Chapter 1

Limits, Alternative, and Choices

Definition of economics:

Is the social science concerned with how individuals, institutions, and society make optimal (best) choices under conditions of scarcity.

Economics: the study of the allocation of scarce resources among alternative end uses.

الاقتصاد: هو ذلك العلم الذي يدرس كيف يوظف الأفراد والمجتمعات مواردهم الاقتصادية النادرة ذات الاستخدامات المتعددة لإنتاج مجموعات متباينة من السلع وذلك لإشباع حاجاتهم ورغباتهم.

The Economic Perspective:

The economic way of thinking has several critical and closely interrelated features.

Scarcity and Choice

Scarce economic resources mean limited goods and services. Scarcity restricts options and demands choices. Because we "can't have it all," we must decide what we will have and what we must forgo.

Scarce inputs of land, equipment, farm labor, the labor of cooks and waiters, and managerial talent are required. Because society could have used these resources to produce something else, it sacrifices those other goods and services in making the lunch available. Economists call such sacrifices opportunity costs**:** To obtain more of one thing, society forgoes the opportunity of getting the next best thing. That sacrifice is the opportunity cost of the choice.

الندرة تمثل المشكلة الأساسية في علم الاقتصاد لدرجة ان بعض الاقتصاديين يطلق على الاقتصاد "علم الندرة" وتنجم الندرة في الاقتصاد عن تعدد رغبات الإنسان وتجددها مقارنة بالموارد الاقتصادية المتاحة, مما يجبره على الاختيار ما بين البدائل المختلفة, وبالتالي يضطره إلى التضحية ببعضها مقابل تحقيق البعض. أن عدم كفاية الموارد الإنتاجية الإنتاج جميع السلع التي يرغبها المجتمع هو ما يجعل الموارد الإنتاجية نادرة. مفهوم الندرة في الاقتصاد هو مفهوم نسبي, بمعنى أن الموارد الإنتاجية نادرة بالنسبة لرغبات الإنسان المتعددة والمتجددة, فلا تكفي هذه الموارد الإنتاج جميع السلع التي تشبع رغبات الأفراد أو المجتمع. كذلك إن ندرة المصادر الإنتاجية تجبر الإنسان على الاختيار مل بين البدائل المختلفة وبالتالي تضطره إلى التضحية ببعضها مقابل تحقيق البعض.

Opportunity costs:

To obtain more of one thing, society forgoes the opportunity of getting the next best thing. That sacrifice is the opportunity cost of the choice.

عملية الاختيار تتضمن التضحية. فاختيارك لأحد البدائل يعني تضحيتك بالبديل أو البدائل الأخرى. فالأرض التي تستخدم للزراعة لا يمكن أن تستخدم في نفس الوقت الأغراض السكن. وكذلك الحال بالنسبة لذلك الجزء من الدخل الذي تدفعه أجرة سكن لا يمكن أن تستخدمه أيضاً للإنفاق على المأكل مثلاً.
إن ندرة عناصر الإنتاج تعني أننا لا نستطيع إنتاج كل ما نرغب فيه من سلع وبالتالي تجبرنا على الاختيار بين البدائل الممكنة. أي ان ندرة عناصر الإنتاج تجبرنا على أن نختار ماذا ننتج(هل ننتج قمحاً أم العاب أطفال؟) وتجبرنا كذلك أن نختار كيف ننتج ما نرغب في إنتاجه (هل نستعمل هذه الأرض أم تلك الإنتاج القمح ؟) وتجبرنا أيضاً أن لمن نوزع الإنتاج.

Purposeful Behavior (Rational Behavior)

Economics assumes that human behavior reflects "rational self-interest." Individuals look for and pursue opportunities to increase their utility— the pleasure, happiness, or satisfaction obtained from consuming a good or service. They allocate their time, energy, and money to maximize their satisfaction. Because they weigh costs and benefits, their economic decisions are "purposeful" or "rational," not "random".

Consumers are purposeful in deciding what goods and services to buy. Business firms are purposeful in deciding what products to produce and how to produce them. Government entities are purposeful in deciding what public services to provide and how to finance them. "Purposeful behavior" does not assume that people and institutions are immune from faulty logic and therefore are perfect decision makers. They sometimes make mistakes. Nor does it mean that people's decisions are unaffected by emotion or the decisions of those around them. "*Purposeful behavior" simply means that people make decisions with some desired outcome in mind.*

هدف المستهلك هو تحديد السلع والخدمات التي يرغب في شرائها. الشركات التجارية هدفها تحديد السلع والخدمات التي يجب أن تنتجها وكيف يتم إنتاجها. بينما تهدف الجهات الحكومية في اتخاذ قرار بشأن ما هي الخدمات العامة التي ستوفرها للمواطنين وكيفية تمويلها.

أن سلوك الإنسان عقلاني أو رشيد, بمعنى أن يتوافق السلوك مع تحقيق الهدف المنشود. فإذا لم يكن هناك توافق بين السلوك والهدف المنشود فإن هذا السلوك يسمى سلوكاً غير عقلاني أو غير رشيد. كما أن هدف الفرد هو زيادة المنفعة التي يحصل عليها من السلع التي يشتريها. أما إذا نظرنا إلى الإنسان كمنتج فإننا نفترض أن هدفه هو تعظيم أرباحه الاقتصادية.

Marginal Analysis: Benefits and Costs:

The economic perspective focuses largely on marginal analysis—comparisons of marginal benefits and marginal costs, usually for decision making. In making choices rationally, the decision maker must compare MB and MC.

Marginal benefits (MB): utility received from consuming goods and services.
Marginal costs (MC): opportunity cost.

The choice rationally if MB > MC

Multiple Choices:

1. Purposeful behavior suggests that:
   A. everyone will make identical choices.
   B. resource availability exceeds economic wants.
   C. individuals may make different choices because of different desired outcomes.
   D. an individual's economic goals cannot involve tradeoffs.

2. Purposeful behavior means that:
   A. people are selfish in their decision-making.
   B. people weigh costs and benefits to make decisions.
   C. people are immune from emotions affecting their decisions.
   D. decision-makers do not make mistakes when weighing costs and benefits.

3. You should decide to go to a movie:
   A. if the marginal cost of the movie exceeds its marginal benefit.
   B. if the marginal benefit of the movie exceeds its marginal cost.
   C. if your income will allow you to buy a ticket.
   D. because movies are enjoyable.

Theories, Principles, and Models

Scientific Method طريقة البحث العلمي

Scientific method procedure consists of several elements: يمر البحث العلمي بصورة عامة بخمسة مراحل وهي

1. Observing real-world behavior and outcomes. ملاحظة الظاهرة وتحديد مشكلة البحث
2. Based on those observations, formulating a hypothesis وضع فرضيات حول الظاهرة أو المشكلة
3. Testing this explanation by comparing the outcomes of specific events to the outcome predicted by the hypothesis. تجميع البيانات حول المشكلة وتحليلها
4. Accepting, rejecting, and modifying the hypothesis, based on these comparisons. اختبار صحة أو عدم صحة فروض البحث
5. Continuing to test the hypothesis against the facts (results). الوصول للنتائج النهائية

Economic principle

A statement about economic behavior or the economy that enables prediction of the probable effects of certain actions

Economic models: which are simplified representations of how economic works.

هو عبارة عن تبسيط للواقع الذي نعيشه. وتتم عملية تبسيط الواقع لبناء النموذج الاقتصادي عن طريقين:
وضع بعض الافتراضات حول سلوك الإنسان.
تقليل عدد المتغيرات المستقلة (افتراض أن بعض العوامل المؤثرة في المتغير التابع ثابتة (Other-thing equal assumption)

Economic principles and models are highly useful in analyzing economic behavior and understanding how the economy operates. They are the tools for ascertaining cause and effect (or action and outcome) within the economic system. Good theories do a good job of explaining and predicting. They are supported by facts concerning how individuals and institutions actually behave in producing, exchanging, and consuming goods and services.

There are some other things you should know about economic principles.

Generalizations: Economic principles are generalizations relating to economic behavior or to the economy itself. Economic principles are expressed as the tendencies of typical or average consumers, workers, or business firms. For example, economists say that consumers buy more of a particular product when its price falls. Economists recognize that some consumers may increase their purchases by a large amount, others by a small amount, and a few not at all. This "price-quantity" principle, however, holds for the typical consumer and for consumers as a group.

Other- Things-Equal (ceteris paribus) Assumption: The assumption that factors other than those being considered do not change. They assume that all variables except those under immediate consideration are held constant for a particular analysis.

افتراض أن بعض العوامل المؤثرة في المتغير التابع ثابتة. أي أننا نعزل أثر التغيير في جميع العوامل التي قد تؤثر في المتغير التابع ونركز على كيفية ومدى استجابة هذا المتغير للزيادة أو النقص في قيمة أحد المتغيرات المستقلة مع افتراض أن قيمة المتغيرات المستقلة الأخرى ثابتة.

For example, consider the relationship between the price of Pepsi and the amount of it purchased. Assume that of all the factors that might influence the amount of Pepsi purchased (for example, the consumer incomes) unchanged.

Multiple Choices:

1. The term "ceteris paribus" means:
   (A) that if event A precedes event B, A has caused B.
   (B) that economics deals with facts, not values.
   (C) other things equal.
   (D) prosperity inevitably follows recession.

2. Suppose an economist says that "Other things equal, the lower the price of bananas, the greater the amount of bananas purchased." This statement indicates that:
   (A) The quantity of bananas purchased determines the price of bananas.
   (B) All factors other than the price of bananas (for example, consumer tastes and incomes) are assumed to be constant.
   (C) economists can conduct controlled laboratory experiments.
   (D) One cannot generalize about the relationship between the price of bananas and the quantity purchased.

Microeconomics and Macroeconomics

علم الاقتصاد يبحث في سلوك الأفراد والمجتمعات. ويمكن دراسة وتحليل هذا السلوك بأسلوبين مختلفين, أو من زاويتين مختلفتين

Microeconomics:

Microeconomics is the part of economics concerned with individual units such as a person, a household, a firm, or an industry. At this level of analysis, the economist observes the details of an economic unit.

يعتمد الأسلوب الأول على دراسة الأجزاء أو الوحدات الصغيرة في الاقتصاد مثل دراسة سلوك المستهلك أو المنتج أو سعر سلعة معينة. ويطلق على هذا الأسلوب " الاقتصاد الجزئي".

Macroeconomics:

Macroeconomics examines either the economy as a whole or its basic subdivisions or aggregates, such as the government, household, and business sectors.

Macroeconomics approaches the study of economics from the viewpoint (من وجهة نظر) *of the entire economy.*
أما الأسلوب الثاني في دراسة التحليل الاقتصادي فيعتمد على دراسة الاقتصاد ككل أو القطاعات الرئيسية فيه أو المجاميع الكلية مثل الإنتاج القومي (GDP) والارتفاع العام بمستوى الأسعار (التضخم) والبطالة وغيرها.

Example

Indicate whether each of the following statements applies to microeconomics or macroeconomics?

a. The unemployment rate in the U.S was 4.9% in January 2008 (Macroeconomics)
b. An expected freeze in central Florida reduced the citrus crop and caused the price of oranges to rise. (Microeconomics)
c. U.S output, adjusted for inflation, grows by 2.2% in 2007. (Macroeconomics)

Multiple Choices:

1. Macroeconomics can best be described as the:
   (A) analysis of how a consumer tries to spend income.
   (B) study of the large aggregates of the economy or the economy as a whole
   (C) analysis of how firms attempt to maximize their profits
   (D) study of how supply and demand determine prices in individual markets

2. Microeconomics:
   (A) is the basis for the "after this, therefore because of this" fallacy.
   (B) is not concerned with details, but only with the overall big picture of the economy.
   (C) is concerned with individual economic units and specific markets.
   (D) describes the aggregate flows of output and income.

3. Which of the following is a microeconomic statement?
   (A) The real domestic output increased by 2.5 percent last year.
   (B) Unemployment was 6.8 percent of the labor force last year.
   (C) The price of personal computers declined last year.
   (D) The general price level increased by 4 percent last year.

Positive and Normative Economics:

الاقتصاد الموضوعي والاقتصاد المعياري

Both microeconomics and macroeconomics contain elements of positive economics and normative economics.

Positive Economics

Positive economics focuses on facts and cause-and-effect relationships. It includes description, theory development, and theory testing (theoretical economics).

Positive economics avoids value judgments

Theoretical economics is a positive economics.

في التحليل الموضوعي يعتمد الباحث على بيانات حقيقية يتم تحليلها للوصول للنتيجة النهائية. ويمكن القول بأنه لو بحث عدد من الباحثين ظاهرة اقتصادية معينة باستخدام نفس البيانات ونفس طريقة التحليل فإننا نتوقع أن يصل جميعهم لنفس النتيجة في وصف تلك الظاهرة.

Normative Economics

Normative economics involves value judgments; about what the economy should be like or what particular policy actions should be recommended to achieve a desirable goal (policy economics).

Normative economics embodies subjective feelings about what ought to be.

الاقتصاد المعياري يبحث بما يجب أن يكون عليه الوضع, أو ما يجب أن نفعل تجاه ظاهرة معينة. وبالتالي فإن هذا النوع من التحليل يحاول أن يطرح حلولاً للظاهرة أو المشكلة معتمداً على التقدير الذاتي للباحث. والتي قد تختلف من باحث الآخر حسب البيئة الاجتماعية والديانة وغيرها من العوامل.

Example

Decide whether the following statements are positive or normative:

1. Luxuries should be taxed more heavily than necessities → (Normative Statement)
2. The price and quantity demanded of a good is inversely related. → (Positive Statement)
3. It is too hot to jog (يركض) today". → (Normative Statement)
4. We should buy Palestinian goods and boycott (مقاطعة) Israeli product. →(normative Statement)
5. A rise in the price of petrol will lead to an increase in the demand for rail transport. → (Positive Statement)
6. Unemployment is more harmful than inflation → (Normative Statement)
7. A rise in the price of petrol will lead to an increase in the demand for rail transport. → (Positive Statement)
8. As a general rule, people are happier in more equal societies. → (Normative Statement)

Multiple Choices:

1. A positive statement is one which is:
   (A) derived by induction
   (B) derived by deduction
   (C) subjective and is based on a value judgment
   (D) objective and is based on facts

2. Normative statements are concerned primarily with:
   (A) facts and theories
   (B) what ought to be
   (C) what is
   (D) rational choice involving costs and benefits

3. "Economics is concerned with how individuals, institutions, and society make optimal choices under conditions of scarcity." This statement is:
   (A) positive, but incorrect
   (B) positive and correct
   (C) normative, but incorrect
   (D) normative and correct

4. Basel says that "An increase in the tax on smoke will raise its price." Ruba argues that "Taxes should be increased on smoke because college students consume too much." We can conclude that:
   (A) Basel's statement is normative, but Ruba's is positive.
   (B) Ruba's statement is normative, but Basel's is positive.
   (C) Both statements are normative.
   (D) Both statements are positive.

Economizing Problem

The fundamental problem of economics is the scarcity of productive resources relative to economic wants.

The economizing problem is one of deciding how to make the best use of limited resources to satisfy virtually unlimited wants.

تنجم المشكلة الاقتصادية بسبب ندرة المصادر الإنتاجية مقارنة بتعدد رغبات الإنسان وتجددها.

Individuals' Economizing Problem المشكلة الاقتصادية على مستوى الأفراد

على مستوى الأفراد فإن مشكلة الندرة تتضح في الدخل الذي يحصل عليه الفرد, حيث أن محدودية دخل الفرد تشكل قيداً على سلوكهم الاستهلاكي.

Limited Income and Unlimited Wants:

Individual has a fixed amount of income, and have unlimited wants. Because wants exceed income, individual face an economizing problem; they must decide what to buy and what to forgo.

A Budget Line (Budget Constraint):

لتحليل مشكلة الندرة على مستوى الأفراد سيتم دراسة خط الميزانية. , حيث أن محدودية دخل الفرد تشكل قيداً على سلوكهم الاستهلاكي, بمعنى إذا أراد الفرد زيادة استهلاكه من سلعة يجب علية أن يضحي من استهلاكه من السلع الأخرى.

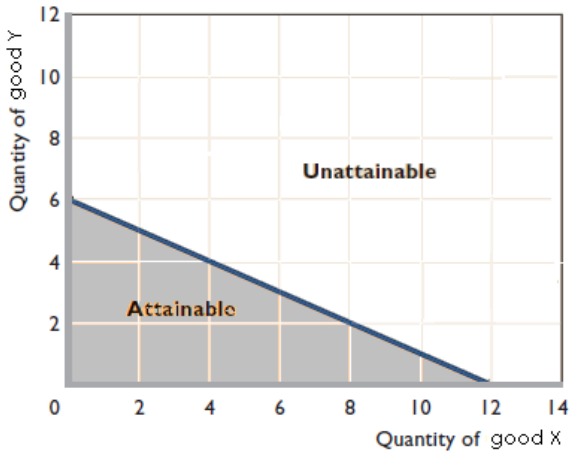
We can clarify the economizing problem facing consumers by visualizing a *budget line* (or, more technically, a *budget constraint*). It is a schedule or curve that shows various combinations of two products a consumer can purchase with a specific money income. Although we assume two products, the analysis generalizes to the full range of products available to an individual consumer.

Budget line (or, more technically, a budget constraint): It is a schedule or curve that shows various combinations of two products a consumer can purchase with a specific money income.

Example:

If a consumer has $120 to spent on two goods: good X and good Y. If the price of good X is $20 and the price of good Y is $10.

- All the combination of good X and good Y on or inside the budget line are *attainable* from the $120 of money income (you can afford to buy يقدر على شرائها).
- All combinations beyond the budget line (خـارج خـط الميزانية) are *unattainable*.
- The slope of the budget line measures the ratio of the price of good X (P_x) to the price of good Y (P_y).



The Budget Line equation: $Px * X + Py * Y = I$

Where: P_x : the price of good X, P_y: the price of good Y, and I : is the consumer income

The Budget Line combinations of good X and good Y attainable with an income of $120 are:

Units of X	Units of Y	Total Expenditure = Px * X + Py * Y
6	0	(10*0) + (20*6) = 120
5	2	(10*2) + (20* 5) = 120
4	4	(10*4) + (20* 4) = 120
3	6	(10*6) +(20* 3) = 120
2	8	(10*8) + (20*2) = 120
1	10	(10*10) +(20*1) = 120
0	12	(10*12) + (20*0) = 120

The slope of the budget line measures the ratio of the price of good X (P_x) to the price of good Y(P_y).

The slope of the budget line = $\frac{P_x}{P_y} = \frac{20}{10} = 2$

This means that: you must forgo 2 units of good Y (measured on the vertical axis) to buy 1 additional unit of good X (measured on the horizontal axis).

Trade-Offs and Opportunity Costs

The budget line in Figure above illustrates the idea of trade-offs (تضحية) arising from limited income. To obtain more of good X, you have to give up some units of good Y.

For example, to obtain the first unit of good X, you trade off 2 units of good Y. So the opportunity cost of the first unit of good X is 2 units of good Y.

The opportunity costs of extra unit of good X = $\frac{P_x}{P_y} = \frac{20}{10} = 2$

To obtain the second unit of good X the opportunity cost is also 2 units of good Y. *The straight-line budget constraint, with its constant slope, indicates constant opportunity cost.* That is, the opportunity cost of 1 extra unit of good X remains the same (2 units of good Y) as more DVDs are purchased.

The opportunity costs of extra unit of good Y = $\frac{P_y}{P_x} = \frac{10}{20} = ½$

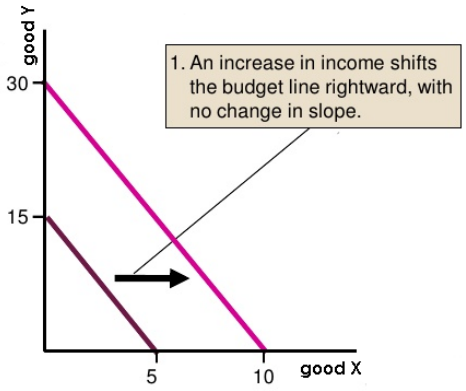
The opportunity cost of 1 extra unit of good Y does not change (= ½ unit of good X) as more books are bought.

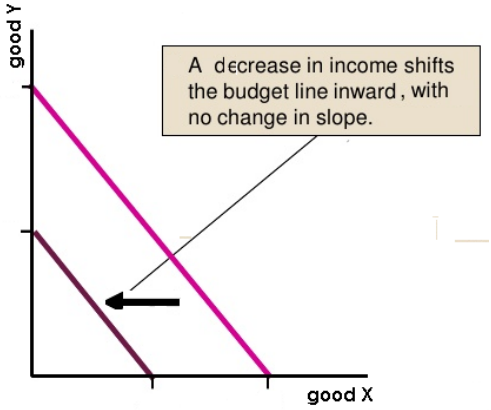
Choice: Limited income forces people to choose what to buy and what to forgo to fulfill wants. You will select the combination of good X and good Y that you think is "best." That is, you will evaluate your marginal benefits and marginal costs (here, product price) to make choices that maximize your satisfaction. Other people, with the same $120, would undoubtedly make different choices.

محدودية الدخل الافراد تحدد للفرد ما هي السلع التي يستهلكها لتحقيق رغباته. يجب عليه ان يختار على سبيل المثال كمية من السلعة X وكمية من السلعة Y والتي يعتقد الفرد أنها الأفضل له والتي تحقق له أكبر منفعة ممكنة. وبسبب اختلاف الاذواق بين الافراد فإن ذلك يؤدي الى اختلاف الكميات المستهلك من السلع بنفس مقدار المصروف من الدخل.

Income Changes : The location of the budget line varies with money income. *An increase in money income shifts the budget line to the right; a decrease in money income shifts it to the left.*

That shifts their budget lines outward and enables them to buy more goods and services. But even with more income, people will still face spending trade-offs, choices, and opportunity costs.





Multiple Choices:

1. The economizing problem is one of deciding how to make the best use of:
   (A) Virtually unlimited resources to satisfy virtually unlimited wants.
   (B) Limited resources to satisfy virtually unlimited wants.
   (C) Unlimited resources to satisfy limited wants.
   (D) Limited resources to satisfy limited wants.

2. The scarcity problem:
   (A) Persists only because countries have failed to achieve continuous full employment.
   (B) Persists because economic wants exceed available productive resources.
   (C) Has been solved in all industrialized nations.
   (D) Has been eliminated in affluent societies such as the United States and Canada.

3. The budget line shows:
   (A) the amount of product A that a consumer is willing to give up to obtain one more unit of product B.
   (B) all possible combinations of two goods that can be purchased, given money income and the prices of the goods.
   (C) the minimum amount of two goods that a consumer can purchase with a given money income.
   (D) all possible combinations of two goods that yield the same level of utility to the consumer.

4. An increase in money income:
   (A) shifts the consumer's budget line to the right.
   (B) shifts the consumer's budget line to the left.
   (C) increases the slope of the budget line.
   (D) has no effect on the budget line.

5. Any combination of goods lying outside of the budget line:
   (A) implies that the consumer is not spending all his income.
   (B) Is attainable (يقدر على شرائها), given the consumer income.
   (C) yields less utility than any point inside the budget line.
   (D) is unattainable, given the consumer's income.

Society's Economizing Problem المشكلة الاقتصادية على المستوى القومى

إن أي قطر من الأقطار يمتلك مجموعة من الموارد الإنتاجية والتي تستعمل الإنتاج السلع الاستهلاكية المختلفة. ولكن عملية إنتاج تلك السلع الاستهلاكية تتطلب استخدام مكائن وآلات, والتي تتطلب بدورها استخدام موارد إنتاجية (عمال, وأراضي, ورأس مال). وبسبب ندرة الموارد الإنتاجية فإن ذلك يحتم علينا عملية الاختيار حول استخدام هذه الموارد. وهذا ويمكن أن ندرس الندرة والاختيار والتضحية على المستوى القومي باستخدام فكرة منحنى إمكانيات الإنتاج.

Scarce Resources

Society has limited or scarce economic resources, meaning all natural, human, and manufactured resources that go into the production of goods and services. This includes the entire set of factory and farm buildings and all the equipment, tools, and machinery used to produce manufactured goods and agricultural products; all transportation and communication facilities; all types of labor; and land and mineral resources.

يعرف المورد الإنتاجي (الاقتصادي) بأنه أي شخص أو أي شيء يساهم في عملية إنتاج السلع والخدمات.

Resource Categories

Economists classify economic resources into four general categories.

A. Land: To the economist land includes all natural resources ("gifts of nature") used in the production process, such as arable land, forests, mineral and oil deposits, and water resources.

الأرض هي الموارد الطبيعية وتشمل جميع الأشياء التي على سطحها, مثل النباتات والغابات, أبار البترول ومناجم المعادن, الغازات وغيرها.

B. Labor (العمل): The resource labor consists of the physical and mental talents of individuals used in producing goods and services. The services of a logger, retail clerk, machinist, teacher, professional football player, and nuclear physicist all fall under the general heading “labor.”

يعرف العمل أنه الجهد الإنساني المبذول ويمكن أن يكون هذا الجهد جسمانياً أو فكرياً.

C. Capital (رأس المال): Capital (or capital goods) includes all manufactured aids used in producing consumer goods and services. Included is all factory, storage, transportation, and distribution facilities, as well as tools or machinery. Economists refer to the purchase of capital - goods as investment.

رأس المال في الاقتصاد هو ما يقوم الإنسان بتصنيعه من وسائل الإنتاج المختلفة. من آلات وأجهزة ومعدات ومباني. وتعتبر المواد الخام بعد استخراجها من باطن الأرض جزءاً من رأس المال (بع استخراج البترول وتعبئته في براميل فإننا نعتبره جزءاً من رأس المال وليس جزءاً من الأرض).

- Capital goods differ from consumer goods because consumer goods satisfy wants directly, whereas capital 'goods do so indirectly by aiding the production of consumer goods.

- *Because money produces nothing, economists do not include it as an economic resource. Money used for purchasing capital goods.*

D. Entrepreneurial Ability (الإدارة والتنظيم): There is the special human resource, distinct from labor, called entrepreneurial ability**.**
التنظيم ويتمثل في أخذ المبادرة في جمع وتصور وتنظيم وتنسيق العملية الإنتاجية وحسن استخدام عناصر الإنتاج المختلفة. ويشمل التنظيم أيضا عملية اختراع واستخدامات أنماط وطرق جديدة في الإنتاج، ويرى البعض أن التنظيم هو نوع متقدّم من العمل فيدخلونه ضمن العنصرالإنتاجي الأول للعمل.

The entrepreneur performs several functions: يقوم الريادي بمجموعة وظائف منها

- The entrepreneur takes the initiative in combining the resources of land, labor, and capital to produce a good or a service. The entrepreneur is the driving force behind production and the agent who combines the other resources in what is hoped will be a successful business venture.

  المنظم او الريادي يأخذ زمام المبادرة في استخدام الموارد الانتاجية الأرض والعمل ورأس المال لإنتاج سلعة و الخدمات وحسن استخدام عناصر الإنتاج المختلفة.

- The entrepreneur makes the strategic business decisions that set the course of an enterprise.
  الريادي يعمل القرارات التجارية الاستراتيجية التي تحدد مسار مؤسسة.

- The entrepreneur is an innovator. He or she commercializes new products, new production techniques, or even new forms of business organization.
  الريادي هو مبتكر، بحيث يقوم بتسويق منتجات جديدة، وتقنيات الإنتاج الجديدة، أو حتى أشكال جديدة من تنظيم الأعمال التجارية.

- The entrepreneur is a risk bearer. The entrepreneur has no guarantee of profit. The reward for the entrepreneur's time, efforts, and abilities may be profits or losses.
  الريادي هو من يتحمل المخاطر. الريادي لا يضمن ان يحقق أرباح للمشروع فقد بحقق ارباح او خسارة.

Because land, labor, capital, and entrepreneurial ability are combined to produce goods and services, they are called the factors of production, or simply "inputs."

Multiple Choices:

1. Which of the following is a labor resource?
   A. a computer programmer
   B. a computer
   C. silicon (sand) used to make computer chips
   D. a piece of software used by a firm

2. Which of the following is a capital resource?
   A. a computer programmer
   B. a corporate bond issued by a computer manufacturer
   C. silicon (sand) used to make computer chips
   D. a piece of software used by a firm

3. The four factors of production are:
   A. land, labor, capital, and money
   B. land, labor, capital, and entrepreneurial ability
   C. labor, capital, technology, and entrepreneurial ability
   D. labor, capital, entrepreneurial ability, and money

4. Which of the following is a land resource?
   A. a farmer
   B. an oil drilling rig
   C. a machine for detecting earthquakes
   D. natural gas

5. Money is not an economic resource because:
   A. money, as such, does not produce anything.
   B. idle money balances do not earn interest income.
   C. it is not scarce.
   D. money is not a free gift of nature.

Production Possibilities Model منحنى إمكانيات الإنتاج

Production Possibilities Curve

Lists the different combinations of two products that can be produced with a specific set of resources, assuming full employment.

هو شكل (منحنى) يمثل أقصى ما يمكن أن ينتجه المجتمع من بضائع وخدمات خلال فترة زمنية معينة بكمية الموارد الإنتاجية المتوفرة.

Assumptions:

لكي نستطيع رسم منحنى إمكانيات الإنتاج لمجتمع معين فإننا نضع عادة بعض الافتراضات التبسيطية الهامة:

1. Full employment: The economy is employing all its available resources.
إن جميع الموارد الإنتاجية المتوفرة لدى المجتمع موظفة بالكامل. ويعني ذلك أنه لا توجد موارد إنتاجية معطلة أو غير مستغلة (تشغيل كامل).

2. Fixed resources: The quantity and quality of the factors of production are fixed.
أن كمية ونوعية الموارد الإنتاجية المتوفرة لدى المجتمع ثابتة.

3. Fixed technology: The methods used to produce output are constant.
أن الأساليب الإنتاجية (التكنولوجيا) التي يستخدمها المجتمع لا تتغير.
4. Two goods: The economy is producing only two goods (consumer goods and capital goods).
أن يقوم المجتمع بإنتاج سلعتين فقط.

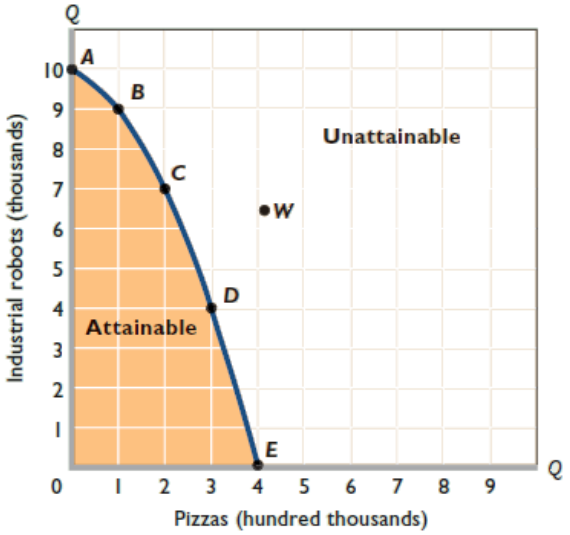
Production Possibilities Table

A production possibilities table lists the different combinations of two products that can be produced with a specific set of resources, assuming full employment. Table below presents a simple, hypothetical economy that is producing pizzas and Industrial Robots.

Example

Production Possibilities of Pizzas and Industrial Robots:

Type of product	Production Alternative				
	A	B	C	D	E
Pizzas	0	1	2	3	4
Robots	10	9	7	4	0



- At alternative A, this economy would be devoting all its available resources to the production of industrial robots (capital goods

- At alternative E, all resources would go to pizza production (consumer goods).

- An economy typically produces both capital goods and consumer goods, as in B, C, and D.
- As we move from alternative A to E, we increase the production of pizzas at the expense of the production of industrial robots.
- In producing more pizzas, society increases the current satisfaction of its wants. But there is a cost: More pizzas mean fewer industrial robots.
- Each point on the production possibilities curve represents some maximum output of the two products.
- *Any combination of industrial robots and pizzas lying outside the curve (such as at W) unattainable.*
- *Points inside the curve are attainable, but they indicate that full employment is not being realized (unemployment point).*

Opportunity cost: the number of units of a specific good that must be given up (يتخلى عن) to obtain one more unit of another good.

Opportunity cost = negative slope of the production possibilities curve at each point

Example

Using the table (Production Possibilities of Pizzas and Industrial Robots) to answer the following questions:

Type of product	Production Alternative				
	A	B	C	D	E
Pizzas	0	1	2	3	4
Robots	10	9	7	4	0

1. If the economy at point D. What is the opportunity cost of one more unit of industrial robots?

Opportunity cost of one more units of robots = $\frac{(\Delta\ in\ Pizzas}{\Delta\ in\ industrial\ robots} = \frac{(3-2)}{(4-7)}$ = -⅓ units of Pizzas.

2. What is the opportunity cost of the second unit of Pizza?

Opportunity cost = $\frac{(\Delta\ in\ industrial\ robots}{\Delta\ in\ pizzas} = \frac{(7-9)}{(2-1)}$ = – 2 units of robots.

Example

Suppose that a nation's production possibilities can be represented by the table below:

	Production Alternatives				
Products	A	B	C	D	E
Food	0	4	8	12	16
Clothing	20	18	14	8	0

a. What is the maximum amount of food this economy can produce? How much clothing can it produce at this point?

The greatest amount of food is 16 units, achieved by producing at alternative E. At this point, all resources are devoted to food production and none to clothing production. Clothing production is zero.

b. If the economy is producing at alternative C, what is the opportunity cost of one more unit of food?

Opportunity cost of one more unit of food = $\frac{\Delta\ Clothing}{\Delta\ food} = \left|\frac{(8-14)}{(12-8)}\right| = \frac{6}{4} = 1.5$ units of clothing

c. If the economy is producing at alternative C, what is the cost of one more unit of clothing?

Opportunity cost of one more unit of clothing = $\frac{\Delta\ food}{\Delta\ clothing} = \left|\frac{(4-8)}{(18-14)}\right| = \frac{4}{4} = 1$ unit of food

d. If the economy is producing at alternative C, what is the cost of 4 more unit of food?

From part b, the opportunity cost of one more unit of food = 1.5 units of clothing
Opportunity cost of 4 more unit of food = 1.5 * 4 = 6

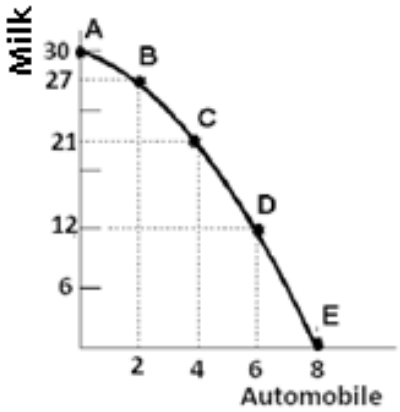
Or from the table, as we move from point C to D, the consumer increase production of food by 4 units (8 to 12), while decrease consumption of clothing by 6 (14 to 8).

Example
Below is a production possibilities table for consumer goods "automobiles" and capital goods "Milk"

Type of product	Production Alternative				
	A	B	C	D	E
automobiles	0	2	4	6	8
Milk	30	27	21	12	0

1.Graph the production possibilities curve

ملاحظة: عند الرسم يجب اللإنتباه الى ان الرسمة ليست خط مستقيم لانه كلما زاد عدد السيارات المنتجة ب 2 قل عدد لترات الحليب المنتجة بعدد متزايد (ميل المنحنى متزايد).



2. If the economy at point C, what is the opportunity cost of one more automobile?

Opportunity cost $= \frac{\Delta\ Milk}{\Delta\ Automobile} = \left|\frac{(12-21)}{(6-4)}\right| = \frac{9}{2}$ =4.5 liters of milk

3. If the economy at point B, what is the opportunity cost of two more automobile?

Opportunity cost of one more automobile $= \frac{\Delta\ Milk}{\Delta\ Automobile} = \left|\frac{(21-27)}{(4-2)}\right| = \frac{6}{2} = 3$

Opportunity cost of two more automobile = Opportunity cost of one more * numbers of units

Opportunity cost of two more automobile = 3 * 2 = 6

Or: From the table the economy must move from point B to point C. When the economy moving from point B to point C, the economy must give up (27 – 21) = 6 liters of milk.

4. If the economy at point B, what is the opportunity cost of one more liter of milk?

Opportunity cost $= \frac{\Delta\ Automobile}{\Delta\ Milk} = \left|\frac{(0-2)}{(30-27)}\right| = \frac{2}{3}$ Automobile

5. What is the opportunity cost of producing the 7th units of automobile?

The economy must move from point D to point E.

Opportunity cost $= \frac{\Delta\ Milk}{\Delta\ Automobile} = \left|\frac{(0-12)}{(8-6)}\right| = \frac{12}{2}$ = 6 liters of milk

6. What is the opportunity cost of producing the 24th liters of milk?

The economy must move from point C to point B.

Opportunity cost of one more liter of milk $= \frac{\Delta\ Automobile}{\Delta\ Milk} = \left|\frac{(2-4)}{(27-21)}\right| = \frac{2}{6}$ Automobile

At point C, the amount of milk = 21. Increase production of milk to 24 means that the 3 more liters of milk increase

Opportunity cost of producing the 24th liters of milk = $3 * \frac{2}{6} = 1$

7. If the economy producing 3 automobile and 20 liters of milk. Is the economy use of its all available recourses to produce it? Explain

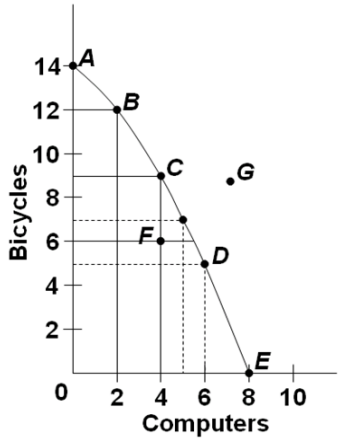
The point 3 automobile and 20 liters of milk *lie inside the PPC. This point is attainable but it unemployment* point (not use of its all available recourses to produce it

8. What would production at point outside the production possibilities curve indicate? What must occur before the economy can attain such a level of production?

   Any point lie outside the production possibilities curve is unattainable point.

   Before the economy can attain such a level of production it must increase the recourses of the production or improvement in the level of technology used.

Example:
Refer to the diagram to answer questions that follow it



a. If society is currently producing 9 units of bicycles and 4 units of computers and it now decides to increase computer output to 6, what is the opportunity cost of increase computer output to 6 units?

   From the diagram as we move from point C to point D, the economy increase production of computers from 4 to 6, that leads to decline production of bicycles from 9 to 5

   Opportunity cost of increase computer output from4 to 6 units = $|5 - 9| = 4$

b. If society is currently producing at point B, what is the opportunity cost of producing one more Computer?

   If the economy at point B, and its wants to increase production of computers it will move from point B to point C.

Opportunity cost $= \frac{\Delta\ Bicycles}{\Delta\ Computer} = \left|\frac{(9-12)}{(4-2)}\right| = \frac{3}{2} = 1.5$ bicycles

c. If society is currently producing at point D, what is the opportunity cost of producing one more Bicycle?

   If the economy at point D, and its wants to increase production of bicycles, it will move from point D to point C.

$$\text{Opportunity cost} = \frac{\Delta\ Computers}{\Delta\ Bicycles} = \left|\frac{(4-6)}{(9-5)}\right| = \frac{2}{4} = ½ \text{ computer}$$

Law of Increasing Opportunity Costs:

The law of increasing opportunity costs. As the production of particular good increases, the opportunity cost of producing an additional unit rises.

قانون التكلفة المتزايدة: إن إنتاج وحدات متتالية من سلعة ما يؤدي إلى التضحية بكميات متزايدة من السلعة الأخرى. والسبب في ذلك هو عدم قدرة عناصر الإنتاج المختلفة على إنتاج كافة السلع بنفس الكفاءة.

Example

The following table shows the production possibilistes for an economy which produces bottles of water (B) and Compact Disks (CD) in millions. Does the law of increasing opportunity cost hold here? Show how?

Possibilistes	B	CD
A	0	15
B	1	14
C	2	12
D	3	9
E	4	5
F	5	0

Answer:

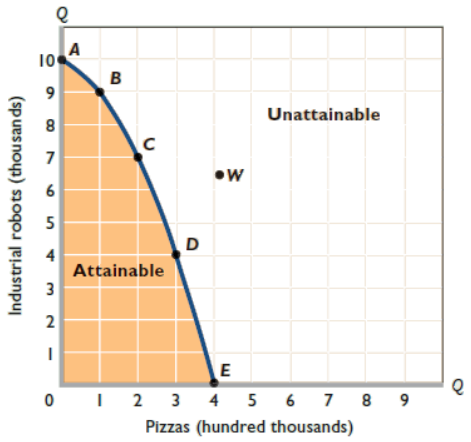
When we move from A to B, just 1 unit of compact disks is sacrificed for 1 more unit of bottles of water; but in going from B to C we sacrifice 2 additional units of CD for 1 more unit of bottles of water; then 3 more of CD for 1 more of bottles of water.

⇨ The law of increasing opportunity cost hold here

B	CD	Opportunity cost of one more bottles of water (B)
0	15	–
1	14	1
2	12	2
3	9	3
4	5	4
5	0	5

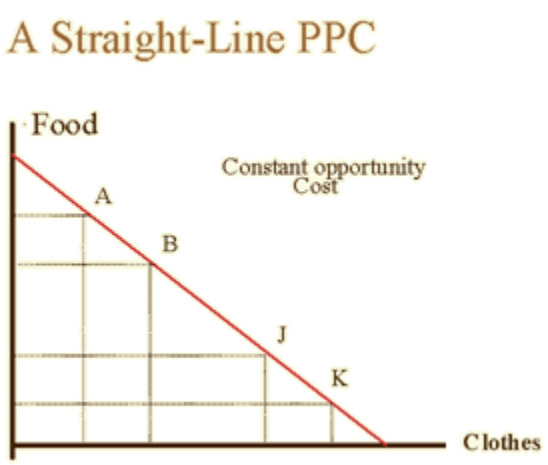
Shape of the Curve:

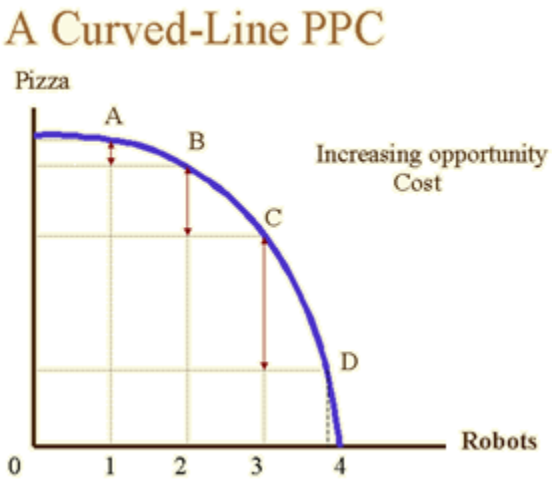
The law of increasing opportunity costs is reflected in the shape of the production possibilities curve: The curve is bowed out from the origin of the graph. Figure shows that when the economy moves from *A* to *E,* it must give up successively larger amounts of industrial robots (1, 2, 3, and 4) to acquire equal increments of pizzas (1, 1, 1, and 1). This is shown in the slope of the production possibilities curve, which becomes steeper as we move from *A* to *E.*



- Production possibilities curve is bowed out from the origin because it reflects the law of increasing opportunity cost.

- Production possibilities curve is straight line because it reflects the law of constant opportunity cost.





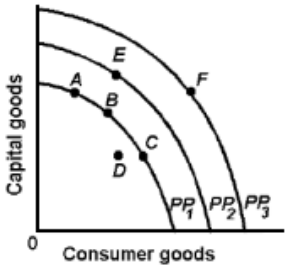
Multiple Choices:

1. The typical production possibilities curve is:
   A. an upsloping line that is bowed out from the origin.
   B. a downsloping line that is bowed in toward the origin.
   C. a downsloping line that is bowed out from the origin.
   D. a straight upsloping line.

2. The slope of the typical production possibilities curve:
   A. is positive.
   B. increases as one moves southeast along the curve.
   C. is constant as one moves down the curve.
   D. decreases as one moves southeast along the curve.

3. The production possibilities curve has:
   A. a positive slope that increases as we move along it from left to right.
   B. a negative slope that increases as we move along it from left to right.
   C. a negative slope that decreases as we move along it from left to right.
   D. a negative slope that is constant as we move along it from left to right.

4. Based on the following production possibilities curve answer the following question: Refer to the above diagram. The concept of opportunity cost is best represented by the:
   A. Move from B on PPl to E on PP2.
   B. Move from B on PPl to C on PP1.
   C. Move from D inside PPl to B on PPl.
   D. Shift of the production possibilities curve from PPl to PP2.



Example

Based on the following production possibilities schedule answer the following questions:

Guns	Butter (tons)	Opportunity cost of Guns
1	36	2 tons of butter
2	28	?
3	?	12 tons of butter
4	0	?

a. If the economy is currently producing one Gun, and wants to produce more Guns, what is the opportunity cost of an additional Gun?

Opportunity cost of an additional Gun = $\frac{(\Delta\, Butter}{\Delta\, Gun} = \frac{(28-36)}{(2-1)}$ = 8 tons of butter

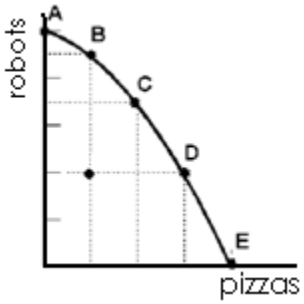
b. If the economy is currently producing 3 Gun, how many tons of butter can this country produce efficiently?

Opportunity cost of an additional Gun = Δ Butter / Δ Gun

–12 = $\frac{(X-28)}{(3-2)}$ ⇨ X – 28 = –12 ⇨ X = 28 – 12 = 16 tons of butter

Optimal Allocation

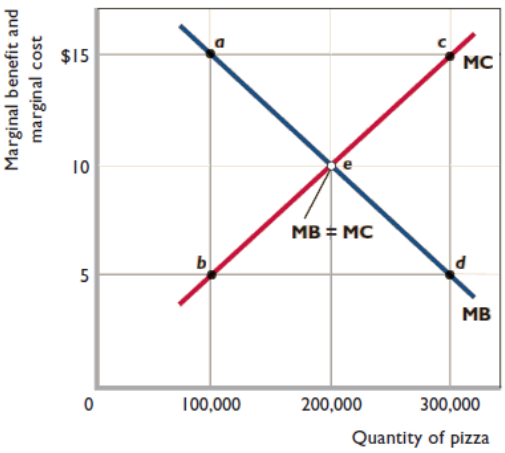
Of all the attainable combinations of pizzas and industrial robots on the curve in Figure, which is optimal (best)? That is, what specific quantities of resources should be allocated to pizzas and what specific quantities should be allocated to industrial robots in order to maximize satisfaction?



ذكرنا سابقاً أن منحنى إمكانيات الإنتاج يمثل أقصى ما يستطيع المجتمع إنتاجه. فالنقطة (A) والنقطة (B) والنقطة (C), وكل نقطة على المنحنى تمثل أحد البدائل أو الخيارات التي يمكن للمجتمع أن ينتجها إذا استخدم جميع العناصر المتوفرة لديه. ونقول في هذه الحالة أن هذه البدائل التي تقع على المنحنى تمثل كفاءة إنتاجية (Productive Efficiency).

Economic decisions center on comparisons of marginal benefit (MB) and marginal cost (MC). Any economic activity should be expanded as long as marginal benefit exceeds marginal cost and should be reduced if marginal cost exceeds marginal benefit. *The optimal amount of the activity occurs where MB = MC*. Society needs to make a similar assessment about its production decision.

Consider pizzas. We already know from the law of increasing opportunity costs that the marginal costs of additional units of pizza will raise as more units are produced. At the same time, we need to recognize that the extra or marginal benefits that come from producing and consuming pizza decline with each successive unit of pizza. Consequently, each successive unit of pizza brings with it both increasing marginal costs and decreasing marginal benefits.



The optimal quantity of pizza production is indicated by point *e* at the intersection of the MB and MC curves: 200,000 units in Figure. Why is this amount the optimal quantity? If only 100,000 units of pizzas were produced, the marginal benefit of an extra unit of pizza (point *a*) would exceed its marginal cost (point *b*).When society gains something worth $15 at a marginal cost of only $5, it is better

off. In Figure above, net gains can continue to be realized until pizza product production has been increased to 200,000.

If MB > MC → production should be increased

If MB < MC → production should be decreased

If MB = MC → the optimal amount of the production occurs (optimal allocation)

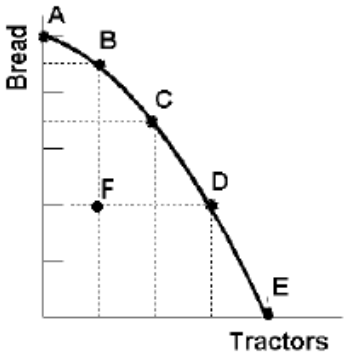
Productive Efficiency (كفاءة إنتاجية)

The production of any particular good in the least costly way (إنتاج السلعة بأقل التكاليف).

- *Each point occurs on the production possibilities curve represents productive efficiency.*
- *Each point occurs inside the production possibilities curve represents productive inefficiency.*

The points A, B, C, D, E represents productive efficiency

Point F represents productive efficiency point



Allocative efficiency

The particular mix of goods and services most highly valued by society (إنتاج ما يرغبه افراد المجتمع).

Economic Efficiency = Productive Efficiency + Allocative efficiency

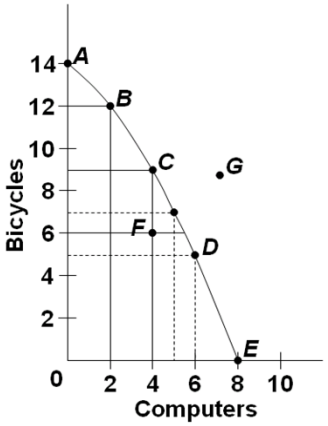
Multiple Choices:

1. The optimal point on a production possibilities curve is achieved where:
   A. the smallest physical amounts of inputs are used to produce each good.
   B. each good is produced at a level where marginal benefits equal marginal costs.
   C. large amounts of capital goods are produced relative to consumer goods.
   D. large amounts of consumer goods are produced relative to capital goods.

2. The marginal cost curve is:
   A. upsloping because of increasing marginal opportunity costs.
   B. upsloping because successive units of a specific product yield less and less extra utility.
   C. downsloping because of increasing marginal opportunity costs.
   D. downsloping because successive units of a specific product yield less and less extra utility.

3. The output of MP3 players should be:
   A. reduced if marginal benefits exceed marginal costs.
   B. reduced if marginal costs exceed marginal benefits.
   C. increased if marginal costs exceed marginal benefits.
   D. reduced to zero if their unit costs exceed the unit costs of alternative products.

4. Refer to the above diagram. Points *A*, *B*, *C*, *D*, and *E* show:
   A. That the opportunity cost of bicycles increases, while that of computers is constant.
   B. Combinations of bicycles and computers that society can produce by using its resources efficiently.
   C. That the opportunity cost of computers increases, while that of bicycles is constant.
   D. That society's demand for computers is greater than its demand for bicycles.



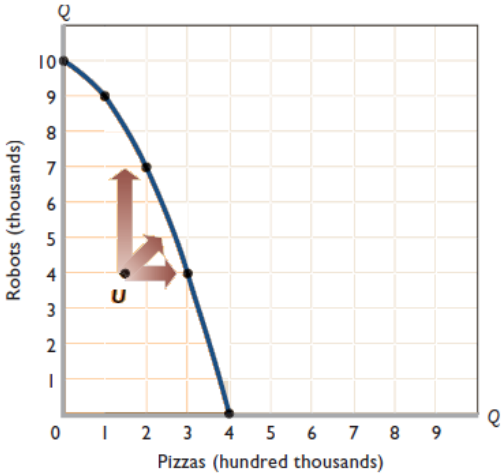
Unemployment, Growth, and the Future

Unemployment of Resources

عدم التوظيف الكامل لعناصر الإنتاج يحث عندما تكون بعض عناصر الإنتاج غير مستغلة, أو غير مستغلة بصورة كاملة.
وهذا يعني أن أي نقطة داخل منحنى إمكانيات الإنتاج تمثل عدم التوظيف الكامل لعناصر الإنتاج.

Any point inside the production possibilities curve, such as U, represents unemployment or a failure to achieve full employment.

The arrows indicate that by realizing full employment, the economy could operate on the curve. This means it could produce more of one or both products than it is producing at point *U.*

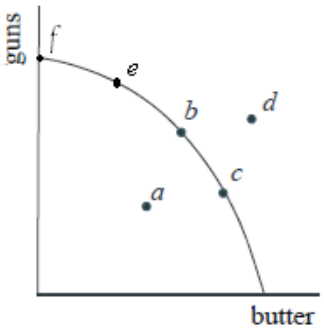


Example

Refer to the production possibilities curve. Which point represents unemployment and producing inefficiently? And which points represent productive efficiency?

Point a: unemployment point and producing inefficiently.
لا يوجد هناك استغلال كامل لعناصر الانتاج (جزء من عناصر الانتاج معطل)

Point's b, c, e, and f represent productive efficiency (لأنها تقع على المنحنى)



Growing Economy النمو الاقتصادي

When we drop the assumptions that the quantity and quality of resources and technology are fixed, the production possibilities curve shifts positions and the potential maximum output of the economy changes.

Production possibilities curve shifters: العوامل التي تؤدي إلى انتقال منحنى إمكانيات الإنتاج

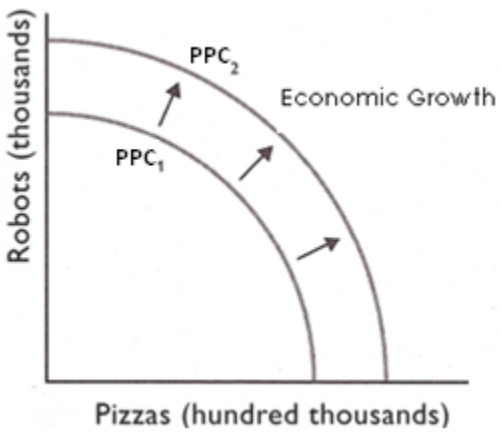
1. Increases in Resource Supplies: زيادة كمية و نوعية المصادر الإنتاجية

The increase in supplies of resources (land, labor, capital, and entrepreneurial ability), improvements in resource quality, move the production possibilities curve outward and to the right, allowing the economy to have larger quantities of both types of goods (Economic Growth).

The increase in supplies of resources, improvements in resource quality, shifts the production possibilities curve outward and to the right (Economic Growth).

إذا افترضنا أن كمية الموارد الإنتاجية قد زادت نتيجة لتزايد السكان والقوى العاملة في المجتمع, ونتيجة للاكتشافات الجديد للثروة المعدنية, وزيادة التراكم الرأسمالي. إن ذلك يعني ببساطة أن مقدرة هذا المجتمع, أي طاقة الإنتاجية, سوف تزيد, وبالتالي يستطيع هذا المجتمع أن ينتج كميات أكبر من البضائع والخدمات سنويا (نمو اقتصادي). ويمكن الحصول على نفس النتيجة إذا تحسنت نوعية الموارد المتاحة للمجتمع, مثل استصلاح الأراضي الزراعية, وتدريب العاملين, وصيانة الآلات, وغيرها.

A decrease in supplies of resources, shift the production possibilities curve inward and to the left from PPC_1 to PPC_2. (Economic recession (ركود اقتصادي).



2. Advances in Technology تطور التكنولوجيا التي يستخدمها المجتمع

An advancing technology brings both new and better goods and improved ways of producing them. Increase in output leads to economic growth.

An advancing technology shifts PPC to the right, this leads to increase output.

Multiple Choices:

1. Unemployment:
   A. causes the production possibilities curve to shift outward.
   B. can exist at any point on a production possibilities curve.
   C. is illustrated by a point outside the production possibilities curve.
   D. is illustrated by a point inside the production possibilities curve.

2. A nation's production possibilities curve might shift to the left (inward) as a result of:
   A. technological advance.
   B. increases in the size of the labor force.
   C. the depletion of its soil fertility (إستنزاف خصوبة التربة) due to overplanting and overgrazing (الرعي الجائر)
   D. investing in more capital goods.

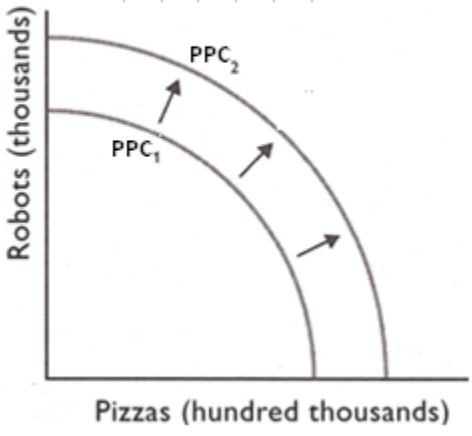
3. Refer to the above diagram. The concept of economic growth is best represented by the:
   A. Move from point B to point C.
   B. Move from point C to point D.
   C. Move from point B to point E.
   D. Move from point F to point E

Biased Growth and Unbiased Growth: النمو المتوازن وغير المتوازن

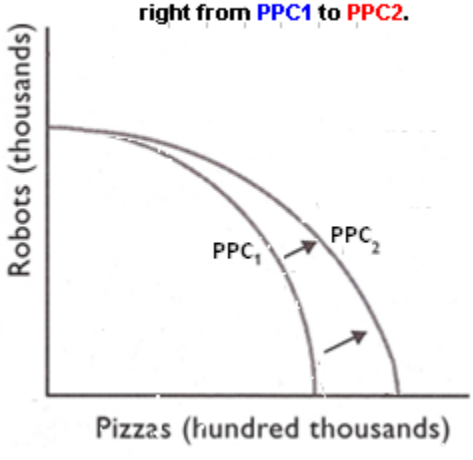
يحدث النمو المتوازن عندما يزيد إنتاج جميع السلع (Pizza and Robots) في مثالنا السابق بنفس النسبة. أما النمو الغير متوازن يحدث نتيجة لزيادة إنتاج سلعة ما دون غيرها. فعلى سبيل المثال, قد يتم تطوير تكنولوجيا خاصة بإنتاج الطعام أو يتم زيادة الأراضي الزراعية, وهذا ما سيؤدي إلى زيادة إنتاج الطعام دون أن يؤثر على إنتاج المكائن. وبالمقابل فقد يتم تطوير تكنولوجيا خاصة بإنتاج المكائن دون أن يوثر ذلك على إنتاج لطعام.

Generally we assume an increase in available resources raises the production capacity of both goods. An improvement in technology, however, may be specific to one product. In this situation the PPC shifts outward only along one axis.

Improvement that benefits both products. PPC shifts outwards from PPC1 to PPC2.

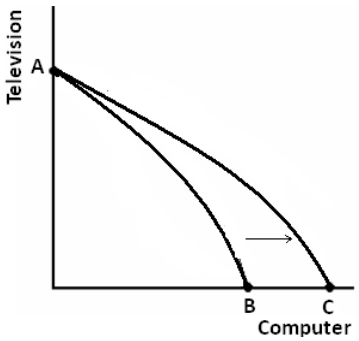


Improvement that benefits only Pizza PPC shifts to the right from PPC1 to PPC2.

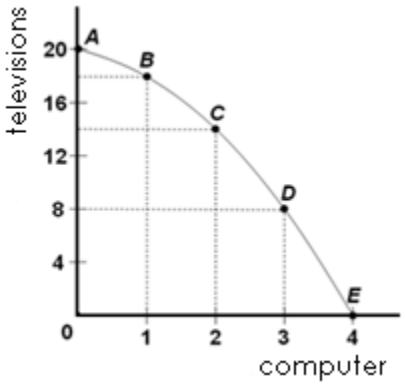


Multiple Choices:

1. Which of the following could explain the shift in the production possibilities frontier from AB to AC
   A. technological improvement in both television production and computer production
   B. technological improvement in television production that has no effect on computer production
   C. technological improvement in computer production that has no effect on television production
   D. an increase in the labor that can produce either television products or computer



2. Which of the following will shift the production possibilities curve to the right?
   A. an increase in the unemployment rate from 6 to 8 percent
   B. a decline in the efficiency with which the present labor force is allocated
   C. a decrease in the unemployment rate from 8 to 6 percent
   D. a technological advance that allows farmers to produce more output from given inputs

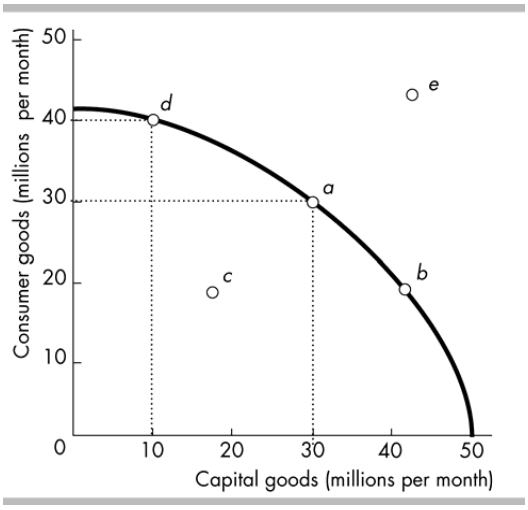


3. In the figure above, moving from point D to point E requires
   A. Technological change.
   B. An increase in unemployment.
   C. Give up (يتخلى عن) some of televisions in order to obtain more computer
   D. Give up some of computers in order to obtain more televisions.

Questions

Question #1

Refer to the production possibilities frontier in the figure above answer the following questions



1. Which point is unattainable? _____
2. Which point indicates that resources are NOT fully utilized or are inefficient? _____
3. Which point represents an attainable but inefficient production point? _____
4. Which point represents the choice to allocate the greatest amount of resources to producing consumer goods? _____
5. If the country moves from point *a* to point *d*, the opportunity cost of one more unit of consumer goods is _____
6. If currently no capital goods are being produced, what is the total opportunity cost of producing another 10 capital goods?
7. What must the economy do to attain point e?

Question # 2:

The table below lists five points on the production possibilities frontier for chocolate bars and cans of cola.

Point	Production chocolate bars	Production cans of cola
A	0	100
B	10	90
C	20	70
D	30	40
E	40	0

1. Show these data graphically
2. If the economy at point B, what is the opportunity cost of the one more cans of cola?
3. If the economy at point D, what is the opportunity cost of the one more bar of chocolate?
4. If the economy producing at point E, what is the opportunity cost of producing 40 cans of cola?
5. Can the economy producing 20 chocolate bars and 75 cans of cola? If not why?
6. Does the law of increasing opportunity cost hold here? Show how?

Question # 3

The table above represents the production possibilities frontier for grain and cars. Given this information answer the following questions.

Point	Production of grain (tons)	Production of cars (cars)
A	0	30
B	2	28
C	4	24
D	6	18
E	8	10
F	10	0

1. Which of the following combinations is unattainable? (4 tons of grain and 26 car), (2 tons of grain and 27 cars), (6 tons of grain and 18 cars), (7 tons of grain and 10 cars)
2. If the economy at point D, what is the opportunity cost of producing one more unit of car?
3. What is the opportunity cost of increasing grain production from 2 tons to 4 tons?
4. What is the opportunity cost of producing the 5th ton of grain?
5. What is the opportunity cost of producing the 26th car?

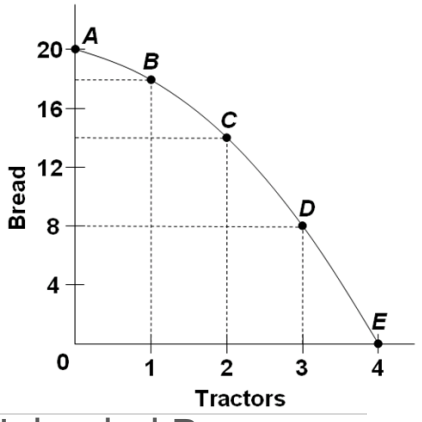
Question # 4:

Decide whether the following statements are positive or normative:

1. A rise in the price of petrol will lead to an increase in the demand for rail transport
2. The government is right to introduce a ban on smoking in public places
3. Despite a large increase in income per head, people are no happier today than they were 50 years ago
4. The government can reduce obesity by offering a subsidy to low income families when they buy fresh vegetables in the supermarket
5. A fall in incomes will lead to a rise in demand for own-label supermarket foods

Question # 5:

The graph represents the production possibilities frontier for Bread and Tractors



1. Is the combination of (3 Tractors and 12 Bread) unattainable? Explain
2. If the economy at point C, what is the opportunity cost of producing one more unit of Bread?
3. What is the opportunity cost of producing the 5th ton of grain?
4. What is the opportunity cost of producing the 4th Tractors?

Chapter One Appendix

Graphs and Their Meaning

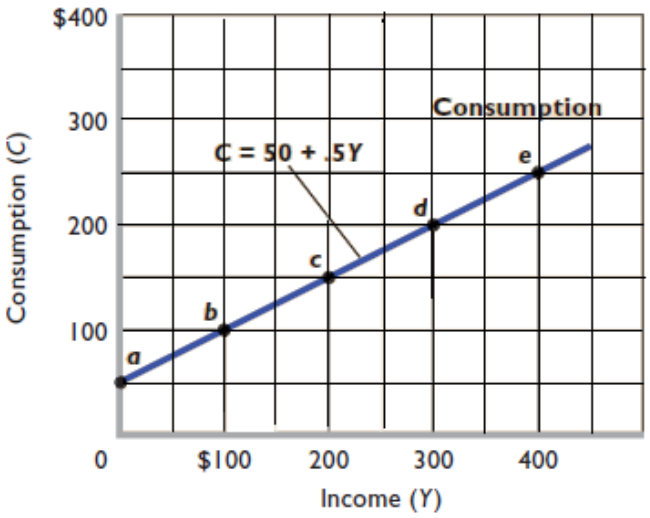
Construction of a Graph

A graph is a visual representation of the relationship between two variables.

إن الرسوم البيانية تهدف إلى تمثيل وتوضيح العلاقات بين المتغيرات الاقتصادية وخاصة عندما نريد أن نربط علاقة متغيرين مع بعضهما البعض. والخطوة الأولى في عملية التمثيل البياني هي أن نرسم محورين متعامدين يطلق على المحور الأفقي " المحور السيني" (Horizontal Axis) وعلى المحور العمودي " المحور الصادي (Vertical Axis). كما أن عملية الرسم البياني تتناسب جداً مع دراسة متغيرين, أحدهما تابع (dependent) والأخر مستقل(independent), حيث يخصص المحور الصادي (Vertical Axis) للمتغير التابع (dependent) والمحور السيني (Horizontal Axis) للمتغير المستقل(Independent).

The table in Figure 1 is a hypothetical illustration showing the relationship between income and consumption for the economy as a whole. Without even studying economics, we would logically expect that people would buy more goods and services when their incomes go up. Thus, it is not surprising to find in the table that total consumption in the economy increases as total income increases. The information in the table is expressed graphically in Figure 1. Here is how it is done: We want to show visually how consumption changes as income changes. We therefore represent income on the *horizontal axis* of the graph and consumption on the *vertical axis*.

Income per Week	Consumption per Week	Point
$ 0	$ 50	*a*
100	100	*b*
200	150	*c*
300	200	*d*
400	250	*e*



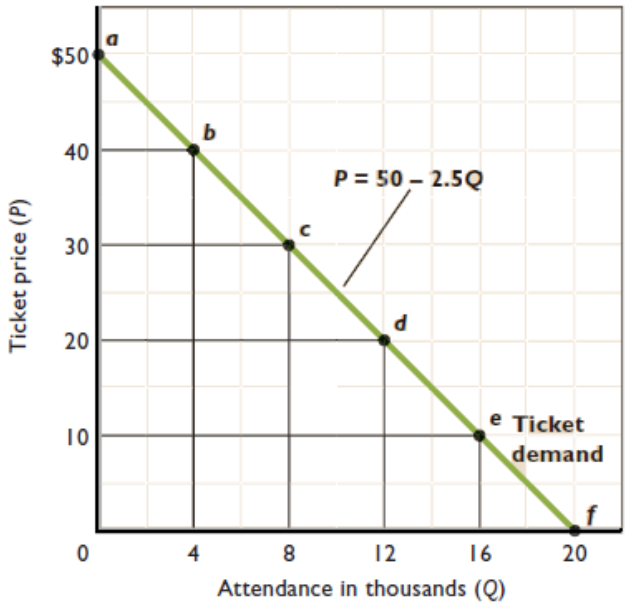
- If the curve is a straight line, as in Figure, we say the relationship is linear.

Direct and Inverse Relationships

The line in Figure above slopes upward to the right, so it depicts a direct relationship between income and consumption. *By a direct relationship (or positive relationship) we mean that two variables change in the same direction.* An increase in consumption is associated with an increase in income; a decrease in consumption accompanies a decrease in income. *When two sets of data are positively or directly related, they always graph as an upsloping line*, as in Figure above.

In contrast, two sets of data may be inversely related. Consider the table in Figure below, which shows the relationship between the price of basketball tickets and game attendance. Here we have an *inverse relationship (or negative relationship) because the two variables change in opposite directions.* When ticket prices decrease, attendance increases. When ticket prices increase, attendance decreases. The six data points in the table in Figure 2 are plotted in the graph. *Observe that an inverse relationship always graphs as a downsloping line.*

Ticket Price	Attendance, Thousands	Point
$50	0	*a*
40	4	*b*
30	8	*c*
20	12	*d*
10	16	*e*
0	20	*f*



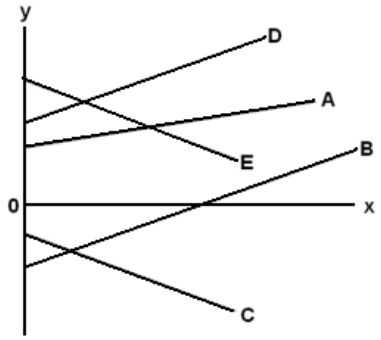
- *When two sets of variables are positively or directly related, they always graph as an upward sloping line.*
- *When two sets of variables are negatively or inversely related, they always graph as a down sloping line.*

Multiple Choices:

1. If we say that two variables are directly related, this means that:
   A. the relationship between the two is purely random.
   B. an increase in one variable is associated with a decrease in the other variable.
   C. an increase in one variable is associated with an increase in the other variable.
   D. the two graphs as a downsloping line.

2. If we say that two variables are inversely related, this means that:
   A. the two graph as an upsloping line.
   B. an increase in one variable is associated with a decrease in the other.
   C. an increase in one variable is associated with an increase in the other.
   D. the resulting relationship can be portrayed by a straight line parallel to the horizontal axis.

3. Refer to the diagram. Which line(s) show(s) a positive relationship between *x* and *y*?
   A. A only.
   B. A and D only.
   C. C. A, B, and D.
   D. both C and E.



4. Refer to the diagram. Which line(s) show(s) a negative relationship between *x* and *y*?
   A. A only.
   B. both A and D.
   C. A, B, and D.
   D. both C and E.

5. If a positive relationship exists between *x* and *y*:
   A. an increase in *x* will cause *y* to decrease.
   B. a decrease in *x* will cause *y* to increase.
   C. the relationship will graph as an upsloping line.
   D. the vertical intercept must be positive.

6. If price (*P*) and quantity (*Q*) are directly related, this means that:
   A. a change in *Q* will alter *P*, but a change in *P* will not alter *Q*.
   B. if *P* increases, *Q* will decrease.
   C. if *P* increases, *Q* will also increase.
   D. an increase in *P* will cause *Q* to change, but the direction in which *Q* changes cannot be predicted.

Dependent and Independent Variables

The independent variable is the cause or source; it is the variable that changes first.

Dependent variable is the effect or outcome; it is the variable that changes because of the change in the independent variable.

As in our income-consumption example, income generally is the independent variable and consumption the dependent variable. Income causes consumption to be what it is rather than the other way around. Similarly, ticket prices determine attendance basketball games; attendance at games does not determine the printed ticket prices for those games. Ticket price is the independent variable and the quantity of tickets purchased is the dependent variable.

Mathematicians put the independent variable (cause) on the horizontal axis and the dependent variable (effect) on the vertical axis.

Multiple Choices:

1. Which of the following statements is correct?
   A. The value of the independent variable is determined by the value of the dependent variable.
   B. The value of the dependent variable is determined by the value of the independent variable.
   C. The dependent variable designates the "cause" and the independent variable the "effect."
   D. Dependent variables graph as upsloping lines; independent variables graph as downsloping lines.

Slope of a line

The slope of a straight line is the ratio of the vertical change to the horizontal change between any two points of the line.

$$\text{Slope} = \frac{Vertical\ change}{Horizontal\ change} = \frac{\Delta y}{\Delta x}$$

Positive Slope

Slope is positive when X and Y have a direct relationship. Because consumption and income change in the same direction; that is, consumption and income are directly or positively related.

Example:

Income per Week	Consumption per Week	Point
$ 0	$ 50	*a*
100	100	*b*
200	150	*c*
300	200	*d*
400	250	*e*

Calculate the slope between point b and c.

Because income is the independent variable and consumption the dependent variable, when we plotted the graph we put consumption on the vertical axis and income in the horizontal axis.

$$\text{Slope} = \frac{\Delta\ Consumption}{\Delta\ Income} = \frac{(150-100)}{(200-100)} = \frac{50}{100} = ½$$

The slope of 0.5 tells us there will be a $0.5 increase in consumption for every $1 increase in income. Or when income increase by $2, consumption increase by $1.

Negative Slope

Slope is negative when X and Y have an inverse relationship.

Example:

The slope between point a and b is:

$$\text{Slope} = \frac{\Delta\ Ticket\ price}{\Delta\ Attendence} = \frac{(40-50)}{(4-0)} = \frac{-10}{4} = -2.5$$

Ticket Price	Attendance, Thousands	Point
$50	0	*a*
40	4	*b*
30	8	*c*
20	12	*d*
10	16	*e*
0	20	*f*

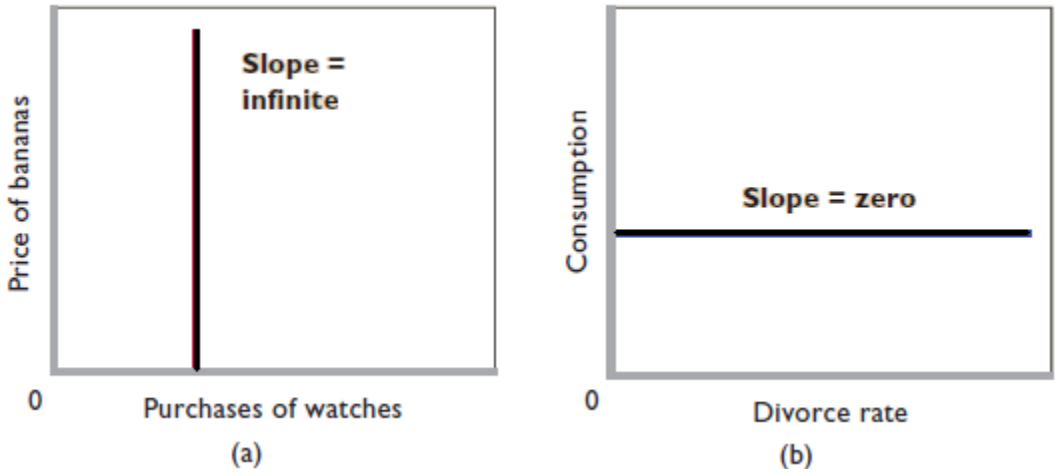
The slope of - 2.5 means that when person attendance increase by 1 person, then the ticket price reduce by $2.5

Slopes and Marginal Analysis

The concept of slope is important in economics because it reflects marginal changes-those involving 1 more (or 1 less) unit. For example, the 0.5 slope shows that $.50 of extra or marginal consumption is associated with each $1 change in income. In this example, people collectively will consume $.50 of any $1 increase in their incomes and reduce their consumption by $.50 for each $1 decline in income.

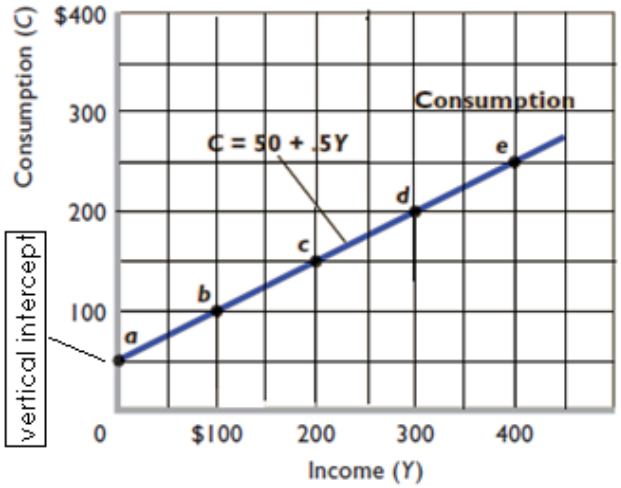
Infinite and Zero Slopes

Many variables are unrelated or independent of one another, the slope of this line is infinite or zero.
A line parallel to the vertical axis (موازي لمحور الصادات) has an infinite slope.
A line parallel to the horizontal axis (موازي لمحور السينات) has a zero slope.

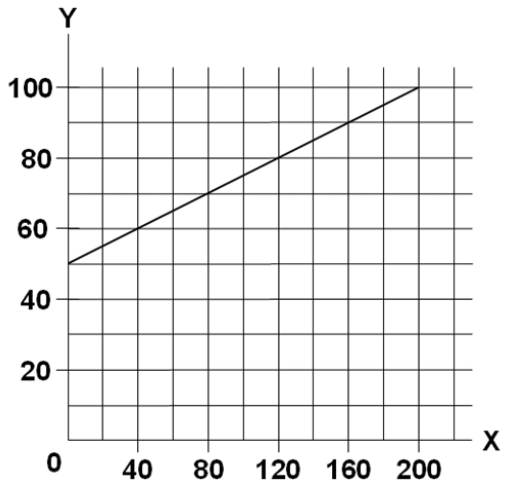


Vertical Intercept

The vertical intercept of a line is the point where the line meets the vertical axis. In Figure below the intercept is $50. *This intercept means that if current income were zero, consumers would still spend $50.* They might do this through borrowing or by selling some of their assets. Similarly, the $50 vertical intercept in Figure 2 shows that at a $50 ticket price, GSU's basketball team would be playing in an empty arena.



Multiple Choices:



1. Refer to the above diagram. The variables *X* and *Y* are:
   A. inversely related.
   B. directly related.
   C. unrelated.
   D. negatively related.

2. Refer to the above diagram. The vertical intercept:
   A. is 40.
   B. is 50.
   C. is 60.
   D. cannot be determined from the information given.

3. Refer to the above diagram. The slope of the line:
   A. is $-1/4$.
   B. is $+1/4$.
   C. is 0.40.
   D. cannot be determined from the information given.

4. Refer to the above data sets. The vertical intercept is positive for:
   A. all five data sets.
   B. data sets 1 and 3 only.
   C. data sets 1, 3, and 5 only.
   D. data set 2 only.

(1)		(2)		(3)		(4)		(5)	
J	K	L	M	N	P	R	T	U	V
0	10	0	-15	100	40	0	-15	0	0
40	20	30	-5	80	50	20	-25	5	10
80	30	60	5	60	60	40	-35	10	20
120	40	90	15	40	70	60	-45	15	30
160	50	120	25	20	80	80	-55	20	40
200	60	150	35	0	90	100	-65	25	50

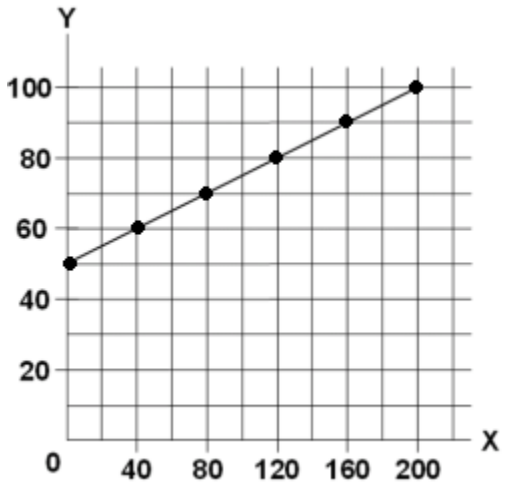
Equation of a Linear Relationship

If we know the vertical intercept and slope, we can describe a line succinctly in equation form. In its general form, the equation of a straight line is $y = a + b\,x$

Where y = dependent variable
a =vertical intercept
b =slope of line
x =independent variable

For our income-consumption example, if *C* represents consumption (the dependent variable) and *Y* represents income (the independent variable), we can write $C = a + bY$.

By substituting the known values of the intercept and the slope, we get $C = 50 + 0.5\,Y$. This equation also allows us to determine the amount of consumption *C* at any specific level of income. You should use it to confirm that at the $250 income level, consumption is $175.



Example:

Refer to the diagram below write the linear equation that shows the relationship between *Y* and *X*

The linear equation form: $y = a + b\,x$

a =vertical intercept = 50

b =slope of line

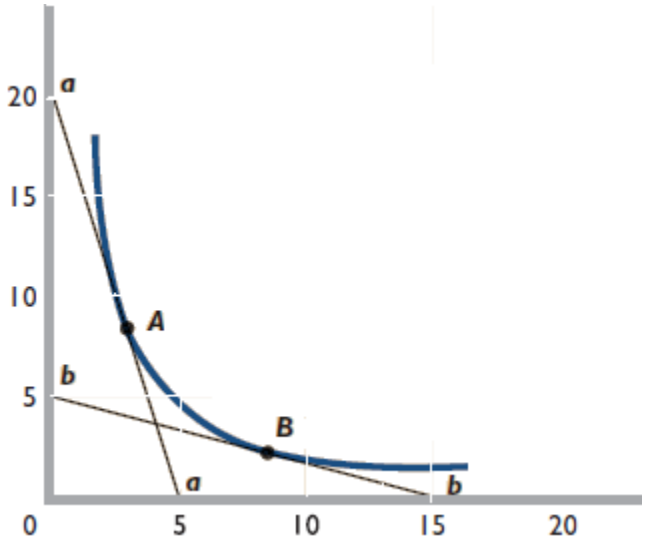
Slope = $\frac{Vertical\ change}{Horizontal\ change} = \frac{\Delta y}{\Delta x} = \frac{(70-60)}{(80-40)} = \frac{10}{40} = {}^{1}/_{4}$

→ $y = 50 + \frac{1}{4}x$

Slope of a Nonlinear Curve

The slope of a straight line is the same at all its points. The slope of a line representing a nonlinear relationship changes from one point to another. Such lines are always referred to as curves.

To measure the slope at a specific point on nonlinear curve, we draw a straight line tangent (مماس) to the curve at that point. (A line is tangent at a point if it touches, but does not intersect).



Chapter 2

The Market System and the Circular Flow

Economic Systems: النظم الاقتصادية

Economic system: a particular set of institutional arrangements and a coordinating mechanism to achieve economics goals.

يعرف النظام الاقتصادي بأنه مجموعة المؤسسات التي يسعى المجتمع من خلالها إلى تحقيق الأهداف الاقتصادية التي يرغب فيها. وقد تتضمن هذه الأهداف إنتاج أكبر كمية من السلع, والعدالة في توزيعا بين أفراد المجتمع, والنمو في الناتج القومي, والاستقرار في أسعار السلع وغيرها.

Economic system has to determine what goods are produced, how they are produced, who gets them, how to accommodate changes, and how to promote technological progress. Economic systems differ as to who owns the factors of production and the method used to motivate, coordinate, and direct economic activity.

النظام الاقتصادي يحدد السلع والخدمات التي سيتم انتاجها ، وكيف يتم إنتاجها وكيف يتم توزيعها بين افراد المجتمع. هناك نوعان من النظم الاقتصادية الوضعية التي تختلف فيما بينها من حيث ملكية الموارد الإنتاجية, وآلية معالجة المشاكل الاقتصادية, وفلسفة توزيع البضائع والخدمات بين أفراد المجتمع.

Two kinds of economics systems: the command system and the market system

The Command (Socialism) System النظام الاشتراكي

In that system, government owns most property resources and economic decision making occurs through a central economic plan. A central planning board appointed by the government makes nearly all the major decisions concerning the use of resources, the composition and distribution of output, and the organization of production.

The government owns most of the business firms, which produce according to government directives. The central planning board determines production goals for each enterprise and specifies the amount of resources to be allocated to each enterprise so that it can reach its production goals. The division of output between capital and consumer goods is centrally decided, and capital goods are allocated among industries on the basis of the central planning board's long-term priorities.

يقوم النظام الاشتراكي على المرتكزات التالية: الملكية العامة للموارد الاقتصادية, فالدولة هي التي تمتلك الموارد الإنتاجية بصفة عامة, أوهي التي تسيطر عليها. فالأراضي والمكائن والمباني والمناجم كلها ملك للدولة. كما تقوم الدولة في ظل هذا النظام بمواجهة المشاكل الاقتصادية المختلفة وتحديد خيارات المجتمع (ماذا ننتج, وكيف ننتج, ولمن ننتج) بواسطة التخطيط والتنسيق الحكومي المركزي. فالصين والإتحاد السوفياتي السابق هما اقرب إلى النظام الاشتراكي.

The Market System (capitalism)"نظام السوق "النظام الرأسمالي

The system is characterized by the private ownership of resources and the use of markets and prices to coordinate and direct economic activity. Participants act in their own self-interest. Individuals and businesses seek to achieve their economic goals through their own decisions regarding work, consumption, or production. The system allows for the private ownership of capital, communicates through prices, and coordinates economic activity through *markets*—places where buyers and sellers come together. Goods and services are produced and resources are supplied by whoever is willing and able to do so. The result is competition among independently acting buyers and sellers of each product and resource.

أهم ما يميز النظام الرأسمالي الملكية الخاصة لعناصر الإنتاج. فالأراضي والمناجم والمكائن وغيرها من الموارد الاقتصادية الأخرى ملك للأفراد أو المؤسسات الخاصة التي يمتلكها الأفراد. ويقوم هذا النظام على حماية الملكية الخاصة بكافة أشكالها بما في ذلك حقوق الملكية وبراءات الاختراع. كذلك الحرية الشخصية في الاختيار: فالفرد في ظل هذا النظام يستطيع اختيار العمل الذي يرغب فيه, ويستطيع إنتاج السلع التي يراها مربحة. وكذلك يتم حل المشاكل الاقتصادية المختلفة في النظام الرأسمالي من خلال نظام السوق باستخدام آلية السعر.

Multiple Choices:

1. Economic planning by central government agencies is primarily associated with
   A. command economies.
   B. market economies.
   C. laissez faire economies.
   D. mixed economies.

2. The market system is an economic system that:
   A. Produces more consumer goods than capital goods
   B. Produces more capital goods than consumer goods
   C. Gives private individuals the right to own resources used in production
   D. Emphasizes the government's power to control markets and direct economic activity

3. One element of the command system is:
   A. Capitalism
   B. Free markets
   C. Private ownership
   D. Central planning

4. Which would *not* be characteristic of a capitalist economy?
   A. Government ownership of most factors of production
   B. Competition and unrestricted markets
   C. Reliance on the market system
   D. Freedom of enterprise and choice

Characteristics of the Market System

- Private Property الملكية الخاصة لعناصر الإنتاج

  In a market system, private individuals and firm, not the government, own most of the property resources (land and capital). It is this extensive private ownership of capital that gives capitalism its name.

حيث يقوم النظام الرأسمالي على ملكية الأفراد لعناصر الإنتاج, ويعترف القانون بهذه الملكية ويحميها, فالمالك له مطلق الحرية في التصرف فيما يملك بالبيع وخلافه, وله الحق في استغلاله في أي مجال طالما لا يتعارض مع القانون. فيمكن أن يوظف أمواله وما لديه في النشاط الزراعي أو الصناعي أو يتركه عاطلاً, فهو له مطلق الحرية فيما يملك، ومن أهم الوظائف التي يؤديها حق الملكية الخاص لعناصر الإنتاج أنه يوفر الباعث على الادخار، فمن يملك يستهلك جزءًا مما يملكه ويدخر الباقي, وبذلك يكون هناك مدخرات لأغراض الاستثمار وزيادة الدخل، فبدون الباعث على الادخار الذي يتيحه نظام الملكية الفردية لا تتوافر الأموال التي توجّه إلى الاستثمار.

- Freedom of Enterprise and Choice حرية اختيار النشاط الاقتصادي

  Businesses are free to obtain and use economic resources to produce their choice of goods and serves and to sell them in their chosen market.

  ويقوم هذا النظام على الحرية الشخصية في الاختيار: فالفرد في ظل هذا النظام يستطيع اختيار العمل الذي يرغب فيه, ويستطيع إنتاج السلع التي يراها مريحة.

- Self-Interest المصلحة الشخصيّة

  In the market system, self-Interest is the motivating force of the various economic units as they express their free choices. Self-Interest simply means that each economic unit tries to achieve its own particular goal, which usually requires delivering something of value to others.

  يعد حافز الربح في النظام الرأسمالي هو الدافع الأساسي لزيادة الإنتاج, وهو المحرك الرئيس لأي قرار يتخذه المنتجون, فكل فرد في هذا النظام إنما يتصرف بما تمليه عليه مصلحته الشخصية بما يتفق مع تحقيق أهدافه الخاصة، وبما أن الربح هو الفرق بين الإيرادات والتكاليف, فإن المنتجين في النظام الرأسمالي يختارون النشاط الاقتصادي الملائم لاستغلال الموارد بأفضل طريقة ممكنة, وحين يحدث ذلك في جميع الأنشطة الاقتصادية فإن كل الموارد الاقتصادية تكون قد استخدمت ونظمت بحيث تعطي أقصى أرباح ممكنة, وبالتالي يحصل المجتمع على أقصى دخل ممكن من موارده.

  Entrepreneurs try to maximize profit or minimize loss. Property owners try to get the highest price for the sale or rent of their resources. Workers try to maximize their utility (satisfaction) by finding jobs.

- Competition المنافسة

  The market system depends on competition among economic units. Competition requires two or more buyers and two or more seller acting independently in a particular product or resources market. Freedom of sellers and buyers to enter or leave markets.

  وهي من أهم خصائص النظام الرأسمالي, حيث تعتبر من العوامل التي تعمل على زيادة الكفاءة الاقتصادية والإنتاجية، فالمنتجون يتنافسون فيما بينهم لاجتذاب أكبر عدد من المستهلكين, والنتيجة هي اتجاه الأسعار للانخفاض وخروج المنتجين ذوي الكفاءة المنخفضة, ولا يتبقى في السوق إلا الأكفاء، ومن ثمّ يؤدي ذلك إلى الاستخدام الأفضل للموارد ومن ثم التخصيص الكفء للموارد.ومن ناحية أخرى توجد المنافسة على مستوى المستهلكين الذين يتنافسون فيما بينهم للحصول على السلع والخدمات التي يحتاجونها؛ ما يؤدي إلى ارتفاع الأسعار, بحيث يخرج المستهلكون الذين لا تمثل لهم السلع ضرورة قصوى, أو الذين لا تتناسب المنفعة التي يحصلون عليها من السلعة مع ثمن السلعة. ولا يتبقى في السوق إلا الذين تكون حاجتهم للسلعة أكبر .وهكذا يؤدي التنافس بين المنتجين فيما بينهم وبين المستهلكين فيما بينهم إلى الاستغلال الكفء للموارد الاقتصادية؛ حيث إن توفر خاصية المنافسة يؤدي إلى توفير السلع بأحسن جودة وأفضل الأسعار.

- Market and Prices الية التسعير

  In the market system, markets, prices, and profits organize and market effective the many millions of individual economic decision that occur daily.

  توجد رغبات للمستهلكين في سلع معينة, هذه الرغبات تسمى بقوى الطلب, وتوجد رغبات للمنتجين في عرض منتجاتهم وبيعها لتحقيق أنظم ربح ممكن, ويسمى ذلك بقوى العرض، فنتيجة للتفاعل بين قوى الطلب وقوى العرض تتحدد الأسعار وتتجدد كمية كل منتج في السوق.

- Technology and Capital Goods التكنولوجيا

  Advanced technology and capital goods are important because the most direct methods of production are often the least efficient.

  التقنية المتقدّمة والسلع الإنتاجية مهمة لأن باستخدام مستوى تكنولوجيا متقدم نستطيع إنتاج نفس الكمية بأقل تكلفة (كفاءة إنتاجية).

- Specialization

  Specialization is the use of resources of an individual, firm, region, or nation to produce one or a few goods or services. These goods and services are then exchanged for a full range of desired products.

- Use of money استعمال النقود

  The characteristic of any economic system is the extensive use of money. Money performs several functions, but first and foremost it is a medium of exchange.

  تتحديد مكانة النقود وأهميتها في الاقتصاد الرأسمالي في أن النقود تسهل عملية التبادل التجاري ، كذلك فإن وظيفة النقود المتعلقة بحفظ قيمة النقود لهي وظيفة لا غنى عنها لتمكين الاقتصاد القائم على المبادلة من أن يتطور وينمو. والواقع أن الاقتصاد الرأسمالي يرتكز على أساس ملكية الأفراد لأدوات الإنتاج، وإن الإنتاج هو إنتاج تلقائي يتم عن طريق قوى السوق وجهاز الأثمان الذي يلعب الدور الحيوي في توزيع القوى الإنتاجية، بعبارة أخرى السوق وحركات الأثمان هي الأساس في التنسيق في الاقتصاد الرأسمالي، وفي هذا الاقتصاد لا تكمن أهمية النقود فقط في كونها وسيطاً للتبادل، بل هي تدخل في معاملات السوق على هيئة الأثمان، فإن كل طلب على سلعة يوجد مقابله عرض للنقود، والعكس بالعكس.

- Active, but limited, government

  An active, but limited, government is the final characteristics of market system in modern advanced industrial economies. Although a market system protests a high degree of efficiency in the use of its resources.

  فكرة الاقتصاد الحر هو عدم تدخل الدولة في الأنشطة الاقتصادية وترك السوق يضبط نفسه بنفسه. والرأسمالية تعتمد بالأساس على فكرة الحرية الفردية، ولمعرفة فكرة الاقتصاد الحر أو اقتصاد السوق بشكل ايجابي فسيكون التعريف هو ان الفرد ولد حرا، بالتالى فإن له الحرية في أن يقوم بأى نشاط اقتصادي. ومع ذلك فان اقتصاد السوق لا يعني بأي شكل من الأشكال غياب القطاع العام ودور الدولة في تنظيم الحياة الاقتصادية. فالحكومة قد تتدخل لفرض سقف سعري للحماية المنتجين عندما يكون السعر متدني أو لفرض ارضية سعرية لحماية المستهلكين عندما يكون السعر عالي.

Five Fundamental Questions: الأمور التي يهتم بها علم الاقتصاد

The key features of the market system help explain how market economies respond to five fundamental questions:

- What goods and services will be produced?
- How will the goods and services be produced?
- Who will get the goods and services?
- How will the system accommodate change?
- How will the system promote progress?

- What Will Be Produced?ما هي السلع والخدمات التي ينتجها المجتمع

The goods and services produced at a continuing profit will be produced, and those produced at a continuing loss will not. Profits and losses are the difference between the total revenue (TR) a firm receives from the sale of its products and the total opportunity cost (TC) of producing those products.

The market system produces products whose production and sale yield total revenue sufficient to cover total cost (TR > TC ⇨ profit). It does not produce products for which total revenue continuously falls short of total cost (TR < TC ⇨ losses). Competition forces firms to use the lowest-cost production techniques.

يتم انتاج السلع والخدمات التي تحقق ارباح بينما لا يتم السلع والخدمات التي يعود على انتاجها خسارة على المجتمع. علي الاقتصاد القومي أو المجتمع أن يختار السلع والخدمات التي يجب أن ينتجها وفقاً لموارده الإنتاجية المتاحة. يُنتج نظامُ السوق المُنتَجاتَ التي تعود عليه بإيراد إجمالي كافيَ لتَغْطية التكلفة الكليةِ (ربح). هو لا يُنتجُ المُنتَجاتَ للتي إيرادها أقل من التكلفة الكليةِ بشكل مستمر (خسارة). تُجبرُ المنافسةُ الشركاتَ لاستعمال تقنياتِ إنتاجِ بأقل تكلفة.

- How will the goods and services be produced? كيف ننتج السلع والخدمات

What combinations of resources and technologies will be used to produce goods and services? How will the production be organized? *The answer: In combinations and ways that minimize the cost per unit of output.* Because competition eliminates high-cost producers, profitability requires that firms produce their output at minimum cost per unit. Achieving this least-cost production necessitates, for example, that firms use the right mix of labor and capital, given the prices and productivity of those resources. It also means locating production facilities optimally to hold down production and transportation expenses. Least-cost production also means that firms must employ the most economically efficient technique of production in producing their output. The most efficient production technique depends on the available technology, that is, the various combinations of resources that will produce the desired results, the prices of the needed resources.
ما هي كمية الموارد الإنتاجية ومستوى التكنولوجيا التي سيتم استخدامها لإنتاج السلع والخدمات؟ الاسلوب الامثل لإنتاج السلع والخدمات هو إنتاج كميات متباينة من السلع والخدمات بأقل تكلفة(تكون تكلفة الوحدة اقل ما يمكن). يتطلب زيادة الارباح أن يتم انتاج الوحدة بأقل تكلفة ممكنة، ولتحقيق ذلك لا بد من الاستخدام الامثل لكمية عناصر الإنتاج وكذلك استخدام مستوى تكنولوجيا أكثر تقدمُ في الإنتاج. بالطبع ستعتمد كيفية الإنتاج على مدى توقير عنصر من عناصر الإنتاج . فمثلاً الاقتصاد القومي أو المجتمع الذي تتوفر فيه أعداد كبيرة من الموارد البشرية (العمال) سيختار أسلوب إنتاجي يعتمد على استخدام الأيادي العاملة بنسبة أكثر من استخدام الماكينات والآلات, بعكس مجتمع لديه قلة في الأيادي العاملة وعنده تكنولوجيا متقدمة فسيختار أسلوب إنتاجي يعتمد على استخدام رأس المال (الماكينات والآلات) بنسبة أكثر من الأيادي العاملة. والأسلوب الأمثل للإنتاج هو الإنتاج بأقل تكلفة (تكون تكلفة الوحدة اقل ما يمكن).

- How will get the goods and services? لمن ننتج السلع والخدمات

The market system enters the picture in two ways when determining the distribution of total output. Generally, any product will be distributed to consumers on the basis of their ability and willingness to pay its existing market price. The ability to pay the prices for products depends on the amount of income that consumers have, along with the prices of, and preferences for, various goods. If consumers have sufficient income and want to spend their money on a particular good, they can have it.

على من يتم توزيع السلع والخدمات التي تم إنتاجها ؟ في نظام السوقيتم توزيع السلع والخدمات على المستهلكين بناء على قدرتهم الشرائية. تعتمد قدرة الفرد الشرائية على الدخل الذي يمتلكه و على ذوق الفرد على السلعة او الخدمة. فإذا كان الفرد يمتلك دخل كافي وكان لديه رغبة في تلك السلعة فإنه يصبح مالك لتلك السلعة.

- How will the system accommodate change? كيف يمكن للنظام الاقتصادي أن تستوعب التغيير

  Market systems are dynamic: Consumer preferences, technology, and supplies of resources all change. This means that the particular allocation of resources that is now the most efficient for a specific pattern of consumer tastes, range of technological alternatives, and amount of available resources will become obsolete and inefficient as consumer preferences change, new techniques of production are discovered, and resource supplies change over time. Can the market economy adjust to such changes? Suppose consumer tastes change. For instance, assume that consumers decide they want more fruit juice and less milk than the economy currently provides. Those changes in consumer tastes will be communicated to producers through an increase in spending on fruit and a decline in spending on milk. Other things equal, prices and profits in the fruit juice industry will rise and those in the milk industry will fall

  النظام الاقتصادي هو نظام حيوي قابل للتغيير. ذوق المستهلك، مستوى التكنولوجيا المستخدم، ومالكي المصادر تتغير من وقت الأخر. هذا يعني أن كمية معينة من الموارد التي هي الآن الأكثر كفاءة لنمط معين من أذواق المستهلكين، ومجموعة من البدائل التكنولوجية، وحجم الموارد المتاحة فهي غير فعالة مع تغير أذواق المستهلكين. فإنتقال المجتمع من مجتمع زراعي الى مجتمع صناعي يتتطلب تحويل جزء كبير من الموادر الانتاجية لإستخدامها في انتاج سلع جديدة تلبي رغبات افراد المجتمع. فمثلاً اذا زاد اقبال المستهلكين على عصير الفواكه على حساب الحليب فإن ذلك يعطي اشارة الى المنتجين عصير الفاكهة على زيادة كمية الانتاج وتقليل كمية الانتاج من الحليب وهذا بالتالي يؤدي الى زيادة اسعار والارباح في صناعة عصير الفاكهة وانخفاضها في صناعة الحليب.

- How will the system promote progress? كيف يشجع النظام الاقتصادي على التقدم

  Society desires economic growth (greater output) and higher standards of living (greater income per person). How does the market system promote technological improvements and capital accumulation, both of which contribute to a higher standard of living for society?

  يسعى كل مجتمع الى تحقيق نمو الاقتصادي (زيادة كمية السلع والخدمات المنتجة) وكذلك الى رفع مستويات المعيشة لافراد المجتمع (زيادة دخل الفرد). ولتحقيق هذه الاهداف الاقتصادية فإنه ينبغي على المجتمع زيادة كمية المصادر الانتاجية وزيادة إنتاجية هذه الموارد من خلال تحسين مستوى التكنولوجيا المستخدم في الانتاج وكلاهما يسهم في رفع مستوى المعيشة للمجتمع وتحقيق نمو اقتصادي.

The "Invisible Hand"

In his 1776 book *The Wealth of Nations,* Adam Smith first noted that the operation of a market system creates a curious unity between private interests and social interests. Firms and resource suppliers, seeking to further their own self-interest and operating within the framework of a highly competitive market system, will simultaneously, as though guided by an "invisible hand," promote the public or social interest. For example, we have seen that in a competitive environment, businesses seek to build new and improved products to increase profits. Those enhanced products increase society's well-being. Businesses also use the least costly combination of resources to produce a specific output because doing so is in their self-interest.

لأيدي الخفية مصطلح في السوق استخدمه لأول مرة آدم سميث في كتابة الشهير ثروة الامم عام 1776 فهو يشرح النظرية التي تقول إن الأفراد يجتمعون على مصالح شخصية، وبالتالى مصالح المجتمع الذي يوجدون فيه .ففى النظرية أن الأيدي الخفية تضبط السوق بمعرفتها أي عندما ترتفع الأسعار فإن الطلب ينخفض على السلع المرتفعة وبالتالي تخفيف الطلب يعود بالأسعار إلى نحو آخر نحو الانخفاض بفضل الأيدي الخفية التي تتحكم في الاقتصاد عن طريق العرض والطلب .

ومن هذه النظرية خرج نظام عدم التدخل الاقتصادي ومن ثم ظهرت أنظمة اقتصادية ونظريات اقتصادية ليبرالية إلى حد ما فظهرت الكينزية في وقت الكساد الكبير وقال إن الأيدي الخفية لا تستطيع أن تعتمد عليها دائماً وغير مضمونة وعلى الحكومة أن تتدخل في الاقتصاد بشكل معين من أجل ضبط الاقتصاد إذا واجهته مشكلة ما .
ورغم أن آدم سميث استخدم المصطلح ثلاث مرات إلا أن المصطلح انتشر بشكل كبير بعد ذلك وهناك من يربط نظريات آدم سميث نفسها بمصطلح الأيدي الخفية .

إذن استعمل سميث المصطلح في كتاب ثروة الأمم إلا أن مفهوم اليد الخفية أخذ معنى أشمل مما بدأ به سميث إذ تخطى استعمالاته المقارنة بين التجارة الداخلية والتجارة الخارجية حتى أن سميث ألمح إلى استعمالات أخرى في كتابه أما ميلتون فريد مان الحائز على جائزة نوبل في الاقتصاد سمى فكرة اليد الخفية بفكرة التعاون بدون إكراه إذ إن المفهوم يعني نشرته طبيعية وليست آلية اجتماعية كما صنفها ليون والرس وفيلغريدو باريتو فيما بعد .

The Circular Flow Model "تبادل السلع والموارد من خلال السوق (التدفق الدوراني)"

يمثل الشكل نموذجاً مبسطاً لنظام رأسمالي يبين كيف يتم تبادل الموارد الإنتاجية والسلع بين الوحدات الاقتصادية في المجتمع من خلال مجموعة من الأسواق المختلفة. وقد تجاهلنا دور الحكومة لتبسيط الأمور. كما افترضنا بأن لدينا اقتصاداً مغلقاً (أي أنه لا توجد تجارة مع العالم الخارجي)

The dynamic market economy creates continuous, repetitive flows of goods and services, resources, and money. The circular flow diagram, shown in Figure below illustrates those flows. Observe that in the diagram we group private decision makers into *businesses* and *households* and group markets into the *resource market* and the *product market*.

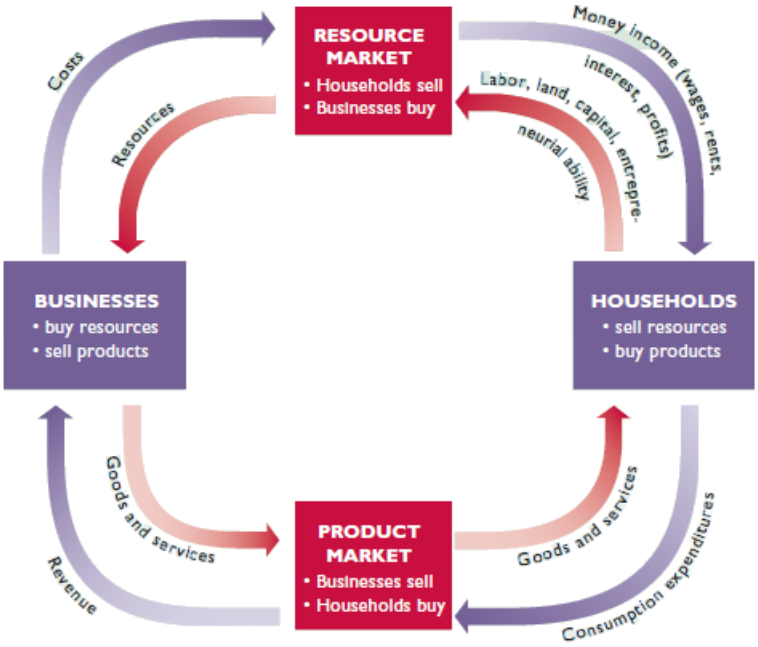
Resource Market:

The place where resources or the services of resource suppliers are bought and sold. In the resource market, households sell resources and businesses buy them. Households (that is, people) own all economic resources either directly as workers or entrepreneurs or indirectly through their ownership of business corporations. They sell their resources to businesses, which buy them because they are necessary for producing goods and services.

سوق المصادر هو المكان او الالية التي يتم فيها تبادل المصادر الانتاجية او خدمات العناصر الانتاجية بين البائعين لها و المشترين. في سوق المصادر الأسر تبيع المصادر بينما قطاع الاعمال (الشركات) هو المشتري لها. الأسر تمتلك كافة الموارد الاقتصادية سواء بشكل مباشر كعمال أو رجال الأعمال أو بشكل غير مباشر من خلال ملكيتها للشركات التجارية. أنها تبيع مواردها للشركات، التي تحتاجها لأنها ضرورية لإنتاج السلع والخدمات.

Product Market

The product market: the place where goods and services produced by businesses are bought and sold. In the product market, businesses combine resources to produce and sell goods and services. Households use the (limited) income they have received from the sale of resources to buy goods and services. The monetary flow of consumer spending on goods and services yields sales revenues for businesses.



سوق المنتجات: المكان الذي يتم شراء السلع والخدمات المنتجة من قبل الشركات وبيعها. في سوق المنتجات تقوم الشركات باستخدام الموارد لإنتاج وبيع السلع والخدمات. الأسر تستخدم الدخل الذي تتلقه من بيع المصادر الانتاجية لشراء السلع والخدمات. التدفق نقدي من الإنفاق الاستهلاكي على السلع والخدمات ينتج إيرادات المبيعات للشركات.

- Resources flow from households to businesses through the resource market.

- Products flow from businesses to households through the product market.

- Opposite these real flows are monetary flows. Households receive income from businesses (their costs) through the resource market, and businesses receive revenue from households (their expenditures) through the product market.

- In this circular flow diagram, resources flow counterclockwise (عكس عقارب الساعة).

- In this circular flow diagram, money flows clockwise.

Multiple Choices:

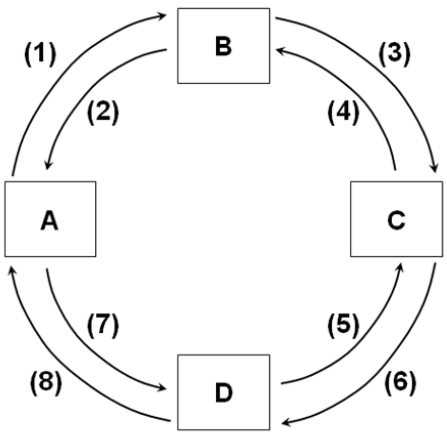
1. The resource market is the place where:
   (A) households sell products and businesses buy products.
   (B) businesses sell resources and households sell products.
   (C) households sell resources and businesses buy resources (or the services of resources).
   (D) businesses sell resources and households buy resources (or the services of resources).

2. Which of the following would be determined in the product market?
   (A) a manager's salary.
   (B) the price of equipment used in a bottling plant.
   (C) the price of 80 acres of farmland.
   (D) the price of a new pair of athletic shoes.

3. In this circular flow diagram:
   (A) money flows counterclockwise.
   (B) resources flow counterclockwise.
   (C) goods and services flow clockwise.
   (D) households are on the selling side of the product market.

4. In this circular flow diagram:
   (A) households spend income in the product market.
   (B) firms sell resources to households.
   (C) households receive income through the product market.
   (D) households produce goods.

5. Refer to the above figure. If box A represents households, B the product market, and C businesses, and if flow (3) represents revenues, then (4) would represent ___ while flow (5) would represent ____.
   A. Resources; goods and services
   B. Goods and services; resources
   C. Costs; resources
   D. Goods and services; costs.



Chapter 3

Demand, Supply, and Market Equilibrium

Markets

Markets bring together buyers ("demanders") and sellers ("suppliers"), and they exist in many forms. The corner gas station, an e-commerce site, the local music store, a farmer's roadside stand—all are familiar markets. Palestinian Stock Exchange is a market where buyers and sellers of stocks and bonds and farm commodities from all over the world communicate with one another to buy and sell.

يعرف السوق بأنه الوسيلة أو الطريقة لتي يتصل بواسطتها البائعون مع المشترين اتصالاً وثيقاً لتحديد كمية ونوعية وسعر سلعة معينة يتم تبادلها بينهما.

هنالك سوقاً لكل سلعة من السلع, فهناك سوق القمح, وسوق للقمصان, وسوقاً للأحذية, وسوقاً للاوراق المالية والسندات وغيرها. وقد يكون السوق منطقة جغرافية, ولكن قد يكون أيضاً جهاز الهاتف أو جهاز التلكس أو البريد أو الفاكس, حيث تمثل هذه الأجهزة وسائل اتصال بين البائعين والمشترين لتحديد كمية ونوعية وسعر السلعة التي يرام تبادلها.

Demand

Demand is a schedule or a curve that shows the various amounts of a product that consumers are willing and able to purchase at each of a series of possible prices during a specified period of time. Demand shows the quantities of a product that will be purchased at various possible prices, other things equal.

هناك قوتين تؤثران في السوق, وهما قوة المستهلكين ممثلة في الطلب وقوة المنتجين ممثلة في العرض. فالطلب هو أقصى كمية يرغب المستهلك شراءها من سلعة ما مع توفر المقدرة على شراء تلك الكمية وذلك حسب دخل المستهلك ومستوى سعر تلك السلعة مع أخذ العوامل الأخرى المؤثرة في الكمية المطلوبة بعين الاعتبار.

Law of Demand

Other thing equal, as price falls, the quantity demanded rises, and as price rises, the quantity demanded falls.

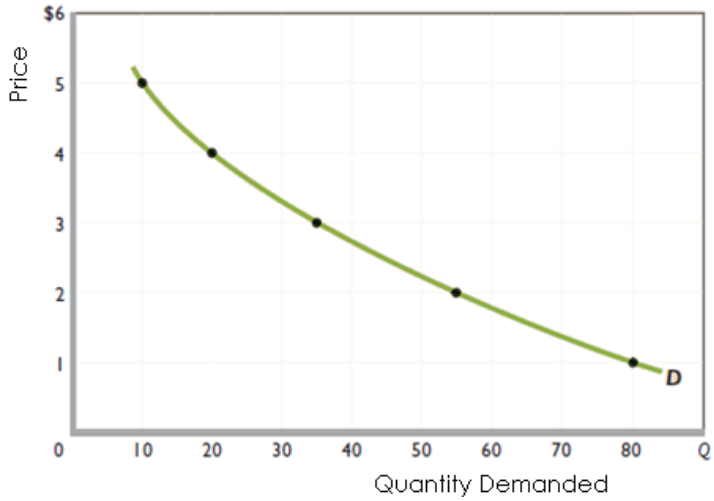
$P\uparrow \Rightarrow Q_d\downarrow$; $P\downarrow \Rightarrow Q_d\uparrow$

There is a negative or inverse relationship between price and quantity demanded.

Demand schedule or demand curve

Because price and quantity demanded are inversely related, an individual's demand schedule graphs as a down sloping curve such as *D.* Other things equal, consumers will buy more of a product as its price declines and less of the product as its price rises.

Price per Bushel	Quantity Demanded per Week
$5	10
4	20
3	35
2	55
1	80



The inverse relationship between price and quantity demanded for any product can be represented on a simple graph, in which, by convention, we measure *quantity demanded* on the horizontal axis and *p rice* on the vertical axis. In the graph in Figure above we have plotted the five price-quantity data points listed in the accompanying table and connected the points with a smooth curve, labeled *D*. *Such a curve is called a demand curve. Its downward slope reflects the law of demand—people buy more of a product, service, or resource as its price falls.* The relationship between price and quantity demanded is inverse (or negative).

Why the inverse relationship between price and quantity demanded?

Three explanations of these relationships

- People ordinarily do buy more of a product at a low price than at a high price. Price is an obstacle that deters consumers from buying. The higher that obstacle, the less of a product they will buy; the lower the price obstacle, the more they will buy.

- In any specific time period, each buyer of a product will derive less satisfaction (or benefit, or utility) from each successive unit of the product consumed. The second Big Mac will yield less satisfaction to the consumer than the first and the third still less than the second. That is, consumption is subject to diminishing marginal utility. And because successive units of a particular product yield less and less marginal utility, consumers will buy additional units only if the price of those units is progressively reduced.

  ينص قانون تناقص المنفعة الحدية (diminishing marginal utility) على أن المنفعة الحدية التي يحصل عليها المستهلك نتيجة استهلاكه لوحدات متتالية من السلعة خلال فترة زمنية محددة ستكون متناقصة. بمعنى أن المنفعة التي تضيفها كل وحدة إلى منفعة المستهلك ستكون أقل من تلك المنفعة التي أضافتها الوحدة التي سبقتها. لذلك فالمستهلك مستعد أن يشتري وحدات إضافية إذا سعر تلك الوحدات كان اقل.

- We can also explain the law of demand in terms of *income and substitution effects*.

  The income effect indicates that a lower price increases the purchasing power (القوة الشرائية) of a buyer's money income, enabling the buyer to purchase more of the product than before.

  عندما يقل سعر السلعة فإن القوة الشرائية للمستهلك تزداد مما يؤدي إلى زيادة الكمية المطلوبة من السلعة.

  The substitution effect suggests that at a lower price buyer have the incentive to substitute what is now a less expensive product for similar products that are now relatively more expensive.

  عندما يقل سعر السلعة فإنها تصبح ارخص من السلع البديلة لهذه السلعة وبالتالي يؤدي إلى زيادة الكمية المطلوبة من تلك السلعة و نقصان الطلب على السلع البديلة

For example, a decline in the price of chicken will increase the purchasing power of consumer incomes, enabling people to buy more chicken (the income effect). At a lower price, chicken is relatively more attractive and consumers tend to substitute it for pork, lamb, beef, and fish (the substitution effect). The income and substitution effects combine to make consumers able and willing to buy more of a product at a low price than at a high price.

Multiple Choices:

1. Demand is the total quantity of a good or service that customers:
   A. are willing to purchase.
   B. are able to purchase.
   C. are willing and able to purchase.
   D. need.

2. The law of demand states that, other things remaining the same, the higher the price of a good, the
   A. Smaller is the demand for the good.
   B. Smaller is the quantity of the good demanded
   C. Larger is the quantity of the good demanded.
   D. Larger is the demand for the good.

3. The law of demand states that the quantity of a good demanded varies
   A. Inversely with its price.
   B. Directly with population.
   C. Directly with income.
   D. Inversely with the price of substitute goods.

4. Each point on the demand curve reflects
   A. The highest price consumers are willing and able to pay for that particular unit of a good.
   B. The highest price sellers will accept for all units they are producing.
   C. The lowest-cost technology available to produce a good.
   D. All the wants of a given household.

Individual Demand الطلب الفردي

Is the quantity demand by single buyer at each price level

نعني بالطلب الفردي الطلب على مستوى الفرد الواحد (مستهلك واحد أو وحدة استهلاكية مثل أسرة من الأسر). ويبين الطلب الفردي العلاقة بين الكمية المطلوبة من سلعة ما من قبل احد المستهلكين وسعر هذه السلعة, مع بقاء العوامل الأخرى المؤثرة في الطلب ثابتة.

Market Demand طلب السوق

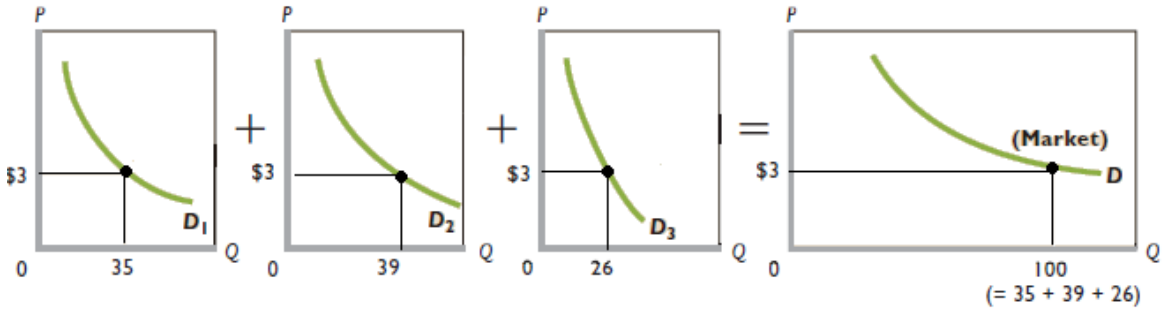
The market demand is the summation the quantities demanded by all consumers at each of the various possible prices. The market demand curve is the horizontal summation of the individual demand curves of all the consumers in the market.

الطلب الفردي يمثل طلب أحد المستهلكين على سلعة معينة. أما طلب السوق فيمثل طلب جميع المستهلكين في السوق على نفس السلعة. ويبين طلب السوق العلاقة بين الكمية المطلوبة من سلعة ما من قبل جميع المستهلكين في السوق وسعر هذه السلعة مع افتراض العوامل الأخرى المؤثرة في الطلب ثابتة.

Example

Suppose that there are three buyers in the market of Corn. At each price level, the quantity demanded is given.

Price per Bushel	Quantity Demanded			Market demand
	Majed	Yousef	Sama	
$5	10	12	8	10 + 12 + 8 = 30
4	20	23	17	20 + 23 + 17 = 60
3	35	39	26	35 + 39 + 26 = 100
2	55	60	39	55 + 60 + 39 = 154
1	80	87	54	80 + 87 + 54 = 221



Example

For a market of *200* corn buyers, each with a demand as shown in the table below. What is the market demand curve?

Price per Bushel	Quantity Demanded per Week	Market Demand (Qd * # of buyers)
$5	10	10 * 200 = 2,000
4	20	20 * 200 = 4,000
3	35	35 * 200 = 7,000
2	55	55 * 200 = 11,000
1	80	80 * 200 = 16,000

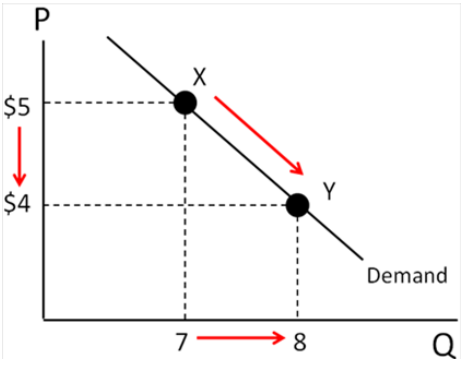
Change in Quantity Demanded التغير في الكمية المطلوبة

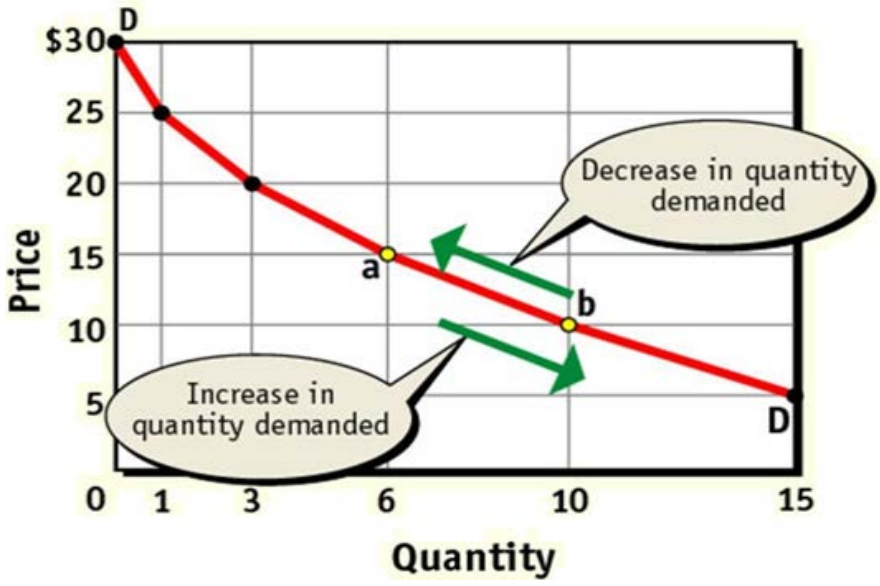
Is a movement from one point to another point on a fixed demand schedule or demand curve.

التغير في الكمية المطلوبة : تعني الإنتقال من نقطة إلى نقطة على نفس منحنى الطلب.
ويحدث تغيير في الكمية المطلوبة عندما يغيير سعر السلع.

Change in quantity demand is cause by increase or decrease in the price of the product.

For example, a decline in the price of corn from $5 to $4 will increase the quantity of corn demanded from 7 to 8 bushels. Movement from point X to point Y on the demand curve represents a change in quantity demanded (increase in quantity demanded).





Change in Demand التغير في الطلب

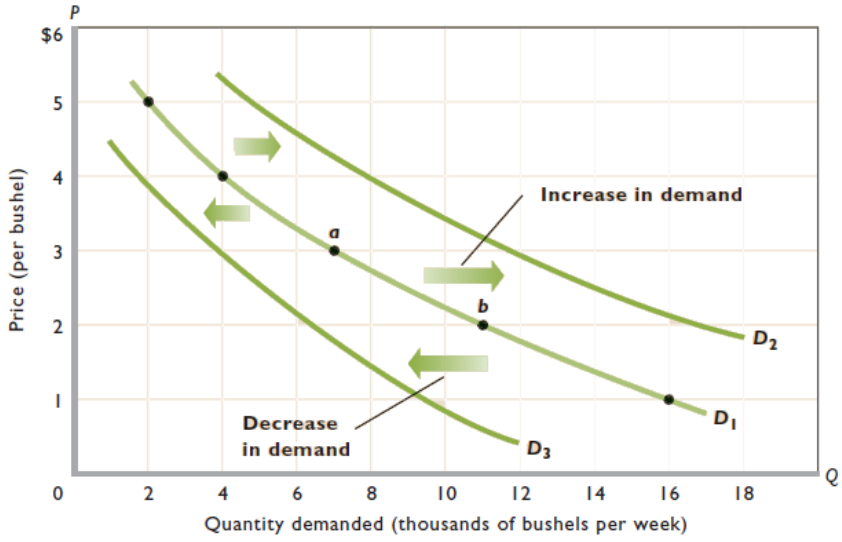
التغير في الطلب : تعني الإنتقال كامل منحنى الطلب. ويحدث تغيير في الطلب عندما يغيير إحدى محددات الطلب والتي سيتم توضيحهما لاحقاً.

يشير مفهوم التغير في الطلب على ان الطلب على السلعة يتغيير على نفس السعرها.

A change in the demand schedule or, graphically, a shift in the demand curve is called a change in demand

- If the consumer desires to buy more units at each possible price, then demand increase. *Increase in demand is shown as a shift of the demand curve to the right*, say, from D_0 to D_1.

- A decrease in demand occurs when consumers buy fewer units at each possible price. *Decrease in demand is shown as a shift of the demand curve to the leftward*, say, from D_0 to D_2.



Multiple Choices:

1. A barber (حلاق) raises the price of haircuts and finds that the volume of business declines. This indicates:
   A. a decrease in demand
   B. an increase in demand
   C. a decrease in quantity demanded
   D. an increase in quantity demanded

2. The quantity of a good demanded tends to increase as its price falls because:
   A. at lower prices, suppliers are willing to supply a greater quantity to the market
   B. a decrease in price leads consumers to substitute toward this now relatively cheaper product
   C. a decrease in price shifts the demand curve to the right
   D. a decrease in price shifts the demand curve to the left

3. The consumer was able to buy 10 cans of cola at a price of $1 in last week. In this week, it is able to buy 14 of the same cans of cola at a price of $1. Evidently, the consumer has experienced a(n):
   A. increase in demand
   B. increase in supply
   C. decrease in demand
   D. increase in quantity demanded

4. The number of personal computers sold annually in the United States has increased at a rapid rate. The price of personal computers has fallen. The rise in sales due to the lower price is called
   A. An increase in quantity demanded.
   B. A decrease in quantity demanded.
   C. An increase in quantity supplied.
   D. An increase in demand.

Determinants of demand (demand shifters)

- Consumer's Tastes (preferences) ذوق المستهلك

  A favorable change in consumer tastes for a product makes the product more desirable; means that more of it will be demanded at each price. Demand will increase (shift to the right).

  An unfavorable change in consumer tastes for a product will decrease demand (shift to the left).

  من الواضح أن ذوق المستهلك يلعب دوراً كبيراً في تحديد الكميات التي يطلبها المستهلك من سلعة معينة. فكلما زاد المستهلك رغبته بسلعة ما كلما زادت الكميات التي يطلبها من تلك السلعة, وكلما قل المستهلك رغبته بسلعة ما, كلما قلت الكميات التي يطلبها منها.

- Number of Buyers عدد المستهلكين للسلعة

  An increase in the number of buyers in a market is likely to increase product demand ⇨ shift demand curve to the right

  A decrease in the number of buyers in a market will lead to decrease demand ⇨ shift demand curve to the left

- Income دخل المستهلك

(a) Normal goods (Superior goods)

Goods whose demand varies directly with money income are called normal goods or "superior goods".

Income ↑ ⇨ demand ↑ ⇨ shift demand curve to the right.
Income ↓ ⇨ demand ↓ ⇨ shift demand curve to the left.

Examples for normal goods: Steak; Furniture; Clothing; car

(b) Inferior goods السلعة الرديئة

Goods whose demand varies inversely with money income are called inferior goods.

Income ↑ ⇨ demand ↓ ⇨ shift demand curve to the left.
Income ↓ ⇨ demand ↑ ⇨ shift demand curve to the right.

Examples for normal goods: Used Furniture, Used Clothing

Multiple choices:

1. If a good is inferior and income decreases then
   A. The demand curve will shift to the right
   B. The supply curve will shift to the right
   C. The demand curve will shift to the left
   D. The supply curve will shift to the left

2. Gasoline is a normal good. When consumer income increases, there will be
   A. a rightward shift in gasoline supply curve
   B. A leftward shift in gasoline supply curve
   C. A rightward shift in gasoline demand curve
   D. A leftward shift in gasoline demand curve

3. If used cars are inferior goods and incomes decline
   A. sales of new cars remain unchanged
   B. sales of used cars decline
   C. sales of new cars increase
   D. sales of used cars increase

- Prices of Related Goods

(a) Substitutes good (السلع البديلة) : Is one that can be used in place of another good.

نسمي السلعتين بديلتين إذا كان بإمكان المستهلك أن يستخدم أحداهما بدلاً من الأخرى في الاستهلاك.

Examples: Coca-Cola and Pepsi; Colgate toothpaste and Crest; Nike and Reeboks; Chevrolets and Fords

When two products are substitutes, an increase in the price of one will increase the demand for the other.

For example, an increase in the price of Coca-Cola, consumers will buy less of it and increase their demand for Pepsi. ⇨ Shift demand curve for Pepsi to the right.

(b) Complements good (السلع المكملة): Is one that is used together with another good?

تعرف السلعتان بأنهما مكملتان لبعضهما إذا اقترن استهلاك الأولى باستهلاك الثانية, وحتى يحصل المستهلك على منفعة معينة فإنه يستهلك السلعتين معاً.

Examples: Car and Gasoline; Computers and Software; Camera and film; Cell phone and Cellular service

When two products are complements, an increase in the price of one will decrease the demand for the other.

For example, a decline in the price of cars, consumers will buy more of it and increase the demand for gasoline ⇨ shift demand curve for gasoline to the right

(c) Unrelated good (السلع الغير مرتبطة)

Goods are not related to one another is called unrelated or independent.

Examples: Butter and Golf balls; Potatoes and Automobiles; Bananas and Camera

If a change in the price of one has no effect on the demand for the other, then the two good are unrelated

Multiple choices:

1. If the price of a complement decreases, all else equal,
   A. Quantity demanded will decrease.
   B. Demand will increase.
   C. Demand will decrease.
   D. Supply will increase.

2. If the price of orange juice rises, the demand for grapefruit juice will
   A. increase because the two goods are substitutes
   B. increase because it is a complement
   C. decrease because the two goods are substitutes
   D. decrease because the two goods are complements

3. Assume chickens are normal goods and chickens and meat are substitutes, which of the following will cause the demand curve for chickens to shift to the left.
   A. increase in consumers' incomes
   B. decrease in the price of chickens
   C. increase in the price of meat
   D. decrease in the price of meat

4. Which of the following events would increase a student's demand for Falafel?
   A. an increase in the price of Falafel
   B. a decrease in the price of Hamburgers (Falafel and Hamburgers are substitutes)
   C. a decrease in the price of Coca-Cola (Falafel and Coca-Cola are complements)
   D. An increase in student monthly allowance (مصرف شهري) that the student receives from his family (Falafel is an inferior good).

5. A rightward shift in the demand curve for product C might be caused by:
   A. An increase in income if C is an inferior good.
   B. A decrease in income if C is a normal good.
   C. A decrease in the price of a product that is a close substitute for C.
   D. A decrease in the price of a product that is complementary to C.

➢ Consumer Expectations توقعات المستهلك تجاه التغير في سعر السلعة

expectation of higher future prices may cause consumers to buy now in order to anticipated (يتجنب) price rises ⇨ increasing current demand (shift current demand to the right)

For example, inclement weather (الطقس الرديئ) creates an expectation of higher future prices of Tomato, this lead to increasing today's demand for Tomato.

Multiple choices:

1. If buyers expect the price of a good to rise in the future, the result is
   A. an increase in supply today
   B. a decrease in quantity demanded today
   C. an increase in demand today
   D. an increase in quantity demanded today

2. If the price of gasoline rises dramatically,
   A. The quantity demanded for cars will decrease.
   B. The demand for commuter train rides will decrease.
   C. The demand for cars will decrease.
   D. The quantity of commuter train rides demanded will increase.

3. Which of the following will increase the demand for large automobiles?
   A. A fall in the price of small automobiles.
   B. A decrease in insurance rates for large automobiles.
   C. A fall in the price of large automobiles.
   D. A decrease in buyers' incomes (assuming large automobiles to be a normal good).

Supply

Is a schedule or curve showing the various amounts of a product that producers are willing and able to make available for sale at each price level.

العرض هو أقصى كمية يرغب المنتج بإنتاجها وعرضها من سلعة ما مع توفر القدرة على إنتاج تلك السلعة.

Law of Supply

Other thing equal: as price rises, the quantity supplied rises; as price fall, the quantity supplied falls.

P ↑ ⇨ Qs ↑

P↓ ⇨ Qs ↓

There is a positive relationship between price and quantity supplied.

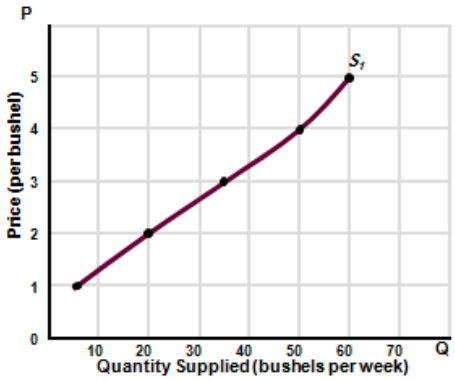
The supply curve

- Individual supply curve العرض الفردى

The supply curve for an individual producer graphs as an up sloping curve. Other thing equal, producers will offer more of a product for sale as its price rises and less of the product for sale as it price falls.

عرض أحد المنتجين يبين العلاقة بين الكمية المعروضة من سلعة ما من قبل أحد المنتجين وسعر هذه السلعة, مع بقاء العوامل الأخرى ثابتة.

Price per Bushel	Quantity supplied per week
$5	60
4	50
3	35
2	20
1	5



Market Supply عرض السوق

The market supply is the summation the quantities supplied by all consumers at each of the various possible prices.

ذكرنا أن العرض الفردي يمثل عرض أحد المنتجين, أما عرض السوق فيمثل عرض جميع المنتجين. ويبين عرض السوق العلاقة بين الكمية المعروضة من سلعة ما من قبل جميع المنتجين في السوق وسعر هذه السلعة, مع افتراض العوامل الأخرى المؤثرة في العرض ثابتة.

Example

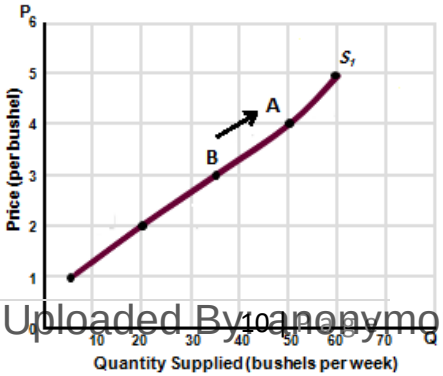
For a market of 200 corn sellers, each with a quantity supply as shown in the table below. What is the market supply schedule?

Price per Bushel	Quantity Supplied per Week	Market supply (Qs * # of producers)
$5	60	60 * 200 = 12,000
4	50	50 * 200 = 10,000
3	35	35 * 200 = 7,000
2	20	20 * 200 = 4,000
1	5	5 * 200 = 1,000

Change in Quantity Supplied التغير في الكمية المعروضة

Is a movement from one point to another point on a fixed supply schedule or supply curve.

Change in quantity supply is cause by a change in the price of the product.



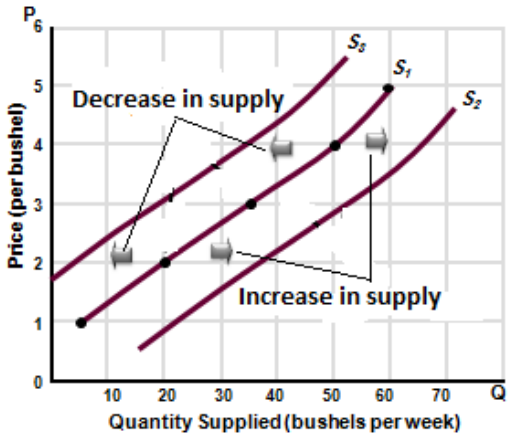
For example, an increase in the price of corn from $3 to $4, increase the quantity of corn supplied from 35,000 to 50,000. *Movement from point A to B on the fixed supply curve.*

Change in Supply

A change in one or more of the determinants of supply causes a change in supply.

An increase in supply is shown as a rightward shift of the supply curve as from S1 to S2.

A decrease in supply is shown as a leftward shift of the supply curve as from S1 to S3.



Determinants of Supply (Supply Shifters) العوامل المؤثرة في العرض

1. Resource Prices أسعار الموارد الإنتاجية

   - Higher resource prices raise production cost, this leads to decrease the profit. Reduction in profits reduces the incentive for firms to supply output at each product price ⇨ shift supply curve to the left (upward).

   - Lower resource prices reduce production cost and increase the profit. Raises profits raise the incentive for firms to supply output at each product price ⇨ shift supply curve to the right.

   Example

   A decrease in the price of microchips increases the supply of computers.

   An increase in the price of textile, decrease the supply of furniture.

2. Technology

   Improvement in technology enable firms to produce units of output with fewer resources ⇨ reduce production cost ⇨ increase the supply (shift supply curve to the right)

   For example, the development of more effective wireless technology increases the supply of cell phones.

3. Taxes and Subsidies الضرائب والدعم الحكومي

   An increase in sale or property taxes will increase production cost and reduce supply (shift supply curve to the left)

   لا شك أن فرض الحكومة ضرائب على السلعة يؤدي إلى زيادة تكاليف الإنتاج وبالتالي تقليل الكميات المعروضة .

   If the government subsidizes the production of a good, it in effect lowers the production costs and increase supply.

إذا قدمت الحكومة دعم لمنتجي الخبز فإن ذلك يؤدي الى انخفاض تكاليف الانتاج وبالتالي القدرة على انتاج كمية اكبر وعرض كمية أكبر

Examples

- An increase in the excise tax cigarettes reduces the supply of cigarettes.

- A decline in subsidies to state universities reduce the supply of higher education
إنخفاض الدعم الحكومي المقدم للجامعات يؤدي الى انخفاض العرض على التعليم

4. Prices of Other Goods أسعار السلع البديلة في الإنتاج

تعرف السلعتان البديلتان في الإنتاج أنهما سلعتان يمكن إنتاجهما بنفس المواد الإنتاجية. فالقمح والشعير, يعتبران بديلين في الإنتاج حيث أن بإمكان المزارع أن ينتج أي منهما باستخدام نفس المواد التي يمتلكها. فإذا ازداد سعر الشعير فإن المزارع سيندفع نحو زراعة الشعير وذلك على حساب القمح, أي أن الكميات المعروضة من القمح ستنخفض .

Firms that produce a particular product, say, soccer balls, can sometimes use their plant and equipment to produce alternative goods, say, basketballs and volleyballs since soccer balls and basketballs are substitutes in production.

The higher prices of these "other goods" may entice soccer ball producers to switch production to those other goods in order to increase profits. This substitution in production results in a decline in the supply of soccer balls.

Example: An increase in the price of cucumbers decrease the supply of watermelons.

إذا ازداد سعر الخيار فإن المزارع سيندفع نحو زراعة الخيار وذلك على حساب البطيخ, أي أن الكميات المعروضة من البطيخ ستنخفض

5. Producer Expectations about the future price

Farmers anticipating a higher wheat price in the future might withhold (يحجب) some of their current wheat harvest from the market, thereby (بذلك) causes a decrease in the current supply of wheat.

6. Number of Sellers عدد الباعة في السوق

Other things equal, the larger the number of suppliers, the greater the market supply. As more firms enter an industry, the supply curve shifts to the right.

Multiple choices:

1. If an excise tax is imposed on a good or service,
   A. the supply curve shifts upward
   B. the supply curve shifts downward
   C. the price paid by consumers decreases
   D. the quantity produced and sold increases

2. Supply curves do not shift if there is a change in the
   A. Number of sellers of the good.
   B. Technology used to produce the good.
   C. Price of the good.
   D. Price of resources used to produce the good.

3. All of the following shift the supply of watches to the right except(بإستثناء)
   A. an increase in the price of watches
   B. an advance in the technology used to manufacture watches
   C. a decrease in the wage of workers employed to manufacture watches
   D. manufactures' expectation of lower watch prices in the future

4. What will happen in the rice market if sellers are expecting higher prices in the near future?
   A. The demand for rice will increase.
   B. The demand for rice will decrease.
   C. The supply for rice will decrease.
   D. The supply of rice will increase

5. Wheat is the main input in the production of flour. If the price of wheat increases, all else equal, we would expect
   A. The supply of flour to be unaffected.
   B. The supply of flour to decrease.
   C. The supply of flour to increase.
   D. The demand for flour to decrease.

6. If good Y is a substitute in production for X then an increase in the price of Y will:
   A. Cause an increase in the supply for X.
   B. Cause a decrease in the demand for X.
   C. Cause an increase in the supply for Y.
   D. Cause a decrease in the demand for Y.

7. Which one of the following would cause the supply of bananas to *increase*?
   A. A technological advance which lowers the cost of banana production.
   B. A decrease in the number of producers of bananas.
   C. An increase in the price of a fertilizer used in growing bananas.
   D. A severe rain shortage (which causes banana trees to die off).

Example

What effect will each of the following have on the supply of auto tires?

a. A technological advance in the methods of producing tires.

A technological advance in the methods of producing tires enable firms to produce tires with fewer resources ⇨ reduce production cost ⇨ increase the supply of auto tires (shift supply curve to the right)

b. A decline in the number of firms in the tire industry.

The smaller the number of firms in the tire industry, the less the market supply of auto tires. Shift the supply curve of auto tires to the left.

c. An increase in the prices of rubber (مطاط) used in the production of tires.

Higher prices of rubber raise production cost, this leads to decrease the profit. Reduction in profits reduces the incentive for firms to supply auto tires at each price ⇨ shift supply curve to the left.

d. The expectation that the equilibrium price of auto tires will be lower in the future than currently.

The expectation that the equilibrium price of auto tires will be lower in the future induce firms of tires to expand production causing current supply to increase. ⇨ Shift supply curve to the right

e. A decline in the price of the large tires used for semi trucks and earth-hauling rigs (with no change in the price of auto tires).

Auto tires and large tires are substitutes in production. A decline in the price of the large tires leads large tires producers to switch production to auto tires in order to increase profits. ⇨ Increase supply of auto tires ⇨ shift supply curve of auto tires to the right.

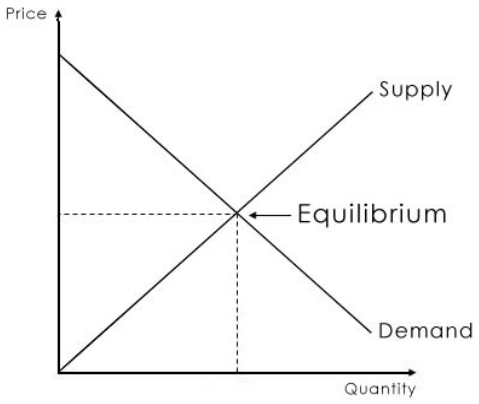
f. The levying of a per-unit tax on each auto tire sold.

A per-unit tax on each auto tire sold will increase production cost and reduce supply (shift supply curve to the left)

g. The granting of a 50-cent-per-unit subsidy for each auto tire produced.

A per-unit subsidy for each auto tire produced will decrease production cost and raises supply of auto tire (shift supply curve to the right).

Market Equilibrium توازن السوق



Equilibrium Price and Quantity

The equilibrium price (market clearing price) is the price where quantity demanded equals quantity supplied.

At equilibrium price: $Q_d = Q_s$

Graphically, the equilibrium price is indicated by the intersection (تقاطع) *of the supply curve and the demand curve.*

- At equilibrium price, there is neither a shortage nor a surplus.
- When $Q_d > Q_s$ → shortage (excess demand) : *Excess Demand* = $Q_d - Q_s$
- When Qs > Qd → surplus (excess supply) : *Excess Supply* = $Q_s - Q_d$
- The surpluses caused by above equilibrium price

إذا كان السعر أعلى من سعر التوازن فإن ذلك يسبب مشكلة فائض من السلعة في السوق, أي أن الكمية المعروضة أكبر من الكمية المطلوبة.

- The shortage caused by below equilibrium price

إذا كان السعر أقل من سعر التوازن فإن ذلك يسبب مشكلة نقص من السلعة في السوق, أي أن الكمية المطلوبة أكبر من الكمية المعروضة .

Example

Based on the following table which represents the supply and demand schedule answer the following questions

Price per Bushel	Total Quantity Supplied	Total Quantity Demanded	Surplus(+) or Shortage(-)	The effect on price
$5	12,000	2,000		
$4	10,000	4,000		
$3	7,000	7,000		
$2	4,000	11,000		
$1	1,000	16,000		

1. Complete the table

Price per Bushel	Total Quantity Supplied	Total Quantity Demanded	Surplus(+) or Shortage(-) ($Q_s - Q_d$)	The effect on price
$5	12,000	2,000	+ 10,000	Decrease
$4	10,000	4,000	+ 6,000	Decrease
$3	**7,000**	**7,000**	**0**	**no effect**
$2	4,000	11,000	- 7,000	Increase
$1	1,000	16,000	- 15,000	Increase

2. What is the equilibrium price? What is the equilibrium quantity?

   The equilibrium price equals $3, when $Q_d = Q_s$

   The equilibrium quantity equal 7000 bushels of corn.

3. At market price of $4, calculate the excess supply

   Excess Supply = $Q_s - Q_d$ = 10,000 – 4,000 = 6,000

Example

Based on the following table which represents the supply and demand schedule for *one seller of meat*

Price	Quantity demanded	Quantity supplied
$20	395	200
$22	375	250
$24	350	290
$26	320	320
$28	280	345

a. Suppose that there are 100 sellers and 100 buyers of meat in this market. What is the equilibrium price and quantity of meat in this market?

   Market demand = number of buyers * Quantity demanded for one buyer.

   Market supply = number of sellers * Quantity supplied for one seller.

   At equilibrium price: Qd = Qs : equilibrium price = $26 equilibrium quantity = 32,000

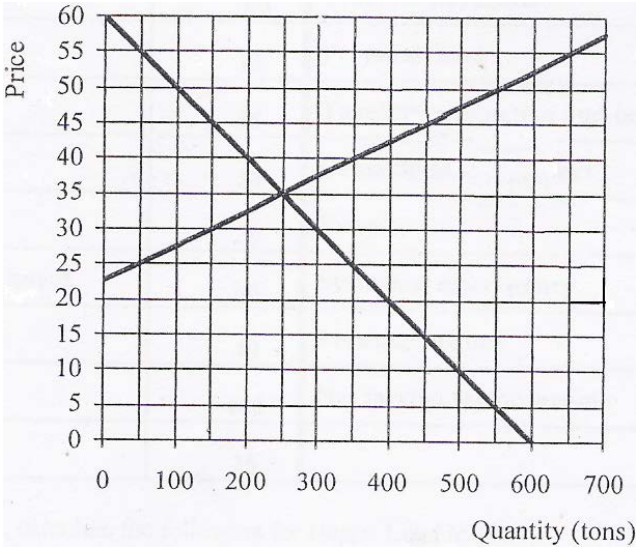
Price	Market demand	Market supply
$20	39,500	20,000
$22	37,500	25,000
$24	35,000	29,000
$26	**32,000**	**32,000**
$28	28,000	34,500

b. When government sets the price of a meat at $28, will there be a shortage or surplus? By what amount?

At $28 of price : Qs = 34,500, Qd = 28,000 ⇨ Qs > Qd ⇨ surplus of the meat by the amount of 6,500 units (34,500 – 28,000

Example

Consider the following market demand and supply curves for Cheese. Quantities are in tons and prices in dollars.



a. What is the equilibrium price and quantity of Cheese in this market?

The equilibrium price is indicated by the intersection of the supply curve and the demand curve.

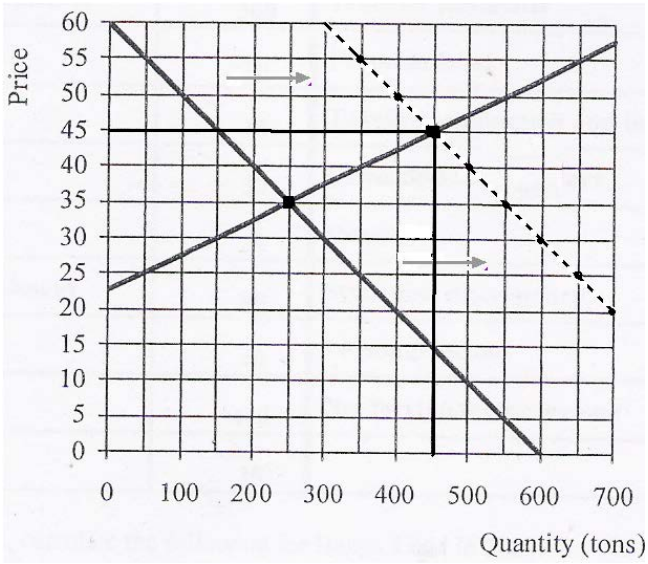
Equilibrium price: $35

Equilibrium quantity: 250 tons

b. Suppose the government purchased 300 tons of cheese at each price level (demand increase by 300 tons), what is the equilibrium price and quantity after this purchase?

Demand increase by 300 tons, means that the at each price quantity demand increase by 300 tons

Price	Q_d	Q_d'(new demand)	Qs
25	350	350 + 300 = 650	50
30	300	300 + 300 = 600	150
35	250	250 + 300 = 550	250
40	200	200 + 300 = 500	350
45	150	150 + 300 = **450**	**450**
50	100	100 + 300 = 400	550



Equilibrium price: $45

Equilibrium quantity: 450 tons

Example:

Assume that demand for a commodity is represented by the equation $P = 10 - 0.2Q_d$ and supply by the equation $P = 2 + 0.2Q_s$, where Q_d and Q_s are quantity demanded and quantity supplied, respectively, and P is price.

1. What is the equilibrium price and quantity for a commodity?

   At equilibrium: $Q_d = Q_s$

   $2 + 0.2Q = 10 - 0.2Q \longrightarrow 0.4\,Q = 8 \longrightarrow Q = \frac{8}{0.4} = 20$

   $P = 10 - 0.2Q \longrightarrow P = 10 - 0.2(20) = 10 - 4 = \$6$

2. At P = \$5 is there a shortage or surplus? By how much the surplus or shortage?

   At P = \$5

   Demand equation: $P = 10 - 0.2Q_d \longrightarrow Q_d = \frac{10-P}{0.2}$; At P = \$5, $Q_d = \frac{10-5}{0.2} = 25$

   Supply equation $P = 2 + 0.2Q_s \longrightarrow Q_S = \frac{P-2}{0.2}$; At P = \$5, $Q_S = \frac{5-2}{0.2} = 15$

   At P = \$5: $Q_d > Q_S \longrightarrow$ *shortage*

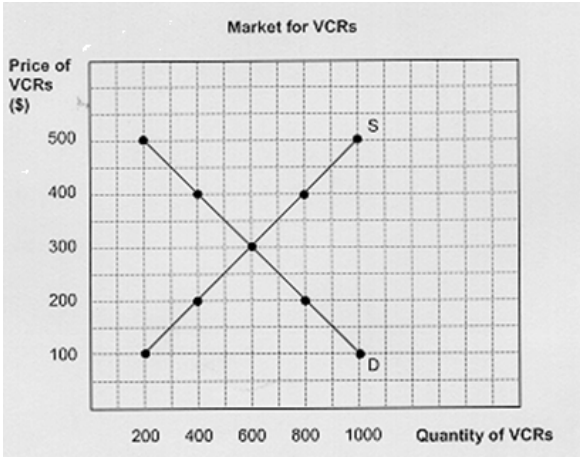
   By the amount equal 25 – 15 = 10 units

Example:

Price	Quantity Demanded	Quantity Supplied
\$100	1000	200
200	800	400
300	600	600
400	400	800
500	200	1000

1. The table above describes the market for VCRs.

   a. Plot the demand and supply schedules. What is the equilibrium price? The equilibrium quantity?



Equilibrium price = \$300
Equilibrium quantity = 600 VCRs

b. At the price of $200, what is the quantity demanded? What is the quantity supplied? Will price tend to increase?

Quantity demand = 800 VCRs
Quantity supplied = 400 VCRs

Yes, there is a shortage and price will increase

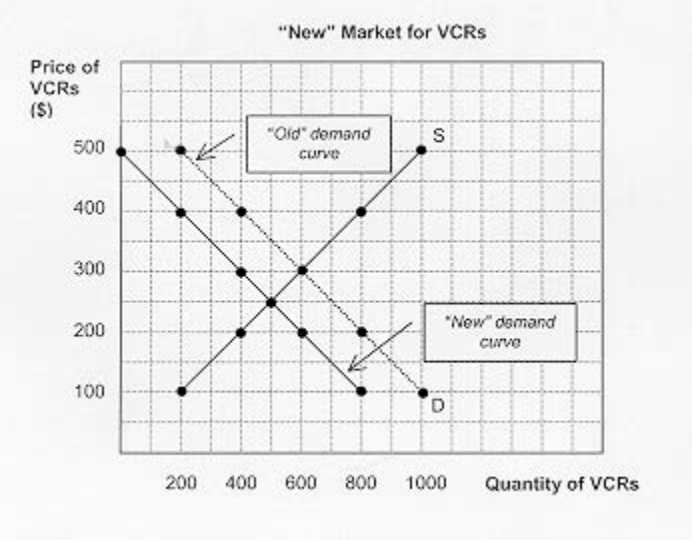
c. At the price of $400, what is the quantity demanded? What is the quantity supplied? Will price tend to decrease?

Quantity demanded = 400 VCRs
Quantity supplied = 800 VCRs
Yes, there is a surplus and price will decline.

2. A new product, DVD is introduced into this market and consumers prefer it to VCRs. The new demand schedule for VCRs is represented in the following table.

Price	Quantity Demanded
$100	800
200	600
300	400
400	200
500	0

a. Plot the new demand schedule. What is the direction of the shift in the demand curve?



The demand curve shifts to the left

b. What is the new equilibrium price and quantity?

Equilibrium price = $250
Equilibrium quantity = 500 VCRs

c. Is there an excess demand or excess supply at the old equilibrium price?

There is an excess supply at the old equilibrium price.

Application: Government Set Prices تدخل الحكومة في الأسواق

من أبرز أشكال تدخل الحكومة في الاقتصاد هو تدخلها في تسعير بعض السلع والخدمات. إن سعر التوازن ليس بالضرورة أن يكون منخفضاً, بل على العكس يمكن أن يكون مرتفعاً. فإذا كان سعر التوازن مرتفعاً فإن المستهلكين يبدأون بالتذمر من ارتفاع السعر, وإذا كان سعر التوازن منخفضاً فإن المنتجين هم الذين سيتذمرون. وفي تلك الحالتين قد تتدخل الحكومة وتفرض سعرً لحماية المستهلكين في حالة ارتفاع السعر أو لحماية المنتجين في حالة تدني السعر.

Price Ceilings: السقف السعري

A price ceiling sets the maximum legal price a seller may charge for a product or services. A price at or below the ceiling is legal; a price above it is not.

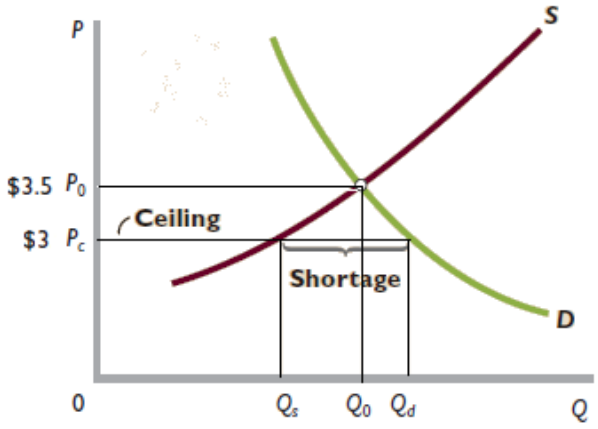
السقف السعري هو أعلى سعر قانوني يسمح أن تباع وتشترى به السلعة. كذلك يمكن أن تباع وتشترى السلعة عند مستوى سعر أقل من السقف السعري. أما أعلى منه فلا يجوز.

A price ceiling is a maximum legal price such as Pc. When the ceiling price is below the equilibrium price, a persistent product shortage results. Here that shortage is shown by the horizontal distance between Q_d and Q_s.

أن نتيجة فرض سقف سعري تكون الكمية المعروضة أقل من الكمية المطلوبة, مما يشير إلى وجود عجز في سوق تلك السلعة. أي أن الحكومة حاولت حل مشكلة ارتفاع السعر, ولكن ذلك على حساب مشكلة العجز الذي ظهر في السوق. ويمكن للحكومة أن تتبع عدة أساليب للتخلص من مشكلة العجز هذه, ومن بين هذه الأساليب أن تقوم الحكومة بتوفير كميت إضافية من السلعة لسد العجز الناجم من السقف السعري. وإذا لم تقم الحكومة بذلك فقد يؤدي وجود العجز الناتج عن فرض سقف سعري إلى ظهور سوق سوداء.

Graphical Analysis (price Ceilings on Gasoline)

Suppose that rapidly rising world income boosts the purchase of automobiles and shifts the demand for gasoline to the right so that the equilibrium or market price reaches $3.5 per gallon, shown as P_0 in Figure. The rapidly rising price of gasoline greatly burdens low- and moderate-income households, which pressure government to "do something." To keep gasoline affordable for these households, the government imposes a ceiling price P_c of $3 per gallon. To impact the market, a price ceiling must be below the equilibrium price. A ceiling price of $4, for example, would have had no immediate effect on the gasoline market.



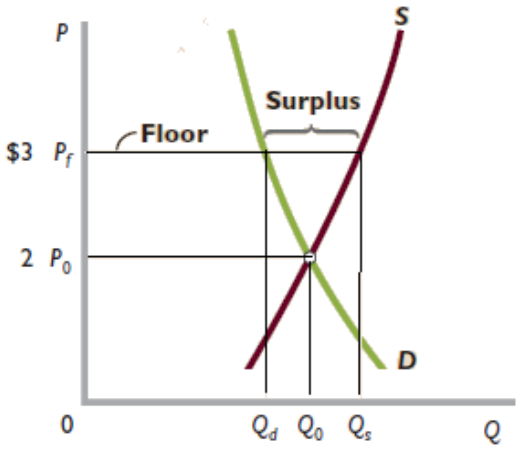
What are the effects of this $3 ceiling price? The rationing ability of the free market is rendered ineffective. Because the ceiling price P_c is below the market-clearing price P_0, there is a lasting shortage of gasoline. The quantity of gasoline demanded at *Pc* is Q_d and the quantity supplied is only *Qs; a* persistent excess demand or shortage of amount $Q_d - Qs$ occurs.

Price Floors: الأرضية السعرية

A price floor is a minimum price fixed by the government. A price at or above the price floor is legal; a price below it is not.

ممكن أن تتدخل الحكومة لحماية المنتجين. وعندما تدخل الحكومة في هذا المجال فإنها تفرض عادة سعراً أعلى من سعر التوازن يسمى أرضية سعريه, وهو أدنى سعر قانوني يسمح أن تباع وتشترى به تلك السلعة.

Graphical Analysis (price Floor on Wheat)

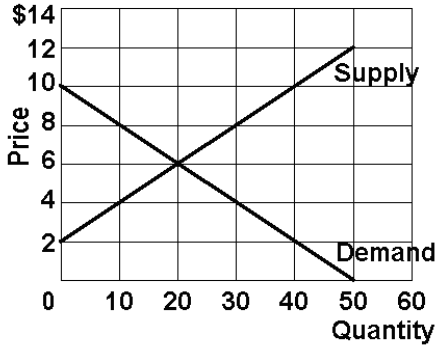


A price floor is a minimum legal price such as P*f*. When the price floor is above the equilibrium price, a persistent product surplus results. Here that surplus is shown by the horizontal distance between Q_s and Q_d.

Suppose the equilibrium price for wheat is $2 per bushel and, because of that low price, many farmers have extremely low incomes. The government decides to help out by establishing a legal price floor or price support of $3 per bushel. What will be the effects? At any price above the equilibrium price, quantity supplied will exceed quantity demanded—that is, there will be a persistent excess supply or surplus of the product. Farmers will be willing to produce and offer for sale more than private buyers are willing to purchase at the price floor.

Example

Consider the following market demand and supply curves for Cheese. Quantities are in tons and prices in dollars.



Suppose that government imposed a price floor of $8, would there be a shortage or a surplus at this price? Why? How much is the size of this shortage or surplus?

Surplus because Qs > Qd

Surplus = Qs – Qd = 30 – 10 = 20 tons

Multiple choices:

1. When a price ceiling is imposed in a market,
   A. a persistent shortage results
   B. a persistent surplus results
   C. sellers of the product are made better off
   D. quantity supplied is greater than the quantity demanded

2. When a price floor is imposed, it has an impact on a market if it is set
   A. below the equilibrium price
   B. above the equilibrium price because quantity demanded exceeds quantity supplied
   C. above the equilibrium price because quantity supplied exceeds quantity demanded
   D. below the equilibrium price because quantity demanded exceeds quantity supplied

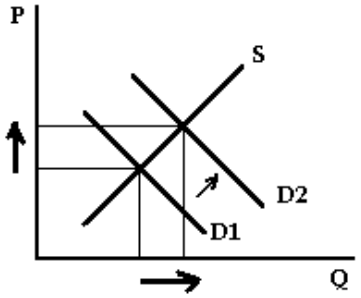
3. A price ceiling
   A. Is a legal maximum on the price at which a good can be sold.
   B. Is a legal minimum on the price at which a good can be sold.
   C. Occurs when the price in the market is temporarily above equilibrium.
   D. Will usually result in a market surplus.

Change in Supply, Demand, and Equilibrium

- Changes in Demand

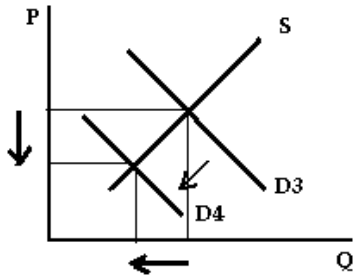
  Increase in Demand

  The increase in demand from D_1 to D_2, *increase both equilibrium price and equilibrium quantity (P↑ ; Q↑)*



  Decrease in Demand

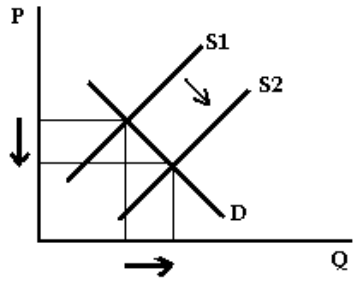
  The decrease in demand from D3 to D4, *decrease both equilibrium price and equilibrium quantity (P↓ ; Q↓)*



- Changes in Supply

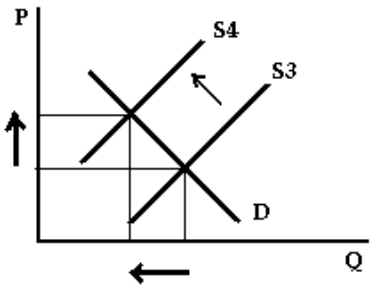
  Increase in Supply

  The increase in supply from S1 to S2, *decrease the equilibrium price and, increase the equilibrium quantity (P↓ ; Q↑)*



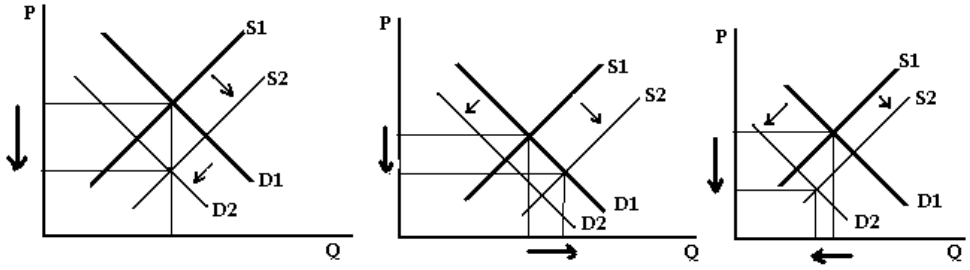
  Decrease in Supply

  The decrease in supply from S3 to S4, *increase the equilibrium price and, decrease the equilibrium quantity (P↑ ; Q↓)*



- Supply Increase; Demand Decrease

  Increase in supply ⇨ Q↑
  Decrease in demand ⇨ Q↓
  Net effect: Q: uncertain (لا استطيع التحديد)



Effects of changes in both supply and demand

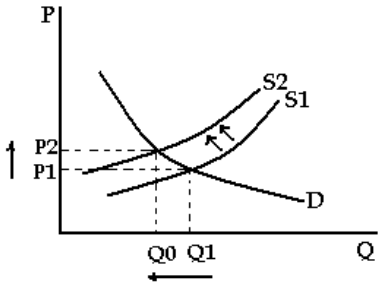
Change in Supply	Change in Demand	Effect on Equilibrium Price	Effect on Equilibrium Quantity
Increase	Decrease	Decrease	Uncertain
Decrease	Increase	Increase	Uncertain
Increase	Increase	Uncertain (Indeterminate)	Increase
Decrease	Decrease	Uncertain	Decrease

Example

Suppose that cheese is a normal goods, cheese and bread are complements, and milk is used to produce cheese. For each of the following cases, show what happens to demand, supply, equilibrium price, and equilibrium quantity of cheese.

a. Price of milk increases.

Milk is used to produce cheese (resources of milk production). Increase in milk prices raise production cost, this leads to decrease the profit. Reduction in profits reduces the incentive for firms to supply output at each product price ⇨ shift supply curve to the left (decrease).



Demand curve for cheese: No change

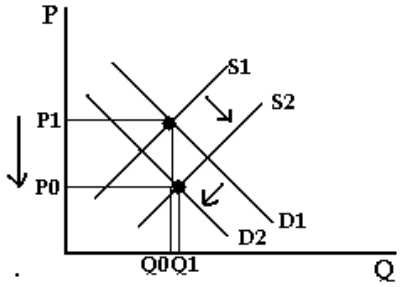
Equilibrium price: Increase

Equilibrium quantity: Decrease

b. National income decrease and, at the same time, the number of sellers of local cheese has increased.

National income decrease: cheese is a normal goods ⇨ decrease income leads to *decrease demand*

The number of sellers of local cheese has increased ⇨ *increased supply*

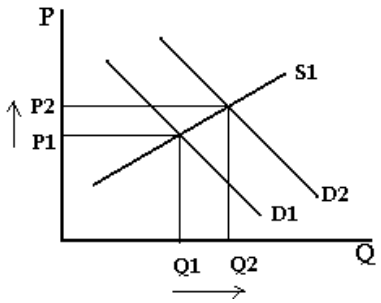


Price: decrease

Quantity: uncertain

c. The government gives a subsidy to the producers of bread.

Subsidy to the producers of bread leads to increase the supply of bread ⇨ decrease the price of bread, but cheese and bread are complements ⇨ *increase the demand for cheese.*



Supply curve for cheese: No change

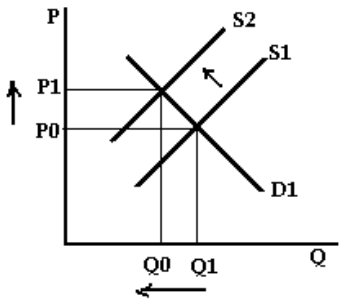
Price: increase

Quantity: increase

Example

Tea and coffee are substitutes and both tea and coffee are normal goods. Explain what happen to demand, supply, equilibrium price, equilibrium quantity of tea due to the following events.

a. Government increase sales taxes on tea.



Increase sales taxes ⇨ decrease supply of tea

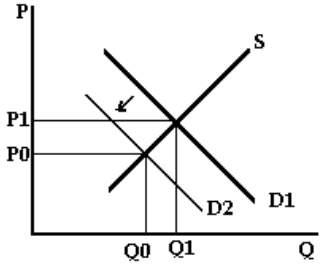
The demand for tea: no change.

The price of tea: increase

The quantity of tea: decrease

b. Price of coffee decrease considerably (بشكل كبير).

Tea and coffee are substitutes ⇨ Price of coffee decrease leads to increase demand for coffee and decrease demand for tea.



The supply of tea: no change

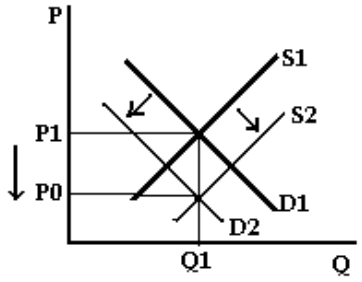
The price of tea: decrease

The quantity of tea: decrease

c. Consumers' income decreases and, at the same time, the cost of producing and transporting tea has also decreased.

Tea is a normal good ⇨Consumers' income decreases leads to decrease the demand for tea

The cost of producing and transporting tea has decreased. ⇨ supply of tea increase



The price of tea: decrease

The quantity of tea: uncertain

Questions:

Question #1:
Refer to the information provided in table below to answer the questions that follow:

Price per Pizza	Q_d for Pizzas	Q_s for Pizzas
$3	1,200	600
6	1,000	700
9	800	800
12	600	900
15	400	1,000

a. What is the equilibrium price and quantity in Pizza market
b. At a price of Pizza $3, is there be a shortage or surplus? By how much?
c. In this market there will be an excess demand of 300 pizzas at which price?
d. Suppose the government sets a price floor of $12. Will there be a shortage or surplus? How large will it be?
e. Suppose the government gives subsides to the producers of pizza that leads to increase the supply of pizza by 300 units at each price level, what is the new equilibrium price and quantity?

Question #2:
Suppose that an mp3 player is normal goods, mp3 players and CDs are complements, and mp3 players and satellite radio are substitutes. For each of the following cases, show what happens to demand, supply, equilibrium price, and equilibrium quantity of mp3 player.
a. a decrease in the price of mp3 players
b. an increase in the price of CDs
c. The government gives a subsidy to the producers of CDs
d. a fad that makes mp3 players more popular among 12-25 year olds
e. a decrease in the price of satellite radio.

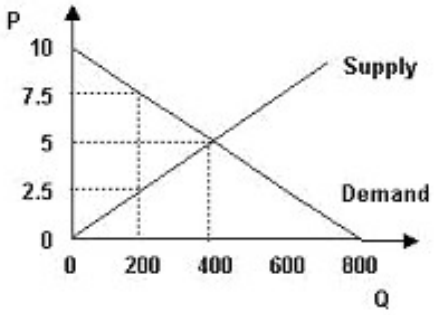
Question #3:
Based on the following table which represents the supply schedule for three sellers and the market demand of Tea.

Price	Firm A's Quantity Supplied	Firm B's Quantity Supplied	Firm C's Quantity Supplied	Market demand
2	2	3	4	54
4	4	6	8	48
6	6	9	12	42
8	8	12	16	36
10	10	15	20	30

a. Suppose that there are only three sellers of market of Tea .What is the market supply schedule
b. What is the equilibrium price and quantity of Tea in this market?
c. When government sets the price of a Tea at $4, will there be a shortage or surplus? By what amount?

Question #4:

Refer to the figure to answer the questions that follow:



a. What is the equilibrium price and quantity in this market?
b. Suppose the government sets a price ceiling of $2.5. Will there be a shortage or surplus? How large will it be?
c. Suppose that consumer income increase that leads to increase the market demand by 400 units at each price level, what is the new equilibrium price and quantity?
d. If the price equals $7.5 calculate the excess supply
e. Describe what will happen over time if the price is $2.5.

Question #5:

The following equations are the demand and supply of economics textbooks:

$Q_D = 100 - 2P$
$Q_S = -20 + P$

Where P is in dollars per book, and Q_D and Q_S are quantities demanded and supplied, respectively, in thousands per year.

a. Given the demand and supply equations above, solve for the equilibrium price and quantity.
b. If a price of economics textbooks $50, is there be a shortage or surplus? By how much?

Chapter 4

Elasticity

Price Elasticity of Demand

The law of demand tells us that, other things equal, consumers will buy more of a product when its price declines and less when its price increases. But how much more or less will they buy? The amount varies from product to product and over different price ranges for the same product. It also may vary over time. And such variations matter.

Elasticity: is a measure of the percentage change in one variable brought about by a 1 percent change in some other variable.

Price Elasticity of Demand: The price elasticity of demand is the percentage change in the quantity demanded of a good in response to a 1 percent change in its price.

تقيس مرونة الطلب السعرية مدى استجابة الكمية المطلوبة من سلعة ما نتيجة لتغير سعر السلعة بنسبة واحد بالمائة.

The responsiveness (or sensitivity) of consumers to a price change is measured by a product's price elasticity of demand. For some products-for example, restaurant meals-consumers are highly responsive to price changes. Modest price changes cause very large changes in the quantity purchased.

For some products—*for example*, *restaurant meals*—consumers are highly responsive to price changes. Modest price changes cause very large changes in the quantity purchased. Economists say that the demand for such products is *elastic.* For other products—*for example*, *toothpaste*— consumers pay much less attention to price changes. Substantial price changes cause only small changes in the amount purchased. The demand for such products is *inelastic.*

The Price-Elasticity Coefficient and Formula

Economists measure the degree to which demand is price elastic or inelastic with the coefficient E_d, defined as:

$$E_d = \frac{Percentage\ change\ in\ quantity\ demanded\ of\ product\ X}{percentage\ change\ in\ price\ of\ product\ X} = \frac{\%\Delta Q}{\%\Delta P}$$

$$E_d = \frac{Change\ in\ quantity\ demanded}{Original\ quantity\ demanded} \div \frac{change\ in\ price}{original\ price} = \frac{\Delta Q}{Q_1} \div \frac{\Delta P}{P_1}$$

$$E_d = \frac{Q_2 - Q_1}{Q_1} \div \frac{P_2 - P_1}{P_1} = \frac{Q_2 - Q_1}{Q_1} \times \frac{P_1}{P_2 - P_1}$$

Example:
You are given market data that says when the price of pizza is $4, the quantity demanded of pizza is 60 slices. When the price of pizza is $2, the quantity demanded of pizza is 80 slices. Calculate the price elasticity of demand

$$E_d = \frac{Q_2 - Q_1}{Q_1} \; x \; \frac{P_1}{P_2 - P_1} = \frac{80 - 60}{60} \; x \; \frac{4}{2 - 4} = \frac{20}{60} \; x \; \frac{4}{-2} = \frac{80}{-120} = -0.67$$

Midpoint formula for calculating elasticity:

$$E_d = \frac{Change\ in\ quantity\ demanded}{Sum\ of\ quantity\ /2} \div \frac{change\ in\ price}{Sum\ of\ price/2}$$

$$E_d = \frac{Q2 - Q1}{Q2 + Q1\ /2} \div \frac{P2 - P1}{P2 + P1/2} = \frac{Q2 - Q1}{Q2 + Q1} \div \frac{P2 - P1}{P2 + P1}$$

$$E_d = \frac{Q2 - Q1}{Q2 + Q1} \; x \; \frac{P2 + P1}{P2 - P1}$$

Example

Use the midpoint formula for E_d to calculate the following

Product price	Quantity demanded
$5	10
$4	20
$3	35
$2	55
$1	80

1. Calculate price elasticity of demand for the price decrease from $4 to $3.

$$E_d = \frac{Q2 - Q1}{Q2 + Q1} \; x \; \frac{P2 + P1}{P2 - P1} = \frac{35 - 20}{35 + 20} \; x \; \frac{3 + 4}{3 - 4} = \frac{15}{55} \; x \; \frac{7}{-1} = \frac{105}{-55} = -1.9$$

2. Calculate price elasticity of demand for the price increase from $1 to $2.

$$E_d = \frac{Q2 - Q1}{Q2 + Q1} \; x \; \frac{P2 + P1}{P2 - P1} = \frac{55 - 80}{55 + 80} \; x \; \frac{2 + 1}{2 - 1} = \frac{-25}{135} \; x \; \frac{3}{1} = \frac{-75}{135} = -0.55$$

Example
Suppose that the price elasticity of demand for maple syrup has been estimated at –2. If quantity demanded increased by 10 percent, by how must price have changed?

$$-2 = \frac{10\%}{\%\ \Delta P} \Rightarrow \%\Delta P = \frac{10\%}{-2} = -5$$

Price must be decrease by %5

Elimination of Minus Sign

The price elasticity coefficient of demand E_d will always be a negative number, because the price and quantity demanded are inversely related.

We will use the absolute value of the elasticity coefficient. (عند حساب قيمة المرونة فإنه يتم اخذ القيمة المطلقة)

Multiple Choices:

1. The price elasticity of demand measures
   A. The slope of a budget curve.
   B. How often the price of a good changes.
   C. The responsiveness of the quantity demanded to changes in price.
   D. How sensitive the quantity demanded is to changes in demand.

2. The price elasticity of demand equals
   A. The percentage change in the quantity demanded divided by the percentage change in the price.
   B. The change in the quantity demanded divided by the change in price.
   C. The percentage change in the price divided by the percentage change in the quantity demanded.
   D. The change in the price divided by the change in quantity demanded.

3. When the price of oranges increases from $4 to $6 per bag, the quantity demanded of oranges decreases from 800 to 700. The price elasticity of demand curve over this price rage is equal to___. Use the midpoint method for your calculation.
   A. 3
   B. 3/7
   C. 1/3
   D. ¼

4. If the price elasticity of demand is 2.5, then a 1 percent increase in price will lead to a
   A. 2.5 percent increase in the quantity demanded
   B. 2.5 percent decrease in demand
   C. 2.5 percent decrease in the quantity demanded
   D. 2.5 percent increase in demand

5. If the price elasticity of demand is 2 and the quantity demanded increased by 25 percent, then price must have
   A. increased by 50 percent
   B. increased by 12.5 percent
   C. decreased by 50 percent
   D. decreased by 12.5 percent

6. Given an income elasticity of demand of ¼, we would expect that
   A. for a ¼ percent increase in the price, demand will increase by 1 percent
   B. for a 1 percent increase in the price, demand will increase by ¼percent
   C. for a 4 percent increase in the price, demand will decrease by 1percent
   D. for a 1 percent increase in the price, demand will decrease by 4 percent

Example:
Suppose that the demand for DVD increases by 40%, when price decreases from $100 to $90. Calculate the price elasticity of demand (Use the midpoint method for your calculation)

$E_d = \frac{\%\Delta Q}{\%\Delta P}$; %ΔQ = 40%

$\%\Delta P = \frac{P2-P1}{(P2+P1)/2} = \frac{90-100}{(90+100)/2} = \frac{-10}{95} = -0.105 = -10.5\%$

$E_d = \frac{\%\Delta Q}{\%\Delta P} = \frac{40\%}{-10.5\%} = |-3.8| = 3.8$

Interpretations of price elasticity of demand

We can interpret the coefficient of the price elasticity of demand as follows:

Elastic Demand: Demand is elastic if a percentage change in price results in a larger percentage change in quantity demanded (%Δ Q > %ΔP). Then E_d will be greater than 1.

Inelastic Demand: if a specific percentage change in price produces a smaller percentage change in quantity demanded (%ΔP > %ΔQ), demand is inelastic. Then E_d will be less than 1.

Unit Elasticity: when the percentage change in price results in a same percentage change in quantity demanded (%ΔP = %ΔQ), demand is unit elastic. Then E_d will be equal to 1.

$$\begin{bmatrix} if\ E_d > 1 \Rightarrow demand\ elastic \\ if\ E_d < 1 \Rightarrow demand\ inelastic \\ if\ E_d = 1 \Rightarrow demand\ unit\ elastic \end{bmatrix}$$

Multiple Choices:

1. When the percentage change in quantity demand is less than the percentage change in the price, then
   A. Demand elastic
   B. Demand inelastic
   C. Supply inelastic
   D. Demand unit elastic

2. the price of sprite cola rises by 25 percent, causing the quantity demanded to increase by 75 percent, then demand for sprite cola is
   A. Elastic
   B. Inelastic
   C. Unitary elastic
   D. Perfectly elastic

3. If demand is unitary elastic and price decreases by 30 percent, then we can expect quantity demanded to
   A. Increase by 30 percent
   B. increase by 60 percent
   C. decrease by 30 percent
   D. decrease by 30 percent

Example

Taleen spend all income on water and milk. When milk price $3 per gallon, Taleen bought 14 gallons of milk. After the price of milk went up to $6 per gallon, Taleen bought only 6 gallons of milk. Calculate Taleen's midpoint-price elasticity of milk when the price of milk increases from $3 to $6 per gallon. Is demand for milk elastic, inelastic or unit elastic?

$$E_d = \frac{Q2-Q1}{Q2+Q1} \times \frac{P2+P1}{P2-P1} = \frac{6-14}{6+14} \times \frac{6+3}{6-3} = \frac{-8}{20} \times \frac{9}{3} = \frac{-24}{20} = |-1.2| = 1.2$$

$E_d = 1.2 > 1$ ⇨ Demand elastic

Example

The following table shows the demand and supply schedules for Starbucks coffee. Using the information in the table, calculate the elasticity of demand (E_d) between the equilibrium price and the price of $5. Is the demand elastic or inelastic?

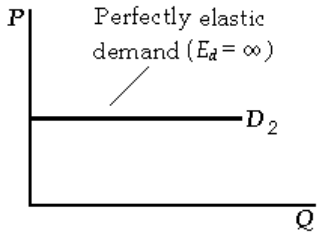
Price of Starbuck coffee	Quantity demanded (per month)	Quantity supplied (per month)
$5.00	3000	5000
$4.75	3400	4400
$4.00	3800	3800
$3.50	4200	3200
$3.00	4600	2600
$2.50	5000	2000

Equilibrium price = $4; Equilibrium quantity = 3800

$$E_d = \frac{Q2-Q1}{Q2+Q1} \times \frac{P2+P1}{P2-P1} = \frac{3000-3800}{3000+3800} \times \frac{5+4}{5-4} = \frac{-800}{6800} \times \frac{9}{1} = \frac{-7200}{6800} = |-1.05| = 1.05 > 1 \quad \text{elastic}$$

Perfectly inelastic and perfectly elastic demand curve

When we say demand is "elastic," we do not mean that consumers are completely responsive to a price change. In that extreme situation, where a small price reduction causes buyers to increase their purchases from zero to all they can obtain, the elasticity coefficient is infinite (∞) and economists say demand is perfectly elastic. A line parallel to the horizontal axis, such as D_2

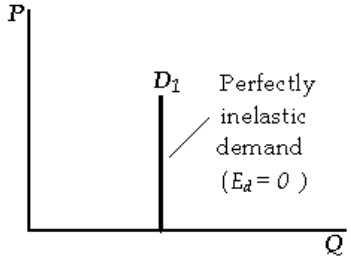


If $E_d = \infty$ ⇨ demand is perfectly elastic

A horizontal demand curve (line parallel to the horizontal axis), shows perfectly elastic demand graphically.

When we say demand is "inelastic," we do not mean that consumers are completely unresponsive to a price change. In that extreme situation, where a price change results in no change whatsoever in the quantity demanded, economists say that demand is perfectly inelastic. The price-elasticity coefficient is zero because there is no response to a change in price. Approximate examples include an acute diabetic's demand for insulin (الأنسولين) or an addict's demand for heroin (هيروين).

هناك حالة خاصة للطلب غير المرن عندما يكون منحنى الطلب عمودياً حيث لا تستجيب الكمية للتغير في السعر مطلقاً, وتكون قيمة المرونة السعرية صفراً في هذه الحالة, ويسمى الطلب عديم المرونة (perfectly inelastic).



If $E_d = 0$ ⇨ demand is perfectly inelastic
A vertical demand curve shows perfectly inelastic demand graphically.

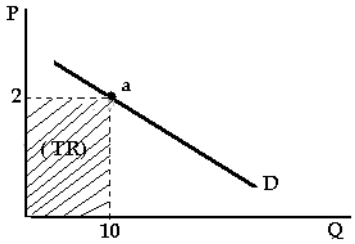
The Total-Revenue Test

The importance of elasticity for firms relates to the effect of price changes on total revenue and thus on profits (total revenue minus total costs).

Total revenue (TR) is the total amount the seller receives from the sale of a product in a particular time period; it is calculated by multiplying the product price (*P)* by the quantity sold (Q). In equation form:

$$TR = P \, x \, Q$$

Graphically, total revenue is represented by the *P* x *Q* rectangle lying below a point on a demand curve. At point *a* in Figure, for example, price is \$2 and quantity demanded is 10 units. So total revenue is \$20 (\$2 x 10), shown by the rectangle composed of the gold and orange areas under the demand curve.



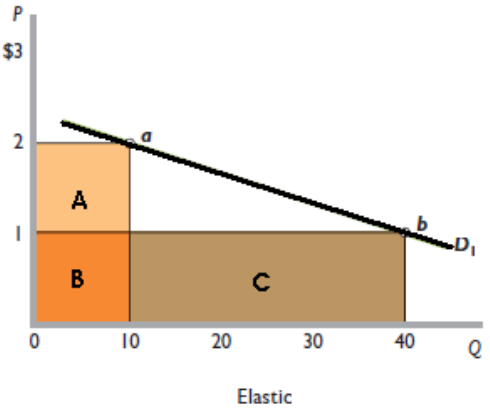
Total revenue and the price elasticity of demand are related. In fact, the easiest way to infer whether demand is elastic or inelastic is to employ the *total-revenue test***.** Here is the test: Note what happens to total revenue when price changes. If total revenue changes in the opposite direction from price, demand is elastic. If total revenue changes in the same direction as price, demand is inelastic. If total revenue does not change when price changes, demand is unit-elastic.

Elastic Demand

If demand is elastic, a decrease in price will increase total revenue. Or if demand is elastic, an increase in price will decrease total revenue. Even though a lesser price is received per unit, enough additional units are sold to more than make up for the lower price.

$$\left\{ \begin{matrix} P \downarrow & \Rightarrow & TR \uparrow \\ P \uparrow & \Rightarrow & TR \downarrow \end{matrix} \right\} \quad \textit{Demand elastic}$$

For an example, look at demand curve D_1 in Figure. We have already established that at point *a*, total revenue is \$20 (\$2 X 10), shown as the gold plus orange area (area A+B). If the price declines from \$2 to \$1 (point *b*), the quantity demanded becomes 40 units and total revenue is \$40 (\$1X 40). As a result of the price decline, total revenue has increased from \$20 to \$40. Total revenue has increased in this case because the \$1 decline in price applies to 10 units, with a consequent revenue loss of \$10 (the gold area B). But 30 more units are sold at \$1 each, resulting in a revenue gain of \$30 (the brown area C). Visually, the gain of the brown area clearly exceeds the loss of the gold area. As indicated, the overall result is a net increase in total revenue of \$20 (\$30 – \$10).



Example:

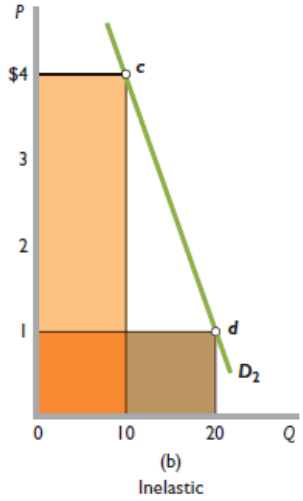
Price (P)	Quantity (Q)	Total revenue (TR)
\$2	10	2 x 10 = 20
\$1	40	1 x 40 = 40

Price decline from \$2 to \$1 and total revenue increases from \$20 to \$40. So demand is elastic.

Inelastic Demand

If demand is inelastic, a price decrease will reduce total revenue or a price increase will increase total revenue

$$\left\{\begin{matrix} P \downarrow & \Rightarrow TR \downarrow \\ P \uparrow & \Rightarrow TR \uparrow \end{matrix}\right\}$$ *Demand inelastic*



To see this, look at demand curve in the figure. At point c, price is \$4 and quantity demanded is 10 ⇨ total revenue is \$40.If the price drops to \$1.5 (point d), total revenue declines to \$30.

Price (P)	Quantity (Q)	Total revenue (TR)
\$4	10	4 x 10 = 40
\$1.5	20	1.5 x 20 = 30

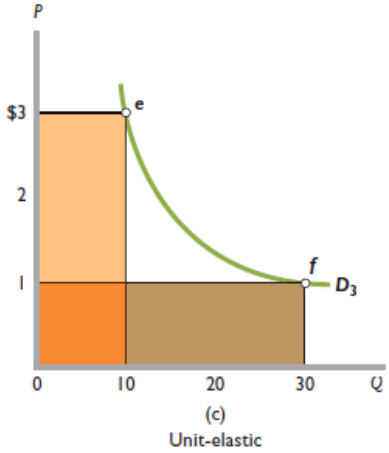
Price declines from \$4 to \$1, and total revenue falls from \$40 to \$22. So, demand inelastic.

Unit Elasticity

An increase or a decrease in price leaves total revenue unchanged.

The loss in revenue from a lower unit price is exactly offset by the gain in revenue from the accompanying increase in sales.

P ↑ or P↓ ⇨ TR unchanged ⇨ demand is unit elastic



To see this, look at demand curve in the figure. At point e, price is \$3 and quantity demanded is 10 ⇨ total revenue is \$30.If the price drops to \$1 (point f), total revenue is \$30 (unchanged).

Price (P)	Quantity (Q)	Total revenue (TR)
\$3	10	3 x 10 = 30
\$1	30	1 x 30 = 30

Price declines from \$3 to \$1 and total revenue still 30 (unchanged). So, demand unit elastic.

Price Elasticity of Demand: A Summary

Absolute Value of Elasticity Coefficient	Demand Is:	Description	Impact on Total Revenue of a: Price Increase	Price Decrease
Greater than 1 ($E_d > 1$)	Elastic or relatively elastic	Quantity demanded changes by a larger percentage than does price	Total revenue decreases	Total revenue increases
Equal to 1 ($E_d = 1$)	Unit or unitary elastic	Quantity demanded changes by the same percentage as does price	Total revenue is unchanged	Total revenue is unchanged
Less than 1 ($E_d < 1$)	Inelastic or relatively inelastic	Quantity demanded changes by a smaller percentage than does price	Total revenue increases	Total revenue decreases

Multiple Choices:

1. The price of canned salmon increases; total spending on canned salmon remains unchanged. Canned salmon has a(n) _____ demand.
   A. perfectly inelastic
   B. perfectly elastic
   C. unitarily elastic
   D. inelastic

2. Total revenue will decrease if price _____ and demand is _____ .
   A. increases; inelastic
   B. increases; unitarily elastic
   C. decreases; inelastic
   D. decreases; elastic

3. An excellent harvest causes apples to fall in price by 10%. Consumers buy 5% more apples. The price decrease has caused consumers to
   A. Spend less on apples.
   B. Spend more on apples.
   C. Reduce the quantity of apples bought. We can't tell what has happened to spending.
   D. Increase the quantity of apples bought. We can't tell what has happened to spending.

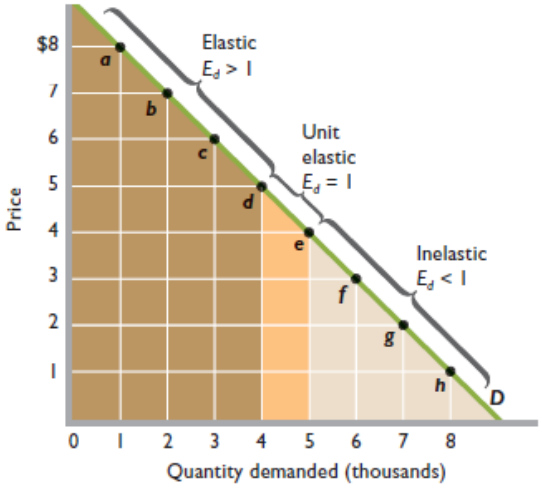
4. Other things the same, if a price change causes total revenue to change in the opposite direction, demand is:
   A. Perfectly inelastic.
   B. Relatively elastic.
   C. Relatively inelastic.
   D. Of unit elasticity.

Price Elasticity along a Linear Demand Curve

Using the total revenue test, when price fall and TR increases, demand is elastic; when price fall and TR unchanged, demand is unit elastic; and when price fall and TR decline, demand is inelastic.

Price Elasticity of Demand for Movie Tickets as Measured by the Elasticity Coefficient and the Total-Revenue Test

Total Quantity of Tickets Demanded	Price per Ticket	Elasticity Coefficient (E_d)	Total Revenue, (1) × (2)	Total-Revenue Test
1	$8	5.00	$ 8000	Elastic
2	7	2.60	14,000	Elastic
3	6	1.57	18,000	Elastic
4	5	1.00	20,000	Unit elastic
5	4	0.64	20,000	Inelastic
6	3	0.38	18,000	Inelastic
7	2	0.20	14,000	Inelastic
8	1		8000	



For a down sloping straight line, demand is more elastic at higher price range and inelastic at lower price ranges.

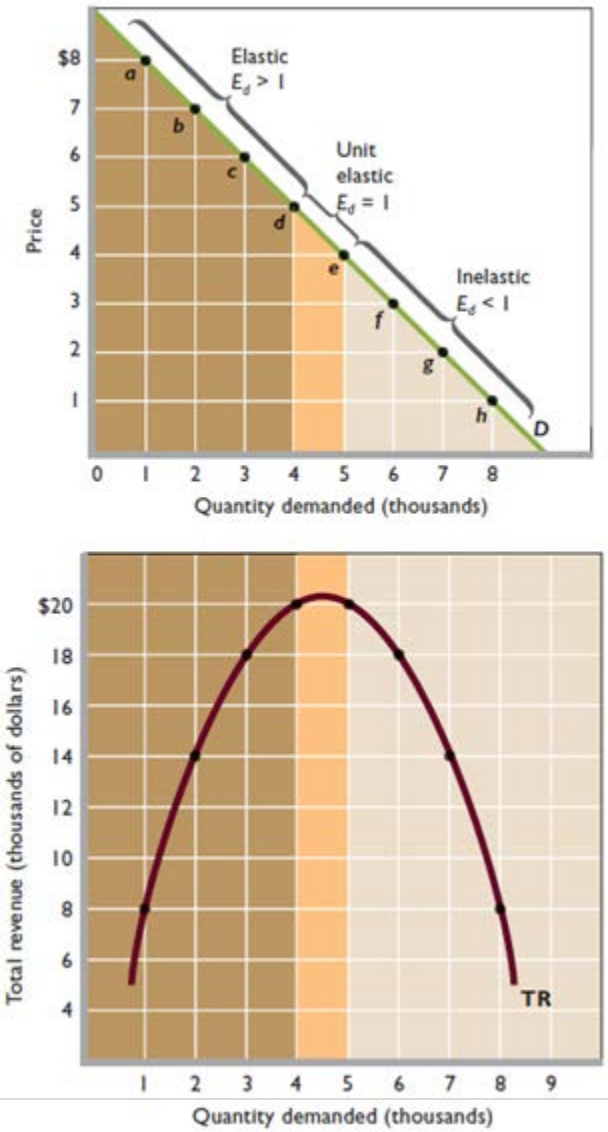
Multiple Choices

1. Along a linear demand curve, from top to bottom (higher price levels to lower price levels), elasticity varies from
   A. elastic, to unit elastic, to inelastic
   B. inelastic, to unit elastic, to elastic
   C. unit elastic, to elastic, to inelastic
   D. elastic, to inelastic, to unit elastic

2. Which of the following is true?
   A. On a linear demand curve, the higher the price the more elastic is demand
   B. On a linear demand curve, elasticity is constant
   C. At the same price demand is more elastic on the steeper demand curve
   D. None are true

Price Elasticity and the Total-Revenue Curve

When price falls and TR increases, demand is elastic; when price falls and TR is unchanged, demand is unit elastic; and when price falls and TR declines, demand is inelastic.



Example

Suppose that total demand for wheat is as shown below:

Price per bushel	Quantity demand
3.4	85
3.7	80
4	75
4.3	70
4.6	65

1. Use the point formula for elasticity of demand to determine price elasticity of demand for each of the price changes from $3.7 to $4.6. Then Graph the demand data

Price elasticity as price increase from 3.4 to 3.7

$$E_d = \frac{Q2-Q1}{Q2+Q1} \times \frac{P2+P1}{P2-P1} = \frac{80-85}{80+85} \times \frac{3.7+3.4}{3.7-3.4} = \frac{-5}{165} \times \frac{7.1}{0.3} = \frac{-35.5}{49.5} = |-0.71| = 0.71$$

Price elasticity as price increase from 3.7 to 4

$$E_d = \frac{Q2-Q1}{Q2+Q1} \times \frac{P2+P1}{P2-P1} = \frac{75-80}{75+80} \times \frac{4+3.7}{4-3.7} = \frac{-5}{155} \times \frac{7.7}{0.3} = \frac{-38.5}{46.5} = |-0.82| = 0.82$$

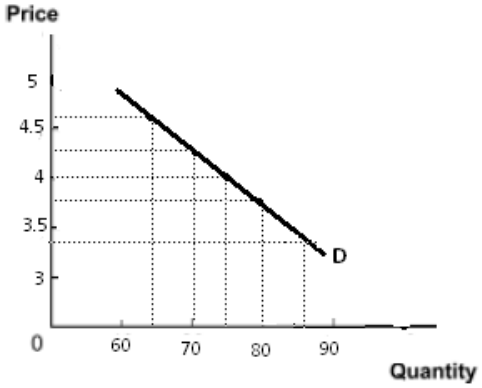
Price elasticity as price increase from 4 to 4.3

$$E_d = \frac{Q2-Q1}{Q2+Q1} \times \frac{P2+P1}{P2-P1} = \frac{70-75}{70+75} \times \frac{4.3+4}{4.3-4} = \frac{-5}{145} \times \frac{8.3}{0.3} = \frac{-41.5}{43.5} = |-0.95| = 0.95$$

Price elasticity as price increase from 4.3 to 4.6

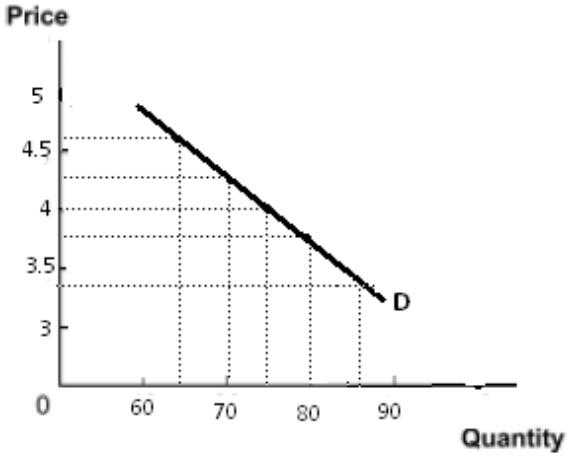
$$E_d = \frac{Q2-Q1}{Q2+Q1} \times \frac{P2+P1}{P2-P1} = \frac{65-70}{65+70} \times \frac{4.6+4.3}{4.6-4.3} = \frac{-5}{135} \times \frac{8.9}{0.3} = \frac{-44.5}{40.5} = |-1.09| = 1.09$$

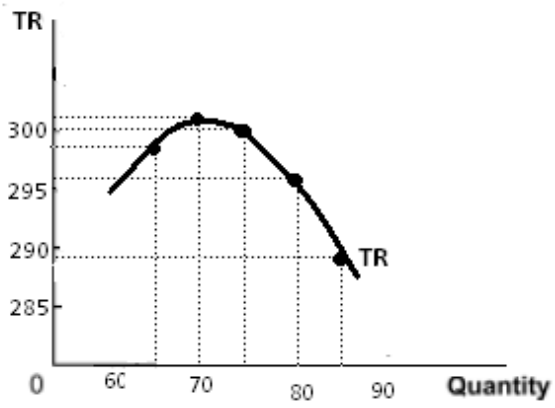
Price per bushel	Quantity demand	Elasticity
3.4	85	-
3.7	80	0.71
4	75	0.82
4.3	70	0.95
4.6	65	1.09



2. Calculate total revenue data from the demand table. Graph total revenue below your demand curve.

Price per bushel	Quantity demand	Total revenue
3.4	85	289
3.7	80	296
4	75	300
4.3	70	301
4.6	65	299





Determinants of Price Elasticity of Demand:

- Substitutability توفر بدائل للسلعة

The larger the number of substitute goods that are available, the grater the price elasticity of demand.

The elasticity of demand for a product depends on how narrowly the product is defined. Demand for Reebok sneakers is more elastic than is the overall demand for shoes. Many other brands are readily substitutable for Reebok sneakers, but there are few, if any, good substitutes for shoes.

بصورة عامة كلما زاد عدد البدائل المتوفرة للسلعة, كلما كان الطلب عليها أكثر مرونة، حيث أن ارتفاع سعر السلعة سيؤدي بالمستهلك لتقليل الكميات المطلوبة منها بصورة كبيرة والانتقال لاستهلاك السلع البديلة. أما عدم وجود بدائل للسلعة فإنه يؤدي بالمستهلك أن يرتبط باستهلاك تلك السلعة حتى لو ارتفع سعرها لعدم وجود بدائل لها.

كلما كان للسلعة بدائل كثيرة وجيدة كلما كان الطلب عليها أكبر مرونة، أو بمعنى آخر كلما عرفنا السلعة تعريفاً ضيقاً، وكلما كان لهذه السلعة بدائل كثيرة وجيدة كلما كان الطلب عليها أكبر مرونة، مثلاً الطلب على الصابون من نوع لوكس أكبر مرونةً من الطلب على الصابون بصورة عامة، والطلب على لحم الضأن أكبر مرونة من الطلب على اللحوم بصورة عامة.

- Proportion of Income نسبة الإنفاق على السلعة من الدخل المستهلك

  Other things equal, the higher the price of a good relative to consumers incomes, the grater the price elasticity of demand.

  بصورة عامة فإن الطلب على السلعة يكون أكثر مرونة كلما زادت نسبة الإنفاق على تلك السلعة من دخل المستهلك. فعلى سبيل المثال فإن الإنفاق على ملح الطعام يشكل نسبة قليلة جداً من دخل المستهلك وعليه فإن ارتفاع سعر ملح الطعام لن يؤدي الانخفاض الكمية المطلوبة منه بنسبة كبيرة بل يمكن أن لا تتأثر الكمية المطلوبة منه مطلقاً.

  A 10 percent increase in the price of low-priced pencils or chewing gum amounts to a few more pennies relative to one's income, and quantity demanded will probably decline only slightly. Thus, *price elasticity for such low-priced items tends to be low*. But a 10 percent increase in the price of relatively high-priced automobiles or housing means additional expenditures of perhaps $3000 or $20,000, respectively. These price increases are significant fractions of the annual incomes and budgets of most families, and quantities demanded will likely diminish significantly. *Price elasticity for such items tends to be high*.

- Luxuries versus Necessities سلع الرفاهية والسلع الضرورية

  The more that a good is considered to be a luxury rather than a necessity the grater is the price elasticity of demand.

  طبيعة السلعة من العوامل المحددة لمرونة الطلب السعرية، وذلك من حيث كون السلعة ضرورية أو كمالية. فارتفاع سعر السلعة الضرورية لن يؤثر كثيراً على الكمية المطلوبة منها نظراً للحاجة إليها وعدم إمكانية الاستغناء عنها. أما ارتفاع سعر السلعة الكمالية فسيؤدي الانخفاض في الكمية المطلوبة منها بصورة واضحة لإمكانية الاستغناء عنها أو التقليل منها بصورة كبيرة.

  For example, electricity is regarded as a necessity: it is difficult to get along without it. A price increase will not significantly reduce the amount of lighting. On other hand, jewelry are luxuries. If the prices of jewelry rise, a consumer need not buy them.

- Time (المدى الطويل والمدى القصير)

  Product demand is more elastic the longer the time period under consideration. Consumers often need time to adjust to changes in prices. For example, when the price of a product rises, time is needed to find and experiment with other product to see if they are acceptable.

  بصفة عامة فإن مرونة الطلب على سلعة ما في المدى الطويل أعلى بكثير من مرونة الطلب عليها في المدى القصير نظراً لصعوبة التكيف في المدى القصير، خصوصاً بالنسبة لعادات المستهلك الشرائية فمثلاً لو ارتفع سعر زيت الزيتون فإن المستهلك الذي تعود على استهلاك هذه السلعة لن يستطيع الاستغناء عنها في المدى القصير ومن ثم فإن الطلب عليها في المدى القصير سيقل بنسبة أقل من نسبة ارتفاع السعر وهذا يعني أن الطلب عليها سيكون قليل المرونة، ولكن إذا استمر الارتفاع في سعرها في المدى الطويل فسيحاول المستهلك التكيف مع أنماط استهلاكية أخرى مثل استهلاك زيت الذرة أو السمن النباتي وبالتالي يكون الطلب على زيت الزيتون أكثر مرونة.

Multiple Choice:

1. Which of the following is not a determinant of the price elasticity of demand?
   A. Time to adjust
   B. Availability of substitute goods
   C. Whether the good is low-priced or high-priced
   D. Whether the consumer is low or high income

2. Over time, the demand of a good or service
   A. becomes more elastic.
   B. becomes less elastic.
   C. initially becomes more elastic and then becomes less elastic.
   D. initially becomes less elastic and then becomes more elastic.

3. The _____ the portion of your income spent on a good, the _____ is your demand for the good.
   A. larger; more income elastic.
   B. larger; more price elastic.
   C. smaller; more price elastic.
   D. smaller; more income elastic.

4. Which of the following factors will make the demand for a product more elastic?
   A. The product has no close substitutes.
   B. A very small proportion of income is spent on the good.
   C. A long time period has elapsed since the product's price changed.
   D. A lower price.

Applications of Price Elasticity of Demand بعض التطبيقات العملية لمرونة الطلب السعرية

- Large Grop Yields

The demand for most products is highly inelastic. As a result, increase in the output of farm products arising from a good growing season or from increased productivity tend to depress both the prices of farm products and the total revenue of farmers.

تلجأ بعض الدول أو بعض المنتجين إلى تخفيض العرض من المنتجات الزراعية وذلك سعياً منهم إلى زيادة الإيراد الكلي لهذه المنتجات. والتحليل الاقتصادي لذلك هو أن الطلب على المنتجات الزراعية هو في الغالب طلب غير مرن ولذلك فإن نقص العرض من هذه المنتجات يسبب ارتفاع السعر، ونظراً لأن الطلب على هذه المنتجات هو غير مرن فإن الإيراد الكلي للمنتجين سوف يزداد. لذلك نرى أن حكومة مثل حكومة البرازيل تقوم بإتلاف جزء كبير من محصول القهوة بهدف زيادة الإيرادات الكلية لها ، حيث أن إتلاف هذا الجزء من محصول القهوة سوف يؤدي إلى انخفاض العرض ومن ثم ارتفاع الأسعار وفي ظل طلب غير مرن على القهوة فإن الإيرادات سوف تزداد.

- Excise Taxes

The government pays attention to elasticity of demand when it selects goods and services on which to levy excise taxes. If a $1 tax is levied on a product and 10,000 units are sold, tax revenue will be $10,000 (1x10,000). If the government rises the tax to $1.5 but the higher price that results reduces sales to 5000 because of elastic demand, tax revenue will decline to $75,000 (1.5 x 5000). Because a *higher tax on a product with elastic demand will bring in less tax revenue*, legislatures tend to seek out products that have inelastic demand such as liquor, gasoline, and cigarettes.

عندما تفكر الدولة في فرض ضريبة معينة فإنها تقوم بفرض هذه الضريبة على السلع التي يكون الطلب عليها غير مرن، حيث أن ارتفاع أسعار هذه السلع بسبب زيادة الضريبة سوف يؤدي إلى زيادة الإيراد الكلي للدولة (أي زيادة حصيلة الدولة من الضريبة) .ويلاحظ هنا إنه إذا كان الطلب على سلعة ما عديم المرونة فإن المستهلك يتحمل كامل عبء الضريبة، أما إذا كان الطلب على هذه السلعة غير مرن فإن المستهلك يتحمل معظم عبء الضريبة أما إذا كان الطلب على هذه السلعة مرن فإن المنتج يتحمل معظم عبء الضريبة، وأخيراً إذا كان الطلب على سلعة ما لا نهائي المرونة فإن المنتج يتحمل كامل عبء الضريبة.

Price Elasticity of Supply

Is the percentage change in the quantity supplied of a good in response to a 1 percent change in its price.

تقيس مرونة العرض السعرية مدى استجابة الكمية المعروضة من سلعة ما نتيجة لتغير سعر السلعة بنسبة واحد بالمائة.

If the quantity supplied by producers is relatively responsive to price changes, supply is elastic. If it is relatively insensitive to price changes, supply is inelastic.

$$E_S = \frac{Percentage\ change\ in\ quantity\ supplied\ of\ product\ X}{Percentage\ change\ in\ the\ price\ of\ product\ X}$$

$$E_S = \frac{\%\Delta Qs}{\%\Delta P} = \frac{Q_{2-}Q_1}{Q_{2+}Q_1} \div \frac{P_{2-}P_1}{P_{2+}P_1} = \frac{Q_{2-}Q_1}{Q_{2+}Q_1} \ x \ \frac{P_{2+}P_1}{P_{2-}P_1}$$

The price elasticity coefficient of supply E_S will always be a positive number, because the price and quantity supplied are directly related.

For example, suppose an increase in the price of a good from \$4 to \$6 increase the quantity supplied from 10 units to 14 units. Find the price elasticity of supply from a price increase.

$$E_S = \frac{\%\Delta Qs}{\%\Delta P} = \frac{Q_{2-}Q_1}{Q_{2+}Q_1} \div \frac{P_{2-}P_1}{P_{2+}P_1} = \frac{(14-10)}{(14+10)} \div \frac{(6-4)}{(6+4)} = \frac{4}{24} \div \frac{2}{10} = \frac{4}{24} X \frac{2}{10} = \frac{40}{48} = 0.83 < 1 \text{ inelastic}$$

Supply is inelastic, if the Es <1
Supply is elastic, if the Es > 1
Supply is unit elastic, if the Es = 1

Example:

If a rise in the price of oranges from \$7 to \$9 a bushel, increases the quantity of bushels supplied from 4,500 to 5,500 bushels. Is demand for oranges elastic or inelastic?

$$E_S = \frac{\%\Delta Qs}{\%\Delta P} = \frac{Q_{2-}Q_1}{Q_{2+}Q_1} \ x \ \frac{P_{2+}P_1}{P_{2-}P_1} = \frac{5{,}500-4{,}500}{5{,}500+4{,}500} \ x \ \frac{9+7}{9-7} = \frac{1{,}000}{10{,}000} \ x \ \frac{16}{2} = 0.8 > 1$$ ➢ elastic

Example:
The quantity supplied of new cars increases by 12 percent when the price of a new cars rise from \$20,000 to \$22,000. What is the price elasticity of supply ?

$$\%\Delta P = \frac{P_{2-}P_1}{(P_{2+}P_1)/2} = \frac{22{,}000-20{,}000}{(22{,}000+20{,}000)/2} = \frac{2{,}000}{21{,}000} = 9.5\%$$

$$E_S = \frac{\%\Delta Qs}{\%\Delta P} = \frac{12\%}{9.5\%} = 1.26$$

Multiple Choice:

1. If the elasticity of supply is 2, this means that if ____
   A. the price rises by one dollar, the quantity supplied will rise by two dollars.
   B. the price rises by one percent, the quantity supplied will rise by two percent.
   C. the price rises by two percent, the quantity supplied will fall by two percent.
   D. the price rises by two percent, the quantity supplied will rise by one percent.

2. If a 3% decrease in the price of chocolate causes a 2% decrease in the quantity supplied, the
   A. demand for chocolate is elastic.
   B. demand for chocolate is inelastic.
   C. supply of chocolate is elastic.
   D. supply of chocolate is inelastic.

3. Supply is elastic if
   A. a 1 percent change in price causes a larger percentage change in quantity supplied.
   B. the good in question is a normal good.
   C. the slope of the supply curve is positive.
   D. a 1 percent change in price causes a smaller percentage change in quantity supplied.

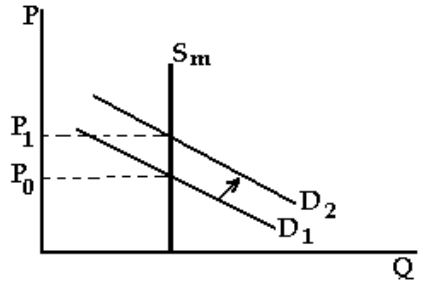
4. If a raise in the price of oranges from $7 to $9 a bushel increases the quantity of oranges supplied from 4,000 bushels to 6,000 bushels, then
   A. supply of oranges is elastic.
   B. supply of oranges is inelastic.
   C. demand for oranges is inelastic.
   D. demand for oranges is elastic.

In analyzing the impact of time on elasticity, economists distinguish among the immediate market period, the short run, and the long run.

Price Elasticity of Supply: The Market Period

Market period: is the period that occurs when the time immediately after a change in market price is too short for producers to respond with a change in quantity supplied.

In the immediate market period there is insufficient time to change output, and so supply is perfectly inelastic.



Price Elasticity of Supply: The Short Run

The short run: is a period of time too short to change plant capacity but long enough to use the fixed sized plant more or less intensively.

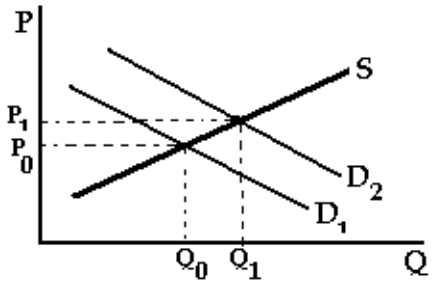
أن مفهوم المدى القصير في الاقتصاد لا يرتبط بفترة زمنية محددة، وإنما يرتبط بإمكانية تغيير جميع العناصر الإنتاجية أو عدم إمكانية ذلك. فالمدى القصير يمثل فترة زمنية ليست كافية لتغيير كمية جميع العناصر الإنتاجية، وبالتالي فإن كمية بعض هذه العناصر الإنتاجية تظل ثابتة خلال تلك الفترة.

فصاحب المنجرة على سبيل المثال، يستطيع أن يزيد عدد الكراسي الخشبية التي ينتجها عن طريق زيادة كمية الخشب التي يستخدمها وعدد العمال الذين يوظفهم ، وكمية الزيوت والدهان التي يستعملها. ولكنه لا يستطيع أن يزيد كمية جميع هذه العناصر خلال فترة زمنية

قصيرة. فإذا كان باستطاعته، على سبيل المثال، أن يزيد عدد العمال وكمية الخشب خلال ساعات أو أيام قليلة، فإنه سيحتاج إلى فترة زمنية طويلة لزيادة الطاقة الإنتاجية للمصنع (لتجهيز المباني, والقيام بالتوسعة اللازمة للمصنع و استيراد وتركيب المكائن).

In the short run plant capacity is fixed, but changing the intensity of its use can alter output; supply is therefore more elastic.

The outcome of an increase in demand from D_1 to D_2 is a smaller price rise and an increase in quantity from Q_1 to Q_2.



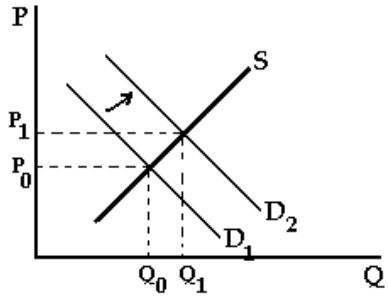
Price Elasticity of Supply: The Long Run

The long run: is a time period long enough for firms to adjust their plant size and for new firms to enter (or existing firms to leave) the industry.

أما المدى الطويل فهو يمثل فترة زمنية طويلة بما يكفي لتغيير كمية جميع العناصر الإنتاجية بالزيادة أو النقص.

In the long run all desired adjustment, including changes in plant capacity, can be mad, and supply becomes still more elastic.

The outcome of an increase in demand from D_1 to D_2 is a smaller price rise and a larger output increase.



Price elasticity of supply and Total Revenue

If supply is elastic or inelastic, a decrease in price will decrease total revenue. Or an increase in price will increase total revenue.

For example

Price (P)	Quantity (Qs)	Total revenue (TR)
$2	40	2 x 40 = 80
$1	10	1 x 10 = 10

$$E_S = \frac{Q_{2-}Q_1}{Q_{2+}Q_1} \; x \; \frac{P_{2+}P_1}{P_{2-}P_1} = \frac{(40-10)}{(40+10)} \; x \; \frac{(2+1)}{(2-1)} = \frac{30}{50} \text{ X } \frac{3}{1} = \frac{90}{50} = 1.8 > 1 \text{ elastic}$$

As price increase from $1 to $2, total revenue increase from $10 to $80, and the supply is elastic

Price (P)	Quantity (Qs)	Total revenue (TR)
$5	120	5 x 120 = 600
$1	80	4 x 80 = 320

$$E_S = \frac{Q_{2-}Q_1}{Q_{2+}Q_1} \; x \; \frac{P_{2+}P_1}{P_{2-}P_1} = \frac{(100-80)}{(100+80)} \; x \; \frac{(5+1)}{(5-1)} = \frac{20}{180} \text{ X } \frac{6}{4} = \frac{120}{720} = 0.16 < 1 \text{ inelastic}$$

As price increase from $1 to $5, total revenue increase from $320 to $600, and the supply is inelastic

Multiple Choice:

1. If the price elasticity of supply for a product equals ½, as its price rises the
   A. total revenue increases.
   B. quantity supplied does not change.
   C. total revenue does not change.
   D. total revenue decrease

2. A vertical supply curve indicates an elasticity of supply that equals
   A. 0
   B. infinity
   C. 1
   D. –1

Income Elasticity of Demand

The income elasticity of demand equals the percentage change in the quantity demanded of a good in response to a 1 percent change in income.

$$E_i = \frac{Percentage\ change\ in\ quantity\ demanded}{Percentage\ change\ in\ the\ income}$$

$$E_i = \frac{\%\Delta Q}{\%\Delta I} = \frac{Q2-Q1}{Q2+Q1} \ x \ \frac{I2+I1}{I2-I1}$$

Example
Last year, Jaber bought 50 pounds of hamburger when the household income was $40,000. This year, the household income was only $30,000 and Jaber bought 60 pounds of hamburger. All else constant Jaber's income elasticity of demand for hamburger is

$$E_i = \frac{\%\Delta Q}{\%\Delta I} = \frac{Q2-Q1}{Q2+Q1} \text{ X } \frac{I2+I1}{I2-I1} = \frac{(60-50)}{60+50)} \ x \ \frac{(30{,}000+40{,}000)}{(30{,}000-40{,}000)} = \frac{10}{110} \text{ X } \frac{70{,}000}{-10{,}000} = \frac{70}{-110} = -0.63$$

Example
If the income elasticity of demand for chocolate candies is 1.2, what percentage change in income is necessary to reduce the amount of chocolate candies demanded by 15%?

$$E_i = \frac{\%\Delta Q}{\%\Delta I} \rightarrow 1.2 = \frac{-15\%}{\%\Delta I} \rightarrow \%\Delta I = \frac{-15\%}{1.2} = 12.5\%$$ *(decrease income by 12.5%)*

Example
The income elasticity is +2 and income increases by 20%. Sales were 5000 units, what will they be now?

$$E_i = \frac{\%\Delta Q}{\%\Delta I} \rightarrow 2 = \frac{\%\Delta Q}{20\%} \rightarrow 40\% = \frac{Q2-Q1}{(Q2+Q1)/2} \rightarrow 40\% = \frac{Q2-5000}{(Q2+5000)/2}$$

$Q_2 - 5000 = 20\% Q_2 + 1000 \rightarrow Q_2 - 6000 = 20\% Q_2 \rightarrow 0.8 Q_2 = 6000 \rightarrow Q_2 = 7{,}500$

Normal Goods

If the income elasticity coefficient Ei is positive (Ei >0), meaning that more of them are demanded as income increase. Such goods are called normal or superior goods.

Inferior Goods

If the income elasticity coefficient Ei is negative (Ei <0), meaning that less of them are demanded as income increase. Such goods are called inferior goods.

Multiple Choice:

1. A 10 percent decrease in income decreases the quantity demanded of compact discs by 3 percent. The income elasticity of demand for compact discs is
   A. 10
   B. 3.3
   C. –0.3
   D. 0.3

2. If the income elasticity of demand for Cheer detergent is −3, then a
   A. 12 percent fall in income leads to a 4 percent rise in the quantity demanded
   B. $1,000 fall in income leads to a 3,000-unit rise in the quantity demanded
   C. 12 percent fall in income leads to a 36 percent rise in the quantity demanded
   D. 12 percent rise in income leads to a 36 percent rise in the quantity demanded

3. Average income increases from £20,000 to £22,000. Quantity demanded per year increases from 5000 to 6000 units. Which of the following is correct?
   A. Demand is price inelastic
   B. The good is inferior
   C. The good is normal
   D. Income elasticity is -2

4. For an inferior good with a downward sloping demand curve:
   A. The price elasticity of demand is negative; the income elasticity of demand is negative.
   B. The price elasticity of demand is positive; the income elasticity of demand is negative
   C. The price elasticity of demand is negative; the income elasticity of demand is positive.
   D. The price elasticity of demand is positive; the income elasticity of demand is positive.

Cross Elasticity of demand مرونة الطلب التقاطعية

The *cross-price elasticity of demand* measures the percentage change in the quantity demanded of a good (say, X) in response to a 1 percent change in the price of another good (say, Y).

$$E_{xy} = \frac{\textit{Percentage change in quantity supplied of product X}}{\textit{Percentage change in the price of product Y}} = \frac{\%\Delta Q_x}{\%\Delta P_y}$$

$$E_{xy} = \frac{Qx_2 - Qx_1}{Qx_2 + Qx_1} \div \frac{Py_2 - Py_1}{Py_2 + Py_1} = \frac{Qx_2 - Qx_1}{Qx_2 + Qx_1} \times \frac{Py_2 + Py_1}{Py_2 - Py_1}$$

The coefficient of cross elasticity of demand may be either positive or negative.

Example
Suppose that the number of units of good X fall 6 percent when the price of good Y falls 4 percent. What is the cross elasticity of demand between goods X and Y?

$$E_{xy} = \frac{\%\Delta Q_x}{\%\Delta P_y} = \frac{-6\%}{-4\%} = 1.5$$

Example
If the Botany Co. lowers printer price from $150 to $120 and finds that students increase their quantity demanded for paper from 400 to 600. Calculate the cross price elasticity of demand between printer and paper.

$$E_{xy} = \frac{Qx_2 - Qx_1}{Qx_2 + Qx_1} \; x \; \frac{Py_2 + Py_1}{Py_2 - Py_1} = \frac{600-400}{600+400} \; x \; \frac{120+150}{120-150} = \frac{200}{100} \text{ X } \frac{270}{-30} = \frac{54000}{-3000} = -1.62$$

Substitute Goods

If cross elasticity of demand is positive, meaning that sales of good X move in the same direction as a change in the price of good Y, then goods X and Y are substitutes.

Complementary Goods

When cross elasticity is negative, we know that X and Y go together; an increase in the price of one decrease the demand for the other. So the two are complementary goods.

Independent Goods

A zero or near zero cross elasticity suggests that the two products being considered are unrelated or independent goods.

Multiple Choice:

1. When two goods are substitutes for each other, the cross elasticity of demand
   A. Will b. e negative.
   B. Will be zero
   C. Will be positive
   D. May be either positive or negative.

2. If the price of orange juice rises the demand for grapefruit juice will increase, then the cross price elasticity between orange juice and grapefruit juice will be
   A. Positive
   B. Negative
   C. Zero
   D. Infinity

3. Suppose that when the price of good X changes, the quantity of good Y remains the same. We would expect the cross elasticity of demand to be
   A. Negative
   B. Zero
   C. Positive
   D. Either positive or negative.

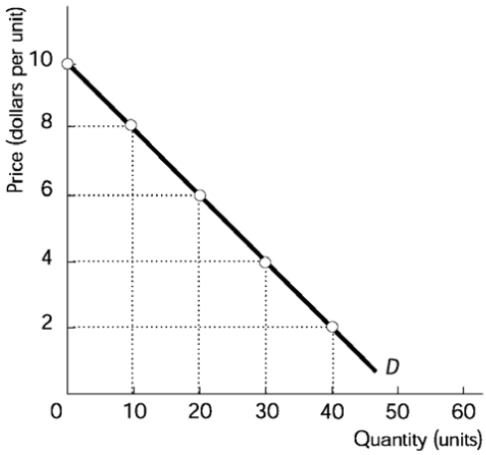
4. When the price of chicken is $2, the quantity demanded for hamburger is 50 units; when the price of chicken is $3, the quantity demanded of hamburger is 60 units. The cross-price elasticity of demand between chicken and hamburger is
   A. -50/110
   B. 10
   C. 1/10
   D. 5/11

Questions:

1. A fall in the price of lemons from $10.5 to $9.5 per bushel increases the quantity demanded from 19,200 to 20,800 bushels. What is the price elasticity of demand?

2. Dema's income has just risen from $950 per week to $1,050 per week. As a result, she decides to increase the number of movies she attends each month by 5 percent. Calculate the income elasticity of demand?

3. A 20 percent decrease in the price of a Pepsi decreases the demand for a Coca-Cola from 130 units to 120 units. The cross elasticity of demand between a Pepsi and Coca-Cola is?



4. Use the following figure illustrates a linear demand curve to answer the following
   a. Calculate the price elasticity of demand If the price falls from $8 to $6. . Is demand elastic or inelastic?
   b. Using total revenue test to indicate if demand is elastic, inelastic or unitary elastic when price increase from $4 to $6.
   c. Calculate the price elasticity of demand If the price increase from $8 to $10. Is demand elastic or inelastic?
   d. Calculate total revenue data from the demand curve. Graph total revenue curve.

5. The cross-price elasticity of demand for Coke with respect to the price of Pepsi has been estimated to be 0.7. When the price of coke is $2, demand for Pepsi is 90 units. If the prices of coke decrease to $1.5 how will that affect the demand for Pepsi?

Chapter 9

Consumer Behavior

In this chapter, you will see how individual consumers allocate their incomes among the various goods and services available to them. Given a certain budget, how does a consumer decide which goods and services to buy? As we answer this question, you will also strengthen your understanding of the law of demand.

Utility المنفعة

The utility of a good or services is the satisfaction or pleasure one gets from consuming it.

ذكرنا سابقاً بأن السلع والخدمات هي تلك الأشياء التي تعطي منفعة لمستهلكيها. والمنفعة ما هي إلا التعبير الاقتصادي لكلمة الإشباع. فالمنفعة هي عبارة عن الإشباع الذي يحصل عليه المستهلك عند استهلاكه سلعة أو خدمة معينة.

Three characteristics of utility:

- "Utility" and "usefulness" are not synonymous. Paintings by Picasso may offer great utility to art connoisseurs but are useless functionally (other than for hiding a crack on a wall).

- Utility is subjective. The utility of a specific product may vary widely from person to person. A lifted pickup truck may have great utility to someone who drives off-road but little utility to someone unable or unwilling to climb into the rig.

  عدد وحدات المنفعة المشتقة من سلعة ما تختلف من شخص إلى أخر. فمثلاً قد يكون المنفعة التي تحصل عليها نجاة من استهلاكها كوب من القهوة أكبر من المنفعة التي يحصل عليها شريف من تلك الكوب, والسبب في ذلك يرجع إلى اختلاف أذواق المستهلكين.

- Utility is difficult to quantify. But for purposes of illustration we assume that people can measure satisfaction with units called *utils* (units of utility). For example, a particular consumer may get 100 utils of satisfaction from a smoothie, 10 utils of satisfaction from a candy bar, and 1 utile of satisfaction from a stick of gum. These imaginary units of satisfaction are convenient for quantifying consumer behavior for explanatory purposes.

  يعتبر الاقتصاديون بأن المنفعة غير مقاسه، أي لا يمكن قياسها بأرقام عددية. فلا يمكنك أن تعطي عدداً معيناً لتقدر بواسطته المنفعة التي تشتقها من وحدة أو وحدات معينة من سلعة ما, ولكن يمكنك أن تعقد مقارنة بين المنفعة التي تشتقها من استهلاك تفاحة مع المنفعة التي تحصل عليها من استهلاك برتقالة. فلا يمكنك أن تقول بأنك حصلت على 15 وحدة منفعة (Utils) من استهلاك تفاحة.

Total Utility and Marginal Utility

Total utility (TU): is the total amount of satisfaction or pleasure a person derives from consuming some specific quantity.

يقصد بالمنفعة الكلية عدد وحدات المنفعة المشتقة من عدد معين من وحدات سلعة يستهلكها الفرد خلال زمن معين. فإذا استهلكت حنين خمس قطع من الشوكولاتة خلال يوم فإن المنفعة الكلية التي تشتقها حنين هي ناتج جمع المنفعة المشتقة من القطعة الأولى والثانية .. حتى القطعة الخامسة.

Marginal utility (MU): is the *extra* satisfaction a consumer realizes from an additional unit of that product. Alternatively, marginal utility is the change in total utility that results from the consumption of 1 more unit of a product.

يقصد المنفعة الحدية مقدار المنفعة الإضافية التي يحصل عليها المستهلك عندما يزيد استهلاكه وحدة إضافية من السلعة التي يستهلكها. فنتحدث هنا عن التغير في مقدار المنفعة الكلية الناتج عن تغير الكمية التي يستهلكها هذا المستهلك من سلعة ما.

$$\textit{Marginal Utility (MU)} = \frac{Change\ in\ total\ utility}{Change\ in\ the\ number\ of\ unit\ consumed} = \frac{\Delta TU}{\Delta Q}$$

Example

Unit consumed (Q)	Total utility (TU)	Marginal utility (MU)
0	0	–
1	10	(10 – 0) / (1 – 0) = 10
2	18	(18 – 10) / (2 – 1) = 8
3	24	(24 – 18) / (3 – 2) = 6
4	28	(28 – 24) / (4 – 3) = 4
5	30	(30 – 28) / (5 – 4) = 2
6	30	(30 – 30) /(6 – 5) = 0
7	28	(28 – 30) / (7 – 6) = -2

Example

Complete the following table

Unit Consumed	Total Utility	Marginal Utility
0	0	--
1	10	10
2	?	8
3	25	?
?	30	5

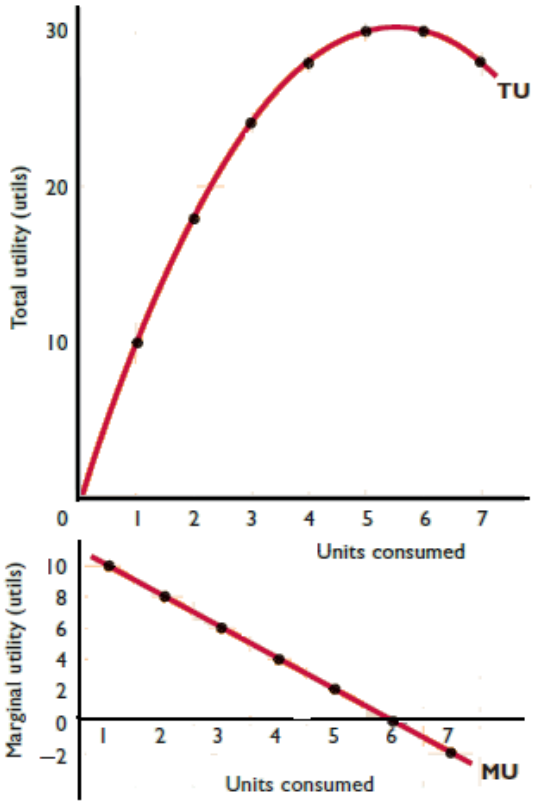
Solution:

Unit Consumed	Total Utility	Marginal Utility
0	0	--
1	10	10
2	$8 = \frac{(U-10)}{(2-1)}$ ⇨8 = U – 10 U = 8 + 10 = 18	8
3	25	$\frac{(25-18)}{(3-2)} = \frac{7}{1} = 7$
$5 = \frac{(30-25)}{(Q-3)}$ ⇨5Q – 15 = 5 5Q = 20 ⇨ Q = 4	30	1

Total and marginal utility curves:

- *As more of a product is consumed, total utility increases at a diminishing rate, reaches a maximum, and then declines.*

- *Marginal utility, by definition, reflects the changes in total utility. Thus marginal utility diminishes with increased consumption, becomes zero when total utility is at a maximum, and is negative when total utility declines.*



As shown (a) and (b), marginal utility is the change in total utility associated with each additional taco. Or, alternatively, each new level of *total utility is found by adding marginal utility to the preceding level of total utility*.

Multiple Choices:

1. Utility is best defined as
   A. The price of a good.
   B. The practical usefulness of a good.
   C. The satisfaction from consuming a good.
   D. The amount one is willing to pay for a good.

2. Normally, as the quantity of a good consumed increases, marginal utility
   A. Decreases and total utility increase
   B. Decreases and total utility decreases.
   C. Increases and total utility increase.
   D. Increases and total utility decreases.

3. Total utility is maximized when
   A. A marginal utility is zero.
   B. A marginal utility is maximized.
   C. The marginal utility per dollar spent is equal for all goods.
   D. A marginal utility is negative.

4. As Shauqi drinks additional cups of tea at breakfast, Shauqi 's
   A. Marginal utility from tea decreases.
   B. Total utility from tea increases.
   C. Total utility from tea decreases.
   D. Both answers A and B are correct.

5. When marginal utility is zero, total utility is:
   A. Also zero.
   B. At a maximum
   C. Negative.
   D. Rising, but at a declining rate.

6. If total utility is decreasing as more units are consumed, then marginal utility must be
   A. increasing at a decreasing rate
   B. positive
   C. decreasing at an increasing rate
   D. negative

7. The following table that givens the marginal utility, measured in utils, for different quantities of apples consumed. The total utility of consuming 2 apples is:
   A. 6
   B. 7
   C. 13
   D. 14

Apples	Marginal Utility
1	7
2	6
3	1
4	-2

Law of Diminishing Marginal Utility قانون تناقص المنفعة الحدية

Added satisfaction declines as a consumer acquires additional units of a given product. For example, a consumer's desire for an automobile when he or she has none may be very strong. But the desire for a second car is less intense.

ينص قانون تناقص المنفعة الحدية على أن المنفعة الحدية التي يحصل عليها المستهلك نتيجة استهلاكه لوحدات متتالية من السلعة خلال فترة زمنية معينة ستكون متناقصة. بمعنى أن المنفعة التي تضيفها كل وحدة إلى منفعة المستهلك ستكون أقل من تلك المنفعة التي أضافتها الوحدة التي سبقتها. مثال ذلك، أن المنفعة التي تحصل عليها حنين من قطعة الشوكولاتة الأولى أكبر من المنفعة التي تحصل عليها من القطعة الثانية، أي أن المنفعة المشتقة من الوحدات الإضافية تكون متناقصة مع زيادة عدد الوحدات المستهلكة.

✓ The law of diminishing marginal utility indicates that gains in satisfaction become smaller as successive units of a specific product are consumed.

Marginal Utility and Demand

The law of diminishing marginal utility explains why the demand curve for a product slopes downward. If the successive units of a good yield smaller and smaller amounts of marginal utility, then the consumer will buy additional units of a product only if its price falls.

Multiple Choices:

1. The idea that the utility a consumer derives from successive units of a good diminishes as total consumption of the good increases is known as
   A. diminishing total utility
   B. utility maximization
   C. diminishing marginal utility
   D. the utility theory of demand

2. The "law" of diminishing marginal utility implies that the
   A. marginal utility of a good diminishes over time
   B. total utility is negative
   C. last unit of a good consumed will contribute most to the consumer's satisfaction
   D. first unit of a good consumed will contribute most to the consumer's satisfaction

Theory of Consumer Behavior

In addition to explaining the law of demand, the idea of diminishing marginal utility explains how consumers allocate their money incomes among the many goods and services available for purchase.

Consumer Choice and Budget Constraint

We will assume that the situation for the typical consumer has the following dimensions:

- Rational behavior: The consumer is a rational person, who tries to use his or her money income to derive the greatest amount of satisfaction, or utility from it.
- Preferences: Each consumer has clear cut preferences for certain of the goods and services that are available in the market.
- Budget constraint: At any point in time the consumer has a fixed, limited amount of money income. Since each consumer supplies a finite amount of resources to society, he earns only limited income.
- Prices: Good are scarce relative to the demand for them, so every good carries a price tag. We assume that the price of each good is unaffected by the amount of it that is bought by any particular person

Utility – Maximizing Rule

Utility maximization rule: To maximize satisfaction, the consumer should allocate his or her money income so that the last dollar spent on each product yield the same amount of extra (marginal) utility.

Consumer equilibrium: the consumer should allocate the income on different goods and services that yields the maximum utility or satisfaction.

يجب على المستهلك أن يوزع دخله بين السلع والخدمات التي يستهلكها حتى يضمن أعلى مستوى ممكن من المنفعة, ونسمي هذه الحالة " توازن المستهلك".

بصفة عامة فإن رغبة المستهلك في استهلاك السلع وتعظيم المنفعة المشتقة منها مقيدة, بقدرة هذا المستهلك على الاستهلاك, ويحدد هذه القدرة عادة أمران هما دخل المستهلك وأسعار السلع التي يستهلكها.

Marginal Utility per Dollar: المنفعة الحدية لوحدة النقود

Is the extra utility that the last dollar spent on each product yields

المنفعة الحدية لوحدة النقود هي المنفعة المشتقة من آخر وحدة نقود مصروفة على السلعة وتحسب عن طريق قسمة المنفعة الحدية على سعر السلعة.

$$Marginal\ utility\ per\ dollar\ of\ good\ A = \frac{Margianl\ Utility\ of\ Good\ A}{Price\ of\ Good\ A}$$

Chapter 10

Pure Monopoly

An Introduction to Pure Monopoly

Pure monopoly exists when a single firm is the producer of a product for which there are no close substitutes.

يطلق الاقتصاديون على السوق الذي ينتج ويبيع فيه بائع واحد فقط سوق الاحتكار التام. فالمحتكر هو البائع الوحيد للسلعة في السوق. وتتميز السلعة التي ينتجها المحتكر بعدم وجود بدائل لها.

Main Characteristics of Pure Monopoly السمات الأساسية لسوق الاحتكار

- **Single Seller**: **وجود بائع واحد في السوق**

  A pure monopoly is an industry in which a single firm is the sole producer of a specific good or services; the firm and the industry are synonymous.

- **No Close Substitutes عدم وجود بدائل للسلعة المنتجة**

  Pure monopoly's product is unique in that there are no close substitutes.

  كثيراً من السلع التي يستهلكها البعض لا يوجد بديل أخر لها مثل الكهرباء والهاتف والمياه بسبب عدم وجود منتجين آخرين في السوق.

- **Price Maker القدرة على التحكم في سعر السلعة**

  The pure monopolist controls the total quantities supplied and has considerable control over price; it is a price maker. The pure monopoly has a downward sloping demand curve, it can changes its product price by changing the quantity of the product it produces.

- **Blocked Entry : وجود عوائق تمنع المنتجين آخرين من الدخول إلى السوق**

  Entry is totally blocked in pure monopoly, those barriers may be economic, technological, legal, or of some other type.
  أي أن هناك أسباب قد تتيح المجال أمام المنتج الحالي للسلعة للبقاء في السوق منفرداً. وتعمل هذه الأسباب بطبيعة الحال على منع منتجين آخرين من الدخول إلى السوق لإنتاج السلعة ذاتها.

- **Nonprice Competition:**

The product produced by a pure monopolist may be either standardized or differentiated.

Barriers to Entry (عوائق الدخول) أسباب وجود المحتكر

- **Economic barriers to entry: (Ownership or Control of Essential Resources) السيطرة على الموارد الإنتاجية الأساسية اللازمة لإنتاج السلعة**

ينجم ذلك عن كون المنتج الوحيد الذي يمتلك تلك الموارد الإنتاجية أو يرتبط بعقود طويلة الأجل مع مالكي تلك الموارد. ومن أمثلة ذلك شركة الفوسفات التي تعتبر المنتج الوحيد للفوسفات الخام أو مشتقاته, ذلك أنها هي المالك الوحيد لمناجم الفوسفات في المنطقة أو دولة ما.

- **Legal barriers to entry: الاحتكار القانوني**

ينتج هذا النوع من الاحتكار عن طريق إعطاء الحكومة امتيازات لشركات معينة الإنتاج سلع ذات طبيعة خاصة مثل شركات الكهرباء والمياه والهاتف. وقد تعطي الحكومة امتياز لأحد المنتجين لإنتاج سلعة ليتمتع بحق الاختراع ولو لفترة زمنية محدودة.

- **Technological barriers to entry الاحتكار التكنولوجي**

حيث تتمتع بعض الشركات أو المؤسسات بالقوة الاحتكارية بسبب امتلاكها لرأس المال (الآلات والأجهزة والمعدات) اللازم لإنتاج سلعة من السلع.

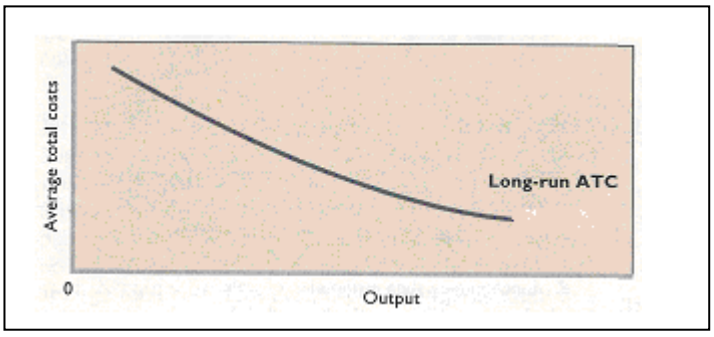
- **Natural barriers to entry (Natural Monopoly) الاحتكار الطبيعي**

يعزى هذا النوع من الاحتكار إلى وجود وفورات كبيرة (economies of scale) جداً مما لا يسمح بوجود أكثر من مؤسسة واحدة في سوق تلك السلعة. وهذا يتيح لتلك المؤسسة إنتاج السلعة بمعدلات تكلفة متدنية لدرجة أن أي منتج جديد يحاول الدخول لإنتاج نفس السلعة تكون معدل تكلفة إنتاجه أعلى من معدل تكلفة المنتج الحالي, مما يقلل من قدرة هذا المنتج الجديد على منافسة المنتج القديم في مجال السعر مما يضطره للخروج من السوق ويبقى المنتج الأصيل وحيداً في السوق.

Economies of Scale : The Natural Monopoly Case.

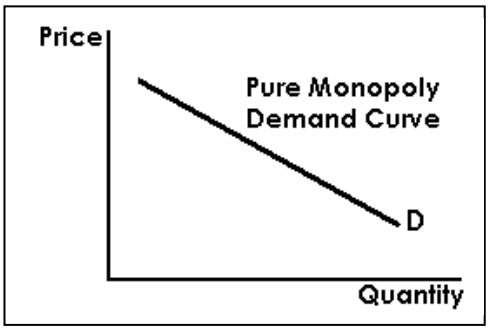
Economies of Scale : A declining long run average total cost curve over a wide range of output quantities.

If a pure monopoly exists in such an industry, economies of scale will serve as an entry barrier and will protect the monopolist from competition. New firms that try to enter the industry as small-scale producers cannot realize the cost economies of the monopolist.



Monopoly Demand منحنى الطلب الذي يواجه المحتكر

The demand curve for the monopolist is quite different from that of the pure competitive. Because the pure monopolist is the industry, its demand curve is the market demand curve. And because market demand is not perfectly elastic, the monopolist's demand curve is downsloping (the quantity demanded increases as price decreases).



Revenue and Costs of a Pure Monopoly

Total Revenue (TR) = P x Q

Average Revenue (AR) = Price (P)

Marginal Revenue = Δ TR / Δ Q

Average Total Cost (ATC) = TC / Q

Marginal Cost = Δ TC / Δ Q

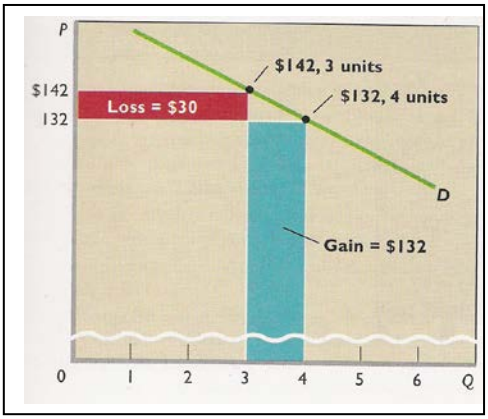
Profit = Total Revenue (TR) – Total Cost (TC).

Revenue Data				Cost Data			
(1) Quantity of Output	(2) Price (Average Revenue)	(3) Total Revenue, (1) × (2)	(4) Marginal Revenue	(5) Average Total Cost	(6) Total Cost, (1) × (5)	(7) Marginal Cost	(8) Profit [+] or Loss [−]
0	$172	$ 0			$ 100		$−100
1	162	162	$162	$190.00	190	$ 90	−28
2	152	304	142	135.00	270	80	+34
3	142	426	122	113.33	340	70	+86
4	132	528	102	100.00	400	60	+128
5	***122***	***610***	***82***	***94.00***	***470***	***70***	***+140***
6	112	672	62	91.67	550	80	+122
7	102	714	42	91.43	640	90	+74
8	92	736	22	93.75	750	110	−14
9	82	738	2	97.78	880	130	−142
10	72	720	−18	103.00	1030	150	−310

Price and Marginal Revenue in Pure Monopoly

With a fixed downsloping demand curve, the pure monopolist can increase sales only by charging a lower price. The marginal revenue is less than price (average revenue) for every unit of output expect the first (MR < P).

A pure monopolist with a downsloping demand curve, must set a lower price in order to sell more output. Here by charging $132 rather than $142, the monopolist sells an extra unit (the fourth unit) and gains $132 from that sale. But from this gain must be subtracted $30, which reflects the $10 less the monopolist charged for each of the first 3 units. Thus, the marginal revenue of the fourth unit is $102, considerably less than its $132 price.

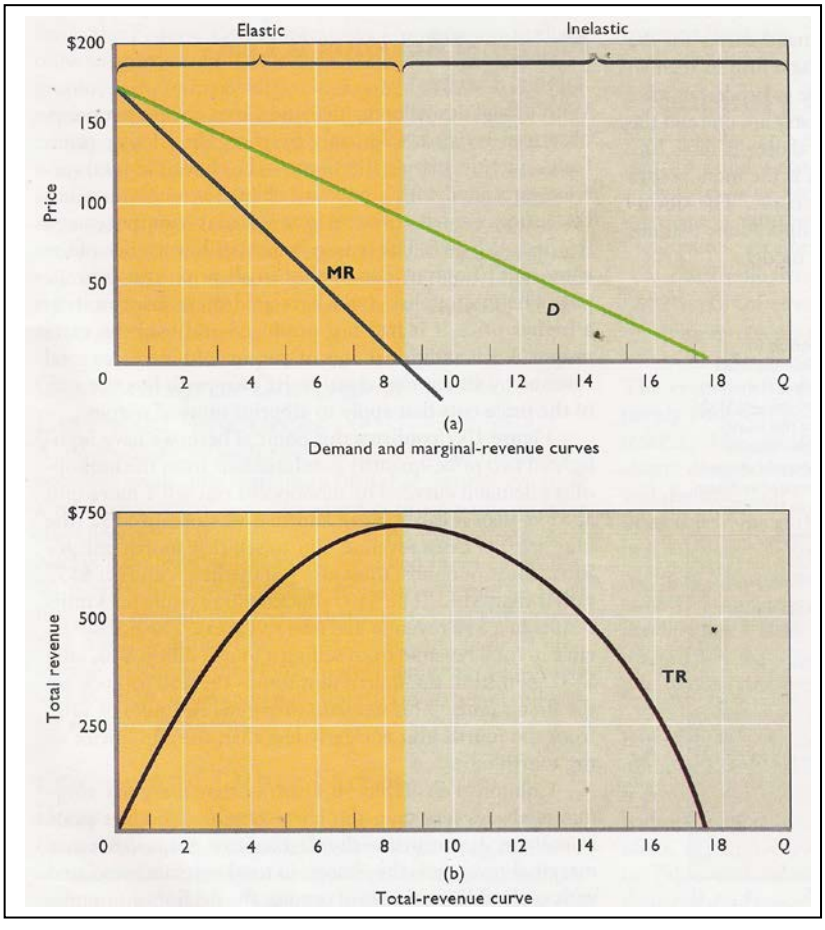


The relationship between the marginal revenue and the demand curve.

- The monopolist's MR curve lies below the demand curve, including that marginal revenue is less than price at every output quantities.

- Total revenue (TR) increases at a decreasing rate, reaches a maximum and then declines.

- In the elastic region, TR is increasing and hence MR is positive. When TR reaches its maximum, MR is zero. In the inelastic region of demand, TR is declining, so MR is negative.



The Monopolist Is a Price Maker

All imperfect competitors, whether pure monopolists, oligopolists, or monopolistic competitors, face downward sloping demand curves. So firms in those industries can to one degree or another influence total supply through their own output decisions. In changing market supply, they can also influence product price. Firms with downward-sloping demand curves are *price makers* . This is most evident in pure monopoly, where one firm controls total output. The monopolist faces a downsloping demand curve in which each amount of output is associated with some unique price.

The Monopolist Set Prices in the Elastic Region of Demand

When demand is elastic, a decline in price will increase total revenue. Similarly, when demand is inelastic, a decline in price will reduce total revenue. The implication is that a monopolist will never choose a price-quantity combination where price reductions cause total revenue to decrease (marginal revenue to be negative). The profit-maximizing monopolist will always want to avoid the inelastic segment of its demand curve in favor of some price-quantity combination in the elastic region.

Output and Price Determination

MR = MC Rule

A monopolist seeking to maximize total profit will produce output at which marginal revenue equal marginal cost (MR = MC).

For example, a comparison of column 4 and 7 in table below indicates that the profit maximization output is 5 units .

What price will the monopolist charge?

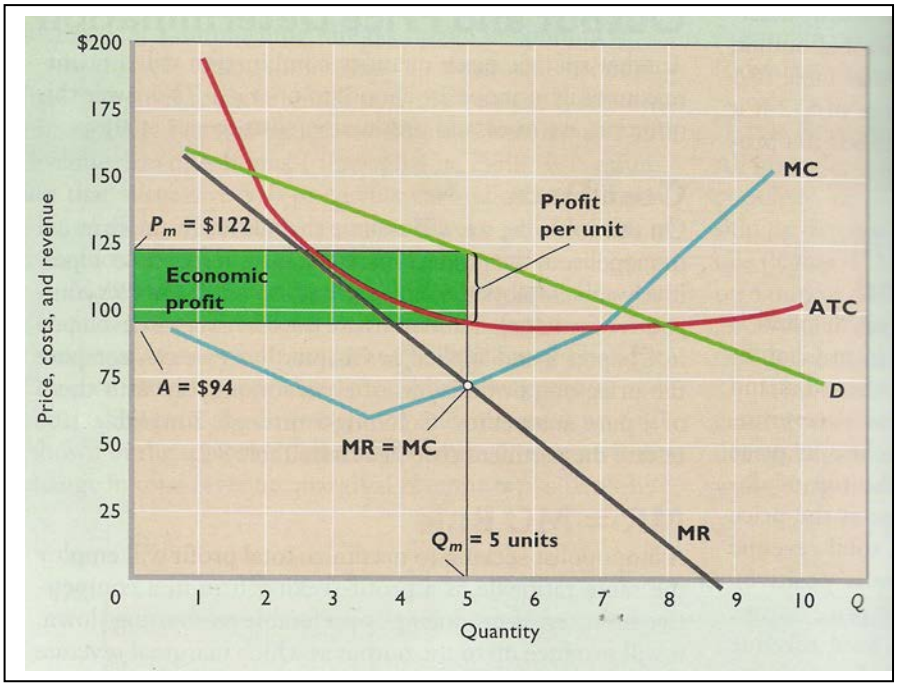
The demand schedule shown as column 1 and 2 in table below indicate there is only one price at which 5 units can be sold (P = $122).

Revenue Data				Cost Data			
(1) Quantity of Output	(2) Price (Average Revenue)	(3) Total Revenue, (1) × (2)	(4) Marginal Revenue	(5) Average Total Cost	(6) Total Cost, (1) × (5)	(7) Marginal Cost	(8) Profit [+] or Loss [−]
0	$172	$ 0			$ 100		$−100
			$162	$190.00		$ 90	
1	162	162			190		−28
			142	135.00		80	
2	152	304			270		+34
			122	113.33		70	
3	142	426			340		+86
			102	100.00		60	
4	132	528			400		+128
			82	***94.00***		***70***	
5	***122***	***610***			***470***		***+140***
			62	91.67		80	
6	112	672			550		+122
			42	91.43		90	
7	102	714			640		+74
			22	93.75		110	
8	92	736			750		−14
			2	97.78		130	
9	82	738			880		−142
			−18	103.00		150	
10	72	720			1030		−310

Profit Maximization by a Pure Monopolist (graphical analysis)

The pure monopolist maximizes profit by producing at the MR = MC output, here Qm = 5 units. Then as seen from the demand curve, it will charge price Pm = $122. Average total cost will be A = $94, meaning that per unit profit is Pm – A and total profit is Q(P – A). total economic profit is thus represented by the green rectangent.

- The MR curve lies below the demand curve in the figure because the gain in revenue from an extra unit of output is less than the price charged for that unit of output.



Example:-

Suppose s pure monopolist is faced with the demand schedule and costs data shown below.

Price	Qd	ATC	MC	TR	MR
40	0	-	-		
38	1	13	-4		
36	2	4	-2		
34	3	1.67	0		
32	4	1	2		
30	5	1.20	4		
28	6	1.34	6		
26	7	1.85	8		
24	8	2.5	10		
22	9	3.23	12		
20	10	4	14		

a. Calculate the missing total revenue (TR) and marginal revenue (MR) amounts.

Price	Qd	ATC	MC	TR	MR
40	0	-	-	0	-
38	1	13	-4	38	38
36	2	4	-2	72	34
34	3	1.67	0	102	30
32	4	1	2	128	26
30	5	1.20	4	150	22
28	6	1.34	6	168	18
26	7	1.85	8	182	14
24	8	2.5	10	192	10
22	9	3.23	12	198	6
20	10	4	14	200	2

b. Determine the profit maximization price and profit earning output for this monopolist.

To maximize profit : MR = MC

Price	Q_d	ATC	MC	TR	MR
40	0	-	-	0	-
38	1	13	-4	38	38
36	2	4	-2	72	34
34	3	1.67	0	102	30
32	4	1	2	128	26
30	5	1.20	4	150	22
28	6	1.34	6	168	18
26	7	1.85	8	182	14
24	8	2.5	**10**	192	**10**
22	9	3.23	12	198	6
20	10	4	14	200	2

To maximize profit the monopolist must produce 10 units of output at a price of $24 per unit.

c. What is the monopolist profit?

Profit = Q (P – ATC) = 10 (24 – 2.5) = 10 x 21.5 = $215

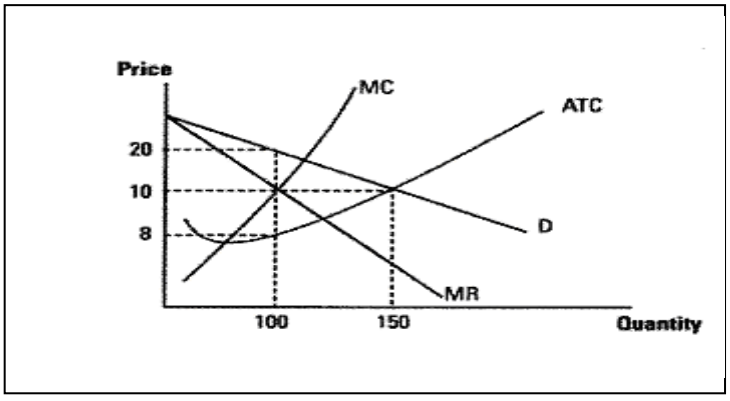
Example:-

Which of the following is true at the output level where P=MC?

(a) The monopolist is maximizing profit.
(b) The monopolist is not maximizing profit and should increase output.
(c) The monopolist is not maximizing profit and should decrease output.
(d) The monopolist is earning a positive profit.

Example:-

The diagram below depicts the situation facing a monopolist. To maximize profits, the monopolist will produce _____ units of output and charge a price of _____. Profits to the firm are equal to _____.



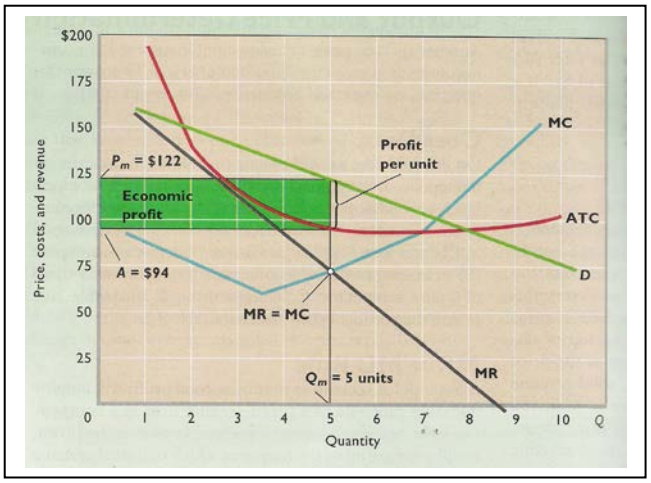
(a) 100, $10, $200
(b) 100, $20, $1200
(c) 100, $20, $2000
(d) 150, $10, $1500
(e) 100, $20, $1500

Monopoly Supply Curve.

The pure monopolist has no supply curve. There is no unique relationship between price and quantity supply for a monopolist. Like the competitive firm, the monopolist equates marginal revenue and marginal cost to determine output, but for the monopolist marginal revenue is less than price. Because the monopolist does not equate marginal cost and price, it is possible for different demand condition to bring about different prices for the same output.

Conclusion: There is no single, unique price associated with each output level that maximize profit, and so there is no supply curve for the pure monopoly.

Misconceptions Concerning Monopoly Pricing



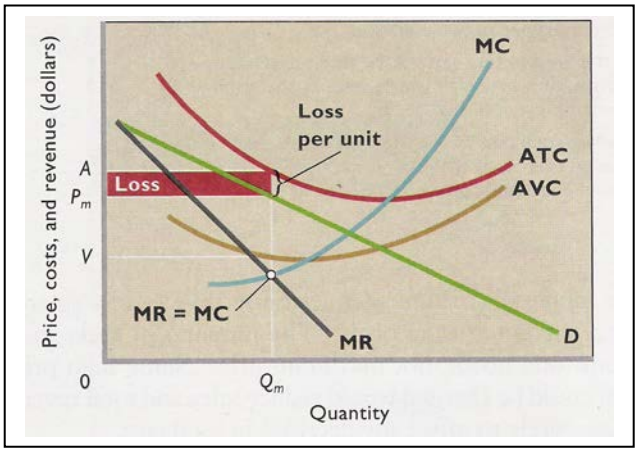
- **Not Highest Price**

Because a monopolist can manipulate output and price, people often believe it " will charge the highest price possible". That is incorrect. There are many prices above Pm in the figure but the monopolist shuns them because they yield a smaller than total maximum profit (the monopolist seek maximize total profit , not maximize price).

- **Total, Not Unit, Profit**

The monopolist seeks maximum total profit, not maximum unit profit. In the figure a careful comparison of the vertical distance between average total cost and price at various possible output indicates that per unit profit is grater at a point slightly to the left of the profit maximization output.

Possibility of Losses by Monopolist



If demand D is weak and costs are high, the pure monopolist may be unable to make a profit. Because P_m exceeds the average variable cost at the MR=MC output Q_m, the monopolist will minimize losses in the short run by producing at that output. The loss per unit is A – P_m, and the total loss is indicated by the rectangle.

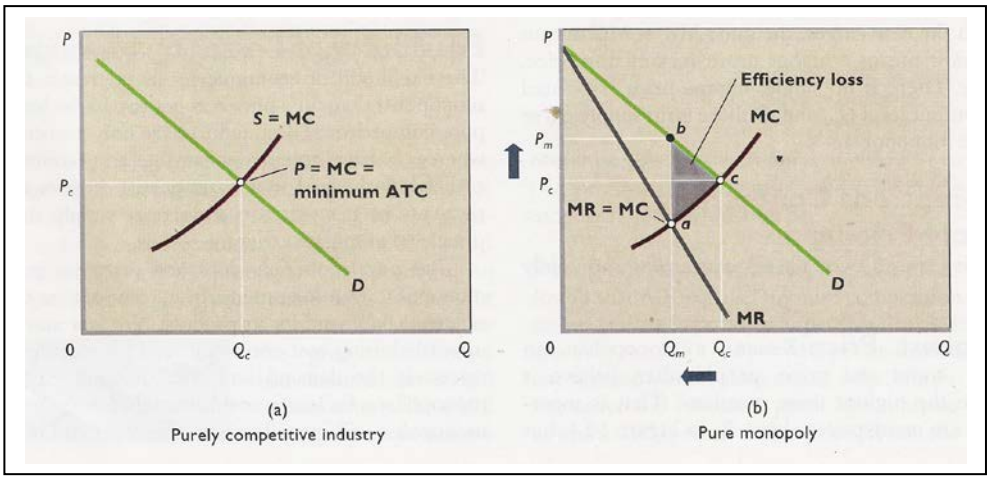
The monopoly suffers a loss, because of weak demand and relatively high costs. Yet it continues to operate for the time being because its total loss is less than its fixed cost. At output Q_m, the monopolist's price Pm exceeds its average variable cost. Its loss per unit is A – P_m, and the total loss is shown by the rectangle.

Economic Effects of Monopoly

Price, Output, and Efficiency

- In a purely competitive industry, entry and exit of firms ensure that price (Pc) equals marginal cost (MC) and that the minimum average total-cost output (Pc) is produced. Both productive efficiency *(P* = minimum ATC) and allocative efficiency *(P* = MC) are obtained.

- In pure monopoly, the MR curve lies below the demand curve. The monopolist maximizes profit at output Qm where MR = MC, and charges price *Pm·* Thus, output is lower *(Qm* rather than Qc) and price is higher *(Pm* rather than Pc) than they would be in a purely competitive industry Monopoly is inefficient, since output is less than that required for achieving minimum ATC (here at Q,) and because the monopolist's price exceeds MC. Monopoly creates an efficiency loss (here of area *ab c).*



- Monopolist yield neither productive nor allocative efficiency. The monopolist's output is less than Qc, the output at which average total cost is lower. And price is higher than the competitive price Pc, which in the long run equilibrium in pure competition equals minimum average total cost. Thus the monopoly price exceeds minimum average total cost.

- Monopoly creates an efficient loss (or deadweight loss) for society. The sum of consumer surplus and producer surplus is not maximized. In monopoly, then:

  - P exceeds MC
  - P exceeds lowest ATC
  - An efficient loss (deadweight loss) occurs (the sum of consumer surplus + producer surplus is less than maximum).

Income Transfer

Monopoly transfers income from consumers to the stockholders who own the monopoly. Because of their market power, monopolist charge a higher price than would a purely competitive firm with the same costs. So monopolists in effect levy a " private tax" on consumers and often obtain substantial economic profit.

Cost Complications

A purely monopolistic industry will charge a higher price, produce a smaller output, and allocate economic resources less efficiently than a purely competitive industry. These inferior results are rooted in the entry barriers characterizing monopoly. The unit cost incurred by a monopolist may be either larger or smaller than that incurred by a purely competitive firm.

Price Discrimination

The monopolist charges a single price to all buyers. But under certain conditions the monopolist can increase its profit by charging different prices to different buyers. In so doing, the monopolist is engaging **in price discrimination,** the practice of selling a specific product at more than one price when the price differences are not justified by cost differences. Price discrimination can take three forms:

- Charging each customer in a single market the maximum price she or he is willing to pay.

- Charging each customer one price for the first set of units purchased and a lower price for subsequent units purchased.

- Charging some customers one price and other customers another price.

Conditions

Price discrimination is possible when the following conditions are met:

Monopoly power: The seller must be a monopolist or, at least, must possess some degree of monopoly power. that is, some ability to control output and price.
Market segregation: At relatively low cost to itself, the seller must be able to segregate buyers into distinct classes, each of which has a different willingness or ability to pay for the product. This separation of buyers is usually based on different price elasticities of demand.

No resale: The original purchaser cannot resell the product or service. If buyers in the low-price segment of the market could easily resell in the high-price segment, the monopolist's price discrimination strategy would create competition in the high-price segment. This competition would reduce the price in the high-price segment and undermine the monopolist's price-discrimination policy. This condition suggests that service industries such as the transportation industry or legal and medical services, where resale is impossible, are good candidates for price discrimination.

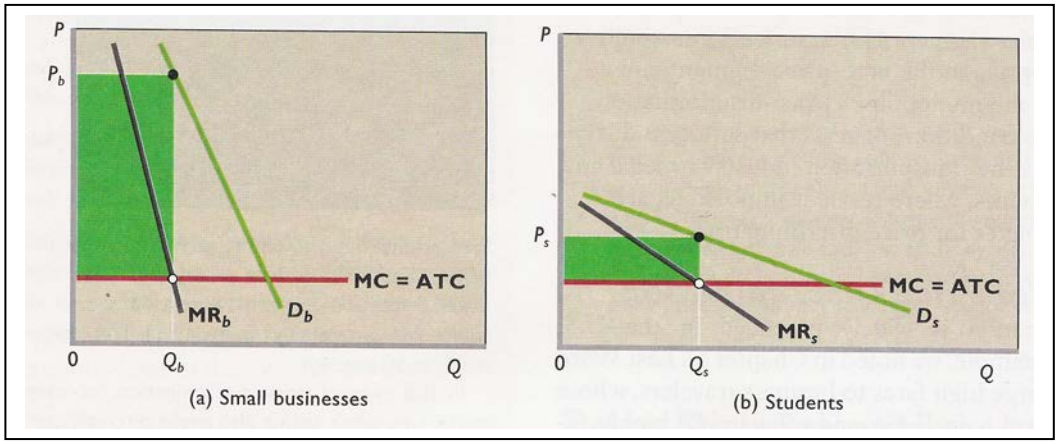
Examples of Price Discrimination

- Airlines charge high fares to business travelers, whose demand for travel is inelastic, and offer lower, highly restricted, nonrefundable fares to attract vacationers and others whose demands are more elastic.

- Electric utilities frequently segment their markets by end uses, such as lighting and heating. The absence of reasonable lighting substitutes means that the demand for electricity for illumination is inelastic and that the price per kilowatt-hour for such use is high. But the availability of natural gas and petroleum for heating makes the demand for electricity for this purpose less inelastic and the price lower.

Graphical Analysis

The price-discriminating monopolist represented here maximizes its total profit by dividing the market into two segments based on differences in elasticity of demand. It then produces and sells the MR = MC output in each market segment. (For visual clarity, average total cost (ATC) is assumed to be constant. Therefore MC equals ATC at all output levels.) (a) The firm charges a higher price (here, P_b) to customers who have a less elastic demand curve and (b) a lower price (here, P_s) to customers with a more elastic demand. The price discriminator's total profit is larger than it would be with no discrimination and therefore a single price.



Example:

Suppose that a price-discriminating monopolist has segregated its market into two groups of buyers, the first group described by the demand and revenue data that you developed for question 5. The demand and revenue data for the second group of buyers is shown in the accompanying table. Assume that MC is $13 in both markets and MC = ATC at all output levels. What price will the firm charge in each market? Based solely on these two prices, what can you conclude about the relative elasticities of demand in the two markets? What will be this monopolist's total economic profit?

Market 1:

Price	Quantity	Total Revenue	Marginal Revenue
115	0	0	-
100	1	100	100
83	2	166	66
71	3	213	47
63	4	252	39
55	5	275	23
48	**6**	**288**	**13**
42	7	294	6
37	8	296	2
33	9	297	1

Market 2:

Price	Quantity	Total Revenue	Marginal Revenue
71	0	0	-
63	1	63	63
55	2	110	47
48	3	144	34
42	4	168	24
37	5	185	17
33	**6**	**198**	**13**
29	7	203	5

a. What price will the firm charge in each market?

For market 1:

The monopolist maximize profit when MR = MC

MC = MR when Q = 6 and the price equal $48

For market 2:

The monopolist maximize profit when MR = MC

MC = MR when Q = 6 and the price equal $33

b. Based solely on these two prices, what can you conclude about the relative elasticities of demand in the two markets?

In market 1: as price decrease from 48 to 42, total revenue increase from 288 to 294 ➔ demand elastic.

In market 2: as price decrease from 33 to 29, total revenue decrease from 13 to 5 ➔ demand inelastic.

c. What will be this monopolist's total economic profit?

Profit (market 1) = Q (P – ATC) = 6 (48 – 13) = 6 x 35 = $210
Profit (market 2) = Q (P – ATC) = 6 (33 – 13) = 6 x 20 = $120
Total profit = $210 + 120 = $330

Chapter 11

Monopolistic Competition and Oligopoly

Monopolistic Competition سوق المنافسة الاحتكارية

يعتبر سوق المنافسة الاحتكارية مزيجاً من سوق المنافسة الكاملة وسوق الاحتكار التام. ويأخذ هذا السوق معظم خصائص سوق المنافسة التامة, إلا أن المنتج يحتفظ ببعض القوة الاحتكارية عن طريق تمييز سلعته. وبالتالي فإن أهم خاصية من خصائص سوق المنافسة التي يتصف بها هذا السوق هو افتراض وجود عدد كبير من المنتجين ينتجون سلعاً متشابهة وليس سلع متجانسة.

The Characteristics of Monopolistic Competition خصائص سوق المنافسة الاحتكارية

- **Relatively Larger Number of Sellers**

Monopolistic competition is characterized by a fairly large number of firms, say, 25, 35, 60, or 70, not by the hundreds or thousands of firms in pure competition.

وجود عدد كبير من المنتجين الذين ينتجون السلعة: ونذكر هنا بأننا نتحدث عن عدد معين من المنتجين وإنما كل ما نعنيه بالعدد الكبير من المنتجين أن كل واحد منهم ينتج حصة صغيرة بالنسبة للإنتاج الكلي من هذه السلعة. ومما يجدر ذكره أيضاً أن عدد المنتجين في سوق المنافسة الاحتكارية أقل في العادة من عددهم في سوق المنافسة الكاملة. إن هذه الخاصية لا تعطي المنتج فرصة كبيرة للتأثير في السوق، وبالتالي فإن قدرته الاحتكارية محدودة.

Monopolistic competition involves:

- **Small market shares**: each firm has a comparatively small percentage of the total market and has limited control over market price.

كل منتج في سوق المنافسة الاحتكارية ينتج حصة صغيرة بالنسبة للإنتاج الكلي من هذه السلعة، كما أن قدرة المنتج على التحكم في سعر السلعة محدودة.

- **No collusion**: the presence of a relatively large number of firms ensures that collusion by a group of firms restrict output and set prices is unlikely.

إنّ وجود عدد كبير نسبياً مِنْ المنتجين يَضْمنُ بأنّ التواطؤ مِن قِبل مجموعة من المنتجين بتُحدّيد أسعارَ والكمية المنتجة غير محتملُ.

- **Independent action** : with numerous firms in an industry, there is no felling of interdependence among them, each firm can determine its own pricing policy without considering the possible reactions of rival firms. A single firm may realize a modest increase in sales by cutting its price, put the effect of that action on competitors' sales will be nearly imperceptible and will probably trigger no response.

إن وجود شركاتٍ عديدةٍ في سوق المنافسة الاحتكاريةِ، ليس هناك ضرورة إلى وجود تفاعل بينهم، كُلّ شركة يُمْكِنُ أَنْ تُقرّرَ سياسةَ تسعيرها الخاصةَ بدون اعتبار ردودِ الأفعال المحتملةِ للشركاتِ المنافسةِ. أي شركة قَدْ تُدركُ زيادة بسيطة في المبيعاتِ من خلال تقليل سعرِها، فإن تأثيرَ ذلك العملِ على مبيعاتِ المنافسين سَيَكُونُ لا تأثير له تقريباً ولن يُسبّبَ أي رَدِّ فعل.

- **Differentiated Products: السلعة المنتجة في السوق متشابهة ولكنها ليست متجانسة**

Monopolistically competitive firms turn out variations of a particular product. They produce products with slightly different physical characteristics. Monopolistic competition firms differentiate product in product attributes, services, location, and the brand names or packaging.

السلعة المنتجة في السوق متشابهة ولكنها ليست متجانسة تماماً. فإن المنتج يحاول أن يميز سلعته عن تلك السلع المنتجة من قبل المنتجين الآخرين. فالسلع المنتجة إذن بدائل جيدة وقريبة من بعضها ولكنها ليست بدائل تامة. ويميز المنتجون عادة سلعتهم عن السلع الأخرى إما باللون أو الرائحة أو التغليف أو الماركة التجارية أو حتى أحياناً في الدعاية والإعلان.

- Monopolistic competitors do have some control over their product prices because of product differentiation.

- **Easy Entry and Exit: سهولة الدخول والخروج من السوق**

Entry into monopolistically competitive industries is relatively easy compared to oligopoly or pure monopoly. Because monopolistic competitors are typically small firms, both absolutely and relatively, economies of scale are few and capital requirements are low.

Exit from monopolistically competitive industries is relatively easy. Nothing prevents an unprofitable monopolistic competitor from holding a going-out-of-business sale and shutting down.

من خصائص سوق المنافسة الاحتكارية سهولة الدخول والخروج من السوق. فلا يوجد عوائق لدخول أي مستثمر جديد لإنتاج السلعة إذا رأى أن إنتاجها يمكن أن يحقق له أرباحاً. وبطبيعة الحال فإنه لا يوجد أي مانع لخروج أحد المنتجين الحاليين من السوق إذا كان يتحمل خسارة من إنتاج هذه السلعة.

- **Nonprice Competition:**

Is to make price less of a factor in consumer purchases and make product differences a greater factor. If successful, the firm's demand curve will shift to the right and will be less elastic.

The Firm's Demand Curve منحنى الطلب في سوق المنافسة الاحتكارية

The demand curve faced by a monopolistically competitive seller is highly, but not perfectly, elastic. It is precisely this feature that distinguishes monopolistic competition from pure monopoly and pure competition. The monopolistic competitor's demand is more elastic than the demand faced by a pure monopolist because the monopolistically competitive seller has many competitors producing closely substitutable goods. The pure monopolist has no rivals at all.

For two reasons, the monopolistic competitor's demand is not perfectly elastic like that of the pure competitor. **First**, the monopolistic competitor has fewer rivals; **second**, its products are differentiated, so they are not perfect substitutes.

إن إحدى خصائص سوق المنافسة الاحتكارية الهامة أن السلعة المنتجة من قبل المنتجين متشابهة ولكنها غير متجانسة, أي أنها بدائل قريبة ولكنها غير تامة لبعضها البعض. إن ذلك يعني أن للمنتج قوة احتكارية, ولو أنها ضعيفة للتحكم في السوق. وعلى هذا فإنه يمكننا القول بأن منحنى الطلب الذي يواجه المنتج في سوق المنافسة الاحتكارية هو منحنى ينحدر من أعلى إلى أسفل ولكنه عالي المرونة أي انه غير أفقي تماماً ولكنه قريب من كونه أفقياً بسبب وجود البدائل القريبة للسلعة.

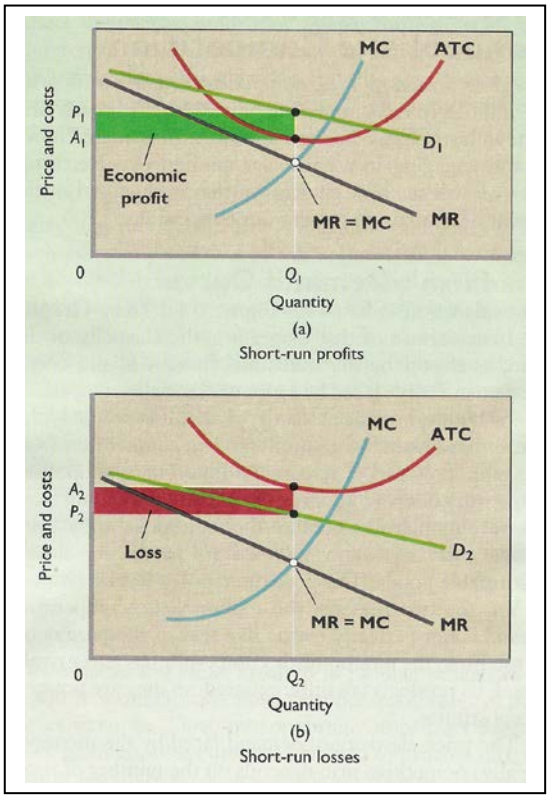
The price elasticity of demand faced by the monopolistically competitive firm depends on the number of rivals (عدد المنافسين) and the degree of product differentiation. The larger the number of rivals and the weaker the product differentiation, the greater the price elasticity of each seller's demand, that is, the closer monopolistic competition will be to pure competition.

The Short Run: Profit or Loss

The monopolistically competitive firm maximizes its profit or minimizes by producing the output at which marginal revenue equals marginal cost (MR= MC).

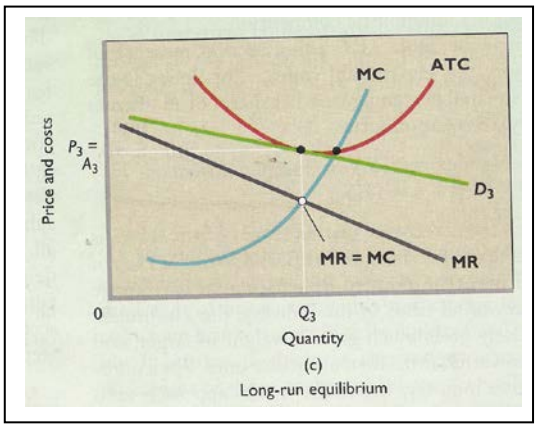
The monopolistic competitor maximizes profit or minimizes loss by producing the output at which MR = MC. **In figure (a)** the firm produces output Q1, where MR=MC. As shown by demand curve D1, it then can charge price P1. It realizes an economic profit, shown by the area (Q1 x (P1 – A1).

In figure (b), the firm may incur a loss in the short run. The firm producing output level Q2 where (MR=MC) and, as determined by demand curve D2, by charging price P2. Because price P2 is less than average total cost A2, the firm incurs a per unit loss of A2 – P2 and a total loss represented as the area (Q2 x (P2 – A2).



The Long Run : Only a Normal Profit.

In the long run, firms will enter a profitable monopolistically competitive industry and leave an unprofitable one. So a monopolistic competitor will earn only a normal profit in the long run or, in other words, will only break even. (Remember that the cost curves include both explicit and implicit costs, including a normal profit.)



Profits: Firms Enter

In the case of short-run profit, economic profits attract new rivals because entry to the industry is relatively easy. As new firms enter, the demand curve faced by the typical firm shifts to the left (falls). Why? Because each firm has a smaller share of total demand and now faces a larger number of close-substitute products. This decline in the firm's demand reduces its economic profit. When entry of new firms has reduced demand to the extent that the demand curve is tangent to the average-total-cost curve at the profit-maximizing output, the firm is just making a normal profit.

Losses: Firms Leave

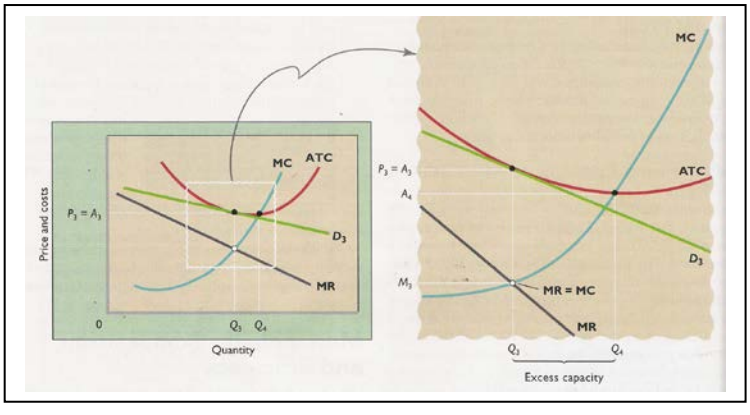
When the industry suffers short-run losses, some firms will exit in the long run. Faced with fewer substitute products and blessed with an expanded share of total demand, the surviving firms will see their demand curves shift to the right (rise), as to D3. Their losses will disappear and give way to normal profits (Figure c).

Monopolistic Competition and Efficiency

We know from Chapter 9 that economic efficiency requires the triple equality P = MC = minimum ATC. The equality of price and minimum average total cost yields *productive efficiency*. The good is being produced in the least costly way, and the price is just sufficient to cover average total cost, including a normal profit. The equality of price and marginal cost yields *allocative efficiency*. The right amount of output is being produced, and thus the right amount of society's scarce resources is being devoted to this specific use.

The inefficiency of monopolistic competition.

In long-run equilibrium a monopolistic competitor achieves neither productive nor allocative efficiency. Productive efficiency is not realized because production occurs where the average total *cost A3* exceeds the minimum average total cost A_4. Allocative efficiency is not achieved because the product price *P3* exceeds the marginal cost M_3. The result is an underallocation of resources and excess production capacity of Q4 - Q3.



Oligopoly احتكار القلة /

Oligopoly, a market dominated by a few large producers of a homogeneous or differentiated product. Because of their "fewness," oligopolists have considerable control over their prices, but each must consider the possible reaction of rivals to its own pricing, output, and advertising decisions.

يتميز سوق احتكار القلة بوجود عدد محدود من المنتجين يبيعون سلعة متجانسة أو متشابهة ويحاول كل منتج تمييز سلعته عن قليل سلع المنتجين الآخرين.

The Characteristics of Oligopoly خصائص سوق احتكار القلة

- **A few large Producers. وجود عدد قليل من المنتجين**

من خصائص سوق احتكار القلة وجود عدد قليل من المنتجين, فلا يمكننا أن نعطي عدداً معيناً لهذا العدد القليل (ثلاثة, خمسة, أو غيرها) حيث لا يوجد اتفاق بين الاقتصاديين على هذا العدد. ولكن معظم هؤلاء الاقتصاديين متفقون على انه إذا كانت حصة أكبر أربعة منتجين في الصناعة تزيد عن 50% من الإنتاج الكلي للصناعة فإنه بإمكان وصف هذه الصناعة أنها تقع ضمن احتكار القلة. وتسمى نسبة إنتاج اكبر أربع مؤسسات من إنتاج الكلى في السوق " نسبة التركيز" " Concentration Ratio".

- **Homogeneous or Differentiated Products السلعة المنتجة في السوق قد تكون متجانسة وقد تكون متشابهة**

An oligopoly may be either a homogeneous oligopoly or a differentiated oligopoly, depending on whether the firms in the oligopoly produce standardized (homogeneous) or differentiated products. Many industrial products (steel, zinc, copper, aluminum, lead, cement, industrial alcohol) are virtually standardized products that are produced in oligopolies. Alternatively, many consumer goods industries (automobiles, tires, household appliances, electronics equipment, breakfast cereals, cigarettes, and many sporting goods) are differentiated oligopolies. These differentiated oligopolies typically engage in considerable nonprice competition supported by heavy advertising.

السلعة المنتجة في سوق احتكار القلة قد تكون متجانسة وقد تكون متشابهة. وحتى إذا كانت السلعة متجانسة, فإن كل واحد من المنتجين يحاول أن يميز سلعته عن السلع المنتجة من قبل منتجين الآخرين. فقد يميز المنتج سلعته عن طريق اللون او الطعم أو الرائحة أو التغليف أو تقديم خدمات للمستهلكين إضافة للدعاية والإعلان, وهذا ما يسمى بالمنافسة غير السعرية (Non-price competition) .

- **Control over Price, but Mutual Interdependence.**

Because firms are few in oligopolistic industries, each firm is a "price maker"; like the monopolist, it can set its price and output levels to maximize its profit. But unlike the monopolist, which has no rivals, the oligopolist must consider how its rivals (منافسين) will react to any change in its price, output, product characteristics, or advertising.

Oligopoly is thus characterized by *strategic behavior* and *mutual interdependence.* By **strategic behavior**, we simply mean self-interested behavior that takes into account the reactions of others (كل منتج يحسب حساب المنتجين الآخرين في اتخاذ قراراته وردود أفعاله على قراراتهم). Firms develop and implement price, quality, location, service, and advertising strategies to "grow their business" and expand their profits. But because rivals are few, there is **mutual interdependence**: a situation in which each firm's profit depends not entirely on its own price and sales strategies but also on those of the other firms. So oligopolistic firms base their decisions on how they think rivals will react.

- **Entry Barriers وجود عوائق لدخول السوق**

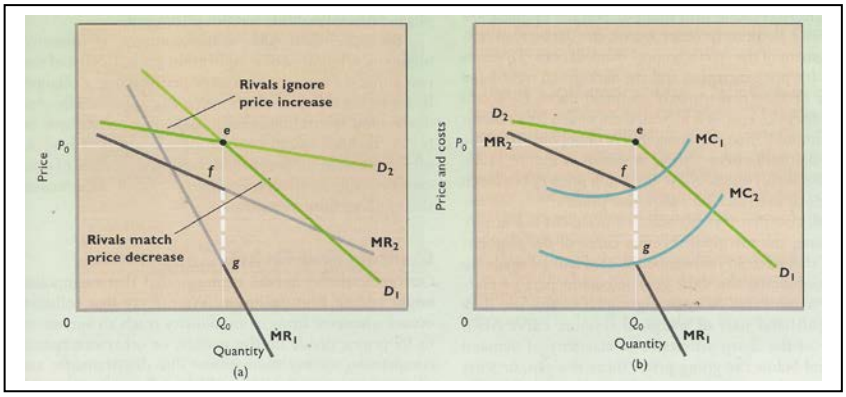
The same barriers to entry that create pure monopoly also contribute to the creation of oligopoly. Economies of scale are important entry barriers in a number of oligopolistic industries, such as the aircraft, rubber, and copper industries. In those industries, three or four firms might each have sufficient sales to achieve economies of scale, but new firms would have such a small market share that they could not do so. They would then be high-cost producers, and as such they could not survive.

يعزى قلة عدد المنتجين في سوق احتكار القلة إلى وجود عوائق لدخول منتجين إلى الصناعة, ولكن هذه العوائق أقل بالتأكيد من تلك العوائق الموجودة في سوق الاحتكار التام. ولعل أهم تلك العوائق هي العوائق الطبيعية (وفورات الحجم) والتي تتمثل في وصول المنتجين الحاليين إلى الإنتاج بمستويات متدنية من متوسطات التكلفة الأمر الذي يجعل منافسة منتجين جدد في مجال السعر أمراً ضعيفاً نظراً الارتفاع تكلفة إنتاجهم النسبية.

- **Mergers الاندماج**

Some oligopolies have emerged mainly through the growth of the dominant firms in a given industry (examples: breakfast cereals, chewing gum, candy bars). But for other industries the route to oligopoly has been through mergers. The merging, or combining, of two or more competing firms may substantially increase their market share, and this in turn may allow the new firm to achieve greater economies of scale.

Kinked-Demand Theory: Noncollusive Oligopoly نظرية الطلب المنكسر



The kinked-demand curve. (a) The slope of a noncollusive oligopolist's demand and marginal-revenue curves depends on whether its rivals match (straight lines D1 and MR1) or ignore (straight lines D_2 and MR_2) any price changes that it may initiate from the current price P_0. (b) In all likelihood an oligopolist's rivals will ignore a price increase but follow a price cut. This causes the oligopolist's demand curve to be kinked *(D_2eD1,)* and the marginal-revenue curve to have a vertical break, or gap *(fg)*. Because any shift in marginal costs between MC1 and MC_2 will cut the vertical (dashed) segment of the marginal-revenue curve, no change in either price P_0 or output Q_0 will result from such a shift.

يفترض هذا النموذج أن المنتجين الآخرين في السوق لن يقوموا برفع أسعارهم إذا أقدم احدهم على رفع سعر سلعته, أما إذا خفض هذا المنتج سعر سلعته فإن المنافسين الآخرين في السوق سيحذون حذوه ويخفضون أسعارهم. وعلى ضوء هذا الافتراض فقد اقترح النموذج أن منحنى الطلب الذي يواجه أحد المنتجين في سوق احتكار القلة يتكون من جزئيين وبصورة منكسرة كما في الشكل المجاور وتسمى النقطة (e) نقطة الانكسار.

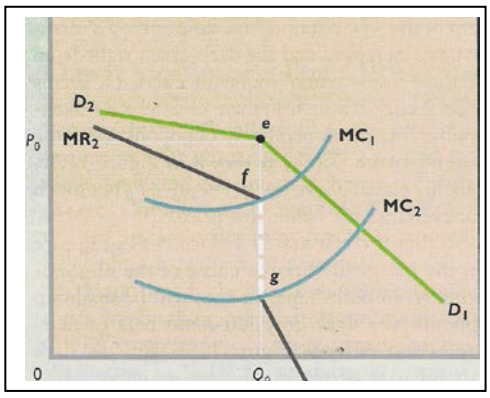
نلاحظ أن الجزء من منحنى الطلب الذي يقع أعلى نقطة الانكسار أكثر مرونة من ذلك الجزء الذي يقع أسفل تلك النقطة, وذلك بسبب الافتراض الذي أفترضه النموذج حول سلوك بقية المنتجين في السوق عندما يغير أحد المنتجين من سعره. إن الافتراض القائل بأن أحد من المنتجين الآخرين لن يتبع ارتفاع السعر, يعني أن المنتج الذي يرفع سعر سلعته سيخسر عدداً من زبائنه ويقلل الكميات المطلوبة من سلعته بنسبة كبيرة, الأمر الذي يعني بأن مرونة الطلب على سلعة هذا المنتج ستكون عالية. أما الافتراض القائل بأن جميع المنتجين الآخرين سيخفضون سعر سلعتهم إذا أقدم أحدهم على خفض سعر سلعته، فإن ذلك سيؤدي إلى احتفاظ كل منهم بمعظم زبائنه مما يجعل الكميات المطلوبة من كل واحد منهم لا تتأثر كثيراً، الأمر الذي يعني بأن الطلب الذي يواجه المنتج هو طلب قليل المرونة.

Price Inflexibility (Price Rigidity) ظاهرة جمود الأسعار في سوق احتكار القلة

This analysis helps explain why prices are generally stable in noncollusive oligopolistic industries. There are both demand and cost reasons.

On the demand side, the kinked-demand curve gives each oligopolist reason to believe that any change in price will be for the worse. If it raises its price, many of its customers will desert it. If it lowers its price, its sales at best will increase very modestly since rivals will match the lower price. Even if a price cut increases the oligopolist's total revenue somewhat, its costs may increase by a greater amount, depending on demand elasticity. For instance, if its demand is inelastic to the right of *Q0,* as it may well be, then the firm's profit will surely fall. A price decrease in the inelastic region lowers the firm's total revenue, and the production of a larger output increases its total costs.

On the cost side, the broken marginal-revenue curve suggests that even if an oligopolist's costs change substantially, the firm may have no reason to change its price. In particular, all positions of the marginal-cost curve between MC_1 and MC_2 will result in the firm's deciding on exactly the same price and output. For all those positions, MR equals MC at output *Q0;* at that output, it will charge price *P0.*



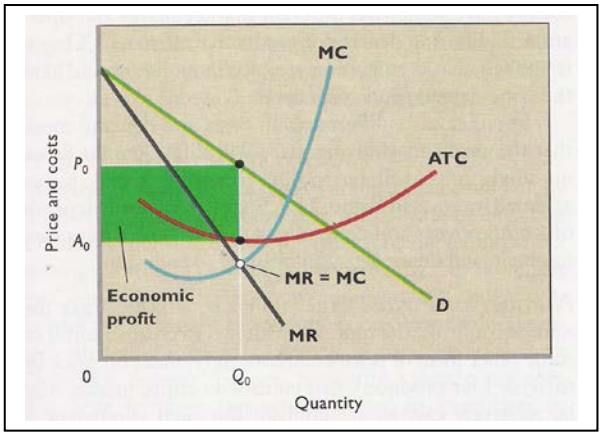
تتصف الأسعار في سوق احتكار القلة بالجمود (ثبات الأسعار). أن شكل منحنى الطلب المنكسر وبالتالي الفجوة العمودية الموجودة في منحنى الإيراد الحدي (MR) تفسران هذا الثبات في الأسعار. ويمكننا ملاحظة ذلك من خلال الشكل المجاور، حيث نفترض تذبذب مستويات التكلفة ممثلة بالتكلفة الحدية من MC1 إلى MC2 نجد أن نقطة التوازن (profit maximization point) في الحالتين تقع ضمن الفجوة العمودية, الأمر الذي ينتج عنه ثبات الأسعار على مستوى P0 إضافة لثبات الكمية على مستوى Q0.

نلاحظ أن تغير السعر يمكن ان يحدث إذا تساوى MR و MC خارج الفجوة العمودية fg. فإذا انخفضت MC أقل من النقطة g فإن ذلك سيؤدي لانخفاض السعر وزيادة الكمية المنتجة. أما إذا ارتفعت MC إلى مستوى أعلى من النقطة f فإن ذلك سيؤدي لزيادة السعر وانخفاض الكمية المنتجة.

Cartels and Other Collusion

Cartels agree on production limits and set a common price to maximize the joint profit pf their members as if each were a unit of a single pure monopoly.

If oligopolistic firms face identical or highly similar demand and cost condition, they may collude to limit their joint output and to set a single, common price. Thus each firm acts as if it were a pure monopolist, setting output at Q0 and charging price P0. this price and output combination maximizes each oligoplist's profit and thus the combined or joint profit of both.



- Collusion among oligopolies is difficult because of

demand and cost differences among sellers, the complexity of output coordination among producers, the potential for cheating, a tendency for agreements to break down during recessions, the potential entry of new firms , and antitrust laws.

Price Leadership Model

Price leadership involves an informal understanding among oligopolists to match any price change initiated by a designated firm (often the industry's dominant firm).

Price leadership entails a type of implicit understanding by which oligopolists can coordinate prices without engaging outright collusion based on formal agreements and secret meetings. Rather, a practice evolves whereby the "dominant firm" initiates price changes and all other firms more or less automatically follow the leader. Many industries, including farm machinery, cement, copper, newsprint, glass containers, steel, beer, fertilizer, cigarettes, and tin, are practicing, or have in the recent past practiced, price leadership.