanh Xuan Translated by Hieu Trung

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Fulbright Economics Teaching Program
Academic year 2005-2006

Microeconomics

Suggested solution to Problem 1

Dear participants,

This suggested solution was done last week. However, by chance I read the article below in the Sai Gon Economics Times no. 38-2005, dated on 15/09 and found some ideas similar to my suggested solution. This is for your reference.

Steel Association reacts to the regulations on the steel business

The Vietnam Steel Association (VNSA) has just requested the Government Office to reconsider the necessity of the regulations on steel business promulgated by the Ministry of Commerce in the middle of August 2005 and petition the government to assign the Ministry of Justice to compare this regulation with current law for more appropriate decisions.

For the VNSA, construction steel is neither a kind of conditional commodity nor one that is under government price controls. And from 1993 the government abolished the regulation of ceiling prices and floor prices for this commodity. Moreover, according to VNSA the production capacity of the whole country is 6 million tons/year, two times more than the demand so the competition among enterprises is very strong, and cannot be a monopoly. So there is no reason for the Ministry of Commerce to issue a regulation for this kind of commodity separately. Besides, some stipulations interfered too much in the business self-regulation of the enterprises mentioned in the state-owned enterprise law and the state laws on price.

VNSA thinks that the Ministry of Commerce should not intervene in the market by administrative

procedures.
T.H

Van Thanh

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Microeconomics

Suggested solution to Problem 2

**Fulbright Economics Teaching Program
Fall Semester**

05/09/2005 - 23/12/2005

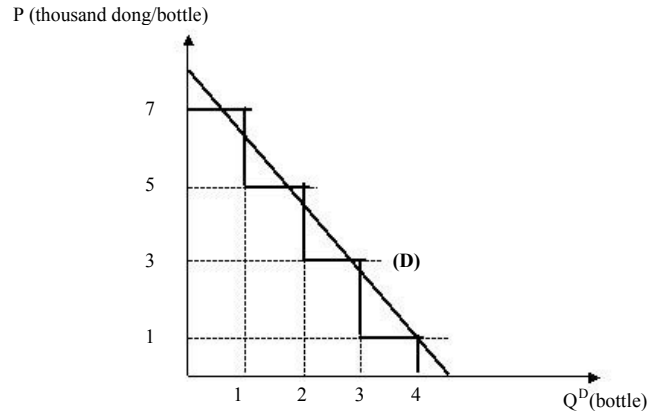
MICROECONOMICS

Suggested solution to Assignment 2

Question 1.

a. Table of Minhs demand for bottled water

P (thousand dong/bottle)	Q^D (bottle)
7	1
5	2
3	3
1	4



Minh's demand curve for bottled water is a step graph if the quantity is a discrete variable. If the quantity is a continuous variable the demand line is straight.

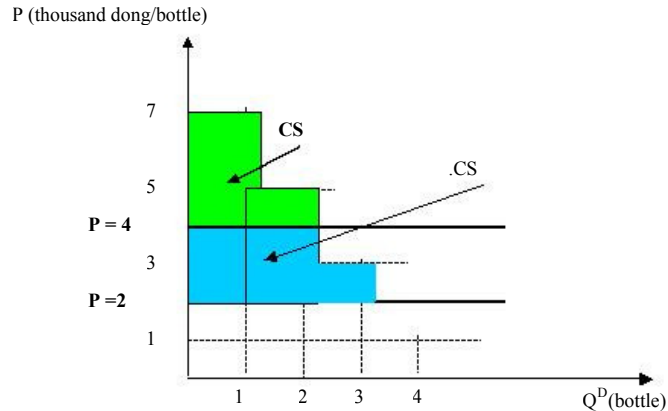
- b. If the price of a bottle of water is 4,000 dong, Minh will buy 2 bottles. Minh's surplus is 4,000 dong = $(7-4) + (5-4)$

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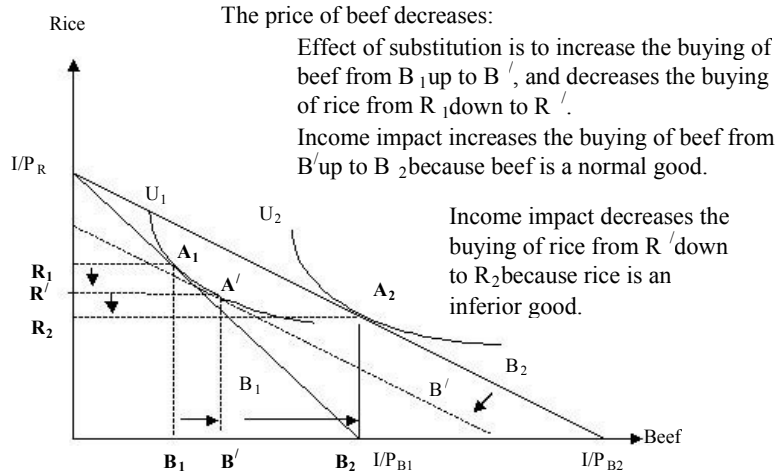
Suggested solution to Problem 2



- c. If the price goes down to 2,000 dong, the demand quantity is 3 bottles. Minhs surplus now is 9,000 dong = $(7-2)+(5-2)+(3-2)$, the increase in quantity is:
.CS = $9 - 4 = 5,000$ dong.

Question 2.

Assume that for Minh, beef is a normal good, in contrast to rice, which is an inferior good. If the price of beef decreases, Minhs consumption of rice will decrease **and his consumption of beef will increase. An illustrative graph follows.**



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Fulbright Economics Teaching Program
Academic year 2005-2006

Microeconomics

Suggested solution to Problem 2

Question 3.

The price of 1kg of apples is 20,000 dong and 1kg of oranges is 10,000 dong.

One consumer first buys 10kg of apples and 5kg of oranges. At that time the consumers marginal utility of 1kg of apples is 3 units and 1kg of oranges is 1 unit.

- a. This consumer does not achieve maximum utility because $MUA/PA > MUO/PO$ ($3/20 > 1/10$)
- b. To achieve maximum utility, this person has to adjust the quantity of each kind of the above fruit by buying more apples and less oranges to achieve maximum utility: $MUA/PA = MUO/PO$.

Further explanation: Under the first method of buying, the marginal utility of every dong of used to buy apples is greater than the marginal utility of every dong used to buy oranges. Under the rule of decreasing marginal utility, the consumer has to buy more apples and fewer oranges until the marginal utility of each dong spent on different kinds of goods is equal.

Question 4.

A big laundry in Ho Chi Minh City needs several hundred kg of detergent. The owner

said, I think that OMO is as good as TIDE, and my shop normally just uses these two kinds of detergent. *She continued, However sometimes I buy only one of the two, and sometimes I buy both of them at random, just to get the quantity I need.*

- a. Her two sayings do not contradict each other at all. The benefit of each kg of detergent of any brand name is the same, but which one we should buy will depend their relative prices.

MUO = MUT does not provide enough information to choose which one and we have to compare MUO/PO and MUT/PT to make a decision.

If $MUO/PO > MUT/PT$ as $PO < PT$ we should only buy OMO.

If $MUO/PO < MUT/PT$ as $PO > PT$ we should only buy TIDE.

If $MUO/PO = MUT/PT$ as $PO = PT$ we should buy both of them at random.

- b. In consumption, the relationship between these two goods is as perfect substitutes.
- c. The marginal rate of substitution (MRS) between these two kinds of goods is a constant. If each bag of detergent is packed the same in 1kg, 5kg, or 10kg $MRS = 1$. If OMO is packed in 5kg, TIDE is packed in 10kg $MRS_{OT} = 1/2$ or $MR_{STO} = 2$

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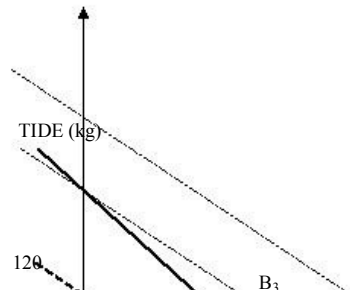
Suggested solution to Problem 2

- d. These two goods are perfect substitutes so the indifference curve is a straight downward-sloping line like the budget line, and in this case the equation of the indifference curve can be written as follows:

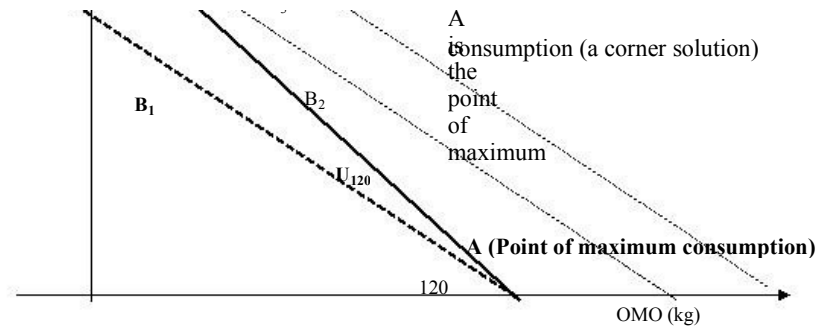
$$U(O,T) = aO + bT$$

where O is the number of bags of OMO and T is the number of bags of TIDE ($a = b$ if the weight of each bag of two kinds is the same, $a = 2b$ if the weight of each bag of OMO doubles each bag of TIDE).

- e. Assume that the owner of the laundry needs 140 kg of detergent every day, she buys both OMO and TIDE at random when $P_T = P_O$



The budget to buy 120 kg of OMO is B_1 . This budget is not enough to buy 120kg of TIDE. Whereas the budget sufficient to buy 120 kg of TIDE is B_2 . $B_2 > B_1$, therefore



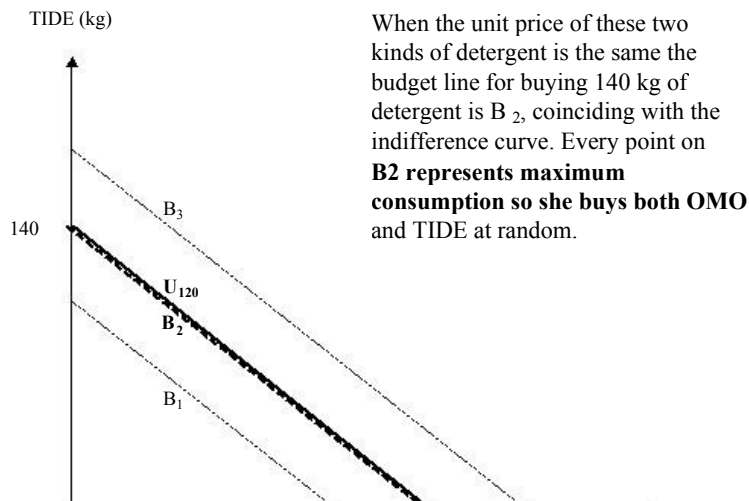
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Fulbright Economics Teaching Program
Academic year 2005-2006

Microeconomics

Suggested solution to Problem 2

- f. Assume that the owner of the laundry needs 140 kg of detergent every day, she buys both OMO and TIDE at random when $P_T = P_O$



When the unit price of these two kinds of detergent is the same the budget line for buying 140 kg of detergent is B_2 , coinciding with the indifference curve. Every point on **B2 represents maximum consumption so she buys both OMO and TIDE at random.**



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Fulbright Economics Teaching Program
Academic year 2005-2006

Microeconomics

Suggested solution to Problem 3

**Fulbright Economics Teaching Program
Fall Semester**

05/09/2005 23/12/2005

MICROECONOMICS

Suggested solution to Assignment 3

Question 1.

Average income of each household: 40.50 USD/month

Oil price before the increase: P $x_1 = 0.375$ USD/liter

Oil price after the increase: P $x_2 = 0.60$ USD/liter

Estimate of the utility function for each household for spending on oil and other goods:

$$U(X, Y) = 2X^{1/2}Y$$

where: X is the number of liters of oil used every month.

Y is the balance of income available to spend on other items.

- a) Determine the number of liters of oil that each poor family bought every month before and after the price increases, in the case that there is no subsidy.

Constraint: $X \cdot P_x + Y \cdot P_y = I$

Objective function: $\text{Max } U(X, Y) = 2X^{-1/2}Y$

To maximize the utility of limited budget the poor households have to buy oil and other kinds of goods with quantities as follows:

$X \cdot P_x + Y \cdot P_y = I$ (1) (Constraint)

and $MU_x / P_x = MU_y / P_y$ (2) (Optimal condition)

By the utility function $U(X, Y) = 2X^{-1/2}Y \Rightarrow MU_x = \frac{\partial U}{\partial X} = \frac{Y}{X^{3/2}}$ and

$$MU_y = \frac{\partial U}{\partial Y} = 2X^{-1/2}$$

Substituting all the given and calculated values in (1) and (2):

Oil price before the increase

$$0.375X + Y = 40.5 \quad (P_y = 1) \quad (3)$$

$$\frac{Y}{0.375X^{3/2}} = 2X^{-1/2} \Rightarrow Y = 0.75X \quad (4)$$

Substituting (4) in (3): $0.375X + 0.75X = 40.5 \Rightarrow X = 36$ $I = 40.5/1.125 = 36$
liters.

Money spent on other goods is: $Y = Y_1 = 0.75 * 36 = 27 \text{ USD}$.

The utility is: $U_1 = 2 * 36^{-1/2} * 27 = 324 \text{ utility units}$

Oil price before the increase

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Suggested solution to Problem 3

$$0.6 X + Y = 40.5 \quad (5)$$

$$\frac{Y}{0.6X^{1/2}} = 2X^{1/2} \Rightarrow Y = 1.2 X \quad (6)$$

Substituting (6) in (5): $0.6X + 1.2X = 40.5 \Rightarrow X = X$
liters.

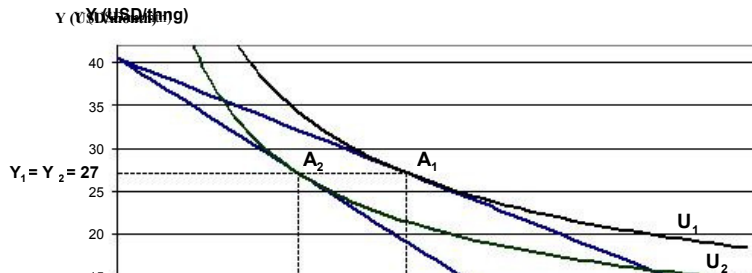
$$X_2 = 40.5/1.8 = 22.5$$

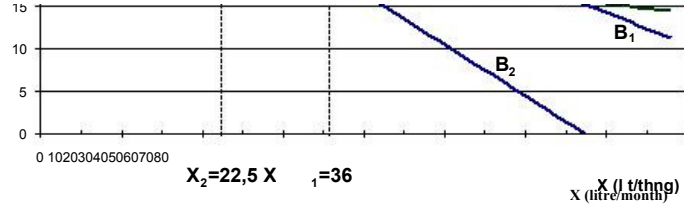
Money spent on other goods is: $Y = Y_2 = 1.2 * 22.5 = 27$ USD.

The utility is: $U_2 = 2 * 22.5^{1/2} * 27 = 256.1445$ utility units

b) Graph

Budget line and indifference curve





- c) The price elasticity of demand for oil for poor households.

$$E_p = \frac{\frac{\Delta X}{X}}{\frac{\Delta P}{P}} = \frac{X_2 - X_1}{P_{X2} - P_{X1}} \cdot \frac{(P_{X2} + P_{X1})/2}{(X_2 + X_1)/2}$$

$$E_p = \frac{22,5 - 36}{0,6 - 0,375} \cdot \frac{(0,6 + 0,375)/2}{(22,5 + 36)/2}$$

$$E_p = \frac{-13,5}{0,225} \cdot \frac{0,4875}{29,25} = -1$$

- d) To determine the substitution impact, we have to exclude the income impact.

This means that we have to determine the new optimal consumption on the first indifference line U_1 , but at the price P_{X2} .

Constraint: $U(X,Y) = 2X^{-1/2}Y = U_1$

Objective function: $\text{Min } E = X \cdot P_X + Y \cdot P_Y$ (E is the amount of money consumed)

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Suggested solution to Problem 3

To minimize consumption at the determined utility poor households have to buy oil and other kinds of goods in the following quantity:

$$U(X,Y) = 2X \quad \text{and} \quad Y = 324 \quad \text{(Constraint)}$$

$$\text{and} \quad MU_X / P_X = MU_Y / P_Y \quad \text{(Optimal condition)}$$

(8) that is (6) in part a, this means $Y = 1.2 X$ (9)

Substituting (9) in (7): $2X \quad \text{and} \quad 1.2X = 324 \Rightarrow 2.4X = 324$

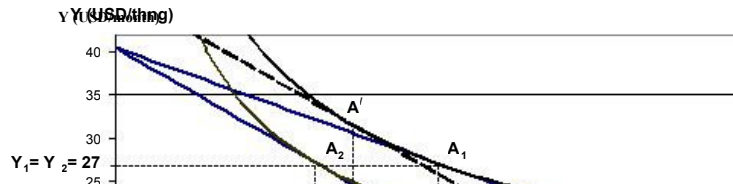
$$X^{3/2} = 135 \Rightarrow X = X^2 = \mathbf{26.316 \text{ liters}}$$

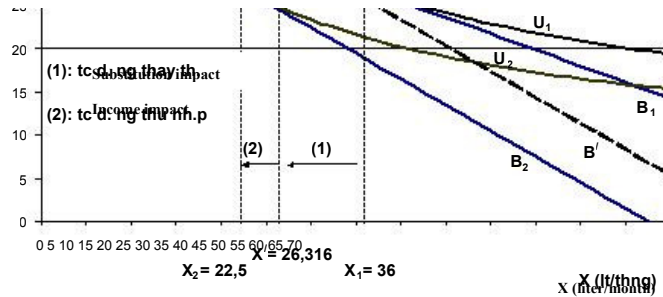
$$Y = Y^1 = \mathbf{1.2 * 26.316 = 31.579 \text{ USD}}$$

Lowest total consumption is $E = I^1 = \mathbf{0.6 * 26.316 + 31.579 = 47.369 \text{ USD}}$

Therefore, when the price increases, substitution makes the purchasing power of poor households decrease **9.684 liters** ($= X_1 - X^1 = 36 - 26.316$) and the income increase make their purchasing power decrease **3.816 liters** ($= X^1 - X_2 = 26.316 - 22.5$)

Substitution impact and income impact

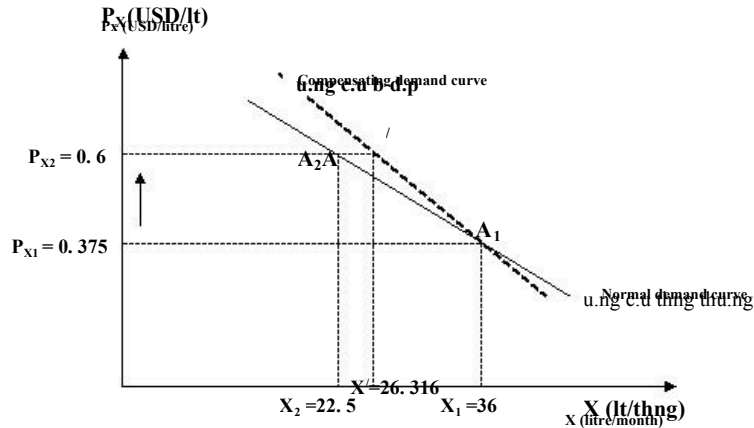




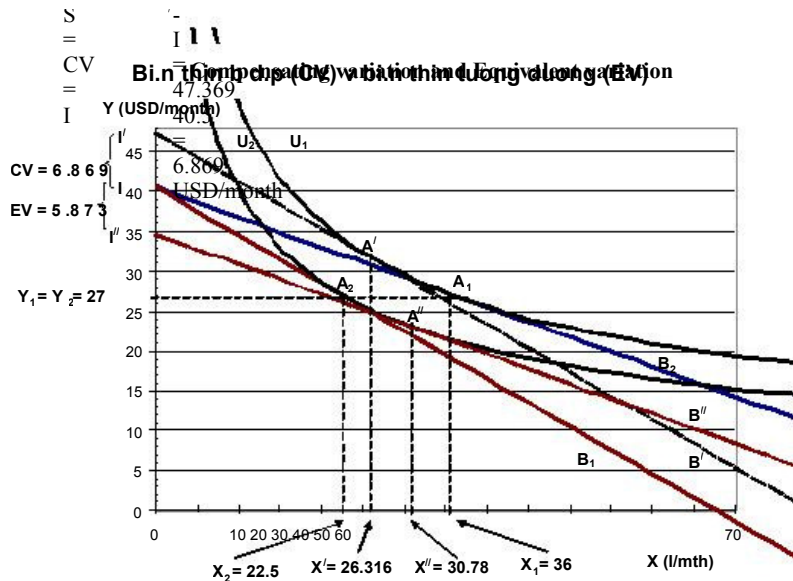
- e) For poor households, oil is a normal good, because when the income decreases (B_1/B_2), the purchasing power decreases (X_1/X_2),
- f) The normal demand curve and the compensating demand curve are shown on the next page.
- g) According to the consumer surplus corresponding to the normal demand curve the minimum amount of subsidy (S) is:

$$S = .CS = 0.5 * (36+22.5) * (0.6 - 0.375) = 6.58125 \text{ USD/month}$$
 (area of the trapezium $P_{X_1}P_{X_2}A_2A_1$)
 According to the consumer surplus corresponding to the compensating demand curve the minimum amount of subsidy (S) is:

$S = .CS = 0,5 * (36+26.316) * (0.6 - 0.375) = 7.0106 \text{ USD/month}$
(the area of the trapezium $P_{X_1}P_{X_2}A_1A_2$)



- h) To get the old utility (U_{X_1}) at the new price (P_{X_2}) the poor households need to have an income of $I' = 47.369 \text{ USD}$ (calculated in question d above). Therefore according to the compensating demand curve the minimum amount of subsidy (S) is:



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Suggested solution to Problem 3

- i) According to the equivalent variation (EV), first we have to find the minimum amount of money such that consumers get the new utility (U_2) at the old price (P_{X1})

$$U(X,Y) = 2X^{1/2}Y = U_2 = 256.1445 \quad (10) \text{ (Constraint)}$$

$$\text{and } MU_X / P_X = MU_Y / P_Y \quad (11) \text{ (Optimal condition)}$$

(11) is actually (4) from part a), meaning $Y = 0.75 X$ (12)

Substituting (12) in (10): $2X^{1/2} * 0.75X = 256.1445 \Rightarrow 1.5X^{3/2} = 256.1445$

$$X^{3/2} = 170.763 \Rightarrow X = X^{2/3} = \mathbf{30.78 \text{ liters}}$$

$$Y = Y^{2/3} = \mathbf{0.75 * 30.78 = 23.085 \text{ USD}}$$

Lowest total consumption is $E = I^{2/3} = \mathbf{0.375 * 30.78 + 23.085 = 34.627 \text{ USD}}$

- j) According to the equivalent variation (EV) the minimum amount of subsidy (S) is:
 $S = EV = I - I^{2/3} = 40.5 - 34.627 = 5.873 \text{ USD/month}$

- k) If the Indonesian government raises the oil price and provides an amount of subsidy according to the compensating variation (CV), it can ensure that poor households utility will be the same as it was before the price increase becomes effective. Therefore some have criticized it as a pointless policy. They hold that it would be better to keep the same price and avoid spending money on managing the subsidy operation. This criticism is not valid. If the same price is maintained and a large price subsidy given for the whole of society, it will encourage people to use too much oil and to use it inefficiently. Having the domestic price reflect the

of oil prices. The cash subsidy without any be provided to poor households so the budget will be less than before and they themselves will use oil more economically.

- l) In fact, the Indonesian government provides a subsidy of 13 USD/month to each poor household to buy oil, making their nominal income 53.50 USD/month.

$$0.6 X + Y = 53.5 \quad (13)$$

$$\frac{Y}{0,6X^{1/2}} = 2X^{1/2} \Rightarrow Y = 1.2 X \quad (14)$$

Substituting (14) in (13): $0.6X + 1.2X = 53.5 \Rightarrow X = X_3 = 53.5/1.8 = 29.72$ liters
 And the amount of money for other kinds of goods is: $Y = Y_2 = 1.2 * 29.72 = 35.66$ USD.

The utility is: $U_2 = 2 * 29.72^{1/2} * 35.66 = 388.88$ units of utility

Their welfare increases compared with the oil price before the increase ($U_1 = 324$)

- m) The calculated results are:

	Amount of oil bought every month (liters)	Amount of subsidy (USD)	Utility (units)
Before the price increase and with no subsidy	36	0	324

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Suggested solution to Problem 3

After the price increase and with no subsidy	22.5	0	256.1445
After the price increase and with subsidy provided by CV	26.316	6.869	324
After the price increase and with the actual subsidy of 13 USD/month	29.72	13	388.88

Question 2.

Fulbright Vietnam participants are required to do their assignments on computer. In order to support them in printing their weekly assignments and research reports the Board of Directors offers them three options.

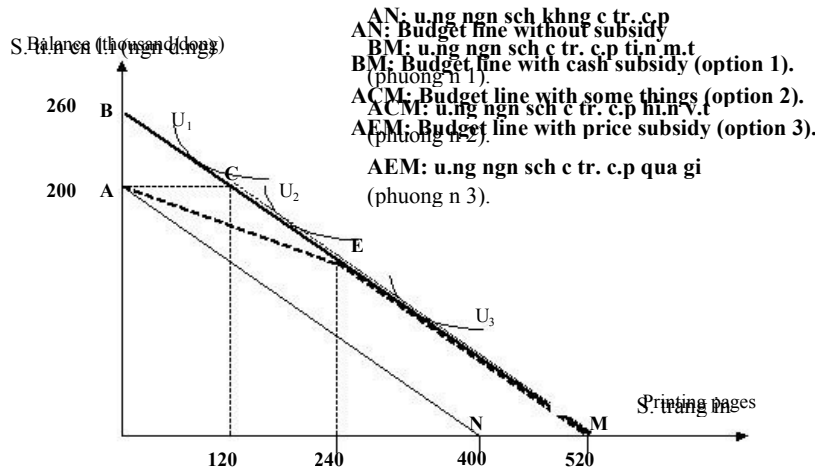
Option 1: Provide an amount of 60,000 dong/month, included in the scholarship, for them to use as they want. They have to pay the market price of 500 dong/page.

Option 2: Provide free printing to a maximum of 120 pages every month. If they exceed the limit they have to pay 500 dong/page.

Option 3: Provide a price subsidy of 50% of the market price, meaning that they have to pay only 250 dong/page. The maximum price subsidy is 60,000 dong/month.

Assume that each student has a fixed budget of 200,000 dong/month to spend on books, newspapers, learning materials, stationery and on printing the assignments and research reports.

The budget line



- a) In the case that every month students print less than 120 pages they will think that the first option is more beneficial than the other two (utility is U_1).

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Suggested solution to Problem 3

- b) In the case that every month the students print from 120 to 239 pages they will think that the first and second options are the same and that they are more beneficial than the third option (utility is U_2).
- c) And in the case that every month the students need to print 240 pages or more, they will think that the three options are equal in value (utility is U_3).
- d) You should advise the class monitor to choose the cash subsidy (option 1). By this option, your benefit is always bigger or at least equal to the other two options, no matter how many pages you want to print every month.

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Microeconomics

Problem 4

**Fulbright Economics Teaching Program
Fall Semester**

05/09/2005 23/12/2005

MICROECONOMICS

Assignment 4

Distributed: 29/09/2005

Due: 5/10/2005 (8:20am)

Question 1. Gambling with hurricanes

Assume that the budget of province X is B and can be used for two purposes: taking precautions against hurricanes and spending for other public purposes. Assume that the probability of a dike being breached by a hurricane every year is 20% and the damage caused by the dike being breached is L ($L < B$). Also assume (unrealistically) that provincial efforts to take precautions against hurricanes do not decrease the probability of a dike breach occurring, but can reduce the damage caused by the breach. Assume that in order to limit the damage having value I the province has to

invest

an

*ambiguity graph to determine qualitatively the optimal investment of province X in
of pI
defenses against hurricanes.*

p <

Budget line

If I = 0: C_{L, I=0} = B L

C_{L, I=0} = B

If I = L: C_{L, I=L} = B pL

C_{L, I=L} = B pL

The corner coefficient of the budget line is: $-p/(1-p)$.

The corner coefficient of the fair odds line is: $-p/(1-p) = -0.2/(1-0.2) = -1/4$.

Because we do not know the exact value of p we have to consider 2 cases:

Case 1: $p = ..$ It can easily be seen that the optimal policy for province X is to invest

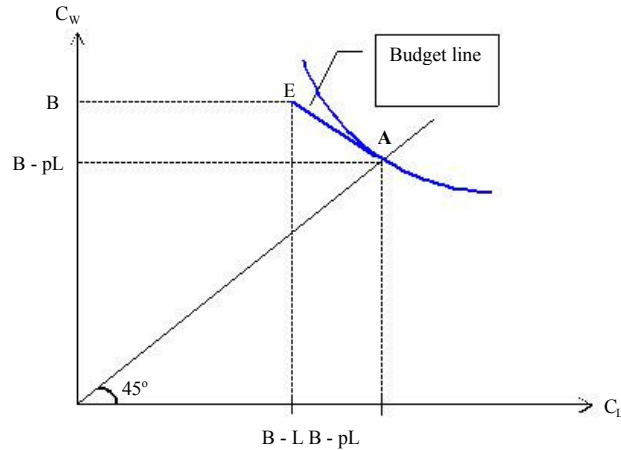
so as fully to reduce the risk (full insurance see part 2 of the handout).

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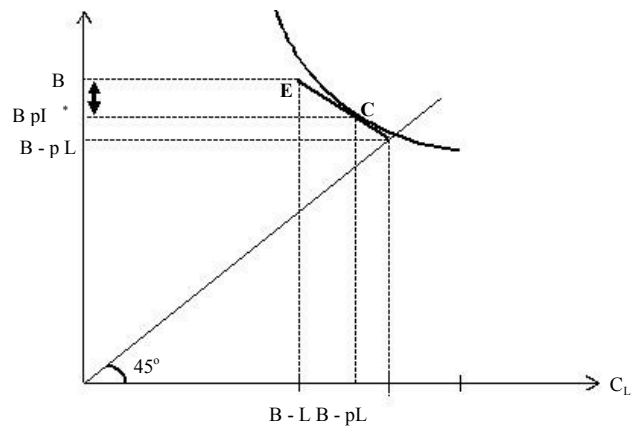
Problem 4



Case 2: $p > ..$ See the graph.

C_w

C_t



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a. Does province X exert its maximum effort completely to protect against the danger of a breach in a dike occurring. *No.*

In case 1, when $p = .$, the probability of a dike breach occurring is higher than the cost to reduce the damage caused by the breach, so it is easy to understand that province X wants to invest an amount of L to eliminate the damage.

In case 2, when $p > .$, as the result of qualitative analysis we see that province X will not invest so as to eliminate the damage, and this seems a little strange to understand because it is clear that when a dike breach occurs (even by any probability lower than the necessary cost to decrease its damage) the damage is immeasurable. If we come back to the problem of insurance (presented in class and in the reading), it seems that we can understand and agree with each other that when the insurance price is higher than the possibility of accident occurring the individuals will not buy the full insurance. But this is more difficult to understand when the decision is in common, especially when that decision is made by the central or by local government.

In the media, not only in Vietnam but in many other developed and developing

countries as well, we find that the press often criticize the government for not rooting out every vestige of corruption, criminals, and environmental pollution. One of the basic reasons, from the economic perspective, of this reality is that the cost of wiping out corruption, crime, and environmental pollution is too high, much higher than its benefit (recall the decreasing marginal benefit). This is a typical illustration for marginal analysis.

a) *Use the same assumptions as above but now, if the dike is breached, the province will receive an amount of relief S from the Center. Use a graph to determine qualitatively the optimal investment of province X in hurricane defenses. What comments do you have when comparing the result with the above question.*

The amount of relief S from the Center does not change the probability of a dike breach occurring so SLCB is the same. Now lets look at how the budget line changes.

$$\text{If } I = 0: C_{L, I=0} = B L + S$$

$$C_{W, I=0} = B$$

$$\text{If } I = L: C_{L, I=L} = B pL + S$$

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$$C \quad w_{,1=L} = B pL$$

The corner coefficient is still: $-p/(1-p)$. The only difference is that the budget line shifts horizontally to the right by a portion exactly equal to S . Then if a graph is used we will see the optimal point move closer to E it means that province X tends to invest less in overcoming the consequences of hurricanes.

We can come to a conclusion by mathematics. To know if this amount of relief changes the amount of investment of province X to overcome the consequences of hurricanes, see the optimal condition: $MRS =$ the slope of the budget line.

$$\text{In class we already demonstrated that: } MRS = - \frac{U'(C)_w}{U'(C)_L}$$

So, when there is no relief the optimal investment I^{*NS} has to meet fully:

$$\frac{p \cdot}{1-p} = \frac{UBL_{-+-(1)p I_{NS}^*}}{UB(I-p_{NS}^*)} \cdot \frac{UBL_{-+-(1)p I_{NS}^*}}{UB(I-p_{NS}^*)} = \frac{p \cdot (1-)}{p(1)}$$

And when there is relief the optimal investment I^{*S} has to meet fully:

$$\frac{p \cdot UBL}{1-p} = \frac{UBL - (1-p)I_s^*}{UBL - pI_s^*} \cdot \frac{UBL - (1-p)I_s^*}{UBL - pI_s^*} = \frac{p \cdot (1-p)UBL}{(1-p)UBL - pI_s^*}$$

Since $U[\cdot] > 0$ and $U[\cdot] < 0$ it is easy to see that the optimal investment with relief (I^{*S}) will be lower than the optimal investment (I^{*NS}) when there is no relief. This is an example illustrating the moral hazard of the local government when they know for sure that they will receive relief from the Center when a dike breach occurs.

Question 2: Preventing corruption

Tac Lem is the cashier of a company. Although right from the beginning he accumulated a colossal fortune W , it is still hard for him to give up the habit of once in a while siphoning off the company money. The probability of being caught in the act of stealing for Tac Lem is p . If he is caught he has to pay a fine of a dong for each dong stolen by him.

- a) *Use a graph to analyze the optimal amount of money Tac Lem should steal depending on p and a .*

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The corner coefficient of SLCB: $-p/(1-p)$

Budget line: If Tac Lems siphoned off money is named T:

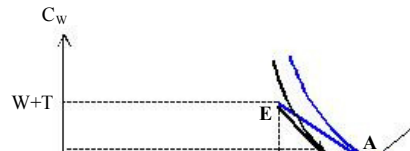
$$\text{If } T = 0: C_L, T=0 = C_{W, T=0} = W$$

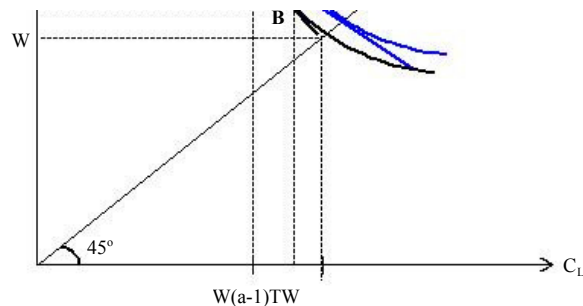
$$\text{In the general case: } C_L = W + T \quad aT = W \quad (a-1)T$$

$$C_W = W + T$$

So, the corner coefficient of the budget line = $-1/(a-1)$

Case 1: SLCB is steeper than or coincides with the budget line, meaning $p/(1-p) = 1/(a-1)$, or $p = 1/a$. In this case, the optimal solution is the corner solution. It means that the probability of being caught in the act of stealing for Tac Lem is high enough for him not to siphon off the company money.





Case 2: The budget line is steeper than SLCB, or $p < 1/a$, so the optimal solution is at B (see the above graph).

a) Do you have any suggestions to reduce Tac Lems corruption (these suggestions are to be based only on the background and data given above).

Under other similar conditions these proposals revolve around 3 basic factors of the model:

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- i) The higher the probability of being caught, the lower the incentive for Tac Lem to pocket the company money.
- ii) The higher the fine paid when he is caught, the lower the level of corruption.
- iii) Utility function: The more ashamed the cashier feels when he is caught, the less eager he will be to siphon off the company money.

c) Assume $a = 3$. Calculate the lowest value of p that no more motivates Tac Lem to steal money.

There is no more motivation for Tac Lem to steal money if the optimal solution is a corner solution, i.e. when $p = 1/a$. So the lowest value of p that no more motivates Tac Lem to steal money is $p = 1/3$.

Question 3: A constant assignment

The assumption from question 2 is used in this question, but now we solve the problem with concrete numbers.

Assume Tac Lems von Neumann Morgenstern utility function is $U(C) = \ln C$.

a) *Assume $p = 0.2$, $a = 3$. Calculate the*

maximum amount of money Tac Lem would steal and his expected utility, and analyse the dependence of these two values on p and a by algebraic methods.

Tac Lems utility function is:

$$EU = p.U(C_L) + (1-p).U(C_w) = p.U[W(a-1)T] + (1-p).U(W+T)$$

The corner coefficient of SLCB = $-p/(1-p) = -0.2/(1-0.2) = -0.25$

The corner coefficient of the budget line = $-1/(a-1) = -1/2$.

The optimal level of take of the company money T^* has to meet fully MRS = the corner coefficient of the budget line, or: ¹

$$\frac{U'(T^*)}{U'(W+T^*)} = -\frac{11}{a-14} = -\frac{\frac{-2}{W+2T^*}}{\frac{1}{W+T^*}} = -\frac{1}{2} \quad T^* = W/5$$

Tac Lems expected utility is:

¹The ratio of the marginal utilities of the two goods is equal to the slope of the budget line.

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$$EU = 0.2\ln(0.6w) + 0.8\ln(1.2w) = 0.043 + \ln(w)$$

b) Now assume that Tac Lem can enter into collusion with the chief accountant so the probability of finding out decreases down to 0.1. In return, Tac Lem has to give the chief accountant a 50% cut. Furthermore, if discovered, Tac Lem has to accept all the responsibility himself. Calculate the maximum amount of money stolen by Tac Lem and his expected utility in this case. Comparing this with the result in question (a) what comments do you have.

$$\frac{1}{9} \frac{w \cdot \frac{1}{2}}{1} = \frac{1}{2} T^* \quad (7/19) \cdot 0.37 \quad w$$

Then, Tac Lems expected utility is:

$$EU = 0.1\ln(0.26w) + 0.9\ln(1.185w) = 0.019 + \ln(w)$$

So, when Tac Lem and the cashier can enter into collusion with each other the double level of theft doubles. The possibility of being caught is lower therefore Tac Lem

tends to siphon off more of the company money. If Tac Lem enters into collusion with the chief accountant it means that he accepts to share part of his utility to decrease the probability of being caught from 20% down to 10% - synonymous with the decrease in risk.

Question 4. Diversification

Imagine that (not true of course) on the morning of September 15th, 2005 you are given 10 million dong to solve some problems as follows:

- a) *Choose a company quoted at the HCM City Securities Trading Center at random and calculate how many securities (round number) you could buy if on the morning of September 15th, 2005 you spent the whole 10 million dong to buy securities in this company.*

If we choose securities REE and HAP the calculated result will be as follows:

Date Security	REE		HAP		50%REE - 50HAP	
	price	Investment value	Security price	Investment value	Security price	Investment value
15/09/2005	31.5	10,000	22.8	10,000	26.5	0,000

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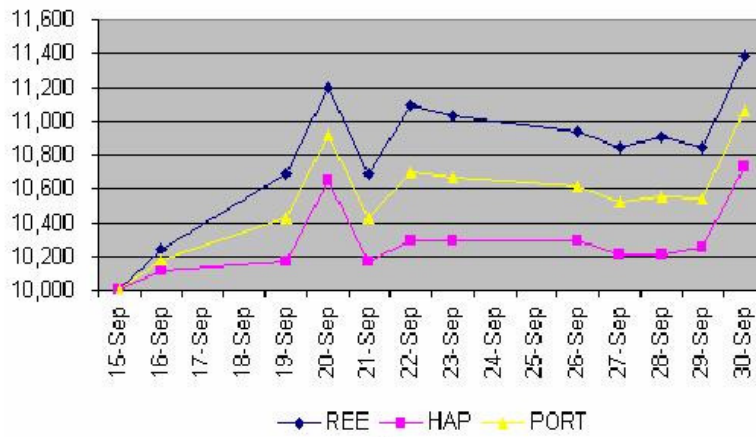
Microeconomics

Problem 4

16/09/2005	32.3	10,239	23.1	10,118	27.0	10,178		
19/09/2005	33.7	10,683	23.2	10,162	27.6	10,422		
20/09/2005	35.3	11,190	24.3	10,643	28.9	10,917		
21/09/2005	33.7	10,683	23.2	10,162	27.6	10,422		
22/09/2005	35	11,095	23.5	10,293	28.3	10,694		
23/09/2005	34.8	11,032	23.5	10,293	28.2	10,662		
26/09/2005	34.5	10,937	23.5	10,293	28.1	10,615		
27/09/2005	34.2	10,841	23.3	10,205	27.9	10,523		
28/09/2005	34.4	10,905	23.3	10,205	28.0	10,555		
29/09/2005	34.2	10,841	23.4	10,249	27.9	10,545		
30/09/2005	35.9	11,380	24.5	10,731	29.3	11,056		
Investment amount		10,000			10,000		10,000	
Number of securities bought		317			438		378	
Average value		10,819			10,280		10,549	
Variance			149,128			43,708		81,970

- b) Considering the total value of all the securities you bought as a random variable, draw a graph to calculate the average value and variance of this random variable from September 15th to 30th.

CHANGES OF INVESTMENT VALUE



c) Repeat questions (a) and (b) for the securities of another optional company.

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Problem 4

(See the above solution)

d) *Now assume that you are required to spend 5 million dong on each security.*

Analyse the variation of the total value of all your securities from September 15th to 30th. What are your comments on this variation compared with the two cases above. ²

We see that the average value of the securities, the average price and the variance of an investment portfolio comprising two securities lie between the respective values of the two securities. From this emerges the question: Could it be the case that the conclusion of all the theoretical models that diversification of investment reduces the risk is incorrect. Actually, this is not the case. Looking at the graph, we can see that the price changes of the selected securities are as alike as two peas in a pod, and this is also true for other types of security. In particular, on the graph there are two periods of time when the price suddenly changes for all types of securities quoted simultaneously, that is from September 19 to 21 and from September 29 to 30. The reason is that there was a rumor of a new policy allowing the level of ownership of a company by foreign shareholders to rise from 30% to

company by foreign shareholders to rise from 50% to 49%. This makes us question the randomness of variations in security price in the security trading market and the role of the security market in combining and dispersing risk.

²For these three questions, assume that when you choose a kind of security you will keep it from September 15th to 30th to observe the changes in price.

Vu Thnh T. Anh

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Fulbright Economics Teaching Program
Academic year 2005-2006

Microeconomics

Suggested solution to Problem 5

Fulbright Economics Teaching Program

Fall Semester

05/09/2005 23/12/2005

MICROECONOMICS

Suggested solution to Assignment 5

Question 1.

a) Increasing returns to scale show the relationship between all the inputs and the output, while economies of scale show the relationship between the output and the average cost.

Increasing returns to scale occur when the output increases at a faster rate than the inputs.

Economies of scale occur when the average cost decreases as the output increases.

Increasing returns to scale lead to economies of scale when the prices of the inputs do not change or increase at low rate as their use increases. If the opposite holds true, then increasing returns to scale lead to diseconomies of scale. For example, if all inputs increase by 20% while the output increases by 28% it will mean that the company enjoys economies of scale, and if the unit prices of the factors do not change or increase by less than 8% it is certain that the average cost will decrease and the company will enjoy

economies

of When the average cost decreases and the output increases the company enjoys economies of scale. Economies of scope are present when the average cost decreases as it produces more different types of products (product diversification).

Question 2.

You should implement the project to diversify the product range because costs increase less than sales. If the company were in profit before, the profit would increase. If it were making a loss, the loss would decrease.

Question 3.

The output q_1 does not bring maximum profit for the company. To maximize profit the enterprise should decrease the output compared with present levels.

At $MC < MR$ output should be increased, because the profit will increase or the loss will decrease.

At $MC > MR$ output should be decreased, also because the profit will increase or the loss will decrease.

$MC = MR$ is where the maximum profit is and where the minimum loss is.

Question 4.

Van Thanh

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Academic year 2005-2006

Microeconomics

Suggested solution to Problem 5

$$Q(K,L) = 2k^{1/2}l^{1/2} \quad (1)$$

$$r = 2; w = 6; k = k$$

$$l_0 = 100.$$

a) T. (1) $\Rightarrow l = Q^2/400$

$$TC = r \cdot k_0 + w \cdot l = 2 \cdot 100 + 6 \cdot (Q^2/400) = 200 + (3/200) Q^2$$

$$MC = dTC/dQ = (3/100)Q$$

- b) To maximize profit, a perfectly competitive industry will produce an output to satisfy the condition of $MC = P$

$$(3/100)Q = 9 \Rightarrow Q = 300$$

$$TR = P \cdot Q = 2,700; TC = 200 + (3/200) \cdot 300^2 = 1,550$$

$$\pi = TR - TC = 1,150$$

- c) In the long run, the enterprise can adjust both its capital and labor. The combination of these two factors is optimal when $MP_k/r = MP_l/w$

$$\frac{1}{2} \cdot \frac{1}{2k^{1/2}} = \frac{1}{2} \cdot \frac{1}{2l^{1/2}} \Rightarrow k = 3l \quad (2)$$

$$\text{Substituting (2) in (1): } Q = 2 \cdot (3l) \cdot l^{1/2} = 300 \Rightarrow l = 150/3 = 50 \quad l^{1/2} = 86.6$$

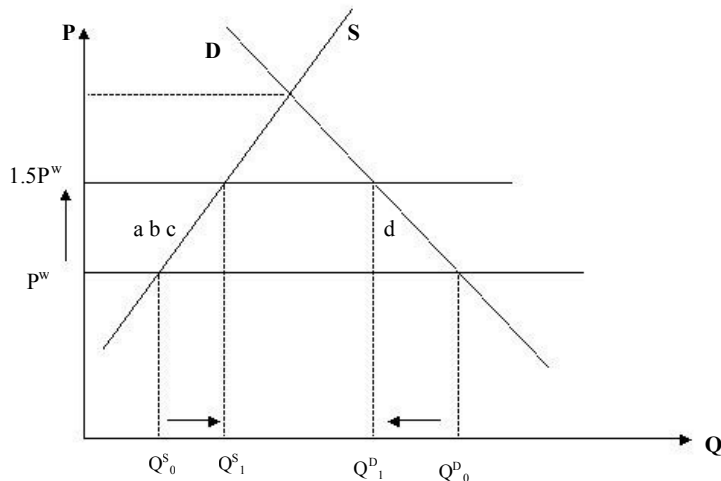
$$k = 259.8$$

$$TC = 2 \cdot 259.8 + 6 \cdot 86.6 = 1,039.2$$

$$\pi = TR - TC = 2,700 - 1,039.2 = 1,660.8$$

Question 5.

- a) To protect domestic electronic products, the government levies a 50% tariff on imports.



The domestic equilibrium price increases from P^w to $1.5P^w$
 Demand decreases from Q^{D_0} to Q^{D_1}
 Supply increases from Q^{S_0} up to Q^{S_1} .

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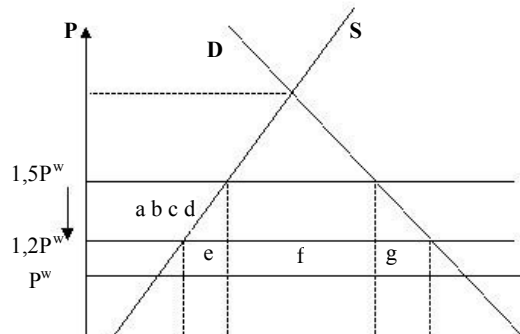
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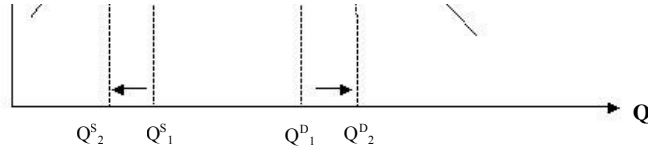
Microeconomics

Suggested solution to Problem 5

Imports decrease from $(Q^{D0} Q^{S0})$ down to $(Q^{D1} Q^{S1})$
 Consumer surplus decreases, the consumers lose: $.CS = -a-b-c-d$
 Producer surplus increases, the producers get profit: $.PS = a$
 The government profits from the tax collected: $.G = c$
 Social surplus decreases: $.NW = -b -d$

- b) Under pressure from consumers and to push domestic electronic companies to improve their production and management, to strengthen competition and to be ready for integration, the government reduces the import tax rate down to 20% of the world price.





The domestic equilibrium price decreases from $1.5P^w$ down to $1.2P^w$

Demand increases from Q^{D1} up to Q^{D2}

Supply decreases from Q^{S1} down to Q^{S2}

Imports increase from $(Q^{D1} - Q^{S1})$ up to $(Q^{D2} - Q^{S2})$

Consumer surplus increases, the consumers gain profit: $\Delta CS = a+b+c+d$

Producer surplus decreases, producers lose: $\Delta PS = -a$

Change (if any) in the tax collected by the government: $\Delta G = e+g-c$ (no conclusion as to whether it increases, decreases or remains unchanged)

Social surplus increases: $\Delta NW = +b+d+e+g$

- c) After reducing the import tax, domestic enterprises react strongly and the imported goods are made subject to a sales tax. The sales tax rate is 25% calculated on the world price including import tax. At this excise tax rate, the domestic price will increase to $1.5P^w$. Therefore all the conclusions regarding the impact of excise tax in this question are simply the exact opposite to question b.

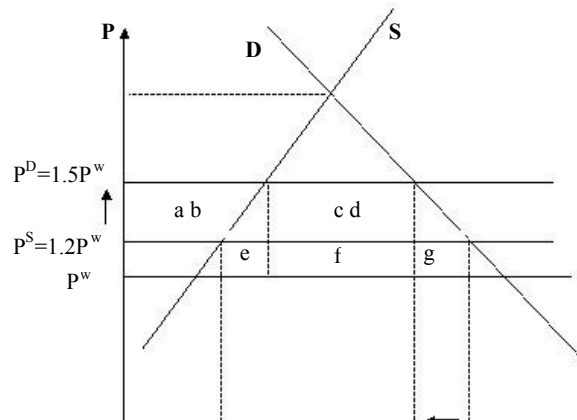
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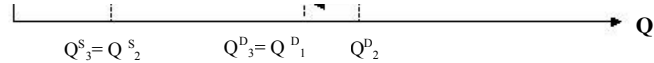
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Microeconomics

Suggested solution to Problem 5

- d) After reducing the import tax, the government imposes a sales tax at a rate of 25% calculated on the world price including import tax. The sales tax is imposed on both imported goods and domestic production. There are some differences in this answer compared with the answer to question c.





The domestic equilibrium price (demand price) increases from $1.2P^w$ to $1.5P^w$
 Demand decreases from Q^{D2} down to $Q^{D3} = Q^{D1}$
 Supply price (producers final price) does not change, it remains at $P^S = 1.2P^w$
 Supply does not change $Q^{S3} = Q^{S2}$.
 Imports decrease from $(Q^{D2} - Q^{S2})$ down to $(Q^{D3} - Q^{S2})$
 Consumer surplus decreases, the consumers lose: $.CS = -a-b-c-d$
 Producer surplus does not change, so no effect on the producers: $.PS = 0$
 Tax collected by the government increases: $.G = a+b+c-g$
 Social surplus decreases: $.NW = -d-g$

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Academic year 2005-2006

Microeconomics

Suggested solution to Problem 6

**Fulbright Economics Teaching Program
Fall Semester, 2005**

**MICROECONOMICS
Problem Set 6: Market Power: Monopoly
Answers
Due date: 8:20 a.m., November 9, 2005**

Monopoly Profits

1. A monopoly faces a demand curve $P = 300 - 4Q$, a constant average variable cost = 100, and fixed cost = 50.

What is the profit maximizing price and output. Explain

Answer

1st order condition for maximizing profit:

$$MR = MC$$

$$R = PQ = 300Q - 4Q^2$$

$$MR = 300 - 8Q$$

$$MC = 100$$

...

MR

$$Q = 25; P = 200$$

MC

$$\text{Profit} = \text{Revenue} - \text{cost} = 300(25) - 100(25) = 2450$$

2. A monopoly must take into account the demand curve facing her firm for maximizing profit. Should the firm produce an output that put it on the inelastic portion of the demand curve. Explain

Answer

Maximizing profits requires:

$$MR = MC$$

From

$$P = MC / (1 + 1/Ed)$$

one has:

$$P = MR / (1 + 1/Ed) \Rightarrow MR = P(1 + 1/Ed)$$

If demand is inelastic : $Ed > -1 \Rightarrow (1 + 1/Ed) < 0$ and

$$MR < 0$$

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Microeconomics

Suggested solution to Problem 6

Monopolist will not produce in the inelastic portion of the demand curve, but only the elastic portion of the demand curve

Deadweight Losses

3. A monopolist is characterized by the following: a demand curve : $P=180 - Q$;
MC: $60 + 2Q$. Calculate and draw a graph with appropriate labelling of variables to show the areas of DWL.

To achieve this, please compute the following:

- a. Monopoly price and output (P_m, Q_m);
- b. Price and output that would exist under competitive market (P_c, Q_c);
- c. Price and output that would exist at the intersection of $MC = MR = P_s$ (P_s, Q_s). Note that Q_s should be equal to Q_m , and
- d. Deadweight losses arisen from monopoly.

Answer

a. Demand curve: $P = 180 - Q$

Revenue: $R = PQ = 180Q - Q^2$

$MR = 180 - 2Q$

$MC = 60 + 2Q$

Maximizing profit rule under monopoly:

$$MR = MC$$

$$\Rightarrow 180 - 2Q = 60 + 2Q \Rightarrow 4Q = 120 \Rightarrow$$

$$Q_m = 30;$$

Price is determined from the demand curve:

$$P_m = 180 - 2Q_m = 150$$

b. Maximizing profit rule under perfect competition:

$$MC = P$$

$$\Rightarrow 60 + 2Q = 180 - Q \Rightarrow 3Q = 120 \Rightarrow$$

$$Q_c = 40, P_c = 180 - 2Q_c = 140$$

c. MR = MC \Rightarrow 180 - 2Q = 60 + 2Q \Rightarrow 4Q = 120 \Rightarrow

$$Q_s = 30; P_s = 180 - 2Q_s = 120$$

d. DWL = (P_m - P_s)(Q_c - Q_m)/2 = (150 - 120)(40 - 30)/2 = (30 x 10)/2 = 150

Tax under competitive and monopoly markets

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Microeconomics

Suggested solution to Problem 6

4. The market for Ha Dong silk faces a demand curve, $P = 28 - 0.02Q$. Ms. Las old family business produces silk at the long run average total cost, which is also the marginal cost of 8 units (in thousands of constant VND) per meter.
- There are several small producers in the village, using the same technology and having similar costs as Ms. Las business. For this question and the question (b) below, the market is considered to be under perfect competition. Compute the equilibrium price P_c and Q_c .
 - A tax of 2 units (in thousands of constant VND) is introduced. Compute the price paid by the buyers, the sellers, and the produced quantity.
 - Ten years later, Ms Las business is so successful, she bought all other silk businesses in her village and becomes a monopoly. Cost conditions remain the same as under perfect competition and without tax. Compute the new price P_m and Q_m .
 - If a tax of VND 2 units(in thousands of constant VND) is introduced. Compute the monopoly price P_{mt} and Q_{mt} .

Answer

a. Maximizing profit rule under perfect competition:

$$P = MC \Rightarrow$$

$28 - 0.02Q = 8$

- $P = 28$
 $0.02Q$
 b. ~~Buyers pay~~ 8
 $\Rightarrow MC1 = MC + Tax \Rightarrow 8 + 2 = 10$
 $Qc =$
 $\frac{20}{0.02}$
~~Maximizing profit rule under perfect competition:~~
 $\frac{1000}{Pc} = MC1 \Rightarrow$
 8
Buyers pays
 $Pbt = MC1 = 10 = Pct$
Sellers receive
 $Pst = 8$
Government receives $T = 2$

Qct is derived from
 $Pct = 28 - 0.02Qct \Rightarrow 10 = 28 - 0.02Qct$
 $Qct = (28 - 10) / 0.02 = 900$

Imposing a specific tax reduces output and raises price.

- c. *Demand curve: $P = 28 - 0.02Q$*
Revenue: $R = PQ = 28 - 0.02Q^2$

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Microeconomics

Suggested solution to Problem 6

$$MR = 28 - 0.04Q$$

$$MC = 8$$

Maximizing profit rule under monopoly:

$$MR = MC \Rightarrow$$

$$28 - 0.04Q = 8 \Rightarrow 0.04Q = 20 \Rightarrow$$

$$Q_m = 500;$$

Price is determined from the demand curve:

$$P_m = 28 - 0.02Q_m = 18$$

$$d. MC1 = MC + tax \Rightarrow 8 + 2 = 10$$

Maximizing profit rule under monopoly:

$$MR = MC1 \Rightarrow$$

$$28 - 0.04Q = 10 \Rightarrow 0.04Q = 18 \Rightarrow$$

$$Q_{mt} = 450;$$

Price is determined from the demand curve:

$$P_{mt} = 28 - 0.02Q_{mt} = 19$$

Imposing a specific tax reduces output and raises price.

Regulation

5. A monopoly faces a demand curve given by $P = a - bQ$ and has a marginal

cost by curve represented by
 $MC = a + bQ$. The government
wants to

- a. What is the ceiling price that leads to the greatest reduction of DWL.
 - i. Draw the graph and indicate the appropriate labels, such as price and quantity under monopoly are (P_m , Q_m) and perfect competition are (P_c , Q_c).
 - ii. Solve algebraically the ceiling price.
- b. Why a price below that ceiling will lead to inefficiency.

Answer

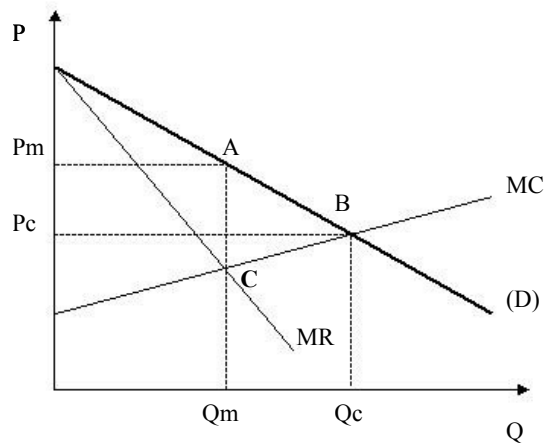
- a.
 - i. *Draw figure*

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Microeconomics

Suggested solution to Problem 6



$$ii. R = PQ = aQ - bQ^2$$

$$MR = a - 2bQ$$

$$MR = MC \Rightarrow a - 2bQ = e + fQ \Rightarrow Q(2b + f) = a - e$$

$$Q_m = (a - e) / (2b + f); P_m = a - b(a - e) / (2b + f)$$

Competitive price:

$$P = MC \Rightarrow a - bQ = e + fQ \Rightarrow Q(b + f) = a - e$$

$$Q_c = (a - e) / (b + f); P_c = a - b(a - e) / (b + f)$$

The ceiling is set at the competitive price $P_c < P_m$ and $Q_c > Q_m$. Since $MC = P_c$, leading to the largest reduction in DWL. The DWL is zero, provided that the ceiling still allows the monopoly to operate.

- b. *Since MC has a positive slope, any price P_g below $P_c = MC$ will lead to a lower Q_g . P_d is the price that consumers are willing to pay, and which corresponds to a point on the demand curve (D) and which exceeds the MC corresponding to Q_g ($P_d > MC$). This will result in some DWL thus inefficiency.*
6. A natural monopoly (such as Electricity of Viet Nam) has economies of scale. Its average total cost declines as output rises. The average total cost is therefore larger than its marginal cost which also declines. It faces a linear demand curve $P = a - bQ$. Monopoly price P_m is higher than competitive price P_c .

In order to increase output, regulator has to set a ceiling price.

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Microeconomics

Suggested solution to Problem 6

- a. May the ceiling (P_c) be set at the intersection (A) of the MC with the demand curve. Explain
- b. Where should the ceiling (P_r) be set to ensure that the monopoly can continue to operate and at possible highest output (Q_r).

Answer

- a. *At the intersection point (A) of the MC with the demand curve, which is represented by $MC = P_c$, where $P_c < ATC$, the monopoly will incur a loss. Thus this P_c may not be set as a ceiling.*
- b. *The ceiling price P_r should be set at the intersection of the ATC and the demand curve where P_r covers ATC and the economic profit is zero.*

Competitive Policies

7. Should the following activities be prohibited to promote competition, thus economic efficiency, and economic welfare. Support your reasoning with appropriate graphs to show the relevant factors, such as P_c , P_m , Q_c , Q_m , MC, MR, DWL.

- a. Conspiring
- b. Merging firms aiming at creating monopoly
- c. Obtaining a patent with the exclusive right to produce a good
prices

Answer

- a. *Conspiring to fix prices should be prohibited because conspirators would restrict competition, fix price $P_m > MC$ which is higher than P_c , lower output $Q_m < Q_c$, reduce economic efficiency, resulting in excess profits and DWL.*
- b. *Merging firms aiming at creating monopoly. This should be prohibited as a preventive measure against the potential negative effects of monopoly that might take place, as discussed in (a).*
- c. *Obtaining a patent with the exclusive right to produce a good should not be prohibited. The granting of a patent aims at rewarding inventors and encouraging the emergence of new technologies. However, the reward to patent holders ($P_m > MC$, excess profits) should be balanced by the negative effects of monopoly (excess profits + DWL). These effects are the reason why the monopoly of the patented goods is granted, as a normal practice, for a specific period, after which the negative effects tend to be eliminated with the termination of monopoly.*

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Microeconomics

Suggested solution to Problem 6

8. Monopoly index

The Lerner's index of monopoly power is $L = (P - MC) / P$. This implies that:

- If $L = 0$, the firm is in a perfectly competitive market. Is this correct. Explain
- The value of L is between 0 and 1. Is this correct. Explain
- The larger L is, the higher the profits of the monopoly are. Is this correct. Explain.

Answer

a. Correct.

$L = 0 \Rightarrow P = MC$, this is the optimal condition for the perfectly competitive firm to produce.

b. Correct

The highest gap between P and MC is when MC tends toward zero, therefore the upper limit of L is 1. The higher L is, the higher the degree of monopoly power of the firm being measured for its monopoly.

c. Incorrect.

i. Because: