BIRZEIT UNIVERSITY

Microeconomics Principles

Econ132

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Chapter 1

Limits, Alternatives, 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.

- 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.

- 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.

  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.

Choice الاختيار

إن ندرة عناصر الإنتاج تعني أننا لا نستطيع إنتاج كل ما نرغب فيه من سلع وبالتالي تجبرنا على الاختيار بين البدائل الممكنة. وبالذات فإن 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 (happiness).

- Purposeful behavior means that people make decisions with some desired outcome in mind.

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:

- Economists usually comparisons of marginal benefits (MB) and marginal costs (MC) 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

Example: You should decide to go to a movie (فلم سينمائي).
(a) Because movies are inherently (بطبيعتها) good products.
(b) If the marginal benefit of the movie exceeds its marginal cost.
(c) If the marginal cost of the movie exceeds its marginal benefit.
(d) If your income will allows you to buy a ticket.

Theories, Principles, and Models
Scientific Method طرق 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. Formulating a possible explanation of cause and effect (hypothesis). وضع الفرضيات 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. 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)

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.

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)*

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.

Examples

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. Why do engineers earn more than librarians? (Normative question)
5. We should buy Palestinian goods and boycott (مقاطعة) Israeli product. *(normative Statement)*

6. A rise in the price of petrol will lead to an increase in the demand for rail transport. *(Positive Statement)*

7. Unemployment is more harmful than inflation *(Normative Statement)*

8. A rise in the price of petrol will lead to an increase in the demand for rail transport. *(Positive Statement)*

9. As a general rule, people are happier in more equal societies. *(Normative Statement)*

10. The government can reduce obesity by offering a subsidy to low income families when they buy fresh vegetables in the supermarket. *(Positive Statement)*

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 finite (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.

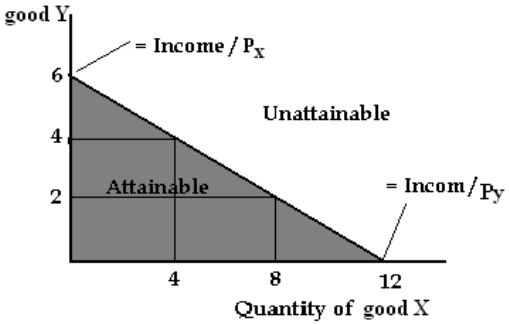
Budget Line (Budget Constraint): Shows all the combinations of any two products that can be purchased, given the prices of the products and the money income.

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 (خارج خط 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 slope of the budget line= P_x / P_y.*



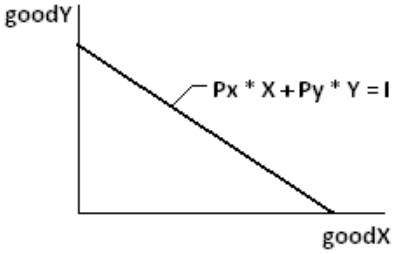
The Budget Line combinations of good X and good Y attainable with an income of $120 are:

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

Budget line equation

Px * X + Py * Y = I

Where: Px = price of good X
Py = the price of good Y
I = consumer income



Trade-Offs and Opportunity Costs:

The budget line in figure above illustrates the idea of trade-offs arising from limited income. To obtain more DVDs, you have to give up (يتخلى عن) some books. For example, to obtain the first DVD, you trade off 2 books. So the opportunity cost of the first DVD is 2 books.
Opportunity cost = slope of the budget line at each point.

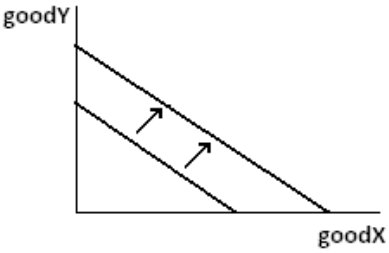
Slope of the budget line = ΔY/ ΔX

Because the straight line has the same slope at each point ➔ opportunity cost constant

- Limited income forces people to choose what to buy and what to forgo to fulfill wants.

Income Changes:-

- An increase in money income shifts the budget line to the right.
- A decrease in money income shifts the budget line to the left.



Increase in the consumer income

Society's Economizing Problem المشكلة الاقتصادية على المستوى القومي

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

Economic resources:- all natural, human, and manufactured resources that go into the production of goods and services.

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

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.

Resource Categories

Economists classify economic resources into four general categories.

1. **Land**

To the economist land includes at: 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.

Land payment: Rent يسمى الدخل المتأتي الأصحاب الأرض الريع أو الإيجار

2. **Labor** (العمل)

The resource labor consists of the physical an mental talents of individuals used in producing goods and services.

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

Labor payment: wage

3. **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.

4. **Entrepreneurial Ability** الإدارة والتنظيم

Entrepreneurial Ability is the human resource

يعرف الريادي بأنه ذلك الشخص الذي يقوم بمزج الموارد الإنتاجية الثلاثة السابقة الإنتاج السلع حتى يبيعها للمستهلكين متأملاً الربح. الريادي هو صاحب الفكرة الإنتاجية, فهو المسؤول عن تنظيم الإنتاج وإدارته.

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

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).

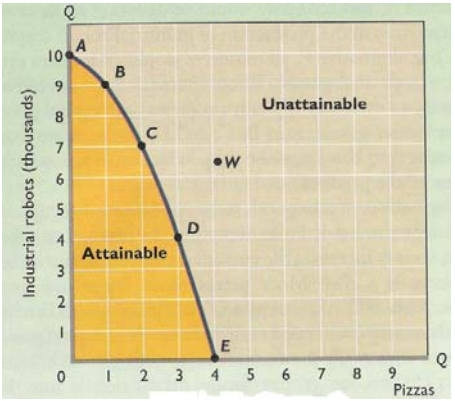
2. Fixed resources*:* The quantity and quality of the factors of production are fixed.
أن كمية ونوعية الموارد الإنتاجية المتوفرة لدى المجتمع ثابتة.

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.

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

$$Opportunity\ cost\ of\ one\ more\ unit\ of\ Pizza = \frac{\Delta\ in\ industrial\ robots}{\Delta\ in\ pizzas}$$

$$Opportunity\ cost\ of\ one\ more\ units\ of\ robots = \frac{\Delta\ in\ pizzas}{\Delta\ in\ industrial\ robots}$$

Law of Increasing Opportunity Costs:

When we move from A to B, just 1 unit of industrial robots is sacrificed for 1 more unit of pizzas; but in going from B to C we sacrifice 2 additional units of industrial robots for 1 more unit of pizzas; then 3 more of industrial robots for 1 more of pizzas.

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

Pizzas	Robots	Opportunity cost of one more unit of Pizza
0	10	–
1	9	-1
2	7	-2
3	4	-3
4	0	-4

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?

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

Answer:

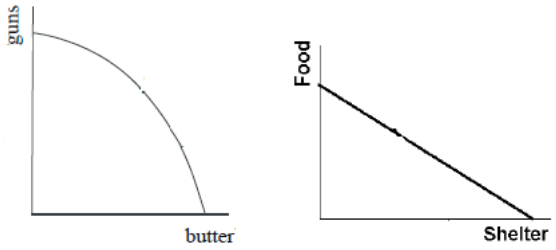
When we move from A to B, just 1 unit of compact disks is sacrificed for 1 more unit of bottles of water; but in going from B to C we sacrifice 2 additional units of CD for 1 more unit of bottles of water; then 3 more of CD for 1 more of bottles of water.

⇨ the law of increasing opportunity cost hold here

Shape of the curve

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.



reflects the law of increasing opportunity cost.

reflects the law of constant opportunity cost

Example

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

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

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

2. 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.

3. What is the total opportunity cost of 7 units of robots?

From the table , at point C the economy produce 2 units of Pizzas and 7 units of robots using all available resources, then the total opportunity cost of 7 units of robots is 2 units of Pizza.

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 cost of one more unit of food?

At C, 8 units of food and 14 units of clothing are being produced. By moving to alternative D, 4 additional units of food are produced at the cost of 6 units of clothing. Each of the next 4 units of food costs 6/4 = 1.5 units of clothing.

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

At C, 8 units of food and 14 units of clothing are being produced. By moving to alternative D, 4 additional units of food are produced at the cost of (14 – 8) = 6 units of clothing.

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

Moving from alternative C to alternative B, the economy gains 4 units of clothing at a cost of 4 units of food. The opportunity cost of the next 1 unit of clothing is then 4/4 = 1 unit of food.

e. *Is this economy subject to the law of increasing opportunity costs? How can you tell?*

Yes—Starting at alternative A, each successive increase in food production requires a larger and larger reduction in clothing. Specifically, the opportunity cost of each successive four units of food cost 2 (=20–18), 4 (=18–14), 6 (=14–8), and 8 (=8–0) units of clothing.

f. *Suppose the economy is currently producing 4 units of food and 16 units of clothing. Is this economy producing efficiently?*
No—by producing efficiently, the table suggests that the economy can produce 4 units of clothing and 18 units of food (alternative B). This is 2 more clothing than is currently being produced, suggesting the economy is inefficient.

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

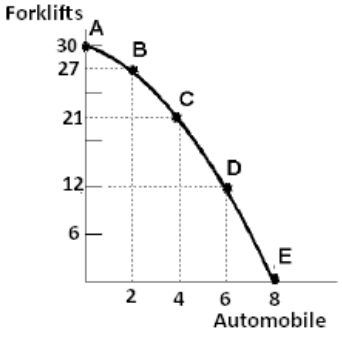
- 12 = $\frac{(\ X-28\ )}{(\ 3-2)}$ ⇨ X – 28 = - 12 ⇨ X = 28 – 12 = 16 tons of butter

Example

Below is a production possibilities table for consumer goods “automobiles” and capital goods “fork lifts”

Type of product	**Production Alternative**				
	A	**B**	**C**	**D**	**E**
automobiles	**0**	**2**	**4**	**6**	**8**
fork lifts	**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 الرافعات ب عدد متزايد (ميل المنحنى متزايد).

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

   O.C = ΔF/ΔA = (12 – 21)/ (6 - 4) = - 9 /2 = - 4.5

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

   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 9 units of fork lifts.

   O.C = 27 – 21 = 9

4. *If the economy at point E, what is the opportunity cost of one more fork lifts?*

   O.C = ΔA/ΔF = (6 – 8)/ (12 - 0) = - 2 /12 = - 1/6

5. *If the economy at point A, what is the opportunity cost of 6 units of automobile?*

   The economy must move from point A to point D.

   O.C = ΔF/ΔA = (12 – 30)/ (6 - 0) = - 18 /6 = - 3

6. *If the economy producing 3 automobile and 20 forklifts. Is the economy use of its all available recourses to produce it? Explain*

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

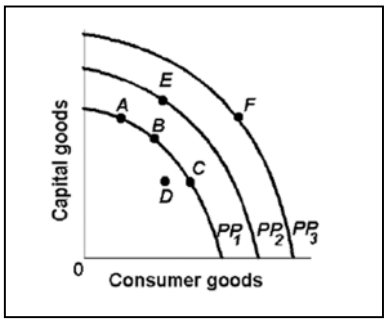
7. *What would production at point outside the production possibilities curve indicate? What must occur before the economy can attain such a level of production?*

   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

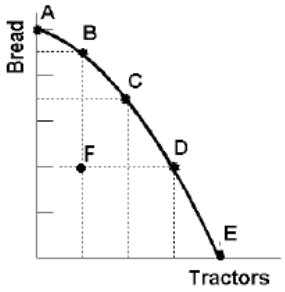
Based on the following production possibilities curve answer the following question:



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 Con *PP1*.**
c. Move from *D* inside *PPl* to *Bon PPl.*
d. Shift of the production possibilities curve from *PPl* to *PP2.*

Optimal Allocation



أين ننتج على منحنى إمكانيات الإنتاج؟

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).

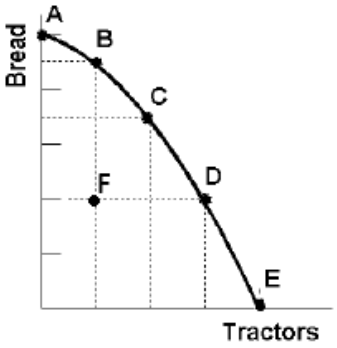
Productive Efficiency

The production of any particular good in the least costly way.

- *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.

Economic Efficiency = Productive Efficiency + Allocative efficiency

Optimal Allocation

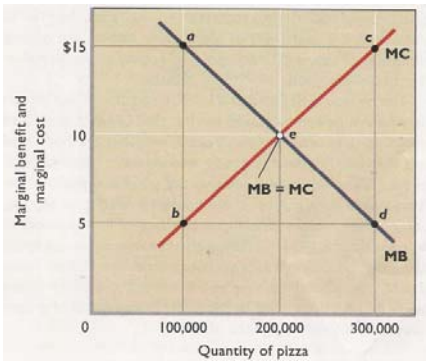
Economic decisions center on comparisons of marginal benefit (MB) and marginal cost (MC).

Any economic activity should be expanded as long as marginal benefit exceeds marginal cost and should be reduced if marginal cost exceeds marginal benefit. .

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)

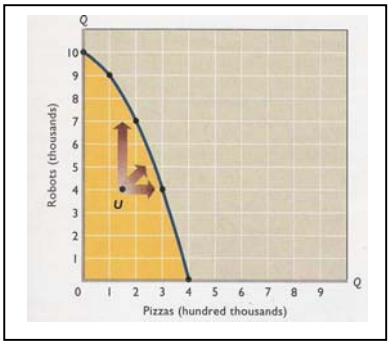


The optimal quantity of pizza production is indicated by point ***e*** at the intersection of the MB and MC curves: 200,000 units of Pizzas.

The production of 30,000 units of Pizzas is excessive. There the MC of an added unit is $15 and its MB is only $5. This means that 1 unit of pizza is worth only $5 but costs it $15 to obtain. This is a losing proposition for society.

Unemployment, Growth, and the Future

Unemployment of Resources



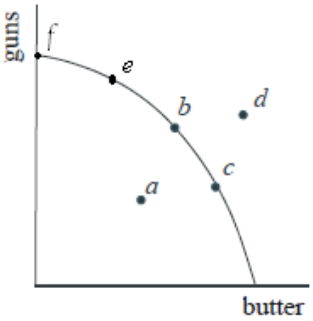
عدم التوظيف الكامل لعناصر الإنتاج يحث عندما تكون بعض عناصر الإنتاج غير مستغلة, أو غير مستغلة بصورة كاملة. وهذا يعني أن أي نقطة داخل منحنى إمكانيات الإنتاج تمثل عدم التوظيف الكامل لعناصر الإنتاج.

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?



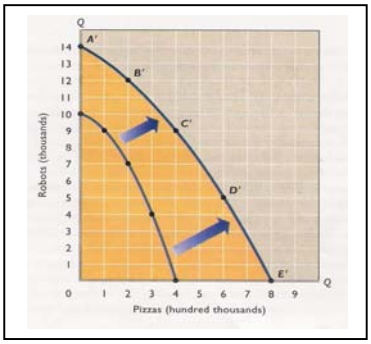
Point a: unemployment point and producing inefficiently.
(لا يوجد هناك استغلال كامل لعناصر الانتاج (جزء من عناصر الانتاج معطل

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



Increases in Resource Supplies:- زيادة كمية 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).

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 (land, labor, capital, and entrepreneurial ability), move the production possibilities curve inward and to the left, allowing the economy to have smaller quantities of both types of goods (Economic Contraction (انكماش اقتصادي).

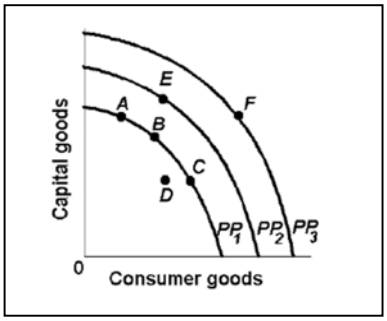
Advances in Technology تطور التكنولوجيا التي يستخدمها المجتمع

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.

Example

Based on the following production possibilities curve answer the following question:

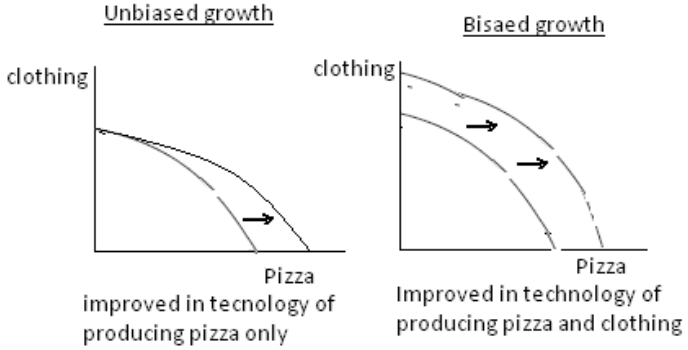


Refer to the above diagram. The concept of economic growth is best represented by the:

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.

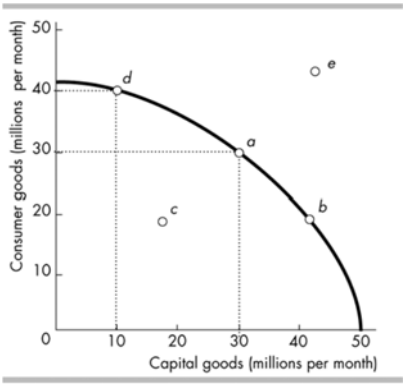
Biased Growth and Unbiased Growth: - النمو المتوازن وغير المتوازن

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.



Study 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 six points on the production possibilities frontier for chocolate bars and cans of cola.

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. 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 chocolate bars	Production cans of cola
A	0	100
B	10	90
C	20	70
D	30	40
E	40	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 # 3:
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

BIRZEIT UNIVERSITY
Macroeconomics Principles
Econ132

1st Semester 2013/2014 أ. محمد عامرية

Chapter 2

The Market System and the Circular Flow

Economic Systems: النظم الاقتصادية

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

- 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.

  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 kind of economics systems: the command system and the market system

The Command System النظام الاشتراك

The command system is also known as socialism or communism.

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.

- In that system, government owns most property resources and economic decision making occurs through central economic plan.

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

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 مريحة. وكذلك يتم حل المشاكل الاقتصادية المختلفة في النظام الرأسمالي من خلال نظام السوق باستخدام آلية السعر.

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 علي 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 التى يهتم بها علم الاقتصاد

- **What goods and services will be produced?** ما هي السلع والخدمات التي ينتجها المجتمع

  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.

  على الاقتصاد القومي أو المجتمع أن يختار السلع والخدمات التي يجب أن ينتجها وفقاً لموارده الإنتاجية المتاحة. يُنتجُ نظامُ السوقَ 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.

- Economic profit (TR > TC) indicates that an industry is prosperous and promotes its expansion (انتعاش إقتصادي). Losses signify that an industry is not prosperous and hasten its contraction ((ركود.

- **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 economy will produced in combinations and ways that minimize the cost per unit of output.

  Least cost production 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, and the price of the needed resources.

  ما هو الأسلوب الأمثل لإنتاج السلع والخدمات؟ 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

  Any product will be distributed to consumers on the basis of their ability and willingness to pay its existing market price.

  على من يتم توزيع السلع والخدمات التي تم إنتاجها ؟ هذا وقد اختلفت المدارس الفكرية في كيفية الرد على هذه الأسئلة. وفي الغالب يتم تحديد كيفية توزيع السلع والخدمات بين أفراد المجتمع بناءاً على قدرة الفرد على شراء تلك السلعة.

- **How will the system accommodate change?** ما مدى الكفاءة التي تستخدم بها الموارد الاقتصادية

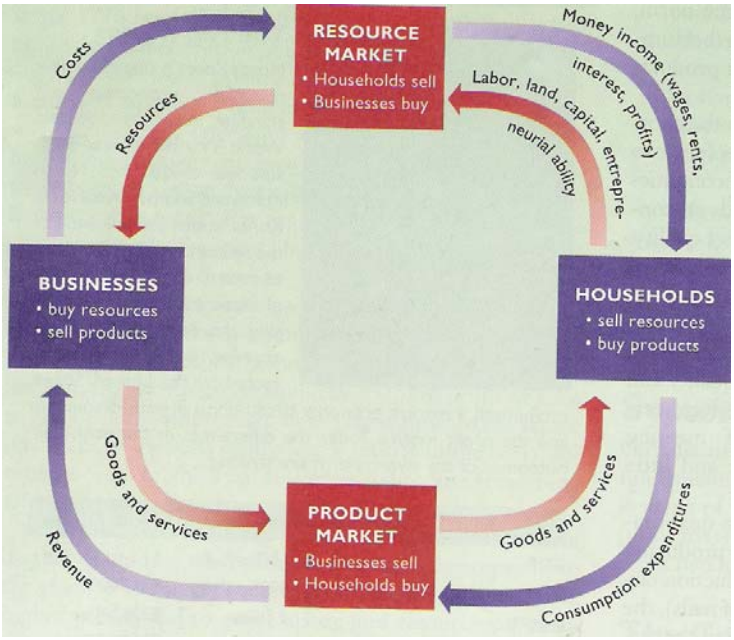
  Market system is dynamic: consumer's preferences, technology, and supplies of resources all change. This means that the particular allocation of resources that is now the most efficient for a specific pattern of consumer taste, and amount of available resources will become obsolete and inefficient as consumer preferences change.

- **How will the system promote progress?** هل الطاقة الاقتصادية تنمو بصورة مطردة مع الزمن أم أنها تظل ثابتة

  The market system encourages technological advance and capital accumulation, both of which raise output (economic growth) and higher standards of living (grater income per person).

The Circular Flow "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).



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.

- 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.

Chapter 3

Demand, Supply, and Market Equilibrium

Market

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 is familiar markets.

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 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 ↑ ⇨ Q_d ↓ ; P ↓ ⇨ Q_d ↑

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

Demand schedule

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**.**

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.

Individual Demand الطلب الفردي

Is the quantity demand by single buyer at each price level.

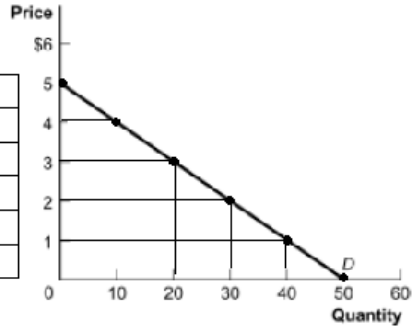
نعني بالطلب الفردي الطلب على مستوى الفرد الواحد (مستهلك واحد أو وحدة استهلاكية مثل أسرة من الأسر). ويبين الطلب الفردي العلاقة بين الكمية المطلوبة من سلعة ما من قبل احد المستهلكين وسعر هذه السلعة, مع بقاء العوامل الأخرى المؤثرة في الطلب ثابتة.

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.

Product price	Quantity Demanded
$1	40
$2	30
$3	20
$4	10
$5	0



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 (1)

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(2)

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**

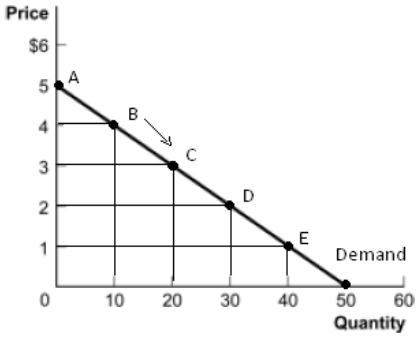
Change in Quantity Demanded

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 $4to $3 will increase the quantity of corn demanded from 10 to 20 bushels. Movement from point **B** to point **C** on the demand curve represents a change in quantity demanded.



Example (1)

A barber (حلاق) raises the price of haircuts and finds that the volume of business declines. This indicates:

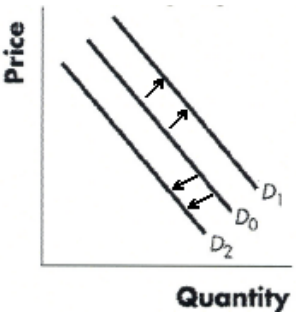
(a) a decrease in demand
(b) an increase in demand
(c) a decrease in quantity demanded
(d) an increase in quantity demanded

Example (2)

The quantity of a good demanded tends to increase as its price falls because:

(a) a decrease in price shifts the demand curve to the right
(b) a decrease in price shifts the demand curve to the left
(c) at lower prices, suppliers are willing to supply a greater quantity to the market
(d) a decrease in price leads consumers to substitute toward this now relatively cheaper product

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 يتغير على نفس السعرها.

- A change in one or more of the determinants of demand will change the demand curve
- *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 D0 to D1.

- 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 D0 to D2.

Example

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 quantity supplied
(b) increase in demand
(c) increase in supply
(d) decrease in demand
(e) increase in quantity demanded

Determinants of demand (demand shifters)

1. **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.

2. **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

3. **Income** دخل المستهلك

(a) Normal goods (Superior goods)

Goods whose demand varies directly with money income are called normal goods or "superior goods".
Money Income ↑ ⇨ demand ↑ ⇨ shift demand curve to the right.
Money 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.
Money Income ↑ ⇨ demand ↓ ⇨ shift demand curve to the left.
Money Income ↓ ⇨ demand ↑ ⇨ shift demand curve to the right.

Examples for normal goods:
Used Furniture, Used Clothing

4. 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

Example (1)
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) increase in the price of chickens
(c) decrease in the price of chickens
(d) increase in the price of meat
(e) decrease in the price of meat

- Chickens are normal goods ⇨ consumers' incomes ↑ lead to increase demand for chickens (shift to the right).

- Chickens and meat are substitute's means that decrease in the price of meat ⇨ consumer buy more meat and less chickens ⇨ decrease demand for chickens ⇨ shift demand for chickens to the left.

- Increase in the price of chickens and decrease in the price of chickens does not shift demand for chickens, this leads to decrease or increase in quantity of chickens (change in the quantity demanded).

Example (2)

Which of the following events would *increase a student's demand for Falafel*?

(a) a decrease in the price of Falafel
(b) an increase in the price of Falafel
(c) a decrease in the price of Hamburgers (Falafel and Hamburgers are substitutes)
(d) a decrease in the price of Coca-Cola (Falafel and Coca-Cola are complements)
(e) An increase in student monthly allowance (مصرف شهري) that the student receives from his family (Falafel is an inferior good).

5. 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 العنيف) *creates an expectation of higher future prices of Tomato, this lead to increasing today's demand for Tomato.*

Example (3)

Which of the following will cause the demand curve for product A to shift to the left?

(a) Population growth which causes an expansion in the number of persons consuming good A
(b) An increase in income if good A is a normal good
(c) A decrease in the price of complementary good C
(d) An increase in income if good A is an inferior good
(e) An increase in the price of substitute good B

Supply العرض السلعة

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.

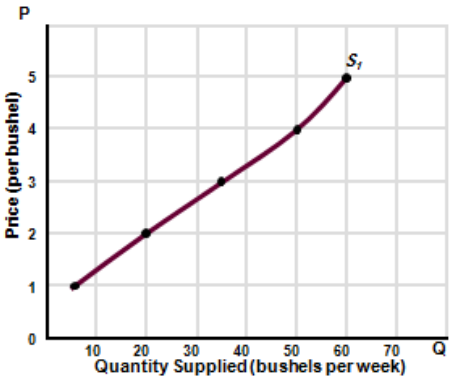
The supply curve

- **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 s per we
$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.

- The market supply curve is the horizontal summation of the individual supply curves of all the consumers in the market.

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 buyers, each with a quantity supply as shown in the table below. What is the market supply schedule.

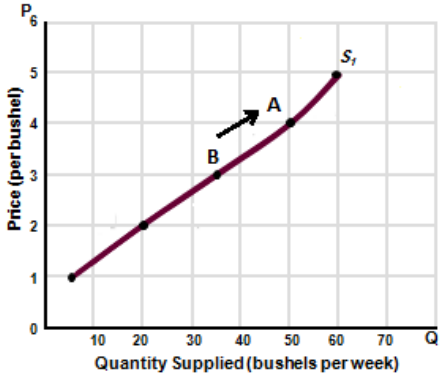
Price per Bushel	Quantity Supplied per Week	Market supply (Qs * # of producers)
$5	60	60 * 200 = **12,000**
4	50	50 * 200 = **10,000**
3	35	35 * 200 = **7,000**
2	20	20 * 200 = **4,000**
1	5	5 * 200 = **1,000**

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.

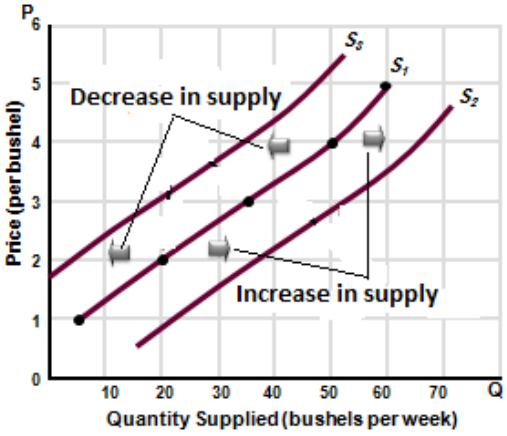
For example, an increase in the price of corn from $3 to $4, increase the quantity of corn supplied from 35,000 to 50,000. *Movement from point A to B on the fixed supply curve.*



Determinants of Supply (Supply Shifters) العوامل المؤثرة في العرض

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.



Supply Shifters

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.

Examples:
A decrease in the price of microchips increase 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 على مستوى الإنتاج 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.

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

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) causing 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.

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

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

- The equilibrium price equals $3, and the equilibrium quantity equal 7000 bushels of corn.
- 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.

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

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

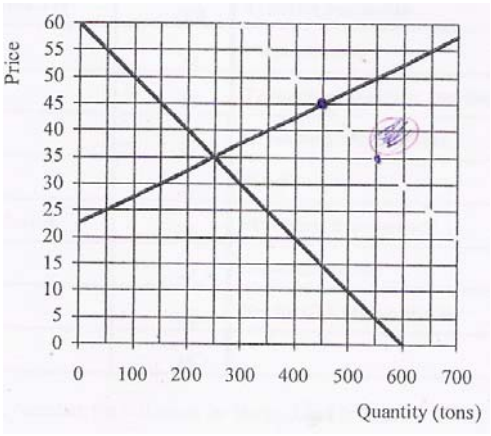
b. When government sets the price of a meat at $28, will there be a shortage or surplus? By what amount?

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 (2)

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(تقاطع) of the supply curve and the demand curve.

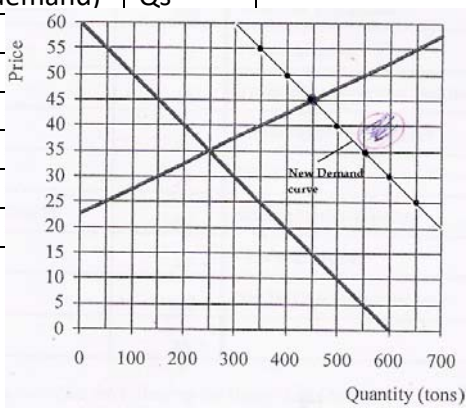
Equilibrium price : $35

Equilibrium quantity: 250 tons

b. Suppose the government purchased 300 tons of cheese (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	Qd	Qd'(new demand)	Qs
25	350	350 + 300	
30	300	300 + 300	
35	250	250 + 300	
40	200	200 + 300	
45	150	150 + 300	
50	100	100 + 300	



Equilibrium price : $45
Equilibrium quantity: 450 tons

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

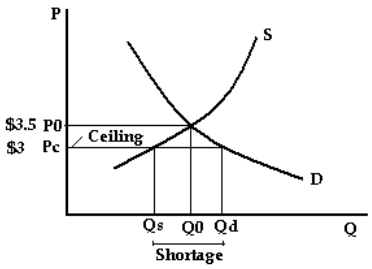
- A price ceiling sets the maximum legal price a seller may charge for a product or services.

- 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.

Graphical Analysis:-

- 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 Qd and Qs.

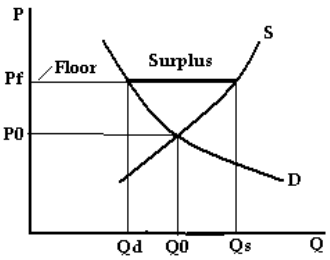


أن نتيجة فرض سقف سعري تكون الكمية المعروضة أقل من الكمية المطلوبة, مما يشير إلى وجود عجز في سوق تلك السلعة. أي أن الحكومة حاولت حل مشكلة ارتفاع السعر, ولكن ذلك على حساب مشكلة العجز الذي ظهر في السوق. ويمكن للحكومة أن تتبع عدة أساليب للتخلص من مشكلة العجز هذه, ومن بين هذه الأساليب أن تقوم الحكومة بتوفير 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.

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.



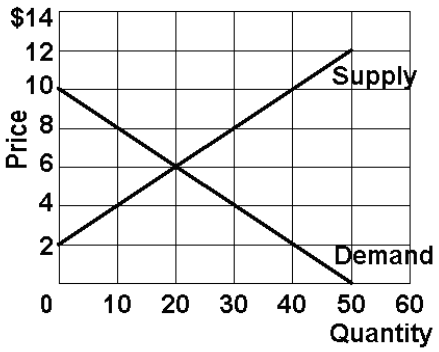
ممكن أن تتدخل الحكومة لحماية المنتجين. وعندما تدخل الحكومة في هذا المجال فإنها تفرض عادة سعراً أعلى من سعر التوازن يسمى أرضية سعريه, وهو أدنى سعر قانوني يسمح أن تباع وتشترى به تلك السلعة.

- 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.

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

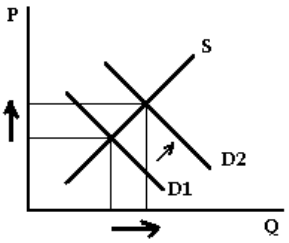
Surplus = Qs – Qd = 30 – 10 = 20 tons

Change in Supply, Demand, and Equilibrium:-

- **Changes in Demand**

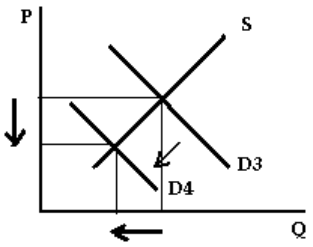
- **Increase in Demand**

The increase in demand from D1 to D2, *increase both equilibrium price and equilibrium quantity (P↑ ; Q↑)*



- **Decrease in Demand**

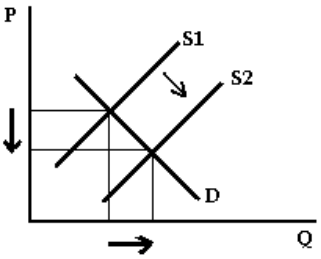
The decrease in demand from D3 to D4, *decrease both equilibrium price and equilibrium quantity (P↓ ; Q↓)*



- **Changes in Supply**

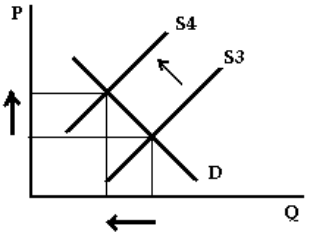
- **Increase in Supply**

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↓)*



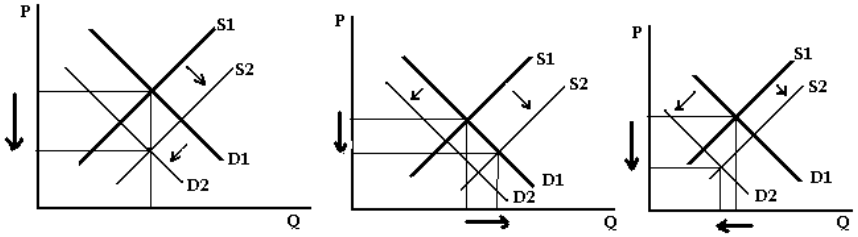
- **Supply Increase; Demand Decrease**

Supply increase ⇨ decrease price

} net effect is a price decrease

Demand decrease ⇨ decrease price

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



Effects of changes in both supply and demand

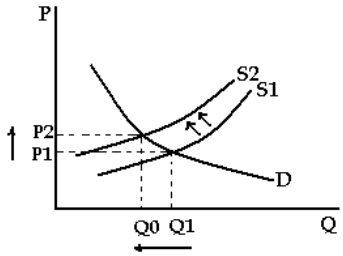
Change in Supply	Change in Demand	Effect on Equilibrium Price	Effect on Equilibrium Quantity
Increase	Decrease	Decrease	Uncertain
Decrease	Increase	Increase	Uncertain
Increase	Increase	Uncertain (Indeterminate)	Increase
Decrease	Decrease	Uncertain	Decrease

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.

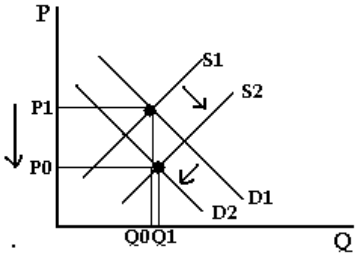
a. Price of milk increases.

- 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



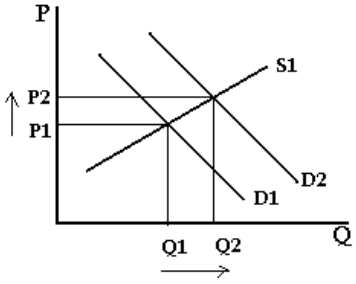
b. National income decrease and, at the same time, the number of sellers of local cheese has increased.

- National income decrease : cheese is a normal goods ⇨ decrease income leads to <u>decrease demand</u>
- The number of sellers of local cheese has increased ⇨ <u>increased supply</u>
- 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 ⇨ <u>increase the demand for cheese</u> .
- Supply curve for cheese : No change
- price: increase
- quantity: increase

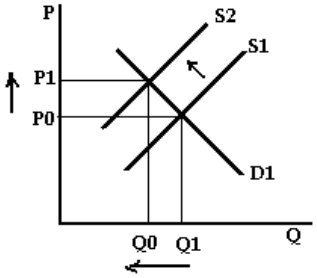


<u>Example</u>

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

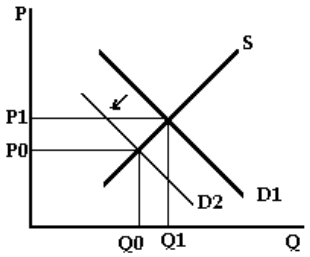
a. Government increase sales taxes on tea.

- Increase sales taxes ⇨ decrease supply of tea
- The demand for tea : no change.
- The price of tea : increase
- The quantity of tea : decrease



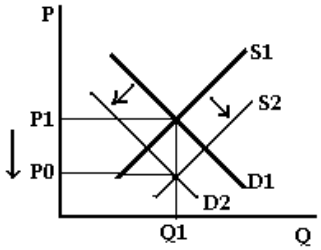
b. Price of coffee decrease considerably (بشكل كبير).

- 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



Study 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:

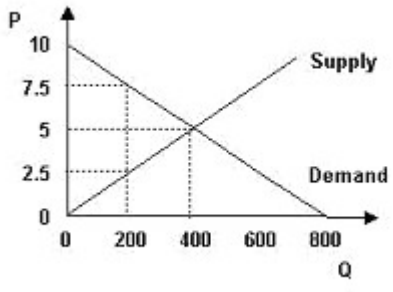
Suppose that an mp3 player is normal goods, mp3 players and CDs are complements, and mp3 players and satellite radio are substitutes. For each of the following cases, show what happens to demand, supply, equilibrium price, and equilibrium quantity of mp3 player.

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
a. 2	2	3	4	54
b. 4	4	6	8	48
c. 6	6	9	12	42
d. 8	8	12	16	36
e. 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 23

An Interdiction to Macroeconomics

As you know from Chapter 1, macroeconomics studies the behavior of the economy as a whole. It is primarily concerned with two topics:

- long-run economic growth
- And the short-run fluctuations in output and employment

Performance and Policy

In order to understand how economies operate and how their performance might be improved, economists collect and analyze economic data.

macroeconomists tend to focus just a few statistics these are *real DP, unemployment, and inflation*.

Real GDP, or Real Gross Domestic Product :- الناتج الإجمالي المحلي

measures the value of final goods and services produced within the borders of a given country (حدود الدولة) during a given period of time, typically a year.

- This statistic is very useful because it can tell us whether economy's output is growing. For instance, if the Palestine's real GDP in 2007 is larger than the Palestine's real GDP in 2006, then we know that Palestine output increased from 2006 to 2007.

Unemployment البطالة

is the state a person is in if he or she cannot get a job despite being willing to work and actively seeking work. High rates of unemployment are undesirable because they indicate that a nation is not using a large fraction of its most important resource

Inflation التضخم

- is an increase in the overall level of prices.

As an example, consider all the goods and services bought by a typical family over the course of one year. If the economy is experiencing inflation, it will cost the family more money to buy those goods and services this year than it cost to buy them last year.

☒ Policy makers attempt to maximize growth while minimizing unemployment and inflation .

Modern Economic Growth :-

- Economic growth : increase in total output (GDP) of goods and services.

- Modern economic growth focus on rises output per person (total output / population).

- If output grow faster than the population, means that standards living rise as the amount of output per person increase

النمو الاقتصادي يعني زيادة الناتج الإجمالي المحلي للدولة. ولكن قد يكون معدل نمو السكان بنسبة تساوي معدل الزيادة في الناتج الإجمالي للدولة, وهذا ما يجعل مساهمة كل فرد من الإفراد في الناتج الإجمالي المحلي للدولة (output per person) لا يتغير. يركز النمو الاقتصادي الحديث على الزيادة في مساهمة كل فرد من الإفراد في الناتج الإجمالي المحلي للدولة. وإذا نمى الناتج المحلي للدولة بنسبة أعلى من النمو في عدد السكان فإن مستوى المعيشة الأفراد الدولة سيتحسن , وهذا ما تسعى إليه كل دولة.

Savings, Investment, and Choosing between Present and Future Consumption.

- Saving : are generated when current consumption is less than current output (when current spending is less than the current income).

- Investment : the purchase of capital goods.

- Investment happens when resources are developed to increasing future output.

Financial Investment : - is the purchase of assets like stocks, bonds, and real estate in the hope of receive a financial gain.

Economic Investment :- Includes money spent purchasing newly created capital goods such as machinery, tools, factories, and warehouses.

- Investment activates increase the economy's future potential output level. But investment must be funded by saving, which is only possible if people are willing to reduce current consumption. Consequently, individuals and society face s trade off between current consumption and future consumption since the only way to fund the investment necessary to increase future consumption is by reducing current consumption in order to gather the saving necessary to fund that investment.

- Banks and other financial institutions help to convert saving into investment by taking the savings generated by households and lending it to businesses that wish to make investments.

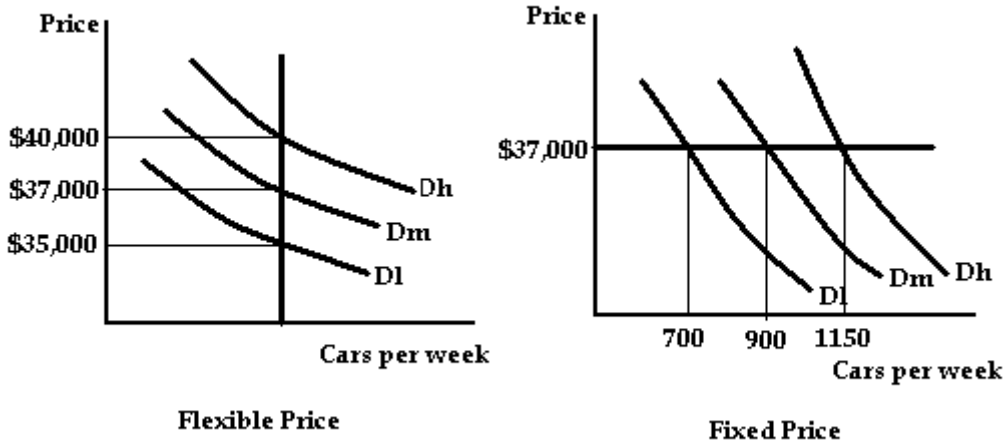
Uncertainty, Expectations, and Shocks :-

- Expectations have an important effect on the economy for two reasons. First, if people and businesses are more positive about the future, they will save and invest more. Second, individuals and firms must make adjustments to shocks situations in which expectations are unmet and the future does not turn out the way people were expecting. In particular, shocks often imply situations where the quantity supplied of a given good or service does not equal the demanded of that good or service.

- Economies are exposed to both demand shocks and supply shocks. **Demand shocks** are unexpected changes in the demand for goods and services. **Supply shocks** are unexpected changes in the supply of goods and services.

- Positive demand shock refers to a situation in which demand turns out to be higher than expected.
- Negative demand shock refers to a situation in which demand turns out to be lower than expected.

The effect of unexpected changes in demand under flexible and fixed prices.



The figure (1) illustrates the case of adjusting to unexpected changes in demand *when prices are flexible.* Here, if demand is unexpectedly low at D_L, the market price can adjust downward to $35,000 per vehicle so that the quantity demanded at that price will still be equal to the factory's optimal output rate of 900 cars per week. On the other hand, if demand is unexpectedly high at D_H, the market price can adjust upward to $40,000 per vehicle so that the quantity demanded will still be equal to the factory's optimal output rate of 900 cars per week.

In the figure (2), in which the price of car is totally inflexible, fixed at $37,000 per car. Here, if demand unexpectedly falls from DM to D_L, the quantity demanded at the fixed price of $37,000 will only be 700 cars per week, which is 200 cars fewer than the factory's optimal output of 900 cars per week. On the other hand, if demand unexpectedly high at D_H, the quantity demanded at the fixed price of $37,000 will be 1150 cars per week, which is 250 cars more than the factory's optimal output of cars per week.

Chapter 24

Measuring Domestic Output and National Income

Gross Domestic Product (GDP)

Gross domestic product (GDP) is a measure of the total market value of all final goods and services produced within the borders of a given country during a given year.

يقصد بالناتج المحلي الإجمالي القيمة السوقية لجميع السلع والخدمات النهائية المنتجة في بلد معين وفي فترة زمنية معينة, ويتم انتاجها فقط داخل الحدود الجغرافية للدولة. السلع والخدمات المنتجة محليا هي داخل الحدود الجغرافية للدولة سواء كان من طرف احد مواطنيها أو احد المقيمين على أراضيها أو المؤسسات الوطنية أو المؤسسات الاجنبيه على أراضيها.

ويعتبر الناتج المحلي الاجمالي من أهم المؤشرات الاقتصادية المستخدمة لتحديد مستوى النشاط الاقتصادي واتجاه وسرعة نموه.

For example, the value of the cars produced at the Toyota factory in Ohio clearly count as part of U.S. aggregate output (GDP) rather than Japanese aggregate output because the cars are made within the borders of the United Satiates.

Example:
The value of what KFC produces in Palestine is included in the U.S. _____ and in the Palestinians'_____.
(a) Palestinians' GDP (b) U.S. GDP (d) both Palestinians' and U.S. GDP

وسنوضح في مايلي المفردات الجديدةالواردة في هذا التعريف:

A Monetary Measure القيمة السوقية

GDP is a measure of the total market value. The total market value is the summation of the values of the goods and services.

$GDP = \sum (P * Q)$

نحصل على القيمة السوقية (Market Value) لأي سلعة أو خدمة بضرب الكمية المنتجة في سعرها الجاري في السوق، ويطلق على الناتج المقوم بالأسعار الجارية، الناتج المحلي الإجمالي بالأسعار الجارية (Current Price GDP) أي الناتج المحلي الاسمي (Nominal GDP).

Example: If the economy produces three foods and two computers in year1 and two foods and three computers in year2. If the price of foods (P*f*) is $10 and the price of computers (P*c*) is $1200.

GDP *(year 1)* = $(P_f * Q_f) + (P_c * Q_c) = (3 * 10) + (2 * 1200) = 30 + 2400 = \$2,430$

GDP *(year 2)* = $(P_f * Q_f) + (P_c * Q_c) = (2 * 10) + (3 * 1200) = 20 + 3600 = \$3,620$

Avoiding Multiple Counting (الحساب المزدوج والسلع والخدمات النهائية)

To avoid multiple counting, GDP includes only the market value of final goods and ignores intermediate goods.

لنتجنب الحساب المزدوج للناتج الاجمالي المحلي فإن يجب أن نحسب القيمة السوقية للسلع النهائية . أما اذا احتسبت قيمة السلع الوسيطة في حساب الناتج المحلي الاجمالي، فإنها تحتسب مرتين، مرة كسلعة وسيطة ومرة أخرى كجزء من قيمة السلعة النهائية. ويعرف ذلك بالحساب المزدوج (Double Counting)، ويتسبب في تضخم قيمة الناتج الاجمالي المحلي بما يفوق حقيقته.

Intermediate goods: - are goods and services that are purchased for resale or for further processing or manufacturing.

هي السلع التي يتم انتاجها بواسطة منشأة معينة لتستخدمها أخرى كعنصر انتاج (Input) في انتاج سلعة أو خدمة أخرى.

Final goods: - are consumption goods, capital goods, and services that are purchased by their final users, rather than for resale.

Why is the value of final goods included in GDP but the value of intermediate goods excluded? Because the value of final goods already include the value of all the intermediate goods that were used in producing them.

لغرض تجنب الوقوع في خطأ الأحتساب المزدوج لقيمة السلع الوسيطة عند تقدير الناتج المحلي الأجمالي, يستخدم الخبراء ما يعرف بطريقة القيمة المضافة (value added)

Value Added طريقة القيمة المضافة

Is the market value of firms' output (the value of final goods) less the value of the input the firm has bought from others (the value of the intermediate goods).

لتجنب الوقوع في خطأ الحساب المزدوج, تستخدم طريقة القيمة المضافة (Value Added)، حيث يتم تجميع القيمة المضافة (قيمة الانتاج – قيمة السلع الوسيطة) في كل مرحلة من مراحل الأنتاج. والقيمة الإجمالية المضافة من السلع الوسيطة هي قيمة السلعة النهائية. فالقيمة المضافة مقياس اخر للناتج المحلي الإجمالي.

We could avoid multiple counting by measuring and cumulating only the value added at each stage. The sum of value added at each stage is equal to GDP.

Example

Ali sells $100 worth of cotton to Basel. Basel turns (يحول) the cotton into cloth, which he sells to Sami for $300. Sami uses the cloth to make school dresses (ملابس مدرسية) that he sells to Dina for $ 700. Dina sells the dresses for $1200 to school children. The total contribution (مساهمة) to GDP of these transactions is:

GDP is the total market value of all final goods. The total market value is the value of school dresses to final users = $1200

Or, *by using the value added methods*:

Stage of Production	Sales Value of Materials or Product	Value Added
Firm1, cotton producers	100	100 – 0 = 100
Firm2, cloth processor	300	300 – 100 = 200
Firm3, School Dresses	700	700 – 300 = 400
Firm4, School Dresses wholesaler	1200	1200 – 700 = 500
		Total= $1200

The total contribution (مساهمة) to GDP of these transactions is the sum of the total value added at each stage = $1200.

Example (2)

A Texas oil company extracts petroleum (تستخرج النفط) and sells it to a refinery (المصفاة) for $1,000. After processing, the refinery sells the gasoline to a wholesaler (التجار) for $1,500, who then sells it to a gas station (محطات البنزين) for $1,700. The gas station sells it to customers for $2,500. In these transactions (هذه العملية), how much has been added to GDP?

These transactions added to GDP by the amount equal to the value of final goods to customers = $2,500

or by summation of the value added :

Stage of Production	Sales Value of Materials or Product	Value Added
Firm1, extracts petroleum	1000	1000 – 0 = 1000
Firm2, refinery processor	1500	1500 – 1000 = 500
Firm3, gas station	1700	1700 – 1500 = 200
Firm4, customers	2500	2500 – 1700 = 800
		Total $2500

The total contribution to GDP of these transactions is the sum of the total value added at each stage = $2,500.

Example (3):

Suppose that Mr. Zaki sells $5,000 of wheat to Sarafandi Bakery (مخبز الصر فندي) . Sarafandi uses the wheat to make flour (طحين) and then hamburger buns (كعك هامبرغر), which they sell to Hamburger Heaven for $11,000. Hamburger Heaven also buys $20,000 of beef (لحم بقر)from a rancher. Hamburger Heaven uses the beef and buns to make 10,000 hamburgers which are sold for $5 each. How much do these transactions add to GDP?

These transactions added to GDP by the amount equal to the total market value of final goods

Total market value = 10,000 * $5 = $50,000

Or:

Stage of Production	Sales Value of Materials or Product	Value Added
Firm1, wheat producer	5,000	5,000 – 0 = 5,000
Firm2, hamburger buns	11,000	11,000 – 5,000 = 6,000
Firm3, Hamburger Heaven	20,000	20,000 – 11,000 = 9,000
Firm4, hamburgers	50,000	50,000 – 20,000 = 30,000
		Total $50,000

The total contribution to GDP of these transactions is the sum of the total value added at each stage = $50,000.

GDP Excludes Nonproduction Transactions

Transaction that must be excluded from GDP.
Nonproduction transactions are two types: Financial transactions and secondhand sales

(A) Financial Transactions: include the following:

- **Public transfer payment**: these are the social security payments (الضمان الاجتماعي), welfare payments (المساعدات الاجتماعية), and veterans payments (مساعدات المحاربين) that the government makes directly to households.

- **Private transfer payments:** they transfer funds from one private individual to another. For example, the money that parent gives children, or the cash gifts given at Christmas time.

- **Stock market transactions**: the buying and selling of stock (الأسهم) and bonds (السندات).

تجدر الإشارة إلى أن الاستثمار من وجهة نظر الفرد قد لا يعد استثمار من وجهة نظر المجتمع. فشراء الفرد لأسهم شركة قائمة يعد استثماراً من وجهة نظر الفرد أما من وجهة نظر المجتمع فيعد ذلك تحويلاً للملكية, و ليس استثماراً. بينما يعد شراء الأسهم لإنشاء شركة ما استثماراً من وجهة نظر الفرد و المجتمع.

- ✓ Payments for the services provided by a stockbroker (سمسار أسهم) are included, however, because their services are currently provided and are thus a part of the economy's current output.

(B) Secondhand sales (السلع المستعملة)

Secondhand sales contribute nothing to current production and for that reason are excluded from GDP.

For example, the purchase of a used washing machine. , The purchase of a used car.

Example (1)

Which of the following activities should be included in GDP?

a. The purchase of a used car from car dealer ---------- not included (secondhand sales).

b. $20 gift to your friend ---------- not included (Private transfer payments).

c. Purchases of new furniture (أثاث) ---------- included in GDP (current production).

d. $50,000 robbed from a bank (سرقت من البنك) ---------- not included (illegal activity).

e. Donation(تبرع)from a person to local hospitals ---------- not included (Private transfer payments).

f. purchases of 100 shares of PALTEL ---------- not included (Stock market transactions).

g. Social security payments received by a retired factory worker ------- not included (public transfer payments).

h. The money received by Sami when he sells his economics textbook to a book buyer. ---------- Not included (secondhand sales).

i. Interest rate on an AT corporate bond ---------- included in GDP (money income).

j. Payment of $400 university tuition (رسوم جامعية) by a student at BZU. (Included in GDP).

Two Ways of Looking at GDP: Spending approach and Income approach

Spending approach (Output or Expenditures approach): GDP is the sum of all the money spent in buying goods and services.

Income approach (طريقة الدخل): GDP is the sum of all income derived or created from producing goods and services.

The Expenditures Approach: (طريقة الانفاق)

GDP = Total expenditures (الناتج الاجمالي المحلي = إجمالي الانفاق)

To determine GDP using the expenditure approach, we add up all the spending on final goods and services that has taken place throughout the year.

$GDP = C + Ig + G + X_n$ ---------- GDP using the expenditure approach

C ≡ Personal consumption expenditures. (الاستهلاك الفردي)

Ig ≡ Gross private domestic investment. (الاستثمار المحلي)

G ≡ Government purchases. (الإنفاق الحكومي)

X_n ≡ Net exports (صافي التجارة الخارجية)

Personal Consumption Expenditures (C)

Personal consumption expenditures cover all expenditures by households on durable consumer goods (automobiles, video recorder, TV), nondurable consumer goods (bread, milk, pencils), and consumer expenditure for services (lawyers, doctors, barbers, hire cut).

ويشمل كل ما ينفق من قبل الافراد على شراء السلع المعمرة وغير المعمرة والخدمات.

Durable consumer goods: هي السلع المعمرة: أي التي يدوم استهلاكها فترة طويلة من الزمن
Nondurable consumer goods: هي السلع الغير معمرة: أي التي لا يدوم استهلاكها فترة طويلة

Gross private domestic investment (I_g).

Gross private domestic investment includes the following items.

- All final purchases of machinery, equipment, and tools by business enterprises.
  وتشمل شراء السلع الرأسمالية كالآلات والمعدات وهي السلع التي تستخدم لإنتاج سلع وخدمات أخرى،
- All construction.وتشمل ايضاً الاستثمار في المباني والعقارات
- Changes in inventories.

  هو عبارة عن التغير في المخزون السلعي من مواد أولية ووسيطة وسلع نهائية، فالمنتج لا يقوم ببيع جميع ما ينتجه فور إنتاجه بل يخزن جزء من هذا الإنتاج توقعاً لطلبات عملائه، كما يقوم بتخزين جزء من المواد الأولية والوسيطة حتى لا يتوقف إنتاجه إذا لم يستطع الحصول على هذه المواد في الأوقات المحددة للإنتاج، وهذا النوع من الاستثمار يسمى استثماراً في المخزون Inventory Investment.

  Changes in inventories = Production – sales

Example:

To the economist, which is not considered to be investment (I_g)?

a. construction of a new factory
b. additions to inventories resulting from unsold cars
c. the building of an apartment complex
d. purchase of 10,000 shares of Paltel stock

إذا قام شخص معين بشراء أسهم لشركة قائمة، لا تعد هذه العملية عملية استثمارية، بينما تعتبر عملية تحويل ملكية، والسبب في ذلك أن عملية شراء وبيع الأسهم لم ينجم عنها إقامة شركة جديدة لإنتاج السلع والخدمات، هذا بخلاف شراء أسهم لإنشاء شركة جديدة فهذه تعد عملية استثمارية لأنها تزيد من طاقة المجتمع الإنتاجية كما تمثل إنفاقا جديداً

Positive and Negative Change in Inventories:-

If production > purchased, then inventory is positive

If economy sold > production, then inventory is negative

If the economy produced $10 billion more output than was purchased, then inventory is positive. We count $10 billion increase in inventories as investment in that year's.

If the economy sold $10 billion more output than it produced that year, then inventory is negative. We consider the $10 billion decline in inventories as "negative investment", and subtract it from total investment that year.

Example:

In January, 2005, Chrysler produced a $40,000 auto, 300 that was delivered to Delray Chrysler in February 2005. This auto was sold to your economics teacher in February of 2006. This auto would be counted as:

a. Investment in 2005 and consumption in 2006.
b. Consumption in 2005 and investment in 2006.
c. Investment in 2005 and disinvestment in 2006.
d. Disinvestment in 2005 and investment in 2006.

Example:

A good produced in 2000 and held in inventory until it is sold in 2001 would be included in which measure of GDP?

a. Half the value in 2000 and half the value in 2001
b. In 2001 GDP
c. In both 2000 and 2001 GDP
d. In 2000 GDP

Noninvestment Transactions:-

Investment does not include the transfer of paper assets (stocks, bonds) or the resale of tangible assets (houses, jewelry, bought), because investment has to do with the creation of new capital assets.

Gross Investment versus Net Investment (إجمالي الاستثمار وصافي الاستثمار)

Gross investment includes investment in replacement capital and in added capital.
Net investment includes only investment in the form of added capital.

Net Investment (I_n) = Gross investment (I_g) – Depreciation (D)
Depreciation (D) = Gross investment (I_g) - Net Investment (I_n)

Depreciation ≡ the amount of capital that is used up over the course of a year.

هو عبارة عن رصيد نقدي يخصص لإحلال آلات ومعدات جديدة محل الآلات والمعدات التي تهتلك خلال العملية الإنتاجية، أو يخصص لصيانة الآلات التي أصابها العطب أثناء الإنتاج، كما يشمل قطع الغيار للآلات وهي اللازمة لاستمرار العملية الإنتاجية.

- If the gross investment exceeds depreciation, then net investment is positive and the nation's stock of capital rises by the amount of net investment.

فكلما استطاع المجتمع أن يقوم باستثمار يفوق حجم اهتلاك رأس المال خلال السنة كلما استطاع أن يزيد من رصيد رأس المال في نهاية السنة.

- If the gross investment equal depreciation, then net investment is zero and there is no change in the size of the capital stock.

- If the gross investment is less than depreciation, net investment is negative (disinvesting), and the nation's stock of capital shrinking.

Government Purchases (G) الإنفاق الحكومي

ويقصد به كل ما تنفقه الحكومة من شراء السلع وما تدفعه من رواتب وأجور باستثناء معاشات التقاعد والهبات والإعانات الأخرى.

Government Purchases have two components:

- Expenditures for goods and services that government consumes in providing public services
  مشتريات الحكومة من السلع والخدمات وكذلك دفع رواتب الموظفين الحكوميين والانفاق العسكري
- Expenditures for publicly owned capital such as schools and highways
  إنفاق الحكومة على السلع العامة مثل المدارس والمستشفيات والمساجد والكنائس والطرق وغيرها .

Government purchases include all government expenditure on final goods and all direct purchases of resources including labor. Government purchases do not include government transfer payments.

Example:
For purposes of calculating GDP, which of the following is NOT included in the government expenditures component?

a. Government purchases of pencils.
b. The payroll of the federal government
c. Welfare payments to the poor.
d. The government's purchase of a computer.

Net Exports (X_n)

Net exports (X_n) = Exports (X) – Imports (M).

Exports (الصادرات): وهي ما يتم تصديره من سلع وخدمات تنتج محلياً إلى دول العالم الخارجي
Exports: the purchases of domestic goods and services by foreigners. (طلب الأجنبي على السلعة المحلية)

Imports (الواردات): وهي ما يتم استيراده من سلع وخدمات تنتج خارج الاقتصاد الوطني
Imports: the purchases of foreign goods and services by domestic consumers. (الطلب المحلي على السلعة الأجنبية)

If exports > imports ➔ trade surplus (فائض في الميزان التجاري)
If imports > exports ➔ trade deficient (عجز في الميزان التجاري)

Example

Indicate whether each of the following is considered as Consumption (C), Investment (I), Government expenditure (**G**), Net exports ($\mathbf{X_n}$).

a. Purchases of new furniture → *Consumption*

b. Palestinian olive oil sales to Jordan → *Net exports*

c. Payment of $500 university tuition by a student at Birzeit University → *Consumption*

d. Construction of a new apartment complex (بناء مجمع سكني جديد) → *Investment*

e. $ 10,000 spent by a government to fight crime (لمحاربة الجريمة) → *Government expenditure*

g. Increase in inventory by business firm → *Investment*

The Income Approach

Income approach (طريقة الدخل): GDP is the sum of all income derived or created from producing goods and services.

تتمثل طريقة الدخل في إمكانية الحصول على الناتج القومي الإجمالي من خلال الدخول التي تولدت من إنتاج السلع والخدمات، فالقيام بالعملية الإنتاجية يتطلب تضافر عوامل الإنتاج و مساهمتها في الإنتاج، و الحصول على خدمات هذه العوامل يستدعي دفع أثمان لها. و كأن قيمة الناتج القومي هنا تتجلى في صورة أجور و ريع و فوائد و أرباح وضرائب.

By income approach GDP equal to:

GDP = National Income (NI) – Net foreign factor income (NFFI) + Statistical discrepancy (SD) + Consumption of fixed capital (Depreciation).

National income (NI): includes all income earned through the use of national resources.

الدخل القومي: عبارة عن دخول عناصر الإنتاج المملوكة للدولة التي ساهمت في العملية الإنتاجية خلال فترة زمنية معينة عادة تكون سنة،

National income (NI) = Compensation of employees (wage) + Rent + Interest + Profit + Taxes on production and imports.

Compensation of employees: تعويضات العمال

Incomes were paid as wages and salaries by business and government to their employees. These also include payments by employers into social insurance (دفعات التأمين الاجتماعي) and into a variety of private pension (الراتب التقاعدي), health, and welfare funds for workers.

Rent: الإيجارات

Consist of the income received by the households and business that supply property resources. For example, the monthly payment for the use of office space.

وتشتمل على إيجارات المساكن والمحلات التجارية والمزارع، كما تشتمل على قيمة تقديرية لإيجارات المساكن التي يقطنها أصحابها وما يحصل عليه أصحاب براءة الاختراعات أو حقوق التأليف.

Interest: الفوائد

Consist of the money paid by private businesses to the suppliers of loans used to purchase capital. It includes such items as the interest households receive on saving deposits (الودائع التوفير), certificates of deposits (شهادات الإداع), and corporate bonds (السندات).

Profit: - ارباح الشركات

Profits are broken down by the national income accountants into two accounts: ***proprietors' income***, and ***corporate profit***.

Proprietors' income*:* : (دخـول أصـحاب الأعمـال الصـغيرة) consists of the net income of sole proprietorships partnerships, and other unincorporated businesses. مثل دخول أصحاب المحلات الصغيرة كالبقالات الصـغيرة والمطـاعم وغيرها.

Corporate profit: Is the earning of corporations. ارباح الشركات التعاونية

Corporate profit = corporate income taxes (ضرائب على ارباح الشـركات) + *dividends* (الارباح الموزعـة) + *undistributed corporate profit* (الارباح المحتجزة)

Taxes on Production and Imports:-

Includes general sales taxes, excise taxes, business property taxes, license fees, and customs duties.

تشمل ضرائب المبيعات والضرائب غير المباشرة، والضرائب على الممتلكات التجارية، ورسوم الترخيص، والرسوم الجمركية

Net Foreign Factor Income (NFFI)صافي عوائد عناصر الإنتاج الخارجية

NFFI = Payments received from the foreign sector by domestic citizens and factor payments made to foreign citizens for domestic production.

صافي عوائد عناصر الإنتاج الخارجية :عوائد عناصر الإنتاج المحمولة من الخارج من قبل المواطنين المحليين – عوائد عناصر الإنتاج المحولة إلى الخارج من قبل الأجانب .

Statistical Discrepancy (SD)

Statistical discrepancy is a term used in economics for the official adjustment factor in the national income and product accounts. It is used to ensure equality between the income and expenditures approaches to measuring gross domestic product.

هو مصطلح يستخدم لضمان المساواة بين طريقة الإيرادات (الدخل) وطريقة والنفقات لقياس الناتج المحلي الإجمالي.

Other National Accounts

- **Gross National Product (GNP)** إجمالي الناتج القومي

  Total monetary value of goods and services produced by the nations or residents of a country. It includes incomes that nationals earn abroad, but does not include income earned within a country by foreigners.

  $GNP = GDP + NFFI$

  If a Palestinian firms makes profit from insurance companies located abroad, then if this profit is sent back to Palestinian nationals, then this net income from oversees assets will be added to GNP.

The difference between GDP and GNP is that while GDP is more focused on the value of goods produced within the territorial borders of a country, GNP is concerned with the total value of goods produced by the citizens of a country, irrespective of the location. Another difference between GDP and GNP is that GDP considers the output of all the people in the country, regardless of whether they are nationals of that country, while GNP only considers the output of its nationals.

الفرق بين الناتج المحلي الإجمالي والناتج القومي الإجمالي هو أنه في حين أن الناتج المحلي الإجمالي أكثر تركيزا على قيمة البضائع المنتجة داخل الحدود الإقليمية لبلد ما، بينما يركز الناتج القومي الإجمالي مع القيمة الإجمالية للسلع المنتجة من قبل المواطنين في بلد ما، بغض النظر عن الموقع. وثمة فرق آخر بين الناتج المحلي الإجمالي والناتج القومي الإجمالي هو أن الناتج المحلي الإجمالي يحسب قيمة ما ينتجه جميع الناس في هذا البلد، بغض النظر عما إذا كانوا من مواطني لذلك البلد، بينما الناتج القومي الإجمالي يحسب فقط ناتج مواطنيها بغض النظر عن مكان إقامتهم.

- **Net Domestic Product (NDP)** صافي الناتج المحلي

$\underline{NDP = GDP - Depreciation}$ *(consumption of fixed capital)*

$NDP = GDP = C + Ig + G + X_n - D$ *but* $Ig - D = I_n$

⇨ $\underline{NDP = C + I_n + G + X_n}$

- **National Income (NI)** الدخل القومي

National income includes all income earned through the use of national resources, whether they are located at home or abroad.

$\underline{NI = W + R + I + P + TPI}$ (W: wage; R: Rent; I: interest; TPI: taxes on production and imports)

$\underline{NI = GDP + NFFI - SD - D}$

But GDP – D = NDP

⇨ $\underline{NI = NDP + NFFI - SD}$

- **Personal Income (PI)** الدخل الشخصي

Includes all income received, whether earned or unearned.

يختلف الدخل الشخصي أو الدخل المستلم فعلاً عن الدخل القومي أو المكتسب، حيث أن الدخل الشخصي هو عبارة عن "الدخل القومي بعد خصم العوائد التي لم يستلمها العنصر الإنتاجي".

PI = NI – Taxes on production and imports (ضرائب على الانتاج والواردات) – Social security contribution (اقساط الارباح) – Undistributed corporate profit (ضرائب ارباح الشركات) – Corporate income taxes (معاشات التقاعد المحتجزة) + Transfer payment (نفقات التحويلات)

$\underline{PI = NI - TPI - SSC - CIT - UCP + TP}$

- **Disposable Income (DI)** الدخل المتاح

الدخل المتاح**:** هو "الدخل الذي يمكن التصرف فيه بانفاقه على الاستهلاك و الادخار". فالحكومات عادة ما تقوم بفرض ضرائب على دخول الأفراد تعرف بالضرائب المباشرة أو ضرائب الدخل Income Taxes ، فإذا خصمنا هذه الضرائب من الدخل الشخصي نحصل على الدخل المتاح

$\underline{DI = Personal\ Income\ (PI) - Personal\ Taxes\ (PT)}$

Or: $\underline{DI = Consumption\ (C) + Personal\ saving\ (S)}$

Example (1)

The following figures are for the economy of Country Alpha in 2010.

Personal Consumption Expenditure	520
Corporate Profit	70
Government Expenditure on goods and services	105
Net Private Investment	120
Rental Income	20
Proprietors' Income	40
Compensation of employees	360
Imports	15
Saving	110
Net Interest	90
Exports	35
Capital Consumption Allowance (Deprecation)	60
Taxes on production and imports	60
Personal Income Taxes	30

Based on the above data, calculate the following for country Alpha in 2010.

a. *Gross Domestic Product (GDP)*

$GDP = C + Ig + G + Xn$

$I_g = I_n + Depreciation = 120 + 60 = \$180$

$X_n = Exports - Imports = 35 - 15 = \$20$

$GDP = 520 + 180 + 105 + 20 = \$825$

b. *National Income (NI)*

NI = Compensation of employees + Interest + Rental Income + Proprietors' Income + Corporate Profit + Taxes on production and imports

$NI = 360 + 90 + 20 + 40 + 70 + 60 = \$600$

c. *Disposable Income (DI)*

$DI = C + S = 520 + 110 = \$630$

d. *Personal Income (PI)*

$DI = PI - PT$
$But\ DI = C + S$
$C + S = PI - PT$
$PI = C + S + PT = 520 + 110 + 30 = \$660$

Example (2)

The following figures are for the economy of Country A in 2009 (in millions of dollars)

Rent	80
Imports	130
Proprietors' Income	45
Personal Consumption Expenditure	650
Gross National Product	880
Taxes on production and imports	25
Corporate income taxes	20
Net Private Investment	105
Undistributed corporate profit	30
Net Interest	50
Consumption of fixed capital (depreciation)	10
Social security contribution	15
Transfer payment	40
Personal Saving	25
Government Expenditure on goods and services	90
Corporate profit	80
Exports	105
Statistical Discrepancy	20

Use the above data to calculate the following:

a. Gross Domestic Product (GDP).

$$GDP = C + I_g + G + X_n = 650 + (105 + 10) + 90 + (105 - 130) = \$830$$

b. Net Foreign Factor Income (NFFI).

$$GNP = GDP + NFFI$$

$$880 = 830 + NFFI \Rightarrow NFFI = 880 - 830 = \$50$$

c. National Income (NI)

$$NI = GDP - Depreciation + NFFI - Statistical\ Discrepancy$$

$$NI = 830 - 10 + 50 - 20 = \$850$$

d. Compensation of employees.

$$NI = Compensation\ of\ employees + Rent + Interest + Proprietors'\ Income + Corporate\ profit + Taxes\ on\ production\ and\ imports$$

$$750 = Compensation\ of\ employees + 80 + 50 + 45 + 80 + 25$$

➔ $Compensation\ of\ employees = 750 - 280 = \$470$

e. Personal Income (PI)

$$PI = NI - TPI - SSC - CIT - UCP + TP$$
$$PI = 750 - 25 - 15 - 20 - 30 + 40 = \$700$$

Example (3)

Answer the next question(s) on the basis of the following data. All figures are in billions of dollars.

Gross investment	18
National income	100
Net Exports	2
Personal Income	85
Personal consumption expenditures	70
Saving	5
Government Purchases	20
Net domestic Product	105
Statistical Discrepancy	3

1. Gross Domestic Product (GDP)

$$GDP = C + I_g + G + X_n = 70 + 18 + 20 + 2 = 110$$

2. Consumption of fixed capital

$$Net\ domestic\ Product\ (NDP) = GDP - D$$
$$Consumption\ of\ fixed\ capital\ (Depreciation) = GDP - NDP = 110 - 105 = 5$$

3. Disposable income (DI)

$$DI = Consumption + saving = 70 + 5 = 75$$

4. Net Foreign Factor Income (NFFI)

$$NI = GDP + NFFI - SD - D \Rightarrow 100 = 110 + NFFI - 3 - 5$$

$$\Rightarrow NFFI = 100 - 102 = -2$$

Example (4)

Personal Consumption Expenditure	430	Rental income	60
Personal income	500	Imports	40
Exports	70	Proprietor's income	50
Government transfer payments	50	Interest	50
Government purchases of goods and services	90	Gross national product	650
Corporate Profits	80	Taxes on production and imports	15
Wages and Salaries	340	Statistical Discrepancy	5
Net Investment	170	Personal income taxes	35

Basis of the following data calculates the following

1. Net domestic product (NDP)

NDP = $C + I_n + G + X_n = 430 + 170 + 90 + (70 - 40) = 720$

2. Net foreign factor income

$GNP = GDP + NFFI = 650$ ------- *(1)*

$GDP = NI - NFFI + SD + Depreciation$
$NI = W + R + I + P + TPI = 340 + 60 + 50 + (80 + 50) + 15 = 595$

$GDP = NI - NFFI + SD + Depreciation$
$GDP = 595 - NFFI + 5 + D$
$GDP + NFFI = 595 + 5 + D$
$GDP + NFFI = 600 + D$

From equation (1): $GDP + NFFI = 650$

$\Rightarrow 650 = 600 + D \quad \Rightarrow D = 650 - 600 = 50$

$GDP = C + (I_n + D) + G + X_n = 430 + (170 + 50) + 90 + (70 - 40) = 770$

$GDP = NI - NFFI + SD + Depreciation$
$770 = 595 - NFFI + 5 + 50$

$\Rightarrow NFFI = 595 + 5 + 50 - 770 = -120$

3. Personal saving (S)

$DI = PI - PT = 500 - 35 = 465$

But $DI = C + S \quad \Rightarrow 465 = 430 + S \quad \Rightarrow S = 465 - 430 = 35$

Nominal GDP versus Real GDP

يتم استخدام الأسعار السائدة في السوق (السعر السوقي) في احتساب قيمة إجمالي الناتج المحلي. إلا أن هذه الأسعار تتعرض للتغير (ارتفاعاً أو انخفاضاً)، ومن ثم ستؤدي إلى تغيير القيمة الفعلية (أو الحقيقية) لإجمالي الناتج المحلي. نتيجة لذلك، فإننا نقوم بالتفريق بين مفهومين لإجمالي الناتج المحلي وهما الناتج المحلي النقدي أو الاسمي (Nominal GDP)، والناتج المحلي الحقيقي (Real GDP).

Nominal GDP (Unadjusted GDP) is the sum of the quantities of final goods produced times their current price.

$Nominal\ GDP\ (NGDP) = \sum (P_t * Q_t)$

Nominal GDP increases over time because:

- The production of most goods increases over time.
- The prices of most goods also increase over time.

Real GDP (adjusted GDP) is constructed as the sum of the quantities of final goods times *constant* (rather than *current*) prices.

$Real\ GDP\ (RGDP) = \sum (P_0 * Q_t)$

Where P_0: is the base year price

Example:

An economy produces two goods, Potatoes and Cars. Quantities and prices per unit for years 2009 and 2010 are as follows:

	2009		2010	
	Quantity	Price	Quantity	Price
Potatoes	100,000	$1	100,000	1.2
Cars	20	$15,000	24	$16,000

Using the prices of 2009 as a base year prices

Calculate Nominal GDP and Real GDP in 2010.

$$NGDP = \sum (P_{2010} * Q_{2010}) = P_{Potato\ 201} * Q_{Potato\ 2010} + P_{Car\ 2010} * Q_{Car\ 2010}$$

$$NGDP = (1.2 * 100{,}000) + (16{,}000 * 24) = 120{,}000 + 384{,}000 = \$504{,}000.$$

$$RGDP = \sum (P_{2009} * Q_{2010} = (P_{Potato\ 2009} * Q_{Potato\ 2010} + P_{Car\ 2009} * Q_{Car\ (2010}$$

$$RGDP = (1 * 100{,}000) + (15{,}000 * 24) = 100{,}000 + 360{,}000 = \$460{,}000$$

GDP Price Index (GDP Deflator) الرقم القياسي للاسعار

A price index is a measure of the price of a specified collection of goods and service, called a "market basket" in a given year as compared to the price of an identical collection of goods and services in a reference year (base year).

هو أداة إحصائية لقياس متوسط التغير في أسعار مجموعة معينة من السلع والخدمات بين فترتين زمنيتين ، تدعى الفترة الاولى بفترة الاساس والثانية فترة المقارنة.

$$Price\ index\ in\ given\ year = \frac{Price\ of\ market\ basket\ in\ specific\ year}{Price\ of\ same\ basket\ in\ base\ yeay} \times 100$$

سلة المستهلك *(Market Basket)*: هي المجموعة الحقيقية للسلع والخدمات التي يقوم المستهلك بالانفاق عليها للأغراض المعيشية.

$$Price\ index\ in\ given\ year = \frac{Nominal\ GDP}{Real\ GDP} \times 100$$

$$Real\ GDP = \frac{Nominal\ GDP}{Price\ index}$$

Example

If the nominal GDP in year 3 is $2400 and the GDP deflator (price index) for year 3 is 120, then the real GDP for year 3 is:

$$Real\ GDP = \frac{Nominal\ GDP}{Price\ index} = \frac{2400}{1.2} = 2000$$

Example

Year	Units of Output	Price of Pizza per Unit
1	5	$10
2	7	20
3	8	25

Let's year 1 as a base year

$$\text{Price index, year 2} = \frac{\text{Price of Pizza in year 2}}{\text{Price of Pizza in year 1}} \times 100 = \frac{20}{10} \times 100 = 200$$

$$\text{Price index, year 3} = \frac{\text{Price of Pizza in year 3}}{\text{Price of Pizza in year 1}} \times 100 = \frac{25}{10} \times 100 = 250$$

For the baser year the price index has to be 100, since that NGDP = RGDP

$$\text{Inflation rate} = \frac{\text{Price index in current year} - \text{Price index in last year}}{\text{Price index in last year}} \times 100$$

Example

Only three goods are produced in an economy in the following amounts: A= 20, B = 60, C= 10. The current year per unit prices of these three goods are A= $3, B= $4, and C= $1. If the per unit prices of the three goods each were $2 in a base year. Calculate the following:

a. Nominal GDP in the current year.

$NGDP_{\text{current year}} = (P_{A\text{ current year}} \times Q_{A\text{ current year}} + (P_{B\text{ current year}} \times Q_{B\text{ current year}} + (P_{C\text{ current year}} \times Q_{C\text{ current year}})$.

NGDP (current year) = (3 x 20) + (4 x 60) + (1 x 10) = 60 + 240 + 10 = $ 310

b. Real GDP in the current year.

$RGDP_{\text{current year}} = \{P_{A\text{ base year}} \times Q_{A\text{ current year}}\} + \{P_{B\text{ base year}} \times Q_{B\text{ current year}}\} + \{P_{C\text{ base year}} \times Q_{C\text{ current year}}\}$

RGDP (current year) = (2 x 20) + (2 x 60) + (2 x 10) = 40 + 120 + 20 = $180

c. GDP price index (deflator) in the current year.

GDP price index (deflator) = $\{NGDP_{\text{current year}} / RGDP_{\text{current year}}\} \times 100$

GDP price index (deflator) = (310 / 180) × 100 = 172. 23

d. inflation rate in current year

$$\text{Inflation rate} = \frac{\text{Price index in current year} - \text{Price index in base year}}{\text{Price index in base year}} \times 100$$

Inflation rate = $\frac{172.23 - 100}{100}$ x 100 = 72.23%

Example

The following table represents data for nominal, real GDP, and the price index for country XYZ.

Year	Nominal GDP	Price Index (GDP Deflator)	Real GDP
1	?	85	$2500
2	$2200	100	?
3	$5200	?	$4000
4	$6000	125	?

a. What is the base year?

For the baser year the index has to be 100. ➔ Year 2 is the base year.

b. Fill in the blank in the table above.

Nominal GDP $_{year\ 1}$ = RGDP $_{year\ 1}$ X Price Index = 2500 X 0.85 = 2125

Real GDP $_{year\ 2}$ = Nominal GDP = $2200 (this is the base year)

Price index year 3 = $\frac{NGDP}{RGDP} \ x\ 100 = \frac{5200}{4000} \text{x}100 = 130$

Real GDP year 4 = $\frac{Nominal\ GDP}{Price\ index} = \frac{6000}{1.25} = 4800$

Year	Nominal GDP	Price Index (GDP Deflator)	Real GDP
1	$2125	85	$2500
2	$2200	100	$2200
3	$5200	130	$4000
4	$6000	125	$4800

c. Calculate inflation rate in year 4

Inflation rate $_{year\ 4}$ = $\frac{Price\ index\ in\ year\ 4 - Price\ index\ in\ year3}{Price\ index\ in\ year3} \ x\ 100 = \frac{125-130}{130} x\ 100 = -3.84\%$

Shortcomings of GDP عيوب الناتج المحلي الإجمالي

- **Nonmarket activities**

Because GDP included economic transactions involving market activity, certain productive activates do not take place in any market. For example, the services of homemakers, and the labor of carpenters who repair their own homes.

يمثل الناتج المحلي الإجمالي القيمة السوقية لجميع السلع والخدمات النهائية المنتجة في بلد معين وفي فترة زمنية معينة.
وبالتالي هناك بعض الأنشطة غير السوقية كالعمل المنزلي ورعاية الأطفال لا تدخل ضمن حسابات الناتج المحلى الإجمالي على الرغم من أنها إنتاج حقيقي

The portion of farmers' output that farmers consume themselves is estimated and included in GDP.

السلع التي يتم استهلاكها بواسطة منتجيها و لا تصل إلى الأسواق، كالجزء الذي يستهلكه المزارع من محصوله الزراعي، أو ذلك الجزء الذي يستهلكه الصياد من حصيلته السمكية، وما إلى ذلك، هي سلع تمثل جزء من الناتج القومي لابد من إضافته وفق إجماع الاقتصاديين، على أن تحسب قيمته على أساس أسعار مثيلات تلك السلع في السوق. خدمات الإسكان أو المساكن التي يقطنها ملاكها هي أيضاً خدمات يجب أن تحسب ضمن الناتج القومي الإجمالي، و يتم تقييمها كأنما يؤجرها أصحابها.

- **Leisure**

Increase in the leisure time has a positive effect on the overall well- being. But our system of national income accounting understates well-being by ignoring leisure's value

لا يدخل في حساب الناتج المحلى الإجمالي أوقات الفراغ التي تعتبر زيادة في الرفاهية الاجتماعية. كذلك ارتفاع الناتج قد يكون على حساب ارتفاع ساعات العمل أو قد يكون مصاحبا لارتفاع معدل البطالة. حسابات الناتج المحلي لا تفرق بين أوقات الرفاه وأوقات النكبات والكوارث، فمثلا إذا حدث هزة أرضية أو كارثة طبيعية في دولة ما، فإن تلك الدولة ستقوم بأعمال إعادة البناء والإنفاق وهذا يعني أن ناتجها المحلي سيزداد، وهذه الزيادة لا تعني بالضرورة زيادة رفاهية تلك الأمة.

- **Improved product quality**

Because GDP is a quantitative measure rather than a qualitative measure, it fails to capture the full value of improvement in product quality.

قد يحدث ارتفاع في الناتج المحلى الإجمالي، ولكن قد لا يشعر أفراد المجتمع بتحسن ملموس في مستوى جودة السلع والخدمات المقدمة في الوقت الحالي، مثال لذلك زيادة الإنفاق العسكري للدولة، والإنفاق على الصعود إلى الفضاء.

- **The underground economy "black market"**

Underground economy engages in perfectly legal activities but choose illegally not to report their full incomes.

وجود سلع وخدمات ودخول متحققة من أنشطة غير رسمية (الاقتصاد الخفي) مثل عمالة الاطفال او الاشتراك في انشطة قانونية ولاكن مع عدم الغبلاغ عن كامل دخولهم.

- **GDP and the environment:**

The growth of GDP is inevitably accompanied by "gross domestic by-products" (i.e. dirty air, polluted water, toxic waste, congestion, and noise).

زيادة الناتج المحلي الإجمالي لا تعبر عن زيادة الرفاهية للاقتصاد لأنها لا تأخذ بعين الاعتبار الظروف البيئة من تلوث الهواء والماء وتدهور الأحوال الصحية.

Chapter 25

Economic Growth

Economic Growth النمو الاقتصادي

النمو الاقتصادي **:**هو الزيادة في كمية السلع والخدمات التي ينتجها اقتصاد معين. في فترة زمنية معينة وهذه السلع يتم إنتاجها باستخدام عناصر الإنتاج الرئيسية، وهي الأرض والعمل ورأس المال والتنظيم.

Economists define and measure economic growth as either:

- ✓ Increase in real GDP occurring over some time period
- ✓ Increase in real GDP per capita over some time period

Economic growth is calculated as a percentage rate of growth per year.

$$\textit{Economic growth} = \frac{Real\ GDP\ (current\ year) - Real\ GDP\ (last\ year)}{Real\ GDP\ (last\ year)} \times 100\%$$

- ✓ Periods of positive GDP growth rate called *expansions*.
- ✓ Periods of negative GDP growth rate called *recessions*.

Real GDP per Capita: نصيب الفرد من إجمالي الناتج المحلي

يعرف "دخل الفرد من إجمالي الناتج المحلي" على أنه ناتج قسمة "إجمالي الناتج المحلي" إلى "إجمالي عدد السكان."

$$\textit{Real GDP per Capita} = \frac{Real\ GDP}{Population}$$

$$\text{Growth rate of GDP per capita} = \frac{\text{Real GDP per capita (current year)} - \text{Real GDP per capita (last year)}}{\text{Real GDP per capita (last year)}} \times 100$$

Example

Suppose an economy's real GDP is $30,000 in year 1 and $31,200 in year 2. What is the growth rate of its real GDP? Assume that population is 100 in year 1 and 102 in year 2. What is the growth rate of its real GDP per capita?

Economic growth = $\frac{Real\ GDP\ (year2) - Real\ GDP\ (\ year\ 1)}{Real\ GDP\ (year\ 1)}$ x 100%

Growth rate in real GDP = $\frac{31{,}200 - 30{,}000}{30{,}000}$ x 100 = 4%

ارتفاع الناتج المحلي الإجمالي الحقيقي خلال العام الحالي بنسبة 4% بالمقارنة مع العام السابق .

Real GDP per capita (year 1) = $\frac{Real\ GDP}{Population}$ = $\frac{30{,}000}{100}$ = $300

Real GDP per capita (year 2) = $\frac{Real\ GDP}{Population}$ = $\frac{31{,}200}{102}$ = $305.9

Growth rate of real GDP per capita = $\frac{305.9 - 300}{300}$ = 1.96 %

بلغ نصيب الفرد من الناتج المحلي الإجمالي 305.9دولار خلال هذا العام بينما بلغ في العام السابق 300دولار مسجلاً ارتفاعاً بنسبة 1.96% بالمقارنة مع العام السابق.

Example

An economy produces two goods: cars, and oranges. Quantities and prices per unit for years 2010 and 2011 are as follows:

	2010		2011	
	Quantity	Price	Quantity	Price
Cars	10	$20,000	12	$22,000
Oranges	10,000	$1	10,000	$1

Calculate GDP growth rate from 2010 to 2011.

GDP growth = = $\frac{Real\ GDP\ (2011) - Real\ GDP\ (\ 2010)}{Real\ GDP\ (2010)}$ x 100%

Real GDP in year *(2011)* = {(12 x 20,000) + (10,000 x 1)} = 240,000 + 10,000 = 250,000

Real GDP in year *(2010)* = {(10 x 20,000) + (10,000 x 1) = 200,000 + 10,000 = 210,000

GDP growth = $\frac{250{,}000 - 210{,}000}{210{,}000}$ x 100% = $\frac{40{,}000}{210{,}000}$ x100 = 19%

Growth as a Goal

Growth is the expansion of total output relative to population results in rising real wage and incomes and higher standard of living

النمو الاقتصادي عبارة عن عملية يتم فيها زيادة الدخل الحقيقي زيادة تراكمية ومستمرة عبر فترة من الزمن بحيث تكون هذة الزيادة أكبر من معدل نمو السكان وبالتالي زيادة معدلات الاجور والدخل للوصول لمستوى معيشي افضل.

Arithmetic of growth: Rule of 70

The rule of 70 tells us that we can find the number of years it will take for some measure to double, given its annual percentage increase.

$$\text{Approximate number of years required to double real GDP} = \frac{70}{\text{Annual percentage rate of growth}}$$

Example:

If the country of Island's current growth rate of real GDP per person was 10 percent a year, how long would it take the country's real GDP per person to double?

$$\text{Approximate number of years required to double real GDP} = \frac{70}{10} = 7 \text{ years}$$

Example:

Consider the following data for a hypothetical economy:

Year	Real GDP	Population
1	$50,000	200
2	$51,400	202

a. Calculate the growth rate of real GDP.

The rate of growth is [($51,400 – $50,000)/$50,000] x 100 = 2.8%.

b. At this rate of growth, approximately how many years will pass before real GDP doubles?

The rule of 70 tells us that real GDP will double in approximately $\frac{70}{2.8}$ *= 25 years.*

c. Find real GDP per capita in each of the two years. Calculate the growth rate of real GDP per capita.

Real GDP per capita in year 1 = $50,000/200 = $250,
Real GDP per capita in year 2 = $51,400/202 = $254.46.
The growth rate of real GDP per capita is then found as [($254.46 – 250)/250] x 100 = 1.78%.

d. At this rate of growth, approximately how many years will pass before real GDP per capita doubles?

The rule of 70 suggests that real GDP per capita will double in approximately $\frac{70}{1.78}$ *= 39.3 years.*

Modern Economic Growth النمو الاقتصادي الحديث

- Modern economic growth focus on rises output per person (total output / population).
- If output grows faster than the population, means that standards living rise as the amount of output per person increase.
- Modern economic growth is characterized by increases in standard of living.

أن النمو الاقتصادي لا يعني فقط حدوث زيادة في إجمالي الناتج المحلي، بل لا بد وأن يترتب عليه زيادة في دخل الفرد الحقيقي، بمعنى أن معدل النمو الاقتصادي لا بد وأن يفوق معدل النمو السكاني. وهذا يعني زيادة مستوى الرفاهية الاقتصادية في الدولة. إلا أن نمو السكان بمعدل أعلى يحول دون زيادة متوسط دخل الفرد، فعلى الرغم من زيادة إجمالي الناتج المحلي في هذا البلد إلا أنه لم يحقق نمواً اقتصادياً. ولذلك فإن الدول التي يزيد عدد سكانها بمعدلات كبيرة تعاني من التخلف ومعظمها من الدول النامية، ولذلك يتعين على الدول النامية التي تسعى إلى تحسين أوضاعها الاهتمام بمعالجة قضية تزايد السكان وإلا فإن مجهوداتها لن تسفر عن تقدم يذكر.

Institutional Structures That Promote Growth

There are several institutional structures that promote modern economic growth. Some structures increase the savings and investment that are needed to fund the construction and maintenance required to run modern economic growth. Other institutional structures promote the development of new technologies. These institutional structures include:

- **Strong property rights** حماية حقوق الملكية

  People will not invest if they believe that thieves, bandits, and tyrannical government will steal their investments or their expected return.

  نظام الملكية الفردية يعطي الأفراد حصراً الحق في استخدام مواردهم وفق ما يرونه مناسباً. حق التصرف هذا بما يملكون يقود منتفعي الملكية بأن يأخذوا بعين الاعتبار جميع الفوائد والأثمان التي تتأتى عن استغلالهم لتلك الموارد بطريقتهم الخاصة بهم. إن عملية تقييم المنافع مقابل الأثمان التي ينطوي عليها ذلك الاستغلال ينتج ما يصطلح عليه علماء الاقتصاد بالنتائج الأكفأ. وهذا يترجم على أرض الواقع بتحقيق مستويات معيشة أعلى.

- **Patents and copyrights** براءات الاختراع وحقوق النشر

  By giving inventors and authors the exclusive right to market and sell their creations, patents and copyrights give a strong financial incentive to invest and create.

  فالحماية الفكرية القوية تشجع على الابتكار كذلك ستوفر مستوى من الثقة في الاقتصاد، وهي ثقة لازمة لاجتذاب الاستثمار الأجنبي وتحفيز نقل التكنولوجيا. وقد تبين ذلك في عدد من الدراسات التي بحثت في العلاقة بين الملكية الفكرية، لا سيما براءات الاختراع، والتنمية والتطوير. و ترتبط حقوق الملكية الفكرية بتدفقات أكبر للتجارة والاستثمارات المباشرة الأجنبية، التي بدورها تترجم إلى معدلات أسرع في النمو الاقتصادي.

- **Efficient financial institutions:** كفاءة أداء المؤسسات المالية

  These are needed to channel the savings generated by households toward the businesses, and inventors that do most of society's investing.

  إن وجود نظام مالي متطور وفعال هو أحد المتطلبات الأساسية لتحقيق نمو اقتصادي مطرد. فمن خلال عملية الوساطة المالية بين المدخرين والمستثمرين وبين المقرضين والمقترضين، يشجع النظام المالي الادخار والاستثمار ، ويحث أيضاً على التوجيه الأمثل للأموال المتوفرة للاستثمار. علاوة على ذلك، فإنه يقدم مجموعة من الخدمات المالية الأخرى مثل تحويل الأموال، والضمانات، وإدارة المخاطر، والتخطيط المالي، وإدارة الاستثمار، والخدمات الاستشارية، التي أصبح المجتمع بحاجة متزايدة لها في العصر الحالي.

- **Literacy and widespread education:** التعليم

Without highly educated inventors, new technologies do not get developed. Work force it is impossible to implements those technologies and put them to productive use.

يتلخص دور التعليم في تحقيق النمو الاقتصادي إلى اعتبار نمو التعليم و تقدمه يزيدا في المعرفة و المعلومات، و هو ما ينعكس على تحسّن عوامل الانتاج. فالتعليم يرفع من قدرة الإنسان على زيادة الانتاج و تحقيق معدلات عالية للنمو الاقتصادي. فاليابان مثلاً، بالرغم من نفص الموارد الطبيعية لديها و عدم كفاية رؤوس الأموال، استطاعت الوصول إلى مرحلة الانطلاق الذاتي، و تحقيق معدلات نمو مرتفعة، و يرجع ذلك إلى أثر التعليم و دوره في الاقتصاد الياباني.

- **Free trade** حرية التجارة

Free trade promotes economic growth by allowing countries to specialize so that different types of output can be produced in the countries.

وفكرة تحرير التجارة تعتبر فكرة واضحة وملزمة. فمن جهة المنتجين والموردين، هناك فرصة لاتساع الاسواق وزيادة المبيعات. وبالنسبة للعاملين، هناك فرص جديدة للعمل. أما عن المستهلكين، فسيتمتعون بفرصة الشراء بسعر أقل مع اتساع فرصة الاختيار بين المنتجات المختلفة. أى أن الاقتصاد ككل سيكتسب امكانيات أكبر للنمو.

- **Competitive market system** نظام السوقِ التنافسيِ

Under a market system, prices and profits serve as the signals that tell firms what to make and how much of it to make.

المنافسة هي المحرك للحياة الاقتصادية وان الأسواق التنافسية هي المحققة لمصالح المستهلكين والمنتجين على حد سواء, فهي التي تسمح للمستهلك بالحصول على السلع ذات الجودة العالية بأفضل الأسعار, كما أن توفر عنصر المنافسة هو الذي يعطي للمنتج الدافع والحافز لرفع مستويات إنتاجه عن طريق إدخال المستلزمات والتقنيات الحديثة والمتطورة في الإنتاج لتحسين ورفع درجة الجودة والنوعية للسلع المنتجة. تستوجب المنافسة تعدد المنتجين أو الموزعين في سوق السلعة أو الخدمة وهذا التعدد لازم حتى يكون هناك عدد كاف من الأشخاص ليتنافسوا في الحصول على اكبر قدر من العملاء وألا كنا بصدد احتكار يمكن صاحبه من التحكم في الأسعار. يجب ان يكون حق المنافسة الشريفة بالسوق مكفول للجميع استخدامه , على ان استخدام هذا الحق مشروط بالا يؤدي الى منع حرية المنافسة او تقييدها او الإضرار بها وهو ما يؤدي في النهاية الى الإضرار بمصلحة المواطنين والإخلال بقواعد التوازن بين مصلحة المنتج والمستهلك.

Ingredients of Growth مكونات النمو

There are six factors that directly affect the rate of economic growth. These six ingredients of economic growth can be grouped into supply factors, demand factor, and efficiency factor.

- **Supply factors**

Four supply factors relate to the ability to grow.

1. The quantity and quality of natural resources,
2. The quantity and quality of human resources,
3. The supply or stock of capital goods, and
4. Technology.

- **Demand and Efficiency factor**

Two demand and efficiency factors are also related to growth.

1. Aggregate demand must increase for production to expand.

2. Full employment of resources and both productive and allocative efficiency are necessary to get the maximum amount of production possible.

- **Demand factor**

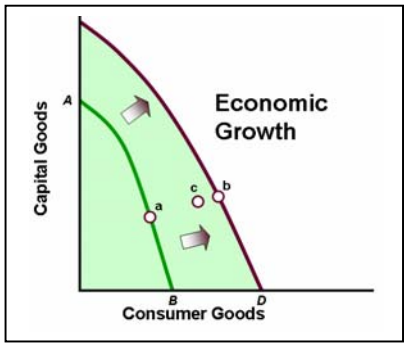
To achieve the higher production potential created by the supply factors, households, businesses, and government must purchase the economy's expanding output. When that occurs, there will be no unplanned increases in inventories and resources will remain fully employed.

- **Efficiency factor**

To reach its full production potential, an economy must achieve economic efficiency and full employment. The economy must use its resources in the least costly way (productive efficiency) to produce the specific mix of goods and services that maximizes people's well-being (allocative efficiency).

Production Possibilities Analysis:

Economic growth is made possible by the four supply factors that shift the production possibilities curve outward, as from AB to CD. Economic growth is realized when the demand factor and the efficiency factor move the economy from point a to point b.



Labor and Productivity

Society can increase its real output (real GDP) and income in two fundamental ways:

- By increasing its input of resources.
- By rising the productivity of those input.

A nation's real GDP in any year depends on the input of labor (measured in hours of work) multiplied by labor productivity (measured as real output per hours of work):

Real GDP = hours of work x labor productivity

Hours of work: the hours of labor input depend on the size of the employed labor force and the length of the average workweek.

Labor productivity: labor productivity is determined by technological progress, the quantity of capital goods available to workers, the quality of the labor itself, and the efficiency with which input are allocated. *Productivity rise when the health, training, education, and motivation of workers improved.*

Example

Assume that the economy of Zoro has 10 workers in year1, each working 2000 hours per year. If productivity (average real output per hour of work) is $10.

1. What is the real GDP in Zoro?

   The total input of labor is: 10 * 2000 = 20,000 hours
   Real GDP = hours of work x labor productivity = (20,000 * 10) = $200,000

2. If work hours rise to 2020, and the labor productivity rises to $10.40. What is the real GDP?

   The total input of labor is: 10 * 2020 = 20,200 hours
   Real GDP = hours of work x labor productivity = (20,200 * 10.4) = $210,080

3. What is the Zoro's rate of economic growth?

   Economic growth = { (210,080 – 200,000) / 200,000} * 100 = 5%

Example

Suppose an economy's real GDP is $5,000 billion. There are 125 million workers, each working an average of 2,000 hours per year.

a. What is the labor productivity per hour in this economy?

   Labor productivity = $\frac{\text{real GDP}}{\text{hours of work}}$

   There are 2,000 x 125 million = 250 billion worker hours available in the economy, producing a real GDP of $5,000 billion.

   Labor productivity = $\frac{5{,}000}{250}$ = $20 per worker hour.

b. Suppose worker productivity rises by 5% over the following year and the labor force grows by 1%. What is the projected value of real GDP?

   Productivity will rise by 5% ⇨ new productivity = 20 + .05 x 20 = $21
   And work hours will rise by 1% ⇨ new work hours is 250 + .01 x 250 = 252.5 billion.
   Real GDP = work hours x productivity = 252.5 billion x $21 = $5302.5 billion.

c. Based on your previous answer, what is this economy's rate of growth?

   The rate of growth = $\frac{5{,}302.5 - 5{,}000}{5{,}000}$ x 100 = 6.05%

BIRZEIT UNIVERSITY

Macroeconomics Principles

Econ132

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Chapter 26

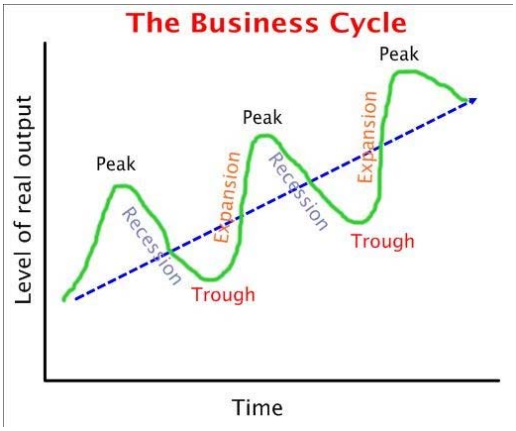
Business Cycles, Unemployment, and Inflation

The Business Cycle

Business cycles are alternating rises and declines in the level of economic activity, sometime over several years.

تقلبات منتظمة بصورة دورية في مستوى النشاط الاقتصادى.

Phases of the Business Cycle مراحل الدورة الاقتصادية



- **Peak**: at a peak, business activity has reached a temporary maximum. The economy is at full employment and the level of real output is at or very close to the economy's capacity. The price level is likely to rise during this phase.
- **Recession:** is a period of decline in total output, income, and employment. This downturn, which last 6 months or more. Along with declines in real GDP increase in unemployment rate.
- **Trough (depression** كساد**):** In the trough output and employment at their lowest levels. The trough phase may be either short-lived or quite long.
- **Expansion (Recovery):** A recession is usually followed by a recovery and expansion, a period in which real GDP, income and employment rise. The economy again approaches full employment. If spending expands more rapidly than does production capacity, prices will rise (inflation).

Cyclical Impact: Durables and Nondurable.

Firms and industries producing capital goods (for example, housing, commercial buildings equipment) and consumer durables (for example, automobiles, and computers) are affected most in recession phase of business cycle.

Services industries and industries that produce nondurable consumer goods are somewhat affected by the recession. People find it difficult to cut back on needed medical and legal services, for example.

Unemployment: البطالة

The labor force, Employment, and Unemployment

Who's in the labor force?

The labor force consists of persons 16 years of age or older who are not in institutions and who are employed or unemployed but seeking for work (يبحث عن عمل).

البطالة: هي التعطيل أو التوقف الجبري عن العمل لجزء من القوة العاملة في المجتمع بالرغم من القدرة على العمل ، و الرغبة في العمل، والبحث عنه . لذلك إذا وجد شخص قادر على العمل و راغب فيه و لكنه لا يبحث عن العمل فلا يدخل ضمن إحصائيات البطالة ، كذلك إذا وجد شخص آخر يبحث عن عمل و يرغب فيه ولكنه غير قادر على العمل لأسباب صحية مثلاً، فإنه لا يدخل ضمن إحصائيات البطالة في المجتمع .

Labor Force (LF) = Employed (E) + Unemployed (U)

We divide the total population into three groups.

- ***People under 16 years of age and who are institutionalized***, for example, mental hospital (أصحاب الأمراض العقلية).

- ***Not in Labor Force***: is composed of adults who are potential workers but are not employed and are not seeking work. For example, they are homemakers, full-time students, or retirees (المتقاعدون).

- ***The labor force***: the labor force consists of people who are able and willing to work. Both those who are employed and those who are unemployed but actively seeking work.

  القوة العاملة هم جميع الافراد القادرين على العمل و الراغبين فيه و الباحثين عنه ، ويتم في العادة إستبعاد الأطفال دون سن 16 سنة و كبار السن و المتقاعدين و العاجزين و ربات البيوت غير الراغبات في العمل و الطلاب بأنواعهم .

  Total Population = $\begin{pmatrix} under\ 16\ years\ of\ age\ and \\ who\ are\ institutionalized \end{pmatrix}$ + $(Not\ in\ Labor\ Force)$ + $(\ Labor\ force)$

  $$Unemployment\ Rate = \frac{Unemployed}{Labor\ Force}\ x\ 100$$

Part-time employment

All part–time workers are fully employed, because part-time workers either wanted to work full-time or could not find full time work.

By counting part-time workers as fully employed, the official unemployment statistics understate (تقلل) the unemployment rate.

Example

Suppose there are 8 million part-time workers & 90 million full-time workers. 4 million of the part-time workers switch to full-time work. We can conclude that:

a. The official unemployment rate will decrease.
b. The official unemployment rate will increase.
c. The official unemployment rate will remain unchanged.

Because we consider part–time workers are fully employed ⇨ unemployment rate will remain unchanged

Discouraged workers

You must be actively seeking work in order to be counted as unemployed. An unemployed individual who is not actively seeking employment is classified as "not in the labor force". The problem is that many workers, after unsuccessfully seeking employment for a time, become discouraged and drop out of the labor force.

أي العمال الذين يئسوا من الحصول على فرصة عملة وتوقفوا عن البحث عن العمل، نظرا لأنهم قضوا فترة طويلة في البحث عنه، لكنهم لم يجدوه، وهؤلاء لا يدخلون في القوى العاملة .

By not counting discouraged workers as unemployed, the official unemployment statistics (الإحصاءات الرسمية) understate (تقلل) the unemployment rate.

- ✓ *A person who is neither holding a job nor searching for a job* (لا يعمل ولا يبحث عن عمل) *is not counted as part of the labor force.*

Example:

In September there are 10,000 people classified as unemployed and the size of the labor force is 400,000. The only change between September and October is that 4,000 of the unemployed give up looking for work. Which of the following is true?

(a) In September the unemployment rate was 4% and in October the unemployment rate was 1%.
(b) In September the unemployment rate was 2.5% and in October the unemployment rate was 1.5%.
(c) In September the unemployment rate was 5% and in October the unemployment rate was 4%.
(d) In September the unemployment rate was 1.75% and in October the unemployment rate was 0.75%.

Participation rate: نسبة المشاركة في القوى العاملة

The participation rate defined as the ratio of the labor force to the *manpower* (16 years of age and older)

$$Participation\ rate = \frac{Labor\ Force}{Not\ in\ labor\ force + labor\ force}\ x\ 100$$

.

Population 16 years of age and older = Not in labor force + labor force

Example:
Answer the next questions in the space below:

Variables	2009	2010
Total Population	1,800,000	2,000,000
Not in the labor Force	450,000	480,000
Part-time workers	40,000	45,000
Unemployed	80,000	72,000
Discourage workers	6,000	10,000
Employed	420,000	450,000

a. What is the size of the labor force in 2009?

Labor Force = Employed + Unemployed = 420,000 + 80,000 = 500,000

b. Calculate the official unemployment rate in 2009.

Unemployment rate = unemployed / labor force = 80,000 / 500,000 = 16%

c. Calculate the size of people under 16 years of age and who are institutionalized in 2010.

Total Population = people under 16 years of age + Not in the labor Force + Labor Force
2,000,000 = people under 16 years of age + 480,000 + (72,000 + 450,000)

⇨ People under 16 years of age = 2,000,000 – 1,002,000 = 998,000

d. Calculate the participation rate in 2010.

Participation rate = {labor force / (labor force + nor in the labor force)}

Participation rate = (450,000 + 72,000) / (522,000 + 480,000) = 522,000 / 1,002,000 = 52%

Example
Suppose the Palestinian population is 3,800,000 individuals, the number of individuals 16 years and above (manpower) is 2,000,000. Given that the labor force participation rate is 80% and unemployment rate is 16%. Calculate the following:

a. The number of people in the labor force.

Participation rate = labor force / Manpower

80% = L.F / 2,000,000 ⇨ labor force = 2,000,000 * 0.8 = 1,600,000

b. The number of people who are unemployed.

Unemployment rate = Unemployed / labor force

16% = Unemployed / 1,600,000 ⇨ Unemployed = 256,000

c. The number of employed people.

L.F = Employed + Unemployed

1,600,000 = Employed + 256,000 ⇨ Employed = 1,344,000

d. How many individuals are outside the labor force (not in the labor force)?

The number of individuals 16 years and above (manpower) = L.F + not in L.F

2,000,000 = 1,600,000 + not in the labor force

⇨ Not in the labor force = 2,000,000 – 1,600,000 = 400,000

Example

Refer to the information provided in table below to answer the questions that follow.

Labor force participation rate	60%
Total population 16 years of age and older	200 million
Unemployment rate	5%

The total number of people unemployed is:

$$Participation\ rate = \frac{Labor\ Force}{Not\ in\ labor\ force + labor\ force} \Rightarrow 60\% = \frac{Labor\ force}{200} \Rightarrow Labor\ force = 120million$$

$$Unemployment\ Rate = \frac{Unemployed}{Labor\ Force} \Rightarrow 5\% = \frac{Unemployed}{120} \Rightarrow Unemployed = 6\ million$$

Example

Refer to the information provided in table below to answer the questions that follow.

Total population (millions)	Currently employed (millions)	Not working and looking for work (millions)	Want to work but no longer looking for work (millions)
80	40	2	4

1. What is the size of the labor force?

   Labor Force = Employed + Unemployed (Not working and looking for work)
   Labor Force = 40 + 2 = 42 millions

2. What is the unemployment rate?

$$Unemployment\ Rate = \frac{Unemployed}{Labor\ Force}\ x\ 100\% = \frac{2}{42}\ x\ 100\% = 4.76\%$$

Types of unemployment

(1) Frictional Unemployment البطالة الاحتكاكية

Frictional unemployment referred to the type of unemployment that includes people who are voluntarily between jobs (يتنقل طواعية بين الوظائف) and looking for a better job.

هذه البطالة ناتجة عن انتقال بعض أفراد القوة العاملة من عمل إلى عمل آخر بسبب تطورات ظروف العمل مثل حدوث التطور التكنولوجي و الرغبة في وظيفة أفضل بعد الحصول على مؤهل علمي أعلى أو الرغبة في الانتقال من منطقة إلى أخرى أو التوسع في بعض الصناعات .

- Economists use the term frictional unemployment - consisting of search unemployment and wait unemployment- for workers who are either searching for jobs or waiting to take jobs in the near future.

- Many workers who are voluntarily between jobs are moving from low-paying, low productivity jobs to higher-paying, higher- productivity positions. That means greater income for the workers, a better allocation for labor resources, and a larger real GDP for the economy.

Example

If a worker quits her job because she wants to move to another state and begin looking for new work, this worker would be experiencing:

(a) Frictional unemployment
(b) Structural unemployment
(c) Cyclical unemployment
(d) Natural unemployment

(2) Structural Unemployment البطالة الهيكلية

Unemployment results because the composition of the labor force (skills and experience) does not respond immediately or completely to the new structure of the job opportunities.

تعرف البطالة الهيكلية على أنها حالة تعطل في أجزاء من القوة العاملة بسبب تطورات تؤدي إلى اختلاف متطلبات هيكل الاقتصاد القومي عن طبيعة العمل المتوفرة . فمثلاً تحول المجتمع من زراعي إلى صناعي فإن ذلك يعني تغيراً جذرياً قد يحصل في هيكل الاقتصاد يستوجب إنحسار العاملين في القطاع الأول لصالح الصناعة و عليه فإنه من الصعب على المزارع العادي أن يتحول إلى موظف إنتاج على آلة حديثة ، كما أن المجتمع الذي يخرج أعداد كبيرة من المتعلمين في تخصصات غير مطلوبة إنما يفاقم من مشكلة البطالة الهيكلية.

- The difference is that frictionally unemployed workers have marketable skills. Structurally unemployed workers find it hard to obtain new jobs without retraining, gaining additional education, or relocating. Frictional unemployment is short-term; structural unemployment is more likely to be long-term.

(3) Cyclical Unemployment

Unemployment that is caused by a decline in total spending is called cyclical unemployment and typically *begins in the recession phase of the business cycle*.

Example

Which type of unemployment increases during a recession?

(a) the natural unemployment rate (c) structural unemployment
(b) cyclical unemployment (d) frictional unemployment

Example

Indicate whether each of the following people is frictionally unemployed or structurally unemployed or cyclically unemployed or not officially unemployed or fully employed

a. A poorly educated (ضعيف التعليم) former telephone operator, replaced by a machine, seeking for work.

Structurally Unemployed

b. A woman with good job skills who cannot find a job due to a sluggish economy (رقود اقتصادي).

Cyclically Unemployed

c. A welfare recipient with good job skills who is not seeking for work.

Not Officially Unemployed

d. A man with obsolete job skills (ضعيف المهارات) who has given up trying (تَخلّى عن المحاولة) to find work.

Not Officially Unemployed

e. A man who are voluntarily (طوعاً) between jobs and looking for a better job

Frictionally Unemployed

f. A person who is part-time workers who is trying to find (يُحاولُ الإيجاد) full-time job.

Fully Employed

Example

The above table shows answers given by people interviewed in the Current Population Survey.

Person A	This person has just graduated from high school and is working at a part-time job but wants a full-time job.
Person B	This person has been laid off from a job but expects to be called back as soon as the economy improves.
Person C	At the age of 45, this person was laid off from the automobile industry when new equipment was installed and the person did not have the skills necessary to use the equipment. This person now is searching to find a new job.
Person D	As a result of this person's spouse being transferred to a job in a new city, this person is looking for a new job.
Person E	This person was laid off last year when new equipment was installed at the plant, reducing the number of workers needed. Shortly after being laid off, this person looked for a new job, was unable to find one, and then stopped looking for work.

1. Which people are structurally unemployed? *(Person C)*
2. Which people are cyclically unemployed? *(Person B)*
3. Which people are frictionally unemployed? *(Person D)*
4. Which person is a discouraged worker? *(Person E)*

Definition of Full employment

- Full employment is less than 100 percent employment of the labor force.
- Fully employed economy does not mean zero unemployment.
- The economy is fully employed when it is experiencing only frictional and structural unemployment.
- Full employed occurs when there is no cyclical unemployment.
- Unemployment rate that is consistent with full employment as the **full-employment rate of unemployment**, or the ***Natural Rate of Unemployment (NRU)***.
- *Natural rate of unemployment (NRU) = frictionally Unemployed + Structurally Unemployed.*
- At the natural rate of unemployment, the economy producing its ***potential output***.
- Potential output: is the output (GDP) that occurs when the economy is 'fully employed".
- The economy can operate at an unemployment rate below the NRU.
- The NRU was about 4 to 5 percent.

Example

At the economy's natural rate of unemployment (NRU):
(a) only frictional unemployment exists
(b) only structural unemployment exists
(c) there is only a relative small amount of cyclical unemployment
(d) employment rate is 100%
(e) The economy achieves its potential output.

An economy is considered to be at "*full employment*" when:
(a) 10-20% of the labor force is unemployed.
(b) 90% of the total population is employed.
(c) 90% of the labor force is employed.
(d) About 4-6% of the labor force is unemployed.

Full employment means that
(a) There is no cyclical or frictional unemployment.
(b) No one is unemployed.
(c) There is no structural or frictional unemployment.
(d) There is no cyclical unemployment.

Economic Cost of Unemployment

GDP gap and Okun's Law

GDP gap = Actual output – potential output

Potential output: is the output at full employment

Actual output: it cause when unemployment rate above the NRU.

GDP gap can be either negative (actual GDP < potential GDP) or positive (actual GDP > potential GDP)

- ✓ *Actual GDP > Potential GDP ⇨ Unemployment rate < Natural rate of Unemployment*
- ✓ *Potential GDP > Actual GDP ⇨ Unemployment rate > Natural rate of Unemployment*

Okun's Law:

The relationship between the unemployment rate and the GDP gap

- Okun's law indicates that for every 1 percentage point by which the actual unemployment rate exceeds the natural rate, a negative GDP gap of about 2 percent occurs.

Example
Assume that the natural rate of unemployment is 6%, the actual unemployment rate is 10, and potential GDP is $600 million. According to Okun's law, what is the GDP gap?

Actual unemployment rate – natural rate of unemployment = 10% - 6% = 4%

GDP gap = 2* 4% = 8% of potential GDP

GDP gap = 8% * 600 m = $48 m (losses).

Example
Assume that in a particular year the natural rate of unemployment is 5% and the actual rate of unemployment is 9%.

a. Use Okun's law to determine the size of the GDP gap in percentage point terms.

   Actual unemployment rate – natural rate of unemployment = 9% - 5% = 4%

   GDP gap = 2* 4% = 8% of potential GDP

b. If the potential GDP is $500 billion in that year, how much output is being forgone because of cyclical unemployment?

   Output is being forgone = 8% * 500 billion = $40 billion

Inflation التضخم

Inflation: Is a rise in the general level of prices.

- When inflation occurs, each dollar of income will buy fewer goods and services than before.
- Inflation reduces the "purchasing power" of money.
- Inflation does not mean that all prices are rising, some prices may be relatively constant and others may even fall.

Deflation: Is a decline in the general level of prices. (Negative inflation rate)

Measurement of Inflation

The main measure of inflation is the Consumer Price Index (CPI).

The Consumer Price Index (CPI) measures the cost of buying a fixed basket of goods and services representative of the purchases of consumers.

مؤشر أسعار المستهلك :هو مقدار التغير الشهري للأسعار لسلة محددة من البضائع الاستهلاكية والتي تشمل الغذاء والملبس والنقل . يعتبر مؤشر سعر المستهلك(CPI) ، المؤشر الرئيسي للتضخم، أو معدل التغير في الأسعار في بلد معين. تبين تقارير مؤشر سعر المستهلك (CPI) التغير في المؤشر الذي يقيس مجموع سعر سلة محددة من المنتجات والخدمات التي يشتريها الجمهور عادة. ويسمى مؤشر سعر المستهلك أيضاً مؤشر تكاليف المعيشة.

$$\text{Consumer Price Index (CPI)} = \frac{\text{Price of a fixed market basket in year } t}{\text{Price of the same market basket in a base year period}} \times 100$$

Example:

Suppose a basket of goods and services has been selected to calculate the CPI and 2002 has been selected as the base year. In 2002, the basket's cost was $50; in 2004, the basket's cost was $52; and in 2006, the basket's cost was $57.25. What is the value of the CPI in 2006?

$$\text{Consumer Price Index (CPI)} = \frac{\text{Price of a fixed market basket in year } 2006}{\text{Price of the same market basket in } 2002} \times 100 = \frac{57.25}{50} \times 100 = 114.5$$

The rate of inflation is equal to the percentage growth of CPI from one year to the next year.

$$\text{Inflation Rate} = \frac{CPI \text{ in year } t - CPI \text{ in year } t-1}{CPI \text{ in year } t-1} \times 100$$

Example

If the CPI was 210 in 2010 and 202 in 2009. What is the rate of inflation in 2010?

Inflation rate = $\frac{CPI\ in\ year\ 2010 - CPI\ in\ year\ 2009}{CPI\ in\ year\ 2009}$ x 100

Inflation rate = $\frac{210 - 202}{202}$ x 100 = 3.96%

By using the rule of 70, the price level will double in about: 70/3.96 = 17.67 years

Example

Use the information below to calculate the requested information.

	2008		2009	
	quantity	price	quantity	price
Banana	10	3	10	3
Carrots	15	2	15	4

a. Calculate the consumer price index for both years using 2008 as the base year.

CPI = Nominal GDP/ real GDP

$CPI_{(2008)} = 100\ (Base\ year)$

$CPI_{(2009)} = \frac{(10\ x\ 3)+(15\ x\ 4)}{(10\ x\ 3)+(15\ x2)}\ x\ 100 = \frac{90}{60}\ x\ 100 = 150$

b. Calculate inflation in 2009.

Inflation rate = $\frac{CPI\ in\ year\ 2009 - CPI\ in\ year\ 2008}{CPI\ in\ year\ 2008}$ x 100

Inflation rate = $\frac{150 - 100}{100}$ x 100 = 50%

c. How many years would it take prices to double?

Number of years would it take prices to double = $\frac{70}{Percentage\ rate\ of\ inflation} = \frac{70}{50} = 1.4\ year$

Types of Inflation

- **Demand –Pull Inflation** تضخم الطلب

  Demand- pull inflation occurs when total spending exceeds the economy's ability to provide goods and services at the existing price level; total spending pulls the price level upward. *This type of inflation is "too much spending chasing too few goods"*

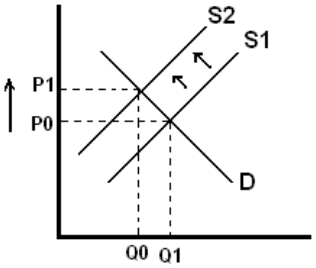
  و هو يحدث عندما يكون الطلب الكلي أكبر من العرض الكلي عند مستوى التشغيل الكامل أو مستوى قريب جداً من مستوى التشغيل (التوظيف) الكامل، و هذا يؤدي إلى ارتفاع المستوى العام لأسعار السلع و الخدمات .

- **Cost- Push Inflation** تضخم التكاليف

The cost push inflation explains rising prices in terms of factors that raise per-unit production costs at each level of spending.

و هو ناتج عن زيادة تكاليف الإنتاج و خاصة ً أجور العمال ، فقد يجد المنتج نفسه أحيانا ً أمام نقابات عمال قوية و قادرة على رفع مستوى أجور العمال لديه ، أو قد ترتفع أسعار بعض المواد الأولية بشكل مفاجئ ، و في جميع الحالات فإن ذلك سيترك أثرا ً مباشرا ً على السعر النهائي للمنتجات التي تأثرت بزيادة تكاليف إنتاجها .

- Rising per-unit production costs decrees profits and reduces the amount of output firms are willing to supply at the existing price level. As a result, the economy's supply of goods and services decline and the price level rises. Costs are pushing the price level upwards.



- The source of cost push inflation has been so-called **supply shocks**. Specifically, increase in the cost of raw materials or energy inputs.

- Cost-push inflation generates (يُولّدُ) a recession.

Redistribution Effects of Inflation

Inflation redistributes real income. This redistribution helps some people and hurts (يؤذي) some others while leaving many people unaffected.

Nominal Income and Real Income:

Nominal income: is the number of dollars received as wages, rent, interest, or profit.

Real Income: is a measure of the amount of goods and services nominal income can buy; it is the purchasing power of nominal income or income adjusted for inflation.

$$Real\ Income = \frac{Nominal\ income}{Price\ index}$$

Example

Variables	2008	2009
CPI	150	180
Nominal Income	$90,000	$100,000
Real GDP	$16,000	$16,800

a. What is the real income in 2008?

$$Real\ Income_{(2008)} = \frac{Nominal\ income}{Price\ index} = \frac{90{,}000}{1.5} = 60{,}000$$

b. What was the increase (or decrease) in real income from year 2008 to year 2009?

$$Real\ Income_{(2009)} = \frac{Nominal\ income}{Price\ index} = \frac{100{,}000}{1.8} = 55{,}556$$

⇨ Real income decrease by: $\frac{(60{,}000 - 55{,}556)}{55{,}556}\ x\ 100 = 8\%$

- If the change in the price level differs from the change in a person's nominal income, his real income will be affected. The following approximation tells us roughly how much real income will change:

$$\begin{pmatrix} Percentage\ change \\ in\ real\ income \end{pmatrix} = \begin{pmatrix} Percentage\ chnage \\ in\ nominal\ income \end{pmatrix} - \begin{pmatrix} Percentage\ chnage \\ in\ price\ level \end{pmatrix}$$

For example, suppose that the price level rises by 6 percent in some period. If his nominal income rises by 10 percent, then real income will increase by about 4 percent.

Anticipations:-

The redistribution effects of inflation depend upon (يعتمد على) whether or not it is expected.

Unanticipated inflation and anticipated inflation التضخم المتوقع والغير متوقع

Unanticipated inflation redistributes real income at the expense of fixed income receives creditors, and savers. If inflation is anticipated, individuals and businesses may be able to take steps to lessen or eliminate adverse redistribution effects.

Who Is Hurt by Inflation?

(1) Fixed- Income Receivers أصحاب الدخل الثابت

People whose incomes are fixed see their real incomes fall when inflation occurs (inflation cut the purchasing power of real income).

أصحاب الدخول الثابتة و هم يمثلون الغالبية العظمى من أفراد المجتمع فهم الذين يعانون من التضخم حيث ترتفع دخولهم النقدية بمعدل أقل من ارتفاع الأسعار و هذا يعني انخفاض الدخل الحقيقي لهم .

(2) Savers المدخرين

Unanticipated inflation hurts savers. As prices rise, the real value (purchasing power) of an accumulation of saving deteriorates.

(3) Creditors الدائنون

Unanticipated inflation hurts creditors (lenders). As prices go up, the value of the dollar goes down. So the borrower pays back less valuable dollars than those received from the lender.

التضخم بسبب الضرر للدائن ويستفيد المدين ، و ذلك بسبب انخفاض القيمة الحقيقية للدين.

Who Is Unaffected or Helped by Inflation?

(1) Flexible- Income Receivers.

People who have flexible incomes may escape inflation's harm or even benefit from it. Some union workers get automatic cost of living adjustment (COLAs) in their pay when the CPI rises.

(2) Debtors المدينون

Unanticipated inflation benefits debtors (borrowers).

Anticipated Inflation التضخم المتوقع

The redistribution effects of inflation are less severe or are eliminated altogether if people anticipate inflation and can adjust their nominal incomes to reflect the expected price level rises.

When inflation is anticipated, lenders add an inflation premium to the interest rate charged on loans. The nominal interest rate reflects the real interest rate plus the inflation premium (the expected rate of inflation).

Real interest rate: is the percentage increase in purchasing power that the borrower pays the lender.

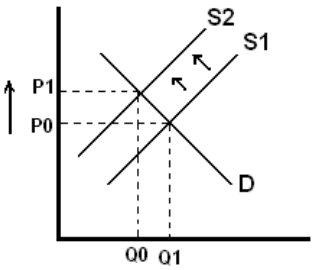
Nominal Interest rate: is the percentage increase in money that the borrower pays the lender.

Nominal Interest rate = real interest rate + inflation premium (the expected rate of inflation).

Does Inflation Affect Output?

Cost- Push Inflation and Real Output:

Cost push inflation reduces real output and employment. As prices rise, the quantity of goods demanded falls. So firms respond by producing less output, and unemployment goes up.



Mild Inflation (less than 3 percent) reduces the economy's real output.

Hyperinflation:

Hyperinflation, caused by highly imprudent expansions of the money supply), may undermine the monetary system and cause severe decline (هبوط حاد) in real output.

لتضخم هو الزيادة المطردة في مستوى إجمالي السعر. أما التضخم الجامح فهو المرتفع جداً. على الرغم من أن البداية تعسفية، إلا أن الإقتصاديين في العادة يحتفظون بالمصطلح "التضخم الجامح" لوصف الحالات التي يكون فيها معدل التضخم الشهري أكبر من 50%. التضخم الجامح ينتج عن النمو شديد السرعة في توفير العملة الورقية. و يحدث عندما تقوم السلطات المالية و النقدية للدولة بإصدار كميات كبيرة من النقود لدفع تدفق كير من النفقات الحكومية. في الواقع، هو شكل من أشكال فرض الضرائب حيث تقوم الحكومة بالكسب على حساب الأفراد الذين يحتفظون بالمال الذي تتراجع قيمته. هو، بالتالي، برامج فرض ضرائب كبيرة للغاية .

Chapter 27

Basic Macroeconomic Relationships

The Income- Consumption and Income- Saving Relationships:

Personal Consumption (C): is the part of disposable income that the individual consumed.
Personal Saving (S): that part of disposable income not consumed.

Personal saving (S) = Disposable income (DI) – Personal Consumption (C).

- Many factors determine a level of consumption and saving, but the most significant is disposable income.
- Both consumption spending and saving rise when disposable income increases, both fall when disposable income decreases.

  DI ↑ ⇨ C ↑ and when DI ↑ ⇨ S ↑

  DI ↓ ⇨ C ↓ and when DI ↓ ⇨ S ↓

  Other thing equal, there is a direct (positive) relationship between income and consumption and income and saving.

The Consumption Schedule (Consumption Function)

Shows the various amounts that households intend to consume at the various income and output levels, assuming a fixed price level.

Consumption function is a function of disposable income: DI ↑ ⇨ C ↑ and DI ↓ ⇨ C ↓

The Saving Schedule (Saving Function)

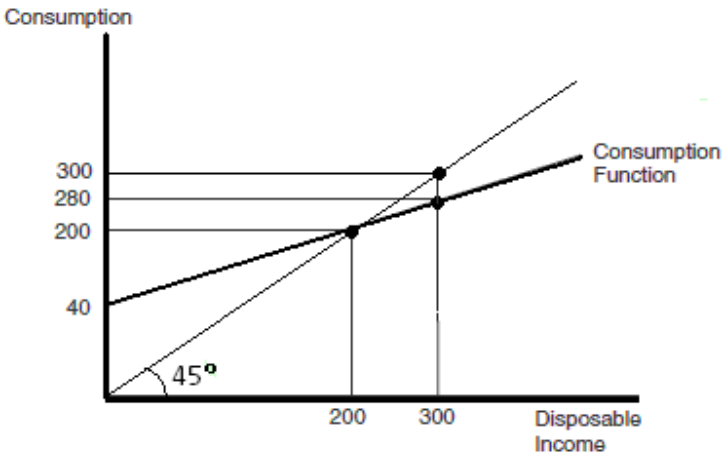
Shows the various amounts that households intend to save at the various income and output levels, assuming a fixed price level.

Saving function is a function of disposable income: DI ↑ ⇨ S ↑ and DI ↓ ⇨ S ↓

Consumption and Saving Schedules

The consumption and saving schedules are the direct relationships between disposable income and consumption and savings. As DI increases for a typical household, *C* and *S* both increase. Table below provides an example.

Disposable income (DI)	Consumption (C)	Saving (S)
0	40	− 40
100	120	− 20
200	200	0
300	280	20
400	360	40
500	440	60



Autonomous consumption الاستهلاك الذاتي أو بالاستهلاك المستقل أو التلقائي

Even with zero disposable income, households still consume as they liquidate wealth (sell assets), spend some savings, or borrow (dissavings).

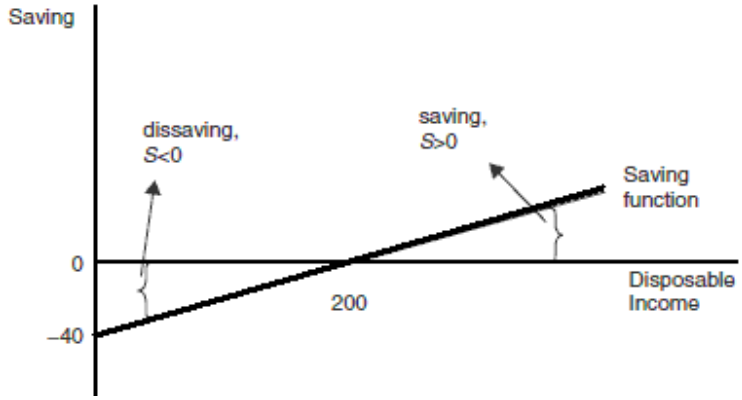
✓ *Autonomous consumption is the intercept of the consumption function*

الاستهلاك الذاتي: وهو يسمى كذلك بالاستهلاك المستقل أو التلقائي وهذا الاستهلاك يمثل قيمة ثابتة وهو مستقل عن مستوى الدخل أي لا يتغير بتغير الدخل، وهذا يتمشى مع واقع الحياة حيث لا يمكن تصور عائلة من العائلات بدون استهلاك حتى ولو لم يكن لها دخل، ويتم تمويل هذا الاستهلاك إما من مدخرات سابقة أو عن طريق الاقتراض مثلاً. **وهو يعني قيمة الاستهلاك عندما يكون الدخل = صفر.**

✓ *Each point on the 45° line consumption equal disposable income (DI =C).*

Figure above tell us that at incomes below $200, the consumer is consuming more than his income; as a result saving is negative and this is referred to as dissaving. But at incomes above $200, the consumer is spending less than his income; and so saving is positive.

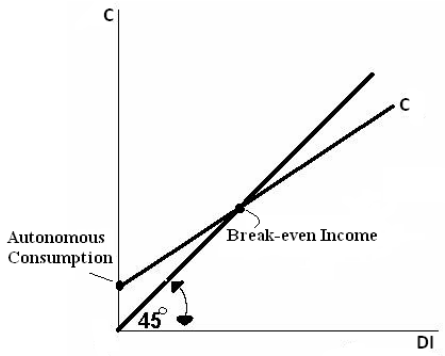
If the consumer is consuming more than his income (C >DI) ⇨ saving is negative (dissaving
If the consumer is consuming less than his income (DI > C) ⇨ saving is positive



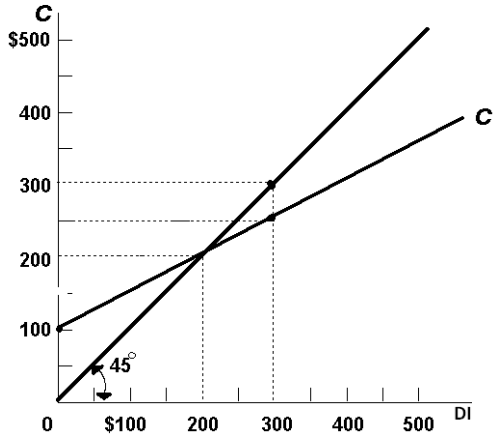
Break-even income

Is the income level at which households plan to consume their entire incomes (C = DI or S = 0).

Graphically, the consumption schedule cuts the 45° line, and the saving schedule cuts the horizontal axis at the break-even income level.



Example:
Use the following diagram to answer questions below it.



1. At disposable income 300, what is the value of saving?

   From the diagram: at DI = 300; Consumption = 250
   S = DI – C = 300 – 250 = $50

2. What is the break-even income?

   At break- even income DI = C or when consumption schedule cuts the 45° line

   Break- even income = $200

3. What is the amount of autonomous consumption?

   Autonomous consumption is the intercept of the consumption function (consumption schedule cuts the vertical line (Y axis)

   Autonomous consumption = 100

Average and Marginal propensities

Average propensity to consume (APC): is the fraction, or percentage, of total income that is consumed

$$Average\ propensity\ to\ consume\ (APC) = \frac{Consumption\ (C)}{Disposable\ Income\ (DI)}$$

Average propensity to save (APS): is the fraction, or percentage, of total income that is saved

$$\text{Average propensity to save (APS)} = \frac{Saving(S)}{Disposable\ Income\ (DI)}$$

Because disposable income is either consumed or saved, the fraction of any DI consumed plus the fraction saved must exhaust that income.

$$APC + APS = 1$$

Marginal propensity to consume (MPC): The fraction of any change in income consumed

Marginal propensity to consume (MPC) = $\frac{Change\ in\ Consumption\ (\Delta C)}{Change\ in\ Disposable\ Income\ (\Delta DI)}$

Marginal propensity to save (MPS): The fraction of any change in income saved.

Marginal propensity to save (MPS) = $\frac{Change\ in\ Saving(\Delta S)}{Change\ in\ Disposable\ Income\ (\Delta DI)}$

The sum of the MPC and the MPS for any change in DI must always be 1.

$MPC + MPS = 1$

- *As disposable income increase: APC decrease, but APS will increase*
- *As disposable income decrease: APC increase, but APS will decrease*

Example

DI	C	S	APC C / DI	APS S /DI	MPC Δ C / Δ DI	MPS Δ S / Δ DI
370	375	-5	375/370 = 1.01	1 - 1.01 = - 0.1	0.75	1 - 0.75 = 0.25
390	390	0	390/390 = 1.00	1 – 1.00 = 0.0	(390-375)/(390-370) = 0.75	1 – 0.75 = 0.25
410	405	5	405/410 = 0.99	1 – 0.99 = 0.1	(405-390)/(410-390) = 0.75	1 – 0.75 = 0.25
430	420	10	420/430 = 0.98	1 – 0.98 = 0.2	(420-405)/(430-410) = 0.75	1 – 0.75 = 0.25
450	435	15	435/450 = 0.97	1 – 0.97 = 0.3	(435-420)/(450-430) = 0.75	1 – 0.75 = 0.25

Example:

Suppose a family's annual disposable income is $8,000 of which it saves $2,000.

1. What is their APC?

APS = $\frac{Saving(S)}{Disposable\ Income\ (DI)} = \frac{2{,}000}{8{,}000} = 0.25$

APC = 1 – APS = 1 – 0.25 = 0.75

2. If their income rises to $10,000 and they plan to save $2,800, what are their MPS and MPC?

MPS = $\frac{Change\ in\ Saving(\Delta S)}{Change\ in\ Disposable\ Income\ (\Delta DI)} = \frac{(2{,}800-2{,}000)}{(10{,}000-\ 8{,}000)} = \frac{800}{2{,}000} = 0.4$

MPC = 1 – MPS = 1 – 0.4 = 0.6

Example:

Complete the following table assuming that MPS = 1/3

Level of income	Consumption	Saving
$100	$120	
130		
160		
190		
220		
250		

MPC = 1 – MPS = 1 - ⅓ = ⅔

MPC = $\frac{\Delta C}{\Delta DI}$ ⇨ ⅔ = $\frac{X-120}{130-100}$ ⇨ X – 120 = ⅔ * 30 ⇨ X – 120 = 20 ⇨ X = 120+20 = 140

عند مستوى دخل مقداره 130 يكون الاستهلاك 140 أي بزيادة مقدارها 20 عن الاستهلاك السابق.

ملاحظة: الزيادة في الاستهلاك هي زيادة ثابتة ومقدارها 20 لذلك عند مستوى دخل 160 يكون الاستهلاك 140+20 = 160 وعند مستوى دخل 190 يزيد الاستهلاك عن الاستهلاك السابق بمقدار 20 وبذلك يكون 180 وهكذا.

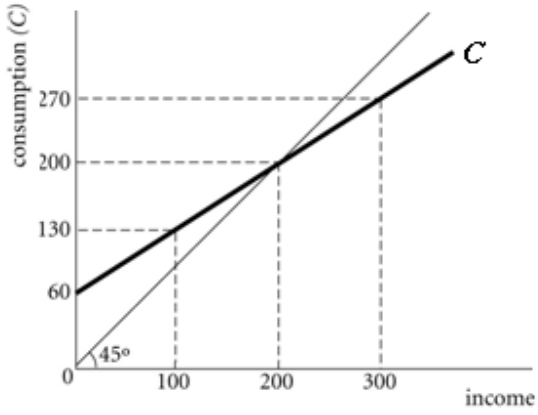
Level of income	Consumption	Saving S = DI – C
$100	$120	100 – 120 = -20
130	140	130 – 140 = -10
160	160	160 – 160 = 0
190	180	190 – 180 = 10
220	200	220 – 200 = 20
250	220	250 – 220 = 30

MPC and MPS as Slopes

The *MPC is the slope of the consumption function*, and the *MPS is the slope of the saving function*.

Example:

Refer to the information provided in Figure below to answer the questions that follow.



What are the MPC and MPS for this household?

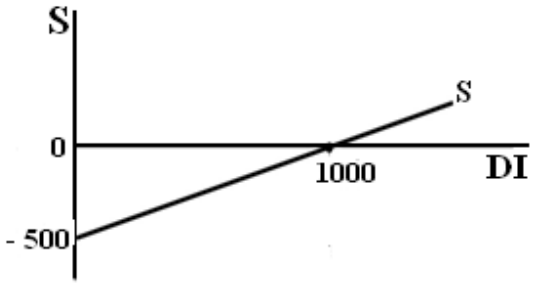
When DI = 100; C = 130
DI = 200; C = 200

$MPC = \frac{\Delta C}{\Delta DI} = \frac{(200 - 130)}{(200 - 100)} = \frac{60}{100} = 0.6$

$MPS = 1 - MPC = 1 - 0.6 = 0.4$

Example

Answer the next questions based on the following saving function.



a. What is the break-even income for this country?

At a break-even: S = 0

Break-even income = $1000

b. At DI = 1000, what is APC?

At DI = 1000, S = 0
But DI = C + S ⇨ 1000 = C + 0 ⇨ C = 1000

APC = $\frac{C}{DI} = \frac{1000}{1000} = 1$

c. What are the MPS and MPC?

MPS = slope of the saving function

(DI = 1000, S = 0) and (DI = 0, S = -500)

MPS = $\frac{Change\ in\ Saving(\Delta S)}{Change\ in\ Disposable\ Income\ (\Delta DI)} = \frac{(-500-0)}{(0-1000)} = \frac{-500}{-1000} = 0.5$

MPC = 1 – MPS = 1 – 0.5 = 0.5

Example

The following table includes data for the economy. Assume that the *MPS is 0.20*. Fill in the blanks in the table:

GDP = DI	Consumption	Average propensity to save (APS)
250	260	?
300	?	?
350	?	?

MPS = 0.20 ⇨ *MPC = 1 – 0.2 = 0.8*

$0.8 = \frac{X-260}{300-250}$ $X - 260 = 40$ ⇨ $X = 300$ (قيمة الاستهلاك عند مستوى دخل 300)

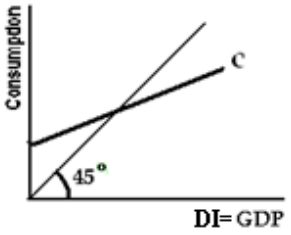
نلاحظ أن الاستهلاك يزيد بمقدار (300 – 260 = 40) وبذلك يكون الاستهلاك عند مستوى دخل 350 هو 340.

GDP = DI	Consumption	APC	APS
250	260	260/250 = 1.04	1 – 1.04 = -0.04
300	300	300/300 = 1	1 – 1 = 0
350	340	380/400 = 0.95	1 – 0.95 = 0.05

Determinates of Consumption and Saving

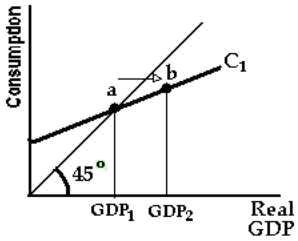
Switching to real GDP:

Economists change their focus from the relationship between consumption (and saving) and disposable income to the relationship between consumption (and saving) and real domestic output (real GDP).



Change along schedule

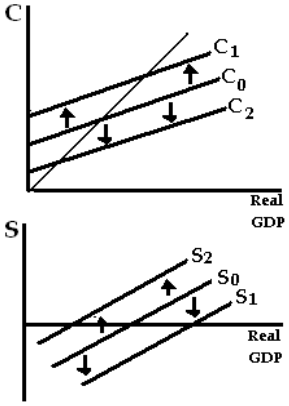
The movement from one point to another on a consumption schedule (for example, from ***a*** to ***b*** on C_1) is a change in the amount consumed and is solely caused by a change in real GDP.



Schedule Shifts:

- *If households consume more at each level of real GDP, they are necessary saving less.*
  Graphically this means that an upwards shift to the consumption schedule (C_0 to C_1), and a downward shift of the saving schedule (S_0 to S_1).

- *If households consume less at each level of real GDP, they are saving more.*
  Graphically this means that a downward shift to the consumption schedule (C_0 to C2), and an upwards shift of the saving schedule (S_0 to S2).



Consumption and saving functions shifters

- ***Wealth***

  A household's wealth is the dollar amount of all the assets that it owns minus the dollar amount of its liabilities. The point of building wealth is to increase consumption possibilities. The larger the stock of wealth that a household can build up, the larger will be its present and future consumption possibilities.

  Wealth effect: when wealth increase households tend to increase their spending and reduce their saving.

  Wealth ↑ ⇨ consumption (C) ↑ and saving ↓ (shifts the consumption curve upwards and the saving curve downwards).

تختلف الثروة عن الدخل ، فالثروة تمثل رصيداً أما الدخل فيشمل تدفقاً أو تياراً لأنه مرتبط بالزمن، أما الثروة فهي جميع ممتلكات الأفراد من الأصول المالية والعقارات .
ولا شك أن زيادة حجم الثروة يؤدي إلى زيادة الاستهلاك وانتقال دالة الاستهلاك إلى أعلى من C0 إلى C1

أما في حالة نقص الثروة يؤدي ذلك إلى نقص الاستهلاك وانتقال دالة الاستهلاك إلى أسفل من C0 إلى C2 . وطالما أن الدخل يقسم بين الاستهلاك والادخار فإنه يلاحظ بشكل عام أن زيادة الاستهلاك تعني نقص الادخار والعكس صحيح، فإذا انتقلت دالة الاستهلاك إلى أعلى من C0 إلى C1 فإن دالة الادخار تنتقل إلى أسفل من S0 إلى S1

- ***Borrowing***

  When household borrows, it can increase current consumption and reduce saving (shift the consumption curve upwards and the saving curve downwards).

  Borrowing ↑ ⇨ consumption (C) ↑ and saving ↓ (shifts the consumption curve upwards and the saving curve downwards).

- ***Expectation About Future Prices and Income*** التوقعات الخاصة بالدخل و الأسعار

  Expectation of rising prices tomorrow may trigger more spending and less saving today. This lead to shift current consumption up and current saving down.

  Expectation of a recession and thus lower income in the future may lead household to reduce consumption and save more today (consumption curve shift down and the saving curve shift up).

فمثلاً إذا توقع الأفراد زيادة دخلهم في العام القادم فإن استهلاكهم من السلع والخدمات يزداد الآن وتنتقل دالة الاستهلاك إلى أعلى من C0 إلى C1 ويحدث العكس إذا توقع الأفراد انخفاض دخلهم في المستقبل . وبشكل عام كلما كانت التوقعات متفائلة حول الدخل والثروة كلما زاد استهلاك الأفراد ، والعكس صحيح فالتوقعات المتشائمة تدعو إلى تقليل الاستهلاك والميل نحو الادخار أكثر .

- ***Real Interest Rate*** معدل الفائدة

  When the interest rate fall, households tend to borrow more, consume more and save less.

  Lower interest rates shift the consumption function upwards and the saving function downwards. Higher interest rates do the opposites.

  i ↓ ⇨ C ↑ , S↓

  i ↑ ⇨ C ↓ , S↑

المقصود بها معدلات الفائدة على المدخرات التي يودعها الأفراد في البنوك ، فعند زيادة أسعار الفائدة على المدخرات يزداد الادخار وتنتقل دالة الادخار إلى أعلى من S0 إلى S2 ، وعند زيادة الادخار يقل الاستهلاك وتنتقل دالة الاستهلاك إلى أسفل من C0 إلى C2 .
أما في حالة انخفاض أسعار الفائدة يقل الادخار وتنتقل دالة الادخار إلى أسفل من S0 إلى S1 ويزداد الاستهلاك وتنتقل دالة الاستهلاك إلى أعلى من C0 إلى C1 .

- ***Taxation***

  In the contrast, a change in taxes shifts the consumption and saving functions in the same direction.

  Taxes are paid partly at the expense of consumption and partly at the expense of saving. So an increase in taxes will reduce both consumption and saving (shifts both consumption and saving downwards).

  T ↑ ⇨ C↓ and S↓ (shift both consumption and saving schedules downward)

  T↓ ⇨ C↑ and S↑ (shift both consumption and saving schedules upward)

The Interest –Rate- Investment Relationship

Investment consists of expenditures on new plants, capital equipment, machinery, inventories, and so on.

The investment decision is a marginal benefit-marginal cost decision

- The marginal benefit from investment is the expected rate of return (r)
- The marginal cost is the interest rate (i) that must be paid for borrowed funds; the two are the determinants of investment spending.

- Businesses will invest in all projects for which the expected rate or return exceeds the interest rate($r > i$). Investments are not made when interest rate exceeds the expected rate of return ($r < i$)

  Expected return and the interest rate are the two basic determinants of investment spending.

يتجه المستثمرون نحو شراء السلع الرأسمالية إذا توقعوا الحصول على أرباح منها ، أي إذا كانت العوائد (الإيرادات) من الاستثمار أكبر من التكاليف المترتبة عليه، وبشكل عام يوجد ثلاثة عناصر رئيسية تحدد عملية اتخاذ قرار الاستثمار، وتتلخص هذه العناصر في العوائد، والتكاليف ، والتوقعات حول الوضع الاقتصادي المستقبلي .

Expected Rate of Return: معدل العائد على الاستثمار

Businesses only make investments when they expect to receive profits.

$$\textit{Expected rate of return } (r) = \frac{Total\ Revenue\ (TR) - Cost\ of\ Investment(TC)}{Cost\ of\ Investment(TC)} = \frac{Profit}{Cost\ of\ Investment(TC)}$$

For example, Suppose the owner of a small making shop is considering whether to invest in a new sanding machine that cost $1000 and has a useful life of only 1 year. The new machine will increase the firm's output and sales revenue. Suppose the net expected revenue from the machine is $1100. What is the expected rate of return?

$$\textit{Expected rate of return } (r) = \frac{Total\ Revenue\ (TR) - Cost\ of\ Investment(TC)}{Cost\ of\ Investment(TC)} = \frac{\$1{,}100 - \$1{,}000}{\$1{,}000} = 10\%$$

The Real Interest Rate

Interest Rate (i): the financial cost of borrowing

إذا أراد أحد المستثمرين شراء آلة معينة فإن تمويل شراء هذه الآلة يتم بأحد الأسلوبين التاليين:
الأسلوب الأول : عن طريق التمويل الذاتي، وفي هذه الحالة فإن تكلفة هذا التمويل تكون هي تكلفة الفرصة البديلة ، ويقصد بها (العائد الذي كان يمكن الحصول عليه لو تم استثمار الأموال في مجالات أخرى كشراء الأسهم والسندات أو إيداعها في البنك) فإذا كان العائد المتوقع الحصول عليه من هذه الآلة أكبر من العائد الذي يمكن الحصول عليه في المجالات الأخرى فإن الاستثمار يكون مجدياً من شراء هذه الآلة ، والعكس صحيح . أما الاسلوب الثاني عن طريق الاقتراض من البنك، وبالطبع فإن تكلفة الاقتراض من البنك هي سعر الفائدة، وعلى هذا الأساس فإن ارتفاع سعر الفائدة يقلل الاقتراض من البنوك وانخفاض سعر الفائدة يزيد الاقتراض من البنوك ،لذلك فإن انخفاض أسعار الفائدة يشجع المستثمرين على تمويل استثماراتهم عن طريق الاقتراض من البنوك وهذا يؤدي إلى زيادة حجم الاستثمار داخل الاقتصاد الوطني .

If the expected rate of return exceeds the interest rate ($r > i$), the investment should be profitable. But if the interest rate exceeds the rate of return ($i > r$), the investment should be unprofitable.

- The firm should undertake all investment projects it thinks will be profitable. That means it should invest up to the point where r = i because then *it has undertaken all investment for which r > i*.

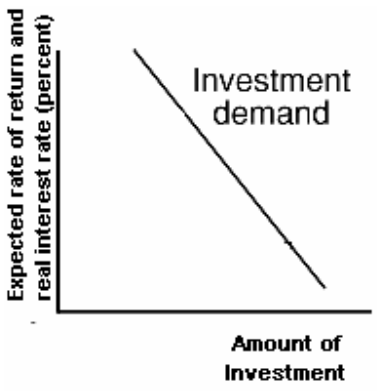
Investment Demand Curve منحنى الطلب على الاستثمار

The investment demand curve shows the total monetary amounts that will be invested by an economy at various possible real interest rates.

Investment demand curve slopes downward, reflecting an inverse relationship between the real interest rate and the quantity of investment spending.

بشكل عام يوجد علاقة عكسية بين سعر الفائدة وحجم الاستثمار فإذا ارتفع سعر الفائدة يقل الاقتراض من البنوك فيقل حجم الاستثمار ، أما إذا انخفض سعر الفائدة فيزيد الاقتراض من البنوك فيزيد حجم الاستثمار

Expected Rate of Return (r)	Cumulative Amount of Investment Having This Rate of Return or Higher (I)
16%	$ 0
14%	5
12%	10
10%	15
8%	20
6%	25
4%	30
2%	35
0%	40



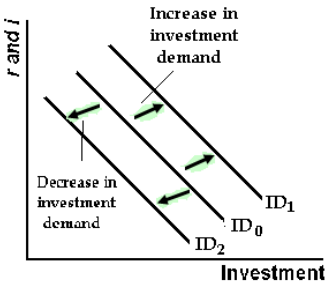
At the interest rate of 12 percent, $10 billion of investment goods will be demanded. If the interest rate is lower, say, 8 percent, the amount of investment for which r equals or exceeds i is 20 billions. Thus, firms will demand $20 billion of investment goods at an 8 percent real interest rate.

Shifts of the Investment Demand Curve

- *Any factor that leads businesses collectively to expect grater rates of return on their investment increases investment demand. That factor shifts the investment demand curve to the right as from ID_0 to ID_1.*

  r ↑ ⇨ investment demand (ID) increase ⇨ shifts the investment demand curve to the right

  i ↑ ⇨ movement from one point to another from the fixed ID curve (the amount of investment demand decrease)



- *Any factor that leads businesses collectively to expect lower rates of return on their investment decreases investment demand. That factor shifts the investment demand curve to the left, from ID_0 to ID_2.*

  r ↓ ⇨ investment demand (ID) decrease ⇨ shifts the investment demand curve to the left

  i ↓⇨ the amount of investment demand increase (ID do not shifts).

Determinates of Investment Demand: العوامل المؤثرة على منحنى الطلب على الاستثمار (محددات الاستثمار)

1. **Acquisition, Maintenance, and Operating Cost.** تكاليف الامتلاك والصيانة والتكاليف التشغيلية

   The initial costs of capital goods, the operating, and maintaining those goods, affect the expected rate of return on investment. For example, higher electricity costs associated with operating tools and machinery shifts the ID curve to the left. Lower costs shift it to the right.

   $r = \frac{Profit}{Cost}$, when cost ↑ ⇨ r ↓ ⇨ ID decrease ⇨ shifts the investment demand curve to the left

2. **Business Taxes**

   An increase in business taxes lowers the expected profitability of investment and shifts the ID curve to the left; a reduction of business taxes shifts it to the right.

   Increase in business taxes ⇨ cost ↑ ⇨r ↓ ⇨ ID decrease ⇨ shifts the investment demand curve to the left.

3. **Technological Change** التطور التقني أو التكنولوجي

   The development of new products, improvements in existing products, and the creation of new machinery and production processes, lowers production costs or improves in product quality and increase in expected rate of return (r), this leads to increase in ID (shift to the right).

   إن حدوث تطورات تكنولوجية وأساليب حديثة في الانتاج يؤدي إلى زيادة حجم الاستثمار بالرغم من ثبات سعر الفائدة ، وبالتالي انتقال منحنى الطلب على الاستثمار إلى اليمين

4. **Stock of Capital Goods on Hand.**

   Stock of capital goods on hand, relative to output and sales, influence investment decisions by firms. When the firms have excessive inventories of finished goods, the expected rate of return on new investment decline.

- Firms with excess production capacity have little incentive to invest in new capital ⇨ decrease ID (shift to the left)

- When firms are selling their output as fast as they can produce it, the expected rate of return on new investment increase and the investment demand curve shifts to the right.

5. **Planned Inventory Changes**

- An increase in inventories is counted as positive investment while a decrease in inventories is counted as negative investment.

- If firms are planning to increase their inventories, the investment demand curve shifts to the right. If firms are planning to decrease their inventories, the investment demand curve shifts to the lefts.

6. **Expectations**

- The expected rate of return on capital investment depends on the firm's expectations of future sales, future operating costs, and future profitability of the product that the capital helps produce.

- If expectations become more optimistic about future sales, costs, and profits, the investment demand curve will shift to the right.

ونعني بذلك الثقة بالوضع الاقتصادي المستقبلي، فإذا توقع المستثمرون حدوث ركود اقتصادي في دولة ما ، فإن حجم الاستثمار سيقل في هذه الدولة، الأمر الذي سيؤدي إلى انتقال منحنى الطلب الاستثماري لليسار ، أما إذا توقع المستثمرون حدوث انتعاش اقتصادي ، فإن حجم الاستثمار سيزيد، ومن ثم ينتقل منحنى الاستثمار لليمين

Chapter 28

The Aggregate Expenditures Model

Assumptions and Simplifications

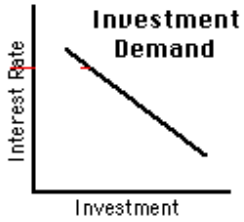
- We assume a "Private closed economy" with no international trade and no Government ($G=X_n = 0$)
- Although both households and businesses save, we assume here that all saving is personal.
- Depreciation and net foreign factor income are assumed to be zero for simplicity.
- Prices in the economy are fixed.
- With no government or foreign trade, GDP, personal income (PI), and disposable income (DI) are all the same. (DI = GDP)

Consumption and Investment Schedules

Investment demand vs. Investment schedule

Investment demand:

Investment demand (ID) curve shows the amount of investment at each interest rate.



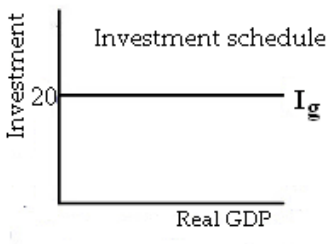
Investment schedule:

Investment schedule shows the amount of investment at each level of GDP.

In developing the *investment schedule*, it is assumed that the *planned investment* (the amount that firms plan or intend to invest) is independent of the current disposable income or real output.

Investment schedule is independent of level of GDP, since the rate of return and the interest rate together determine the amount of investment.

output and income	Investment (Ig)
$370	$20
390	20
410	20
430	20
450	20



Equilibrium GDP

Aggregate Expenditures Schedule (AE)

In privet close economy the aggregate expenditures consist of consumption plus investment.

$AE = C + I_g$

Equilibrium GDP*:*

Is the level at which the total quantity of goods produced (GDP) equals the total quantity of goods purchased (AE)

At equilibrium GDP: $GDP = AE \Rightarrow GDP = C + Ig$

- At levels of GDP less than equilibrium level of GDP, spending (AE) always exceeds production (GDP) (AE > GDP) ⇨ unplanned changes in inventories negative (shortage).
- At levels of GDP grater than equilibrium level of GDP, production (GDP) always exceeds spending (AE) (GDP > AE) ⇨ unplanned changes in inventories positive (surplus).
- At equilibrium level of GDP (GDP = AE) unplanned changes in inventories equal zero.

  Unplanned change in inventories = GDP – AE

Tabular Analysis

Employment (millions)	GDP = DI	Consumption(C)	Saving(S)	Investment(Ig)	Aggregate Expenditure (C+Ig)	Unplanned changes in inventories (+ or -)	Tendency of Employment, output
40	370	375	-5	20	395	-25	Increase
45	390	390	0	20	410	-20	Increase
50	410	405	5	20	425	-15	Increase
55	430	420	10	20	440	-10	Increase
60	450	435	15	20	455	-5	Increase
65	***470***	***450***	***20***	***20***	***470***	***0***	***Equilibrium***
70	490	465	25	20	485	+5	Decrease
75	510	480	30	20	500	+10	Decrease
80	530	495	35	20	515	+15	Decrease
85	550	510	40	20	530	+20	Decrease

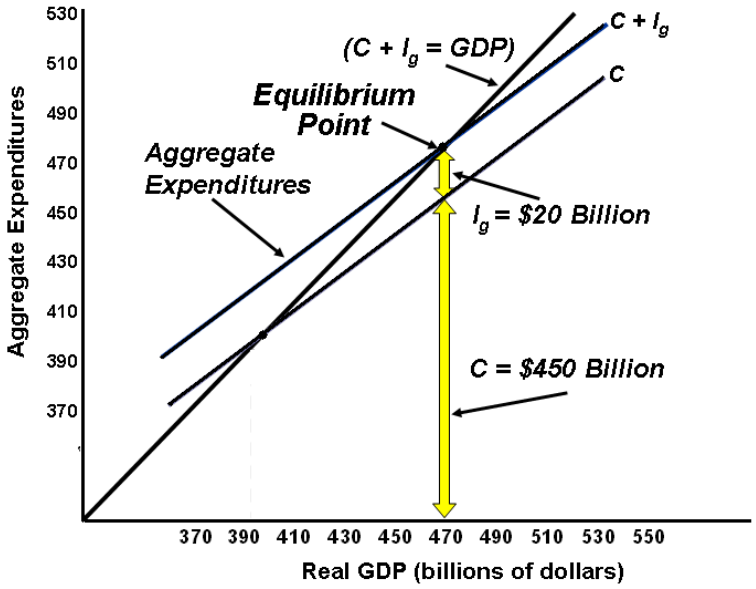
- Tendency of employment, output, and income: when GDP > AE ⇨ businesses can adjust to accumulation of unsold goods by cutting back on the rate of production. The resulting decline in output would mean fewer jobs and a decline in total income.

Graphical Analysis:

The aggregate expenditure schedule:

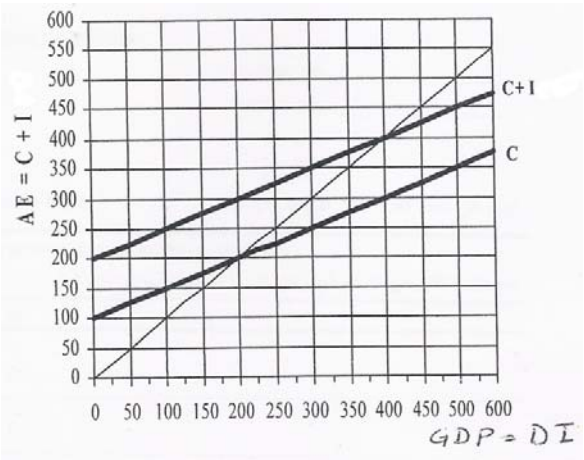
$AE = C + I_g$

- *The slope of the AE schedule is constant and equals the MPC.*
- *The vertical distances between C and AE schedule do not change and equal to investment.*
- *Equilibrium GDP is determined where the AE schedule intersect the 45° line (GDP = AE).*



Example

Consider the following graph which represents the AE curve for a closed economy. Answer the following questions based on the above graph.



a. *What is the break even level of disposable income?*

At a break even: C = DI (intersection 45° and C)

Break even income = $200

b. *What is the equilibrium GDP for this economy?*

At equilibrium GDP: AE = GDP (intersection 45° and C +Ig).

At equilibrium GDP = 400

c. *What is the amount of investment spending (Ig) for this economy?*

Ig = the vertical distance between C and C + Ig (the difference between the intercepts)

Ig = 200 – 100 = $100

d. *At the $400 level of disposable income, what is the APC?*

When DI = 400 ⇨ C = 300 ⇨ APC = C/DI = 300/ 400 = 0.75

e. *At the $500 level of DI, what is the amount of saving?*

When DI = 500 ⇨ C = 350 but S = DI – C = 500 – 350 = $150

f. *What is the MPC for this economy?*

MPC = (ΔC /ΔDI) = (300 – 200) / (400 – 200) = 100 / 200 = 0.5

Example

GDP = DI	Saving	Consumption	Investment	AE
600	-150		150	
700	-75		150	
800	0		150	
900	75		150	
1000	150		150	
1100	225		150	
1200	300		150	

Consider the table above which represents aggregate expenditure (AE) for a private closed economy.

a. *Complete the above table.*

GDP = DI	Saving	Consumption C = DI - S	Investment	AE AE = C + Ig
600	-150	750	150	900
700	-75	775	150	925
800	0	800	150	950
900	75	825	150	975
1000	150	850	150	1000
1100	225	875	150	1025
1200	300	900	150	1050

b. *What is the break-even level of income?*

At a break-even income: S =0 ⇨ when DI = $800

c. *What is the equilibrium level of GDP?*

At equilibrium GDP: AE = GDP ⇨ when GDP = 1000

d. *What is MPC for this economy?*

MPC = $\frac{\Delta C}{\Delta DI} = \frac{(775 - 750)}{(700 - 600)} = \frac{25}{100} = 0.25$

e. *At equilibrium, what is the APC?*

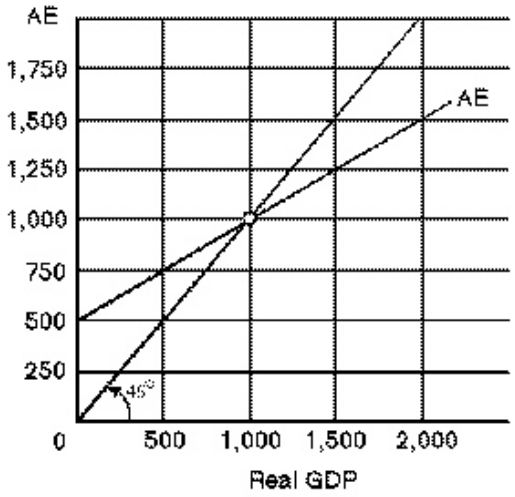
APC = $\frac{C}{DI}$

At equilibrium C = 850

APC = $\frac{850}{1000} = 0.85$

Example

Consider the following graph which represents the AE curve for a closed economy. Answer the following questions based on the above graph.



1. *What is MPC for this economy?*

   MPC = the slope of the AE

   MPC = $\frac{\Delta \text{ AE}}{\Delta \text{ GDP}} = \frac{(1000 - 750)}{(1000 - 500)} = \frac{250}{500} = 0.5$

2. *What is the equilibrium GDP for this economy?*

   At equilibrium GDP: AE = GDP (intersection 45° and AE).

   At equilibrium GDP = 1,000

3. *At a real GDP of $500 billion, what is the economy unplanned inventory?*

   At a real GDP of $500 billion: AE = 750

   Unplanned change in inventories = GDP – AE = 500 – 750 = −250 (*depletion of $250 billion)*

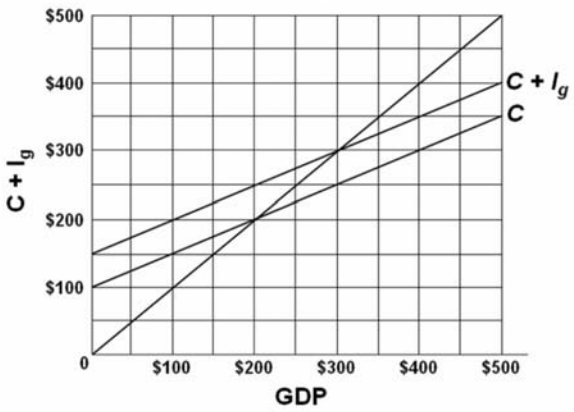
Example

Refer to the above diagram for a private closed economy. Answer the following questions based on the graph.

1. *What is the equilibrium level of GDP?*

   At equilibrium GDP: AE = GDP (intersection 45° and AE).

   At equilibrium GDP = 300



2. *At the equilibrium level of GDP, what is the value investment and saving*

   I_g = the vertical distance between C and C + I_g (the difference between the intercepts)

   I_g = 150 – 100 = $50

   Saving = DI – C

   At the equilibrium level of GDP: C = 250

   Saving = DI – C = 300 – 250 = 50

Other Features of Equilibrium GDP:

In the private closed economy C + I_g = GDP. There are two more characteristics of equilibrium GDP:

- Saving and planned investment (I_g) are equal (S =I_g).

- There are no unplanned changes in inventories (GDP = AE).

GDP = DI	Saving	Consumption C = DI - S	Investment	AE AE = C + Ig
600	-150	750	150	900
700	-75	775	150	925
800	0	800	150	950
900	75	825	150	975
1000	***150***	***850***	***150***	***1000***
1100	225	875	150	1025
1200	300	900	150	1050

Saving equals Planned Investment:

As shown by row 6 in table above, saving and planned investment is both $150 at the $1000 equilibrium level of GDP.

- Saving is a leakage or withdrawal of spending from the economy's circular flow of income and expenditures.

التسرب: الجزء الغير منفق من الدخل على الانتاج المحلى

- Investment is an injection of spending into the income expenditure stream.

الحقن: انفاق ياتي من مصدر اخر غير الدخل المحلي لعناصر الانتاج

If the leakage of saving at a certain level of GDP exceeds the injection of investment, then AE will be less than GDP (GDP > C + Ig). If the injection of investment exceeds the leakage of saving, then AE will be grater than GDP.

- *At equilibrium: Leakage = injection*
- *If leakage > injection ⇨ GDP > AE*
- *If injection > leakage ⇨ AE > GDP*

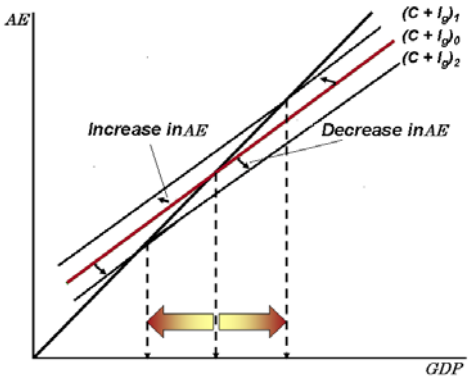
No unplanned changes in inventories

Unplanned changes in inventories = GDP – AE, but at equilibrium GDP = AE ⇨ no unplanned changes in inventories (unplanned changes in inventories = 0).

At equilibrium GDP: the amounts of goods produced equal the amounts of goods purchases.

Changes in the Equilibrium GDP and the Multiplier

Changes in the Equilibrium GDP



In the private closed economy, the equilibrium GDP will change in response to changes in either the investment schedule or the consumption schedule.

C ↑ or Ig ↑ ⇨ AE will shift upwards as from $(C + Ig)_0$ to $(C + Ig)_1$.

C ↓ or Ig ↓⇨ AE will shift downwards as from $(C + Ig)_0$ to $(C + Ig)_2$.

- An upward shifts of AE schedule from $(C + Ig)_0$ to $(C + Ig)_1$ will increase the equilibrium GDP.
- A downward shifts of AE schedule from $(C + Ig)_0$ to $(C + Ig)_2$ will decrease the equilibrium GDP.

An increase in the interest rate (i) leads to decrease investment ⇨ shift AE schedule downwards ⇨ decrease in equilibrium GDP.

An increase in the expected rate of return (r) leads to increase investment ⇨ shift AE schedule upwards ⇨ increase in equilibrium GDP.

The multiplier Effect

More spending results in a higher GDP; less spending results in lower GDP (C↑ = GDP↑, I↑ = GDP↑). A change in spending (C or I_g), changes output and income by more than the initial change in spending.

Multiplier effects: a change in a component of total spending leads to a larger change in GDP.

$$Multiplier(m) = \frac{Change\ in\ real\ GDP}{Initial\ chnage\ in\ spending}$$

Change in GDP = multiplier (m) x initial change in spending.

Initial change in spending is associated with change in investment, consumption, government spending, and net exports.

The multiplier and the Marginal Propensities:

$$Multiplier\ (m) = \frac{1}{1 - MPC} \qquad or\ Multiplier\ (m) = \frac{1}{MPS}$$

The MPC and the multiplier are directly related and the MPS and the multiplier are inversely related.

MPC ↑ ⇨ multiplier ↑ and MPS ↑ ⇨ multiplier ↓

Example

Suppose that a certain country has an MPC of 0.9 and a real GDP of $400 billion. If its investment spending decreases by $4 billion, what will be its new level of real GDP?

Change in GDP = multiplier (m) x change in investment

$\Delta\ GDP = m * \Delta\ I$

$Multiplier\ (m) = \frac{1}{1 - MPC} = \frac{1}{1 - 0.9} = \frac{1}{0.1} = 10$

Δ GDP = 10 * 4 = $40 billion decrease in GDP ($I \downarrow \Rightarrow$ GDP$\downarrow$)

New level of real GDP = 400 – 40 = $360 billion.

Example

If the marginal propensity to save is 0.2 in an economy, a $20 billion rise in investment spending will increase GDP by how much?

$Multiplier\ (m) = \frac{1}{MPS} = \frac{1}{0.2} = 5$

$\Delta\ GDP = m\ x\ \Delta\ I = 5\ x\ 20 = 100$ billion rise GDP

Example

a. What is the equilibrium level of GDP?

At equilibrium: GDP = AE = $300

b. If investment increased to $180 million, what is the new equilibrium GDP?

$\Delta\ GDP = m * \Delta\ I$

$MPC = \frac{\Delta C}{\Delta GDP} = \frac{200 - 150}{200 - 100} = \frac{50}{100} = 0.5$

$Multiplier\ (m) = \frac{1}{1 - MPC} = \frac{1}{1 - 0.5} = \frac{1}{0.5} = 2$

$\Delta\ I = (180 - 150) = 30$

$\Delta\ GDP = m * \Delta\ I = 2 * 30 = 60$ *million increase in GDP (investment increased ⇨GDP increase)*

New GDP = 300 + 60 = $360 million.

Example

Suppose a private closed economy describe by the following equations:
Consumption function: C = $200 + 0.5Y$ *Where Y = GDP = DI*
Investment function: $I_g = 100$

1. *At the $800 level of disposable income, what is the APC?*

   When DI = 800 ⇨ C = 200 + 0.5(800) = 600

   APC = $\frac{C}{DI} = \frac{600}{800} = 0.75$

2. *At the $500 level of DI, what is the amount of saving?*

   When DI = 500 ⇨ C = 200 + 0.5(500) = 450

   S = DI – C = 500 – 450 = $50

3. *What are the MPC and multiplier for this economy?*

   MPC = slope of the consumption function

   From the consumption function equation(C = $200 + 0.5Y$) slope = 0.5 = MPC

   Multiplier (m) = $\frac{1}{1 - MPC} = \frac{1}{1 - 0.5} = \frac{1}{0.5} = 2$

4. *What is the equilibrium GDP?*

   At equilibrium GDP: AE = GDP (AE = Y)

   AE = C + I_g ⇨ AE = 200 + 0.5Y + 100 ⇨ AE = 300 + 0.5Y

   At equilibrium GDP: Y = AE ⇨ Y = 300 + 0.5Y

   $\begin{Bmatrix} Y = 300 + 0.5Y \\ -0.5y \quad\quad - 0.5Y \end{Bmatrix}$ ⇨ 0.5 Y = 300 ⇨ Y = $\frac{300}{0.5} = 600$

   Equilibrium GDP = 600

5. *If its investment spending decreases by $ 10 billion, what will be its new equilibrium GDP?*

   $\Delta\ GDP = m * \Delta\ I$

   Δ GDP = 10 * 2 = $20 billion decrease in GDP

   New level of real GDP = 600 – 20 = $580 billion.

Adding International Trade

International trade is the exchange of goods and services between two countries.

Net exports and aggregate expenditures

We move from a closed economy to an open economy.

Net exports: The value of a country's total exports minus the value of its total imports ($X_n = X - M$)

Exports (X): are the total amount of goods and services produced in the home country that are bought by foreigners.

Imports (M): are the total amount of goods and services consumed in the home country that are bought from foreigners.

- When a country exports (X) more than it imports (M) it has a ***trade surplus.***
- When a country imports (M) more than it exports (X) it has a ***trade deficit.***
- When a country exports (X) equal it imports (M) it has a ***trade balance.***

In a ***private open economy***, aggregate expenditure are $C + I_g + (X - m)$

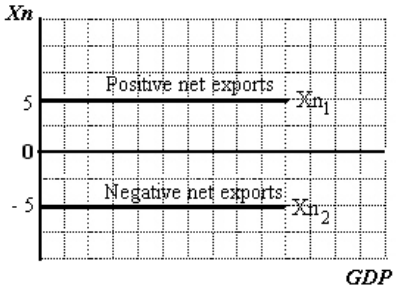
$$AE = C + I_g + X_n$$

Net exports schedule

A net exports schedule lists the amount of net exports that will occur at each level of GDP.

❖ Net exports schedule is independent of GDP (GDP change ⇨ X_n does not change)

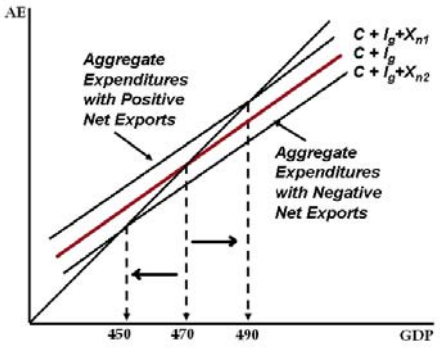
Level of GDP	Net exports X_{n1} (X > M)	Net exports X_{n2} (X < M)
$370	+ 5	- 5
$390	+ 5	- 5
$410	+ 5	- 5
$430	+ 5	- 5



Net exports and equilibrium GDP

Positive net exports such as shown by the net exports schedule X_{n1}, grater the aggregate expenditure schedule from the closed economy level of $C + I_g$ to the open economy level of $C + I_g + X_{n1}$.

Negative net exports such as shown by the net exports schedule X_{n2}, lower the aggregate expenditure schedule from the closed economy level of $C + I_g$ to the open economy level of $C + I_g + X_{n2}$.



- *Positive net exports increase AE and equilibrium GDP.*
- *Negative net exports decrease AE and equilibrium GDP*

Example

Suppose in an open economy where MPC = 0.75, exports increase by 10 million and imports increase by 15 million. What is the effect of equilibrium GDP?

Δ GDP = m * ΔX_n

$$Multiplier\ (m) = \frac{1}{1 - MPC} = \frac{1}{1 - 0.75} = \frac{1}{0.25} = 4$$

$\Delta X_n = 10 - 15 = -5$

Δ GDP = 4 * − 5 = − 20 million (fall by 20 million).

Example

Refer to the information provided in table below to answer the questions that follow.

GDP = DI	Consumption (C)	Investment (I_g)	Exports (X)	Imports (M)	Aggregate Expenditure (AE)
500	300	500	150	50	
1,000	600	500	150	50	
1,500	900	500	150	50	
2,000	1,200	500	150	50	
2,500	1,500	500	150	50	

1. Complete the following table

GDP = DI	Consumption (C)	Investment (I_g)	Exports (X)	Imports (M)	Aggregate Expenditure AE = C +I_g + X – M
500	300	500	150	50	300+500+150−50 = 900
1,000	600	500	150	50	600+500+150−50 = 1,200
1,500	900	500	150	50	900+500+150−50 = **1,500**
2,000	1,200	500	150	50	1,200+500+150−50 = 1,800
2,500	1,500	500	150	50	1,500+500+150−50 = 2,100

2. Refer to the above table. The economy shown is a: *(Chose the correct answer)*
   (a) Private economy. (b) Private open economy. (c) Mixed closed economy. (d) Mixed open economy.

3. What is the equilibrium GDP?

   At equilibrium GDP: AE = GDP ⇨ GDP = 1,500

4. What is the MPC?

$$MPC = \frac{\Delta C}{\Delta GDP} = \frac{600 - 300}{1{,}000 - 500} = \frac{300}{500} = 0.6$$

5. At equilibrium, what is the APC?

$$APC = \frac{C}{DI} = \frac{900}{1500} = 0.6$$

International economic linkages: (factors affected X_n)

- **Prosperity Abroad (increase foreign income)** الرفاهية في الخارج

  A rising level of real output and income among foreign trading partner enables the Palestine to sell more goods abroad, thus raising Palestine net exports and increasing its real GDP.

  Foreign income ↑ ⇨ exports ↑ ⇨ net exports ↑ ⇨ real GDP ↑

- **Tariffs** التعرفة الجمركية

  Suppose foreign trading partner impose high tariffs on Palestine goods to reduce their imports from the Palestine and thus increase production in their economies.

  الرسوم الجمركية هي ضرائب تفرض عادة على السلع المستوردة .قد تأخذ الرسوم شكل ضرائب قيمية تقدر بنسبة مئوية من قيمة السلعة، أو شكل مبلغ ثابت يفرض على السلعة مهما كانت قيمتها. الغرض من الرسوم الجمركية هو جمع إيرادات للحكومة وحماية للمنتجين المحليين من المنافسة الأجنبية · فعند زيادة الرسوم الجمركية يؤدي على ارتفاع سعرها مقارنة بالسلع المحلية وبالتالي يقل الطلب على السلع المستوردة

  Tariffs ↑ ➔ imports ↓ ➔ net exports ↑ ➔ real GDP ↑

- **Exchange rates سعر الصرف**

  Depreciation of the dollar relative to shekel enables people in U.S. to obtain more shekels with each unit of dollar. The price of Palestine goods in terms of dollar will fall, this leads to increase of Palestine exports. Also, Palestine customer will fine they need more dollars to buy U.S. goods and, this will leads to reduce their spending on imports. The increase exports and decreased imports will increase domestic net exports and thus expand the real GDP.

  يمكن تعريف سعر الصرف على أنه السعر الذي يتم به مبادلة عملة بلد ما بعملة بلد آخر ، وسعر الصرف الأجنبي هو قيمة الوحدة من العملة الأجنبية مقومة بوحدات من العملة المحلية.

  فعند ارتفاع سعر صرف الدولار مقابل الشيكل تعني تمكين الناس في الولايات المتحدة للحصول على مزيد شيكل مع كل وحدة من الدولار. وبالتالي فإن أسعار السلع فلسطينية بالدولار تنخفض ، وهذا يؤدي إلى زيادة الصادرات فلسطين. كذلك فإن المواطنين الفلسطينيين يحتاجون الى المزيد من الدولارات لشراء البضائع الأمريكية ، وهذا بدوره يؤدي إلى انخفاض الإنفاق على الواردات. فإن الزيادة الصادرات وتراجعت الواردات يؤدي الى زيادة صافي الصادرات المحلية، وبالتالي زيادة الناتج المحلي الإجمالي الحقيقي.

  Depreciation of domestic currency ⇨ exports ↑ and imports ↓ ⇨ net exports ↑ ⇨ real GDP ↑

  Appreciation of domestic currency ⇨ exports ↓ and imports ↑ ⇨ net exports ↓⇨ real GDP ↓

Adding the Public Sector

The final step in construction the full AE model is to move the analysis from a private open economy to an economy with a public sector that is called "*Mixed Economy*". Public sector includes government purchases (G) and taxes (T).

In private closed economy, $AE = C + I_g$.

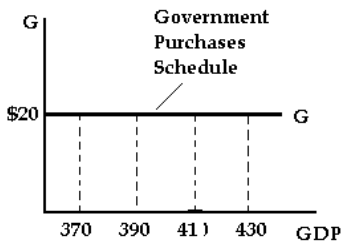
In private open economy, $AE = C + I_g + X_n$.

In mixed closed economy, $AE = C + I_g + G$.

In mixed open economy, $AE = C + I_g + G + X_n$.

Government Purchases Schedule

We assume that the government purchases are independent of the level of GDP.
GDP change ⇨ G does not change.



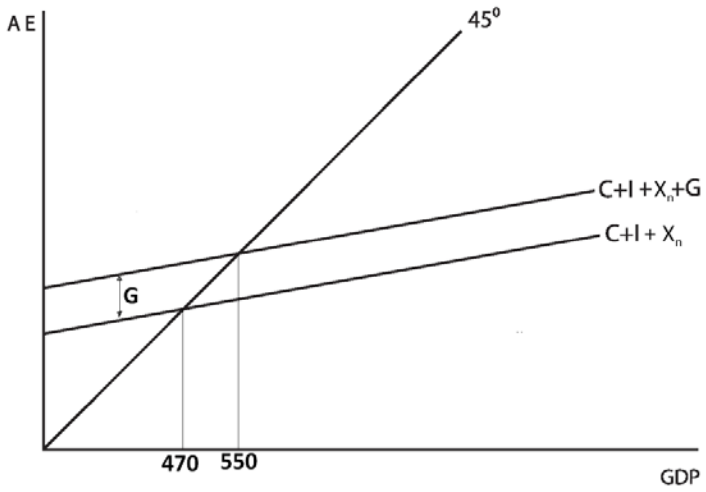
Government Purchases and Equilibrium GDP

The addition of government expenditures (G) raises the AE schedule and increases the equilibrium level of GDP. A decline in government purchases (G) will lower the AE schedule and result in a decline in equilibrium GDP.

If G ↑ ⇨ GDP ↑ $(\Delta GDP = m \times \Delta G)$

If G ↓ ⇨ GDP ↓ $(\Delta GDP = m \times \Delta G)$

Government spending is determined by a political process and is not based on the level of the GDP; it is graphed as a horizontal line when GDP is on the horizontal axis. When this horizontal line is added to the upward sloping Aggregate Expenditures line, it simply shifts Aggregate Expenditure upward by the amount of the government spending. See the two graphs below for an illustration. The equilibrium GDP will be determined by where the $C+I+X_n+G$ line intersect the 45 degree line in our standard model.



Tabular Example

GDP = DI	Consumption	Saving	Investment	Exports	Imports	Government Purchases	AE
450	435	15	20	10	10	20	475
470	450	20	20	10	10	20	490
490	465	25	20	10	10	20	505
510	480	30	20	10	10	20	520
530	495	35	20	10	10	20	535
550	**510**	**40**	**20**	**10**	**10**	**20**	**550**

AE = C + Ig + G + Xn
Equilibrium level of GDP = 550 (GDP = AE).

Example

Consider the following table for a given economy:

GDP = DI	C	I_g	G	X_n
400	450	15	25	10
500	525	15	25	10
600	600	15	25	10
700	675	15	25	10
800	750	15	25	10
900	825	15	25	10

a. What is the MPS?

$$MPC = \frac{\Delta C}{\Delta GDP} = \frac{525 - 450}{500 - 400} = \frac{75}{100} = 0.75$$

MPS = 1 – MPC = 1 – 0.75 = 0.25

b. What is the equilibrium GDP?

GDP = DI	C	I_g	G	X_n	AE = C+I_g+G+X_n
400	450	15	25	10	500
500	525	15	25	10	575
600	600	15	25	10	650
700	675	15	25	10	725
800	**750**	**15**	**25**	**10**	**800**
900	825	15	25	10	875

At equilibrium: GDP = AE = $800

c. If DI = $1000, what is APC?

When DI = 1000, C =?

MPC = 0.75 ⇨ $0.75 = \frac{X - 825}{1000 - 900}$ ⇨ 0.75 (100) = X – 825 ⇨ X = 825 + 75 = 900

When DI = 100, C =900

APC = $\frac{C}{DI} = \frac{900}{1000} = 0.9$

d. Suppose that gross investment decrease by 5 million, what would happen to real GDP? What is the new GDP?

$\Delta GDP = m \times \Delta I_g$ $\quad m = \frac{1}{MPS} = \frac{1}{0.25} = 4$

Δ GDP = 4 x−5 = −20 million

New GDP = 800 – 20 = $780 million

Example

If real GDP is $600 million below full employment level, by how much should government spending be increased to reach full employment, assuming that MPC is 0.8?

Δ GDP = m x Δ G

$m = \frac{1}{1 - MPC} = \frac{1}{0.20} = 5$

Δ GDP = 600

600 = 5 x Δ G ⇨ Δ G = $\frac{600}{5}$ = 120 million.

Example

Assume the current equilibrium level of income (GDP) is $200 billion as compared to the full-employment income level of $240 billion. If the MPC is 5/8, what change in aggregate expenditures is needed to achieve full employment?

Δ GDP = m x Δ AE

$m = \frac{1}{1 - MPC} = \frac{1}{1 - \frac{5}{8}} = \frac{1}{\frac{3}{8}} = \frac{8}{3}$

Δ GDP = 240 – 200 = 40

40 = $\frac{8}{3}$ x Δ G ⇨ Δ G = $\frac{40\ x\ 3}{8}$ = 15 billion

Increase aggregate expenditures by 15 billion

Taxation and Equilibrium GDP

Lump-sum tax: is a tax of a constant amount or a tax yielding the same amount of tax revenue at each level of GDP.

The tax lowers the consumption and saving.

$T \uparrow \Rightarrow C \downarrow by\ (MPC\ x\ T)$

$T \uparrow \Rightarrow S \downarrow by\ (MPS\ x\ T)$

Increase taxes leads to lower consumption leads to lower AE; shift AE downward and decrease the equilibrium GDP.

Decrease taxes leads to higher consumption leads to higher AE; shift AE upward and increase the equilibrium GDP.

Tabular Example

GDP	T	DI (DI = GDP – T)	C	S (S = DI – C)	Ig	X	M	G	AE (AE = C+Ig+G+X−M)
450	20	430	420	10	20	10	10	20	**460**
470	20	450	435	15	20	10	10	20	**475**
490	20	470	450	20	20	10	10	20	**490**
510	20	490	465	25	20	10	10	20	**505**
530	20	510	480	30	20	10	10	20	**520**
550	20	530	495	35	20	10	10	20	**535**

The equilibrium level of GDP = 490

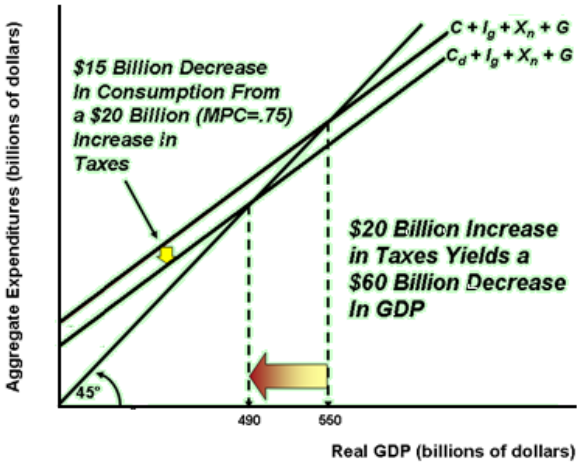
Graphical Analysis

Taxes will lower the consumption and AE. Shifts the AE downward ⇨ decrease equilibrium level of GDP.

If MPC = 0.75, a $20 billion of taxes will lower the consumption schedule by MPC X T = 0.75 x 20 = 15 billion. And lower saving by MPS x T = 0.25 x 20 = 5 billion. And cause a decline in the equilibrium GDP by the amount equal (m x Δ C = 4 * 15 = 60 billion) decrease in equilibrium GDP.

In the open mixed economy, equilibrium GDP occurs where GDP = $Ca + I_g + G + X_n$

Where Ca: Consumption after tax income



Example

Suppose the MPC is 0.8 and the government cuts taxes by $40 billion. What is the effect on the equilibrium GDP?

T ↓ ⇨ C ↑ ⇨ Shifts the AE schedule upward ⇨ increase equilibrium GDP.

T ↓ ⇨ C ↑ by (MPC x T) = 0.8 * 40 = 32 billion. *(Consumption increase by 32 billion)*

C ↑ ⇨ GDP ↑

△GDP = m x Δ C

$$m = \frac{1}{1-MPC} = \frac{1}{1-0.8} = \frac{1}{0.2} = 5$$

△GDP = 5 x 32 = 160 billion increase in GDP

Or by using tax multiplier

$$m_t = \frac{-MPC}{1-MPC} = \frac{-0.8}{1-0.8} = \frac{-0.8}{0.2} = -4$$

Δ GDP = m_t x Δ T = - 4 X (– 40) = 160 billion increase in GDP (T↓ ⇨ C↑ ⇨ GDP↑)

Example

Consider the following table for a given economy:

GDP	T	DI	C	I_g	G	AE
400	100		500	25	50	
500	100		575	25	50	
600	100		650	25	50	
700	100		725	25	50	
800	100		800	25	50	
900	100		875	25	50	

1. What is the equilibrium output (GDP)?

   At equilibrium: GDP = AE

GDP	T	DI DI = GDP – T	C	I_g	G	AE AE = C + Ig + G
400	100	300	425	25	50	500
500	100	400	500	25	50	575
600	100	500	575	25	50	650
700	100	600	650	25	50	725
800	100	700	725	25	50	800
900	100	800	800	25	50	875

The equilibrium level of GDP = 800

2. What are the MPC and multiplier?

$$MPC = \frac{\Delta C}{\Delta GDP} = \frac{500-425}{500-400} = \frac{75}{100} = 0.75$$

$$m = \frac{1}{1-MPC} = \frac{1}{1-0.75} = \frac{1}{0.25} = 4$$

3. Suppose the government wishes to increase equilibrium GDP to 1000. (1) By how much would they have to increase G to do this? (2) By how much would they have to decrease T to do this?

   (1) $\triangle$GDP = m x Δ G ⇨ (1000 – 800) = 4 x Δ G ⇨ Δ G = $\frac{200}{4}$ = 50 *(Increase G by 50)*

   (2) $\triangle$GDP = m_t x Δ T

$$m_t = \frac{-MPC}{1-MPC} = \frac{-0.75}{1-0.75} = \frac{-0.75}{0.25} = -3$$

$\triangle$GDP = m_t x Δ T ⇨ (1000 – 800) = −3 x Δ T ⇨ Δ T = $\frac{200}{-3}$ = −66.67 (*Decrease T by 66.67)*

Example

The table below gives data about the economy of country X, answer the questions below given the provided information.

GDP = Y	DI	C	Ig	G	X	M	AE
40			10	30	15	15	
60			10	30	15	15	
80			10	30	15	15	
100			10	30	15	15	
120			10	30	15	15	
140			10	30	15	15	
160			10	30	15	15	

a. Fill in the blanks in the table if $T = 20$ and $C = 10 + 0.75\,(Y - T)$.

GDP = Y	DI = Y -T	C	Ig	G	X	M	AE = C+Ig+G+X-M
40	40 – 20 = 20	10 + 0.75(20) = 25	10	30	15	15	25+10+30+15-15 = 65
60	60 – 20 = 40	10 + 0.75(40) = 40	10	30	15	15	40+10+30+15-15 = 80
80	80 – 20 = 60	10 + 0.75(60) = 55	10	30	15	15	55+10+30+15-15 = 95
100	100 – 20 = 80	10 + 0.75(80) = 70	10	30	15	15	70+10+30+15-15 = 110
120	120 – 20 = 100	10 + 0.75(100) = 85	10	30	15	15	85+10+30+15-15 = 125
140	140 – 20 = 120	10 + 0.75(120) = 100	10	30	15	15	100+10+30+15-15 = 140
160	160 – 20 = 140	10 + 0.75(140) = 115	10	30	15	15	115+10+30+15-15 = 155

b. What is the equilibrium level of income (GDP)?

At equilibrium: GDP = AE = $140 million.

c. What are the equilibrium values of consumption and saving?

At equilibrium: C = 100, DI = 120

S = DI – C = 120 – 100 = $20 million.

d. If taxes increase to 30, what is the new equilibrium GDP?

$$MPC = \frac{\Delta C}{\Delta GDP} = \frac{40-25}{40-20} = \frac{15}{20} = 0.75$$

$$m = \frac{1}{1-MPC} = \frac{1}{1-0.75} = \frac{1}{0.25} = 4$$

T ↑ ⇨ C ↓ by MPC x Δ T = 0.75 * (30 – 20) = 0.75 * 10 = 7.5

C ↓ ⇨ GDP ↓ by (m x Δ C)

Δ GDP = m x Δ C = 4 x (– 7.5) = –30 million

New GDP = 140 – 30 = 110 million.

Injections, Leakages, and Unplanned Changes in Inventories

❖ *At equilibrium GDP: Injections = Leakages*

For the private closed economy, $S = I$. For the expanded economy, imports (M), and taxes (T) are added leakages. Exports (X) and government spending are added to injection.

At the equilibrium GDP, the sum of the leakages equals the sum of injection.

$$\begin{Bmatrix} S + M + T \\ Leakages \end{Bmatrix} = \begin{Bmatrix} Ig + X + G \\ Injections \end{Bmatrix}$$

❖ *At equilibrium GDP: no unplanned changes in inventories*

At equilibrium GDP = AE *(total amount of goods produced equal total amount of goods purchases)*

Unplanned changes in inventories = GDP – AE, but at equilibrium GDP = AE (Unplanned changes in inventories = 0)

Example

Use the table below to answer the following questions:

GDP = DI	C	I_g	G	X	M	AE
200	150	50	40	10	20	**230**
225	165	50	40	10	20	**245**
250	180	50	40	10	20	**260**
275	**195**	**50**	**40**	**10**	**20**	**275**
300	210	50	40	10	20	**290**
325	225	50	40	10	20	**305**

a. What is the equilibrium level of GDP?

At equilibrium: GDP = AE = $275

b. Calculate the leakages and injections at equilibrium.

Leakages = S + M + T

At equilibrium: S = DI – C = 275 – 195 = 80

M = 20, T = 0

Leakages = S + M + T = 80 + 20 + 0 = 100

Injections = I_g + X + G = 50 + 10 + 40 = 100

At equilibrium: injections = leakages

Balance Budget multiplier

If both G and T increase by the same amount, then GDP increase by the same amount

For example if G ↑ by 20 million and T ↑ by 20 million ⇨ GDP ↑ by 20 million

And if G ↓ by 20 million and T ↓ by 20 million ⇨ GDP ↓ by 20 million

❖ *The balance budget multiplier = 1*

Example

Suppose that a certain country has an MPC of 0.8 and real GDP of 800 billion. If both government spending and taxes increase by 15 billion, what will be its new level of real GDP?

G ↑ by 15 billion ⇨ GDP ↑

Δ GDP = m x Δ G = $\frac{1}{0.2}$X 15 = 5 x 15 = $75 billion increase in GDP

T ↑ by 15 billion ⇨ GDP↓

Δ GDP = m_t x Δ T

$m_t = \frac{-MPC}{1-MPC} = \frac{-0.8}{1-0.8} = \frac{-0.8}{0.2} = -4$

Δ GDP = m_t x Δ T = −4 x 15 = − 60 billion decrease in GDP

Net effect = 75 – 60 = 15 billion increase in GDP

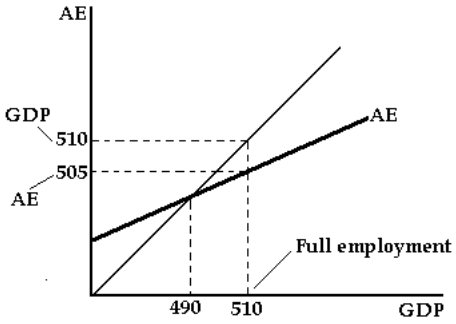
Equilibrium versus Full Employment GDP

The equilibrium GDP and the full employment GDP is not the same.

إن تحقيق توازن الدخل لا يعنى بالضرورة أن الاقتصاد يعمل عند مستوى التوظيف الكامل ،بل قد يحدث أن يتحقق التوازن عند نقطة أقل من مستوى التوظيف الكامل وهنا نقول أن هناك فجوة انكماشية ،أو يتحقق التوازن عند نقطة أعلى من مستوى التوظيف الكامل وهنا نقول أن هناك فجوة تضخمية .

Recessionary Expenditure Gap حالة الفجوة الانكماشية

Is the amount by which AE at the full employment GDP falls short of those needed to achieves the full employment GDP.



If at full employment, GDP > AE ⇨ *recessionary gap*

The size of the gap = GDP – AE (the vertical distance between AE and 45° line).

Recessionary Gap causes cyclical unemployment.

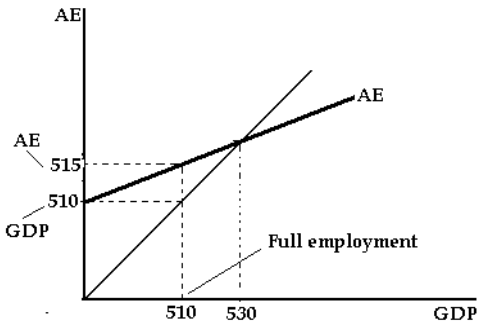
Keynes' Solution to a Recessionary Gap:

Keynes pointed to different policies that a government might pursue to close a recessionary gap and achieve full employment. The first is to increase government spending. The second is to lower taxes.

Inflationary Expenditure Gap

وهـى عكـس الفجـوة الانكماشـية وتحـدث عنـدما يكـون مسـتوى التـوازن للنـاتج الإجمـالي عنـد نقطـة أكبـر مـن مسـتوى التوظيـف الكامل،فالفجوة التضخمية عبارة عن الفرق بين المستوى المتحقق من الناتج المحلى الإجمالي والمستوى الـذي يمكـن تحقيقـه عنـد توظيف جميع الموارد المتاحة.

Is the amount by which AE at the full employment GDP exceed those just sufficient to achieve the full employment GDP.



❖ *If at full employment, GDP < AE ⇨ Inflationary Gap*

The size of the gap = AE – GDP (the vertical distance between AE and 45° line).

❖ *Inflationary gap causes demand pull inflation.*

Example

Use the data in the table to answer the questions below:

Level of Employment	Real output (GDP)	AE
90	500	520
100	550	560
110	600	600
120	650	640
130	700	680

a. If full employment is 130 million, will there be an inflationary gap or a recessionary gap? By how much would AE have to change at each level of GDP to eliminate this gap? What is the multiplier in this example?

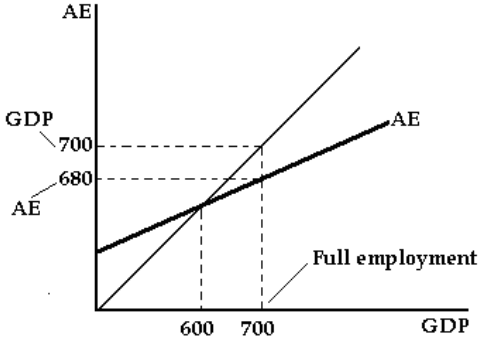
If full employment is 130 million: GDP = 700; AE = 680 ⇨ GDP > AE ⇨ recessionary gap

The size of the gap = GDP – AE = 700 – 680 = 20 million.

Multiplier $= \frac{\Delta \text{ GDP}}{\Delta \text{ AE}} = \frac{700-600}{700-680} = \frac{100}{20} = 5$

Or MPC $= \frac{\Delta AE}{\Delta GDP} = \frac{680-600}{700-600} = \frac{80}{100} = 0.80$

$m = \frac{1}{1-MPC} = \frac{1}{1-0.8} = \frac{1}{0.20} = 5$



b. Will there be an inflationary gap or recessionary gap if the full employment level of output is $500 billion? What is the size of this gap?

At full employment level of output of $500 billion: AE = 520 ⇨ AE > GDP ⇨ inflationary gap

The size of the gap = AE – GDP = 520 – 50 = 20 billion

c. Assuming that investment, net exports, and the government expenditures do not change with the changes in real GDP, what are the sizes of the MPC, the MPS, and the multiplier?

MPC = slope of the consumption function = slope of the AE schedule

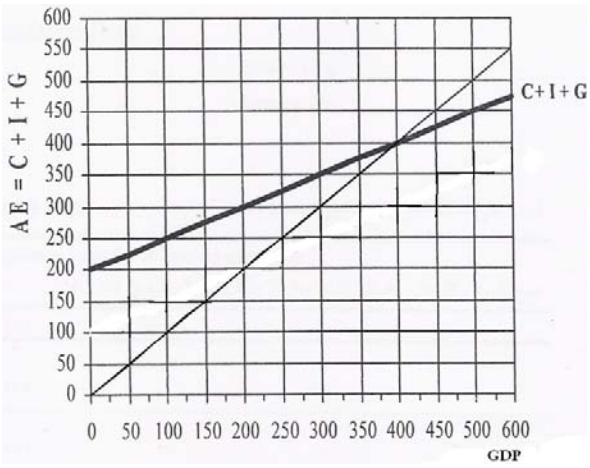
$$\text{MPC} = \frac{\Delta AE}{\Delta GDP} = \frac{680-600}{700-600} = \frac{80}{100} = 0.80$$

MPS = 1 – MPC = 1 – 0.8 = 0.20

$$m = \frac{1}{1-MPC} = \frac{1}{1-0.8} = \frac{1}{0.20} = 5$$

Example

Consider the following graph which represents the AE schedule for an economy. Suppose net exports are zero and investment is $60 million dollars and government spending is $40 million dollars.



Answer the following questions based on the above graph and information.

a. What is the equilibrium GDP for this economy?

At equilibrium GDP = AE = C+I+G = $400 million

b. What is the amount of consumption (C) at 300 level of output (GDP)? Show your work.

At GDP = 300 ⇨ AE = 350

AE = C+I+G ⇨ 350 = C + +60 + 40 ⇨ C = 350 – 100 = 250

c. At the 400 level of output (GDP), what is the APC? Show your work.

At GDP = 400 ⇨ AE = 400

AE = C+I+G ⇨ 400 = C + +60 + 40 ⇨ C = 400 – 100 = 300

$$\text{APC} = \frac{C}{DI} = \frac{300}{400} = 0.75$$

d. Suppose that the full employment GDP equals $300 million, would there be a recessionary gap or inflationary gap? Why? How much is the size of this gap? Show your work.

At full employment GDP, AE = 350 ⇨ AE > GDP ⇨ inflationary gap

The size of this gap = AE – GDP = 350 – 300 = 50 million.

e. What are the MPC and multiplier for this economy? Show your work.

MPC = slope of the AE schedule

$$\text{MPC} = \frac{\Delta AE}{\Delta GDP} = \frac{300-250}{200-100} = \frac{50}{100} = 0.5$$

$$m = \frac{1}{1-MPC} = \frac{1}{1-0.5} = \frac{1}{0.5} = 2$$

f. Suppose government spending is decreased by $15 million, by how much would GDP increase or decrease? What is the new equilibrium GDP?

G ↓ ⇨ GDP ↓, Δ GDP = m x Δ G = 2 x 15 = 30 million decrease in GDP

New GDP = 400 – 30 = $370 million.

Example

Assume that the full employment GDP of an economy is $1250 million, government expenditure on goods and services are $300 million, tax revenue is $320 million, and the economy is currently producing (GDP) $850 million. Assume also that MPS were 0.25.

a. Would there be a recessionary gap or inflationary gap? Why? How much is the size of this gap? Show your work.

Full employment GDP of an economy is $1250 million, AE = 850 ⇨ GDP > AE ⇨ recessionary gap

The size of this gap = 1250 – 850 = 400

b. By how much should government spending be increased or decreased to reach full employment?

Δ GDP = m x Δ G

Multiplier = 1 / 0.25 = 4

To reach full employment actual GDP must increase by 400 (from 850 to 1250)

Δ GDP = m x Δ G

400 = 4 x Δ G ⇨ Δ G = 400/4 = 100 million. (Increase by 100 million).

Chapter 29

Aggregate Demand and Aggregate Supply

Aggregate Demand

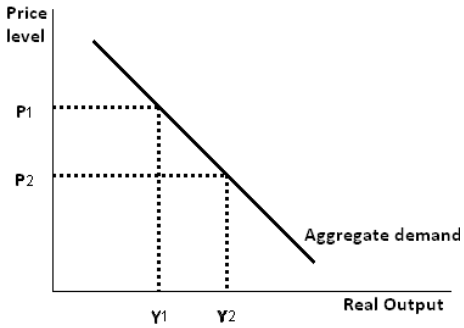
Is a schedule or curve that shows the amounts of real output (real GDP) that payers collectively desire to purchase at each possible price level.

The relationship between the price level and the amount of real GDP demanded is inverse or negative. When the price level rises, the quantity of real GDP demanded decreases; when the price level falls, the quantity of real GDP demanded increase.

P ↑ ⇨ output (real GDP) ↓ and when P ↓ ⇨ output (real GDP) ↑

يوضح المنحنى الطلب الكلي العلاقة بين المستوى العام للأسعار (General Price Level)، وهو عبارة عن متوسط سعري لأسعار السلع والخدمات المنتجة في الاقتصاد، وبين الكمية المطلوبة في الاقتصاد.

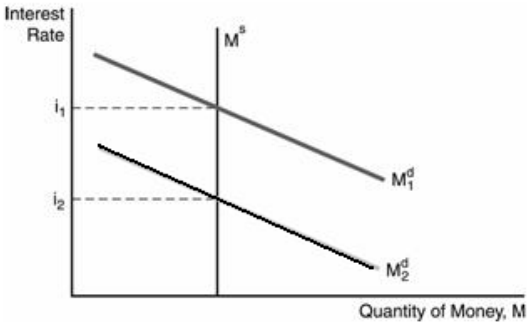
Aggregate Demand Curve (AD)



The AD slopes downward because, the inverse relationship between the price level and the real GDP. When the price level rises, the quantity of real GDP demanded decreases; when the price level falls, the quantity of real GDP demanded increase.

وينحدر منحنى الطلب الكلي من الأعلى إلى الأسفل وله ميل سالب وذلك بسبب وجود العلاقة العكسية بين السعر (المستوى العام للأسعار) وبين الكمية المطلوبة الكلية. فعند انخفاض المستوى العام للأسعار من (P1) إلى (P2)، ترتفع الكمية المطلوبة من (Y1) إلى (Y2)، مما يعني ارتفاع القوة الشرائية للأفراد (Purchasing Power)، أي إمكانية حصولهم على كميات أكبر من السلع والخدمات عن السابق. أما ارتفاع المستوى العام للأسعار فيعني انخفاض القوة الشرائية للقطاعات الاقتصادية، مما يعني انخفاض الطلب الكلي

Why the AD downward slope?



The explanation rests on three effects of a price level change.

1. ***Real Balances Effect***

   A higher price level reduces the real value or purchasing power of assets with fixed money values, this leads to reduce its consumption spending and real GDP

   P ↑ ⇨ purchasing power of assets ↓ ⇨ C ↓ ⇨ GDP↓

2. ***Interest- Rate Effect***

   When the price level rises, consumers need more money for purchases and businesses need more money to meet their payroll and to buy other resources. A higher price level increases the demand for money. So, given a fixed supply of money, an increase in money demand will drive up the interest rate. Higher interest rate lower investment and then GDP.

   P ↑ ⇨ M^d ↑ ⇨ i ↑ ⇨ I ↓ ⇨ GDP ↓

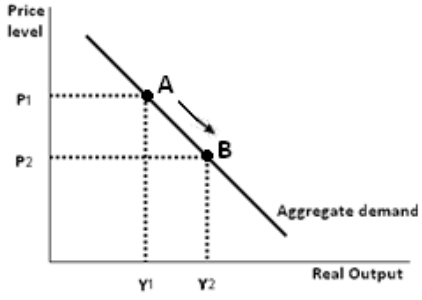
3. ***Foreign Purchases Effect***

   When the domestic price level rises relative to foreign price levels, foreigners buy fewer domestic goods and domestic individual buy more foreign goods. Therefore, domestic exports fall and domestic imports rise. This leads to decrease net exports and GDP.

   P ↑ ⇨ X ↓ and M ↑ ⇨ X_n ↓ ⇨ GDP ↓

Change in Aggregate Demand

Change the amount of real GDP demanded

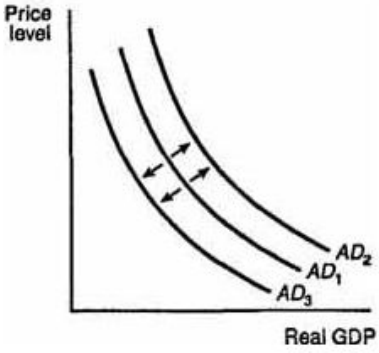


The movement along a fixed AD curve that is caused by a change in the price level

P ↑ ⇨ decrease the amount of real GDP demanded

P↓ ⇨ increase the amount of real GDP demanded

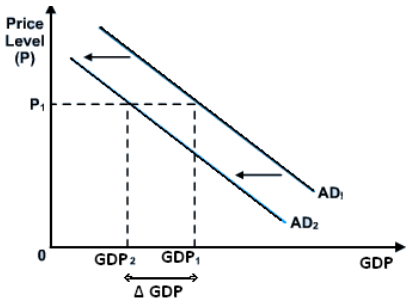
Change in the Aggregate Demand



A change in one or more of the determinates of AD will shift the AD curve.

- The rightward shift from AD_1 to AD_2 represents an increase in AD.
- The leftward shift from AD_1 to AD_3 shows a decrease in AD.

*Change in GDP = m * change in spending*



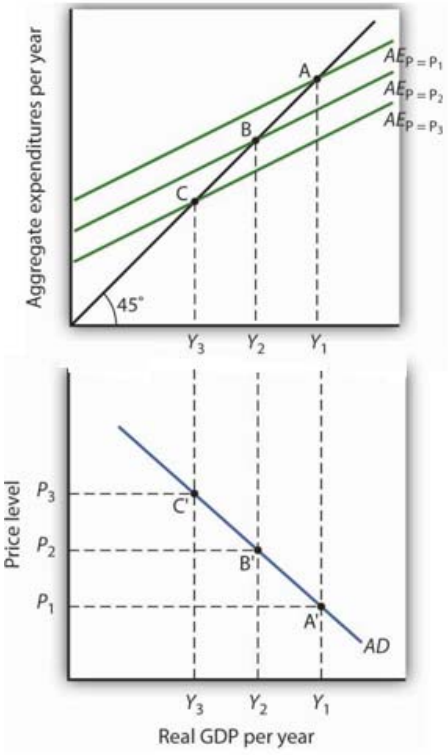
For example, if the economy's MPC is 0.75 and the initial decrease in spending is $5 billion.

The multiplier equal (1 / 0.25) = 4

Change in GDP = 4 x 5 = $20 billion decrease in GDP

The Relationship of the Aggregate Demand Curve to the Aggregate Expenditure Model:

Derivation of the AD curve from the AE model



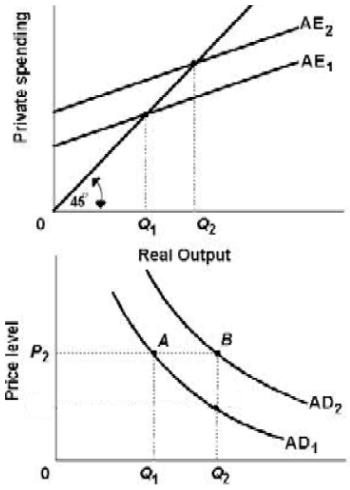
Rising price level from P_1 to P_2 to P_3 shift the AE curve downwards from AE_1 to AE_2 to AE3 and reduce real GDP from Q_1 to Q_2 to Q_3.

The AD curve is derived by plotting the successively lower real GDP from the upper graph against the P_1, P_2, and P_3 price levels.

Because there is a different aggregate expenditures curve for each price level, there is a different equilibrium real GDP for each price level. Panel (a) shows aggregate expenditures curves for three different price levels. Panel (b) shows that the aggregate demand curve, which shows the quantity of goods and services demanded at each price level, can thus be derived from the aggregate expenditures model. The aggregate expenditures curve for a price level of P_2, for example, intersects the 45-degree line in Panel (a) at point B, producing an equilibrium real GDP of Y_2 billion. We can thus plot point B' on the aggregate demand curve in Panel (b), which shows that at a price level of P_2, a real GDP of $\$Y_2$ billion is demanded.

Aggregate Demand Shifts and the Aggregate Expenditures Model:

A change in some determinant of consumption, investment, or net exports shifts the AE schedule upward from AE_1 to AE_2. The multiplier increases real output from Q1 to Q2.



Shifts of AD curve = initial change in spending x multiplier

Fro example, if investment spending increase is reflected in a shift in AE schedule upwards from AE_1 to AE_2 and shifts in AD curve to the right from AD_1 to AD_2. This leads to increase in output from Q_1 to Q_2.

Shifts of AD curve = change in investment spending x multiplier

Δ output (ΔQ) = ΔI_g x m

Determinants of Aggregate Demand: Factors That Shift the Aggregate Demand Curve.

1. ***Change in consumer spending (C).***

   If the consumers decide to buy more output at each price level, the aggregate demand curve will shift to the right.

   C ↑ ⇨ GDP ↑ at each price level ⇨ shift AD curve to the right.

   C ↓ ⇨ GDP ↓ at each price level ⇨ shift AD curve to the left.

   Several factors may change consumer spending (C) and therefore shift the AD curve. Those factors are:

   a. **Consumer Wealth: Wealth** ↑ ⇨ C ↑ ⇨ GDP↑ ⇨ shift AD curve to the right

   b. **Consumer Expectations on Real Income and Prices**: The expectation about future incomes to rise, they tend to spend more of their current incomes ⇨ consumption ↑ ⇨ GDP ↑ ⇨ shift AD curve to the right

   c. **Household Borrowing**: consumer can increase their consumption spending by borrowing ⇨ shift AD curve to the right.

   d. **Taxes**: increase in personal taxes lower the disposable income and decrease consumer spending at each price level ⇨ shift AD curve to the left.

2. ***Change in Investment Spending (Ig).***

   An increase in investment spending will shift the AD curve to the right.

   A decline in investment spending will shift the AD curve to the left.

   Ig ↑ ⇨ GDP ↑ at each price level ⇨ shift AD curve to the right.

   Ig ↓ ⇨ GDP ↓ at each price level ⇨ shift AD curve to the left.

   Investment spending depends on the real interest rate (i) and the expected rate of return (r).

   a. **Interest rate (*i*)**: other things equal, an increase in real interest rate will lower investment and reduce AD ⇨ shift AD to the left.

   b. **Expected returns (*r*)**: higher expected returns on investment projects will increase AD ⇨ shift AD to the right.

3. ***Change in Government Spending (G).***

   An increase in government spending will shift the AD curve to the right.
   A decrease in government spending will shift the AD curve to the left.

   G ↑ ⇨ GDP ↑ at each price level ⇨ shift AD curve to the right.
   G ↓ ⇨ GDP ↓ at each price level ⇨ shift AD curve to the left.

4. ***Change in Net Exports Spending (X_n).***

Other thing equal, higher domestic exports rise in net exports, shift the AD curve to the right.

A decrease in net exports shift the AD curve leftward.

X_n ↑ ⇨ GDP ↑ at each price level ⇨ shift AD curve to the right.

X_n ↓ ⇨ GDP ↓ at each price level ⇨ shift AD curve to the left.

Change in national income abroad and change in exchange rate will cause net exports to change at each price level.

a. **National Income Abroad**: rising national income abroad encourages foreigners to buy more domestic goods ⇨ exports increase ⇨ net exports increase ⇨ GDP increase ⇨ shift AD curve to the right.

b. **Exchange Rate**: a depreciates in domestic currency leads to increases net exports ⇨ GDP increase ⇨ shift AD curve to the right.

   An appreciate in domestic currency leads to decreases net exports ⇨ decrease GDP ⇨ shift AD curve to the left.

Aggregate Supply (AS)

Is a schedule or curve showing the relationship between the price level and the amount of real domestic output that firms in the economy produce.

العرض الكلي : مجموعة السلع والخدمات التي ينتجها المجتمع في فترة زمنية معينة. وهو علاقة بين المستوى العام للاسعار وكمية السلع والخدمات التي يتم إنتاجها.

The relationship between price and real output varies depending on the time horizon and how quickly output prices and input prices can change.

We will define three time horizons:

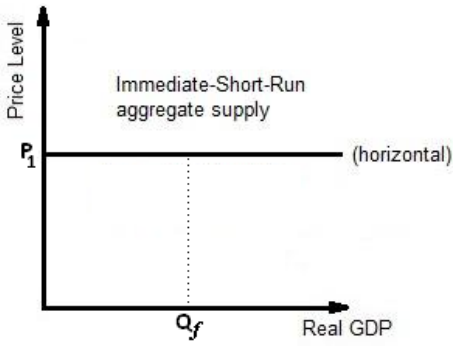
- ***In the immediate short run***: both input prices as well as output prices are fixed.
- ***In the short run***: input prices are fixed, but output prices can vary.
- ***In the long run***: input prices as well as output prices can vary.

Aggregate Supply in the Immediate Short Run

- The immediate short run can last anywhere from a few days to a few months.

- In immediate short run both input prices and output prices stay fixed (In particular, 75 percent of the average firm's costs are wages and salaries, and these are almost always fixed by labor contract for months or years at a time).

- Output prices are also fixed in the immediate short run. This is caused by firms setting fixed prices for their customers and then agreeing (المُوَافَقَة) to supply whatever quantity demanded results at those fixed prices.



- With output prices fixed and firms selling however much customers want to purchase at those fixed prices, ***the immediate short run aggregate supply curve (AS_{ISR}) is a horizontal line***.

- If total spending is low at price level P_1, firms will supply a small amount to match the low level of spending. If total spending is high at price level P_1, they will supply a high level of output to match the high level of spending.

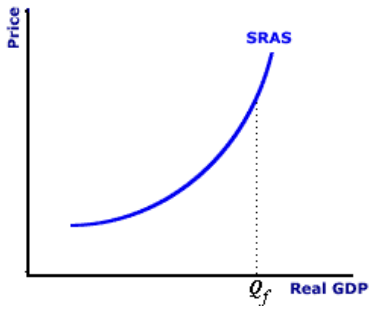
- The amount of output that results may be higher than or lower than the economy's full employment output level (Q_f).

Aggregate Supply in the Short Run العرض الكلي في المدى القصير

- The short run begins after the immediate short run ends. The short run is a period of time during which output prices are flexible, but input prices are fixed or highly inflexible.

- The AS curve in the short run is upward sloping. The upsloping AS curve indicates a direct (positive) relationship between the price level and the amount of real output that the firms will offer to sale.

- The AS curve is relatively flat below the full employment output (Q_f) because unemployed resources and unused capacity allow firms to respond to price level rises with large increase in real output.



العرض الكلي في المدى القصير:
يمكن تعريف المدى القصير بالفترة الزمنية التي يتغير فيها الناتج المحلي الإجمالي الحقيقي وبصفة مؤقتة فيزيد أو ينقص عن مستوى الناتج المحلي الإجمالي الكامل. وفي الوقت نفسه، يرتفع أو ينخفض معدل البطالة عن المعدل الطبيعي.
في المدى القصير ، يرتفع أو ينخفض معدل البطالة عن معدل البطالة الطبيعي، نتيجة لجهل العمال بالتغيرات في مستوى الأسعار والأجور الحقيقية. يفسر ذلك بتوفر المعلومات عن زيادة مستوى الأسعار للمنشآت، وعدم توفرها للعمال، فتزيد الأرباح الحقيقية ويزيد الناتج مع زيادة الأسعار، والعكس في حالة انخفاضها.

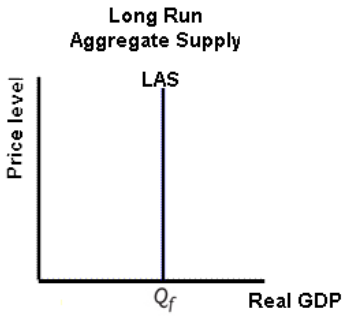
- The AS curve is relatively steep (حادّ) beyond the full employment output (Q_f) because resources shortages and capacity limitation make it difficult to expand real output as the price level rises.

- As the economy expands in the short run, per unit production costs generally rise because of reduced efficiency. When the economy is operating below its full employment output, it has larger amounts of unemployed workers.

Aggregate Supply in the Long Run

- The long run is the time horizon over which both input prices as well as output prices are flexible.

- The ***long-run aggregate supply curve*** AS_{LR} is vertical at the economy's full employment output Q_f. The vertical curve means that in the long run the economy will produce the full employment output level no mater what the price level is.



- With higher prices firms wants to increase output. The explanation in the fact that in the long run when both input prices as well as output prices are flexible, profit levels will always adjust so as to give firms exactly the right profit incentive to produce exactly the full employment output level, Qf.

- The long run supply curve is vertical at the full employment level of real GDP because in the long run wages and other input prices rise and fall to match changes in the price level. So price level changes do not affect firms' profits and thus they create no incentive for firms to alter their output.

منحنى العرض الكلي في المدى البعيد (الطويل) (LRAS):
منحنى العرض الكلي في الأمد البعيد (LRAS) يعكس العلاقة بين كمية الناتج المحلي الإجمالي الحقيقي ومستوى الأسعار في المدى البعيد عندما يتساوى الناتج المحلي الإجمالي الحقيقي (RGDP) مع الناتج المحلي الإجمالي الكامل (Q_f) ويكون المنحنى خطاً عمودياً، حيث يبقى الناتج الإجمالي الحقيقي عند مستوى الناتج المحلي الإجمالي الكامل، فلا يتأثر بتغير مستوى الأسعار.

الناتج في المدى البعيد مستقل عن مستوى الأسعار، نتيجة لتغير الأسعار والأجور بذات النسبة، ففي الأمد البعيد، يتمكن العمال ومالكو عناصر الإنتاج الأخرى من الحصول على المعلومات الكاملة عن أي زيادة في الأسعار، مما يمكنهم من المطالبة بزيادة في الأجور وأسعار عناصر الإنتاج الأخرى بنسبة مماثلة لنسبة الزيادة في الأسعار مما يجعل الأرباح الحقيقية ثابتة رغم تغير مستوى الأسعار. ويكون معدل البطالة مساوياً لمعدل البطالة الطبيغي.

Example:

What assumptions cause the immediate-short-run aggregate supply curve to be horizontal?
Answer:
The immediate short-run supply curve is horizontal because of contractual agreements. These 'contracts' for both input and output prices imply that prices do not change along the immediate short-run aggregate supply curve.

Why is the long-run aggregate supply curve vertical?

Answer:
The long-run aggregate supply curve is vertical (at the full-employment or potential output) because the economy's potential output is determined by the availability and productivity of real resources, not by the price level. The availability and productivity of real resources is reflected in the prices of inputs, and in the long run these input prices (including wages) adjust to match changes in the price level. Firms have no incentive to increase production to take advantage of higher prices if they simultaneously face equally higher resource prices.

Explain the shape of the short-run aggregate supply curve. Why is the short-run curve relatively flat to the left of the full-employment output and relatively steep to the right?

Answer:

The shape of the short-run supply curve is up sloping. Wages and other input prices adjust more slowly than the price level, leaving room for firms to take advantage of these higher prices (temporarily) by increasing output. Firms face increasing per unit production costs as they increase output, making higher prices necessary to induce them to produce more.

To the left of full-employment output the curve is relatively flat because of the large amounts of unused capacity and idle human resources. Under such conditions, per-unit production costs rise slowly because of the relative abundance of available inputs. Additional resources are easily brought into production, as the suppliers of these resources (especially labor) are anxious to employ them and are happy to accept current prices.

To the right of full-employment output the curve is relatively steep because most resources are already employed. Those resources that are not yet in production require higher prices to induce them, or generate higher per-unit production costs because they are less productive than currently employed inputs. Firms trying to increase production bid up input prices as they attempt to attract resources away from other firms. Even if the firm succeeds in pulling resources from another firm, the aggregate increase in output is minimal at best, as resources are merely shifted from one productive process to another.

Example

Answer the following questions on the basis of the three sets of data for the country of North Vaudeville:

(A)		(B)		(C)	
Price Level	Real GDP	Price Level	Real GDP	Price Level	Real GDP
110	275	100	200	110	225
100	250	100	225	100	225
95	225	100	250	95	225
90	200	100	275	90	225

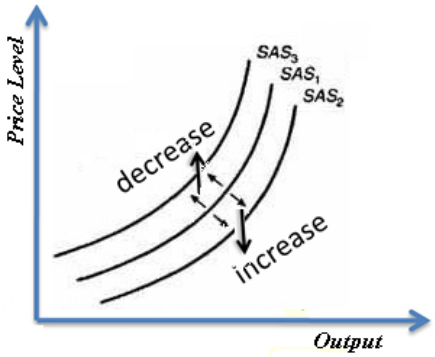
Which set of data illustrates aggregate supply in the immediate short-run in North Vaudeville? The short run? The long run?

The data in B. The price level does not have time to adjust in the immediate short-run. Only output can change.

The data in A. The price level only has time to partially adjust in the short-run. Both the price level and output can change.

The data in C. The price level has time to completely adjust in the long-run. Only price will change.

Changes in Aggregate Supply:



- The rightward shift of the AS curve from AS_1 to AS_2 represents an increase in AS, indicating that firms are willing to produce and sell more real output at each price level.

- The leftward shift of the AS curve from AS_1 to AS_3 represents a decrease in AS, indicating that firms are willing to produce and sell less real output at each price level.

Determinants of AS or AS shifters:

1. ***Input (Resources) Prices:***

   a. **Domestic Resources Prices:**
   Other thing equal, decrease in wages reduces per unit production cost ⇨ AS curve will shift to the right**.**

   Resources prices ↑ (wage, rent, interest, or profit) ⇨ cost per unit ↑ ⇨ AS ↓ (shift to the left).

   b. **Prices of Imported Resources:**

   Increase in the prices of resources imported from abroad (for example, oil), increase per unit production cost ⇨ AS↓ ⇨ AS shift to the left.

2. ***Productivity***

   Productivity measure of the relationship between a nation's level of real output and the amount of resources used to produce that output.

   Productivity = $\frac{Total\ output}{Total\ input}$

   An increase in productivity enables the economy to obtain more real output from its limited resources.

   For example, that real output is 10 units that 5 units of input are needed to produce that quantity, and the price of each unit of input is $2.

   Productivity = $\frac{10}{5} = 2$

   Per unit production cost = $\frac{Total\ input\ cost}{Total\ output} = \frac{2\ x\ 5}{10} = \$1$

   If real output doubles to 20 units, while the price and the quantity of the input remain constant, then productivity increase to 4 (20 / 5 = 4). Per unit production cost falls from $1 to $0.5 (2x5/20 = 0.5).

   Productivity increase ⇨ per unit production cost ↓ ⇨ shift AS curve to the right.

3. ***Legal Institutional Environment***

a. **Business Taxes and Subsidies**

Higher business taxes, such as sales (ضريبة المبيعات), excise (ضريبة إنتاج), and payroll taxes (ضريبة الدخل), increase per unit costs and reduce short run AS.

T ↑ ⇨ per unit production cost ↑ ⇨ AS ↓ ⇨ shift AS curve to the left.

b. **Business Subsidies** (الإعانات)

A payment or tax break by government to producers.

Business Subsidies ⇨ decreases per unit production cost ⇨increase AS (shift to the right).

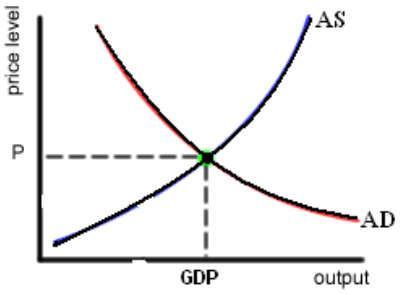
4. **Government Regulation:**

More regulation tends to increase per unit production cost and shift the AS curve to the left
Deregulation of the economy by increasing efficiency will reduce per unit costs and shift AS curve to the right.

Equilibrium and Changes in Equilibrium

Equilibrium price and real GDP

The intersection of the AD curve and the AS curve determines the economy's equilibrium price level.

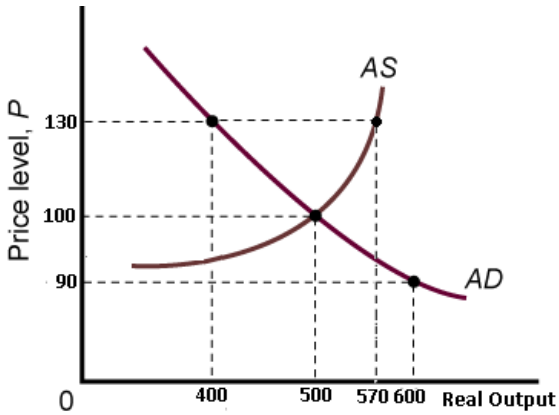


At equilibrium price: AD = AS

- *If at a price level AD > AS ⇨ a GDP shortage*
- *If at a price level AD < AS ⇨ a GDP surplus*

Example

Using the following figure to answer the below questions:



1. *What is the equilibrium price and real output?*

   At equilibrium price: AD curve intersect the AS curve

   P = $100, real GDP = 500

2. *At price level 130, is a GDP shortage or GDP surplus? What is the amount of shortage or surplus?*

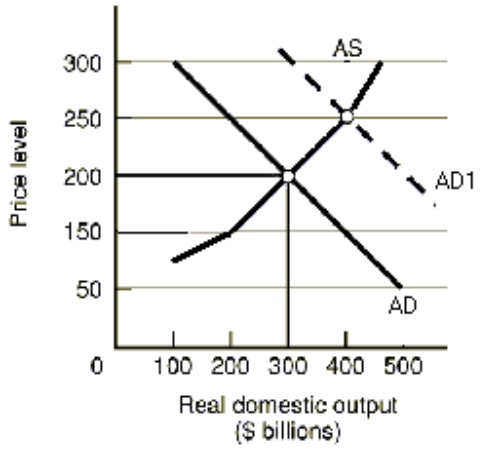
   At P = 130, output demanded = 400, and output supplied = 570
   ⇨ AS > AD ⇨ GDP surplus by (570 – 500 = 70)

Example

Suppose that the aggregate demand and aggregate supply schedules for a hypothetical economy are as shown below:

Amount of Real GDP Demanded, Billions	Price Level (Price Index)	Amount of Real GDP Supplied, Billions
$100	300	$450
200	250	400
300	200	300
400	150	200
500	100	100

a. Use these sets of data to graph the aggregate demand and aggregate supply curves. What is the equilibrium price level and the equilibrium level of real output in this hypothetical economy?



Equilibrium price level = 200, which occurs where aggregate supply equals aggregate demand, Thus the equilibrium real output = $300 billion.

b. If the price level in this economy is 150, will quantity demanded equal, exceed, or fall short of quantity supplied? By what amount? If the price level is 250, will quantity demanded equal, exceed, or fall short of quantity supplied? By what amount?

At a price level of 150, real GDP supplied is $200 billion, less than the real GDP demanded of $400 billion. Thus, quantity demanded exceeds the quantity supplied by $200 billion.

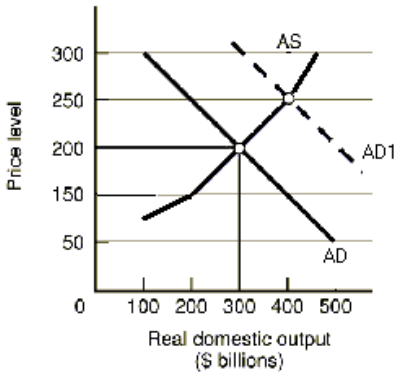
At a price level of 250, real GDP supplied is $400 billion, which is more than the real GDP demanded of $200 billion. Thus, quantity demanded falls short of the quantity supplied by $200 billion.

c. Suppose that buyers desire to purchase $200 billion of extra real output at each price level. Sketch in the new aggregate demand curve as AD1. What is the new equilibrium price level and level of real output?

Increases in consumption, investment, government, or net export spending might shift the AD curve rightward. The new values for the aggregate demand schedule are:

Amount of Real GDP Demanded, Billions	Price Level (Price Index)	Amount of Real GDP Supplied, Billions
$300 (=$100 + $200)	300	$450
$400 (=$200 + $200)	250	400
$500 (=$300 + $200)	200	300
$600 (=$400 + $200)	150	200
$700 (=$500 + $200)	100	100

The new equilibrium price level = 250 where aggregate supply equals aggregate demand. The new equilibrium GDP = $400 billion.

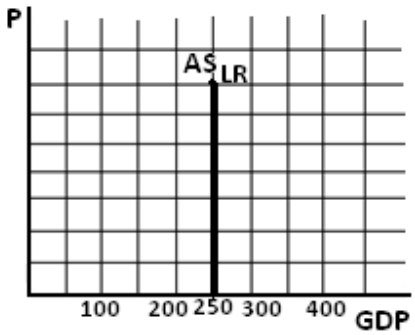


Example

The following table contains information about real GDP (billions of dollars) and the price level (P):

AD	P	AS
50	150	200
100	125	200
150	100	150
200	75	100
250	50	50

1. *Suppose the level of full-employment real GDP is $250 billion. Plot (ارسم) the Long run AS curve.*



2. *What is the equilibrium level of GDP? The price level?*

   GDP = 150

   P = $100

3. *At price level 125, is a GDP shortage or GDP surplus? What is the amount of shortage or surplus?*

   At a price level of 125, real GDP supplied is $200 billion and real GDP demanded is $100

   Real GDP supplied > real GDP demanded ⇨ GDP surplus by 200 – 100 = 100

4. Suppose the level of full-employment real GDP is $250 billion .By how much should government spending be increased or decreased to reach full employment if MPS = 0.1?

   $\triangle GDP = m \times \triangle G \Rightarrow (250 - 150) = \frac{1}{0.1} \times \triangle G \Rightarrow \triangle G = \frac{100}{10} = 10$ *(Increase G by 10)*

Changes in Equilibrium:

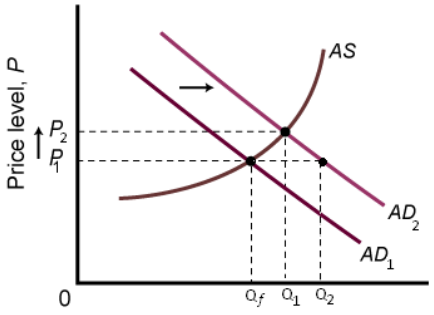
- **Increase in AD: Demand- Pull Inflation**

  The increase of AD from AD_1 to AD_2 causes demand pulls inflation, shown as the rise in the price from P_1 to P_2. It also causes an inflationary GDP gap of Q1 minus Qf.

  If the price level had remained at P, the increase in the AD from AD_1 to AD_2 would increase output from Q_f to Q_2 and the multiplier would have been at full strength.

  Because the increase in the price level, real output increase only from Q_f to Q_1 and the multiplier effect is reduced.

  The rise of the price level reduces the size of the multiplier effect.

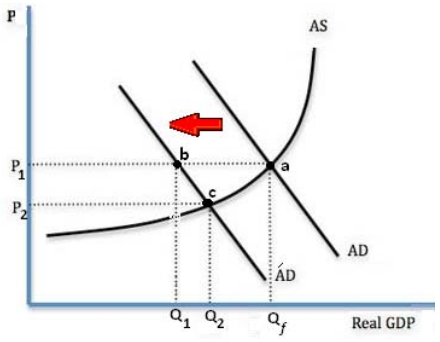


- **Decrease in AD: Recession and Cyclical Unemployment:**

  A decrease in AD that causes a recession and cyclical unemployment

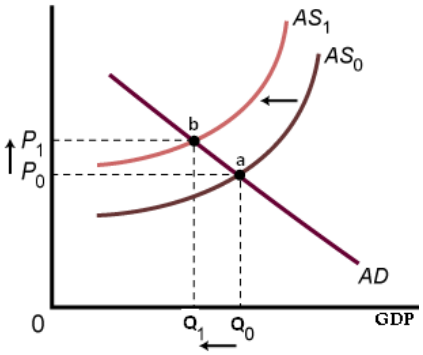
  If the price level is downwardly inflexible at P, a decline in AD from AD_1 to AD_2 will move the economy leftward from a to b along the horizontal line segment and reduce real output from Q_f to Q_1. Idle production capacity, cyclical unemployment, and a recessionary GDP gap (of Q_1 minus Q_f) will result.

  If the price level were flexible downward, the decline in AD would move the economy from a to c, that result in a decline in output from Q_f to Q_2 (recession and cyclical unemployment).



- **Decreases in AS : Cost- Push Inflation**

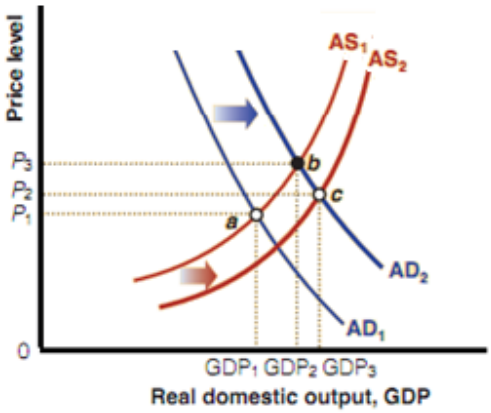
  A decrease in AS will causes cost push inflation. A leftward shift of AS from AS_0 to AS_1 raises the price level from P_0 to P_1 and produces cost push inflation. Real output declines and a recessionary GDP gap (of Q_1 minus Q_0) occur.



- **Increase in AS : Full Employment with Price Level Stability:**

  An increase in AD from AD_1 to AD_2 would move the economy from a to b along AS_1. Real output would expand to Q, and inflation would result (P_1 to P_3).

  Increase in the real output lead to increase in productivity that would shifted the AS curve from AS_1 to AS_2. The economy moved from a to c. It experienced strong economic growth (Q1 to Q_3, full employment, and only very mild inflation (P1 to P_2).

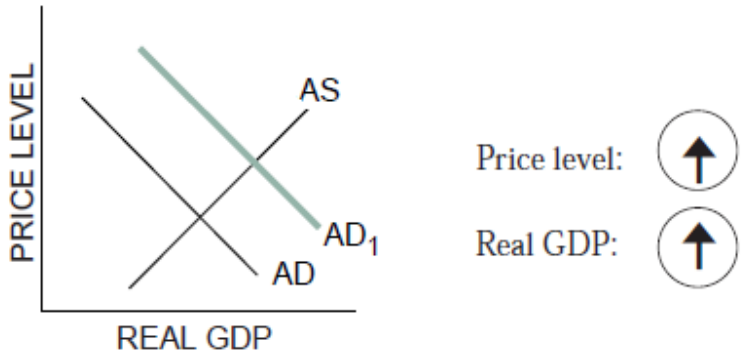


Example

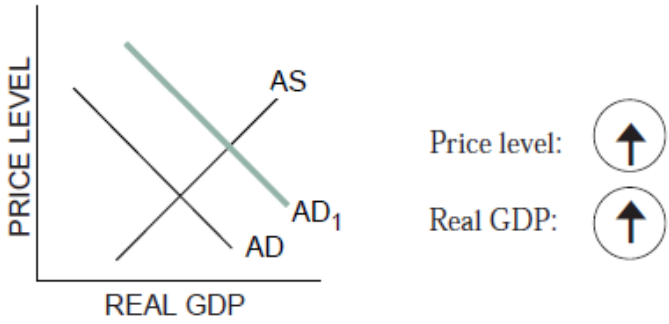
For each situation described below, illustrate the change on the AD and AS graph and describe the effect on the equilibrium price level and real GDP by circling the correct symbol: ↑for increase, ↓ for decrease, or — for unchanged.

1. Government passes a tax cut for the middle class

   Income tax cut ⇨ consumption ↑ ⇨ shift AD to the right

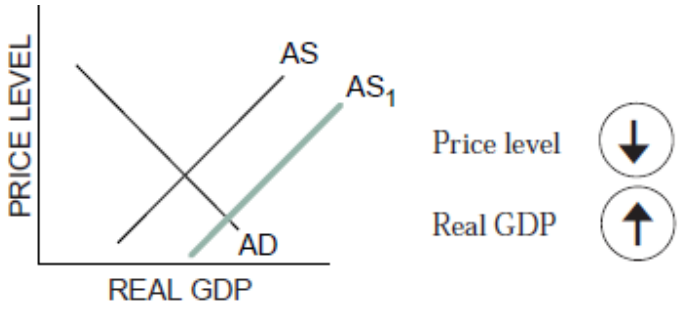


2. During a recession, the government increases spending on schools, highways and other public works.



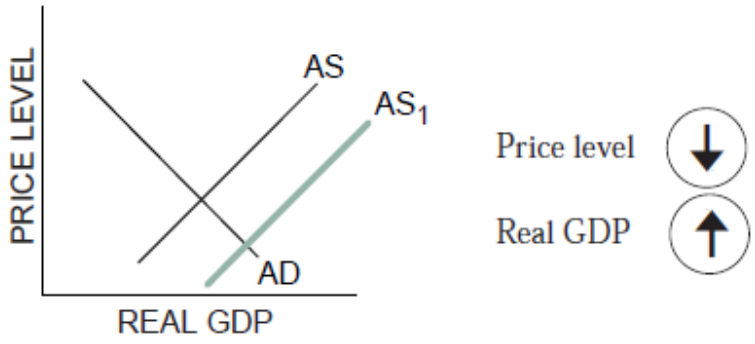
3. New oil discoveries cause large decreases in energy prices.

   Decreases in energy prices ⇨ production cost ↓ ⇨ shift AS to the right



4. New technology and better education used in production

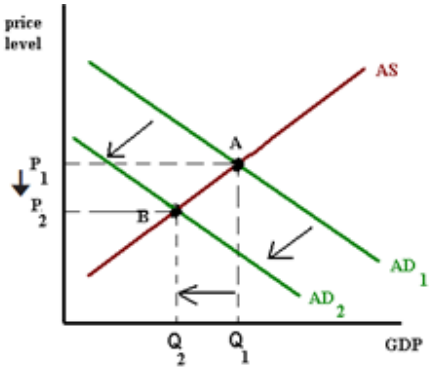
   New technology and better education used in production leads to increase productivity of employees and this leads to increase AS



Example

Show the effect of each of the following on price level and output (GDP). Use diagrams of AS and AD to show your answer. Label the original curves AS_1 and AD_1, the new ones AD_2 and AS_2.

a. A decrease in the expected rate of return.

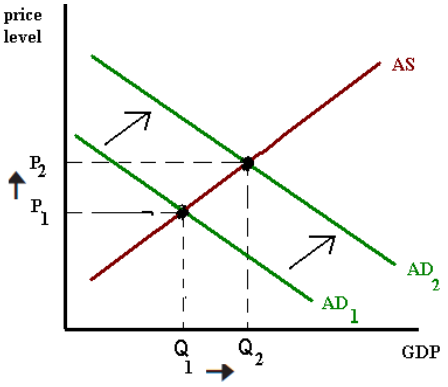


$r \downarrow \Rightarrow I \downarrow \Rightarrow$ shift AD curve to the left (AD $\downarrow$)

Price level: ↓

Real GDP: ↓

b. A large purchase of foreigners of a country's wheat production

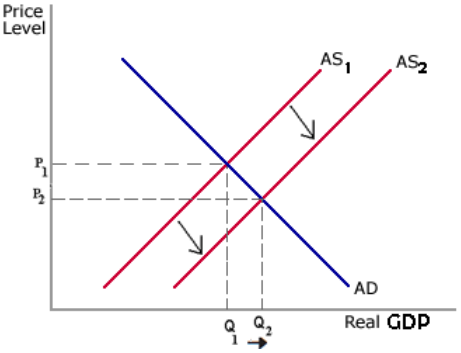


A large purchase of foreigners of a country's wheat production ⇨ Export ↑ ⇨ shift AD curve to the right.

Price level: ↑

Real GDP: ↑

c. An increase in the labor productivity

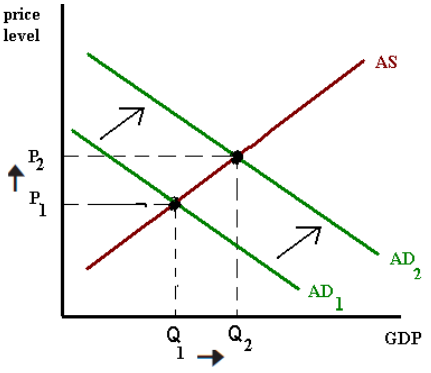


Productivity ↑ ⇨ cost per unit ↓ ⇨ shift AS curve to the right

Price level: ↓

Real GDP: ↑

d. An increase in national income abroad.



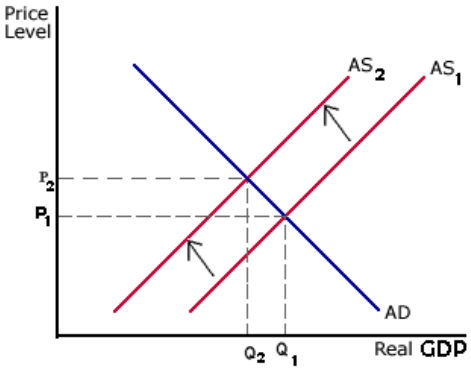
National income abroad ↑ ⇨ Export ↑ ⇨ shift AD curve to the right.

Price level: ↑

Real GDP: ↑

e. *Increase in the wages wheat production*

Resources prices ↑ (wage, rent, interest, or profit) ⇨ cost per unit ↑ ⇨ AS ↓ (shift to the left).

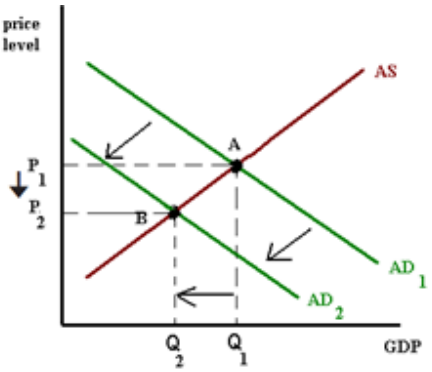


Price level: ↑

Real GDP: ↓

f. *An increase in the excess capacity (unused capital)*

Unused capital ↑ ⇨ *Investment* ↓ ⇨ AD ↓ (shift to the left)



Price level: ↓

Real GDP: ↓

5.

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Chapter 30

Fiscal Policy, Deficits, and Debt

Fiscal Policy:

Fiscal policy uses the government's powers of taxation and spending to influence the amount of employment and output across the economy. The legislative and executive branches of government control this type of economic policy. In the Palestine, for example, ministry of finance makes fiscal policy decisions.

السياسة الاقتصادية هي تلك السياسة التي تستخدمها الدولة من أجل إدارة وتطوير اقتصادها، وكذلك وضع الحلول المناسبة للمشكلات التي تواجه الدولة. وهي سياسة تقوم وزارة المالية بوضعها والاشراف علي تنفيذها بالنيابة عن الدولة.

Types of fiscal policy

Fiscal policy is one of the main ways in which government tries to influence overall economic performance. The two main types of fiscal policy are expansionary and contractionary policy. Both involve the use of the government's budget and its ability to levy taxes.

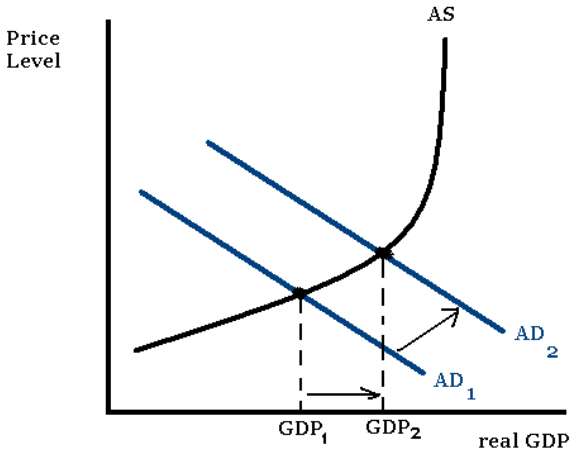
1. Expansionary Fiscal Policy السياسة الحكومية التوسعية

Expansionary fiscal policy uses increased government spending, reduced taxes or a combination of the two. The chief objective of a fiscal expansion is to increase aggregate demand for goods and services across the economy, as well as to reduce unemployment. Governments often enact expansionary measures during an economic recession, when unemployment rises and output decreases. By boosting its own purchases of goods and services, government tries to stimulate the economy.

- *When recession occurs, an expansionary fiscal policy used to increase output.*
- *Expansionary fiscal policy uses increase in government spending (G ↑) or tax cuts (T ↓) to push the economy out of recession.*
- G ↑ or T ↓ ⇨ shift AD curve to the right ⇨ increase output (push the economy out of recession).

في حالة وجود مشكلة الركود فإن الدولة تنتهج سياسة مالية توسعية حيث تقوم بزيادة الإنفاق الحكومي أو خفض الضرائب مما يؤدي إلى زيادة الدخول ومن ثم الاستهلاك وبالتالي زيادة مستوى التشغيل.

Increase in Government Spending:



G ↑ ⇨ shift AD curve to the right ⇨ increase output (GDP) from GDP_1 to GDP_2 ⇨ push the economy out of recession

Δ GDP = m x Δ G

For Example:-

In an economy with an MPC of 0.75 and real output of 490 billion, if government spending increase by $5 billion. What is the effect on output?

Δ GDP = m x Δ G

$m = \frac{1}{1-0.75} = \frac{1}{0.25} = 4$

Δ G = 5 billion

Δ GDP = 4 x 5 = 20 billion increase in GDP.

New GDP = 490 + 20 = 510 billion.

Tax Reductions

T ↓ ⇨ DI ↑ ⇨ C ↑ ⇨ shift AD curve to the right ⇨ increase output (GDP)

Δ C = MPC x Δ T

Δ GDP = m x Δ C

For Example

If an economy has an MPC of 0.75 and real output of 490 billion. Suppose the government cuts personal income taxes by $6.67 billion, what is the effect of this policy on real output?

Δ C = MPC x Δ T = 0.75 x 6.67 = $5 billion increase in consumption.

Δ GDP = m x Δ C = 4 x 5 = 20 billion increase in GDP

New GDP = 490 + 20 = 510 billion.

Combination Government Spending Increase and Tax Reductions:

The government may combine spending increase and tax cuts to produce the desired increase in real GDP.

For example:

If the government might increase it's spending by $1.25 billion while reducing taxes by $5 billion. What is the effect of this policy in output? If MPC of 0.75 and real output of 490 billion**.**

G ↑ by 1.25 billion ⇨ GDP ↑ by (m x Δ G) = 4 x 1.25 = 5 billion increase in GDP

T ↓ by 5 billion ⇨ C ↑ by (MPC x Δ T) = 0.75 x 5 = $3.75 billion

GDP ↑ by (m x Δ C) = 4 x 3.75 = 15 billion increase in GDP

Net effect = 5 + 15 = 20 billion increase in GDP.

Government Budget:

The two basic elements of any budget are the revenues and expenses. In the case of the government, revenues are derived primarily from taxes. Government expenses include spending on current goods and services, which economists call government consumption; government investment expenditures such as infrastructure investment or research expenditure; and transfer payments like unemployment or retirement benefits.

The government budget = T – G

Government Budgets are of three types:

- Balanced budget: when the government revenue as expenditure are equal (T = G).
- Surplus Budget: when anticipated revenues exceed expenditure (T > G).
- Deficit Budget: when anticipated expenditure is greater than revenues (T < G).

If the government budget is balanced, expansionary fiscal policy will create a government budget deficit.

Example:

Assume that the full- employment GDP if an economy is $1250 million, government expenditure on goods and services are $300 millions, tax revenue is $320 millions. And the economy currently producing (GDP) $850 million assume also that the MPS were 0.25.

a. By how much should government spending be increased or decreased to reach full employment?

To reach full employment the government spending must increase

GDP gap = full employment GDP – actual GDP = 1250 – 850 = 400 million

To reach full employment, the actual GDP must be increase by 400

Δ GDP = m x Δ G ⇨ 400 = (1/0.25) Δ G ⇨ Δ G = 400 / 4 = 100 million increase in G

b. What is the effect of each of the following policies on GDP?

1. *A decrease in taxes by $60 million***.**

T ↓ ⇨ C ↑ by (MPC x ΔT) = 0.75 x 60 = 45 million increase in C

C ↑ ⇨ GDP ↑ by (m x ΔC) = 4 X 45 = 180 million increase in GDP.

2. An increase in government spending by 20 million and a decrease in taxes by 20 million.

G ↑ ⇨ GDP ↑ by (m x ΔG) = 4 x 20 = 80 million increase in GDP

T ↓ ⇨ C ↑by (MPC x ΔT) = 0.75 x 20 = 15 million increase in C

C ↑ ⇨ GDP ↑ by (m x ΔC) = 4 X 15 = 60 million increase in GDP.

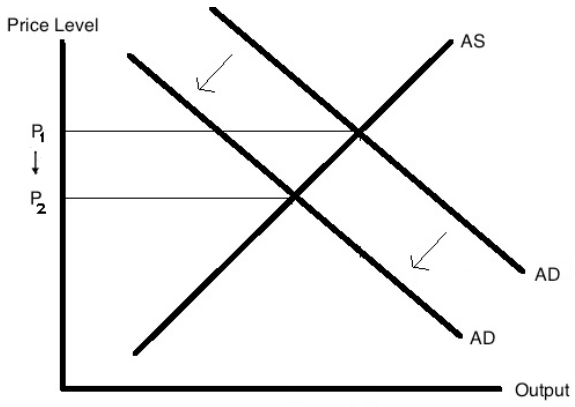
Net effect = 80 + 60 = 140 million increase in GDP.

2. Contractionary Fiscal Policy السياسة الحكومية الإنكماشية

When government policy-makers cut spending or increase taxes, they engage in contractionary fiscal policy. Governments may enact contractionary measures to slow an economic expansion and prevent inflation. In addition, governments may enact contractionary policy for ideological reasons. These include reducing the overall size and scope of government activity or lowering budget deficits, in which the government spends more money than it collects. The contractionary policy reduces aggregate demand in the economy, lowering inflation. But it may also lead to higher unemployment.

- When demand-pull inflation occurs, a restrictive or contractionary fiscal policy may help control it.
- Contractionary fiscal policy uses decreases in government spending (G ↓) or increases in taxes (T ↑) to reduce demand-pull inflation.

G ↓ or T ↑ ⇨ shift AD curve to the left ⇨ decrease price level from P_1 to P_2 (reduce demand-pull inflation).



- When the economy faces demand pull inflation, fiscal policy should move toward a government budget surplus (tax revenues > government spending)

Decreased Government Spending:

G ↓ ⇨ shifts the AD curve leftward to control demand pull inflation (price decrease).

For example:

In an economy with an MPC of 0.75 and real output of 522 billion, if government spending decrease by $3 billion. What is the effect on output?

Δ GDP = m x Δ G

$m = \frac{1}{1-0.75} = \frac{1}{0.25} = 4$

Δ G = − 3 billion

Δ GDP = 4 x − 3 = − 12 billion

New GDP = 522 – 12 = 510 billion.

Increased Taxes:

T ↑ ⇨ DI ↓ ⇨ C ↓ ⇨ shift AD curve to the left ⇨ decrease output (GDP)

Δ C = MPC x Δ T

Δ GDP = m x Δ C

For Example

If an economy has an MPC of 0.75 and real output of 522 billion. Suppose the government raises taxes by $4 billion, what is the effect of this policy on real output?

Δ C = MPC x Δ T = 0.75 x 4 = $3 billion decrease in consumption.

Δ GDP = m x Δ C = 4 x −3 = − 12 billion *(decrease in GDP)*

New GDP = 522 −12 = 510 billion.

Or using tax multiplier

Δ GDP = m_t x Δ T

$m_t = \frac{-MPC}{1-MPC} = \frac{-0.75}{1-0.75} = \frac{-0.75}{0.25} = -3$

Δ GDP = m_t x Δ T = −3 x 4 = −12 billion

New GDP = 522 −12 = 510 billion.

Combination Government Spending decreases and Tax Increases:

The government may combine spending decrease and tax increase to produce the desired increase in real GDP.

For example:

If the government might decrease it's spending by $1. 5 billion while increases taxes by $2 billion. What is the effect of this policy in output? If MPC of 0.75 and real output of 522 billion**.**

G ↓ by 1. 5 billion ⇨ GDP ↓by (m x Δ G) = 4 x 1.5 = 6 billion *(decrease in GDP)*

T ↑by $2 billion ⇨ C ↓ by (MPC x Δ T) = 0.75 x 2 = $1.5 billion decrease in C

GDP ↓ by (m x Δ C) = 4 x −1.5 = −6 billion *(decrease in GDP)*

Net effect = −6 − 6 = −12 billion

New GDP = 522 – 12 = 510 billion.

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Chapter 31

Money and Banking

What is Money?

Money is anything that is generally accepted as final payment for goods and services or for the repayment of debt - cash/currency, checks, gold, etc.

Barter
Trading goods and services for goods and services.

النقود هي أي شيء مقبول قبولاً عاماً للدفع من أجل الحصول على السلع أو الخدمات الاقتصادية، أو من أجل إعادة دفع الديون، فمثلاً يمكن القول بأن الدينار يعد نقداً أو أن نقول الشيكات هي نقود.
وتعرف النقود في المفهوم الاقتصادي على نوعين : نقود حقيقية وأخرى تقديرية، فالنقود الحقيقية (Real Money) هي التي لها وجود مادي مثل الليرة العثمانية (المجيدية) والتي كانت متداولة في سوريا والعراق قبل الحرب العالمية الأولى، وكذلك الجنيه الأنكليزي الذهبي والروبية الهندية الفضية. أما النقود التقديرية أو التعدادية (Account Money) التي ليس لها وجود مادي وإنما تستعمل كوحدة للتحاسب كالدينار في الدول العربية، والدولار الأمريكي في الولايات المتحدة الأمريكية والجنيه الأنكليزي في إنجلترا.

إن النقود من اعظم الابتكارات التى ابتكرتها البشريه والتى احدثت تأثيرات جذريه فى حياه البشر.

وقد مرت البشريه بثلاث مرحل:

المرحله الاولى : الاقتصاد الذاتى (الاكتفاء الذاتى) اتسم فيها النشاط الاقتصادى بالبدائيه وتركز النشاط الاقتصادى على قيام افراد الاسرة الواحده باستهلاك ما ينتجونه انطلاقا من بساطه متطلباتهم

المرحله الثانيه : المقايضه (التبادل السلعى) هى مبادله سلعه بسلعه اخرى او خدمه بخدمه اخرى دون استخدام النقود..

وقد واجه هذا النظام العديد من المشكلات , اهمها: 1. صعوبه تحقيق التوافق المزودج بين رغبات العاملين بالسوق 2. عدم قابليه بعض السلع للتجزئه 3. صعوبه الاهتداء الى مقياس تتحدد على اساسه نسب المبادله 4. صعوبه تخزين بعض السلع.

المرحله الثالثه : الاقتصاد النقدى. والذى ادى الى نشاه النقود كوسيط للتبادل.
ويعتبر من اهم خصائص النقود ما يلى. 1ـ سهوله حمل النقود. 2 ـ قابليه وحدات النقود الاساسيه للتجزئه. 3ـ ان تكون صالحه للتدوال لفترات زمنيه طويله . 4 ـ سهوله التعرف عليها . 5 ـ تماثل وتجانس وحدات النقود. 6 ـ القبول العام .

The Functions of Money (وظائف النقود)

Anything that performs the functions of money is money

1. **Medium of exchange** وسيلة للتبادل

   Money usable for buying and selling goods and services

إن استخدام النقود "كوسيط للمبادلات Medium of Exchange" يسهل عملية التبادل ويوفر كثيراً من الوقت والجهد اللذين كانا يضيعان في ظل التبادل عن طريق المقايضة . فهي وسيلة لنقل ملكية السلع والخدمات من طرف الى طرف وبالتالي فهي قوة شرائية تسهل التبادل بين طرفين.
إن النقود بصفتها قوة شرائية عامة تكفل الحرية الاقتصادية للأفراد ، بمعنى حريتهم في اختيار أنواع السلع التي يرغبون الحصول عليها وبالكميات التي يرغبونها وفي المكان والزمان الذي يرغبونه . وهذا كله لا يتوفر إلا لكون النقود تقوم بوظيفة وسيط للتبادل وبالطبع فإن هذا يتطلب تمتعها أصلاً بالقبول العام من جانب أفراد المجتمع.

- **Unit of account:** وحدة حساب (مقياس للقيمة)

  Society uses monetary units for measuring the relative worth of a wide variety of goods, services, and resources. With money as an acceptable unit of account, the price of each item need be stated only in terms of the monetary unit.

  Money aids rational decision making by enabling buyers and sellers to easily compare the prices of various goods, services, and resources.

تستخدم النقود لقياس قيم السلع والخدمات ونسبة قيمة كل سلعة الى غيرها من السلع. وفي هذه الحالة تصبح النقود معدلاً للاستدال وخاصة بين السلع الكبيرة التي يصعب تجزئتها الى وحدات صغيرة دون ان تفقد قيمتها. فالوحدة النقدية لأي دولة هي وحدة تقاس بها قيم السلع والخدمات في المجتمع. فإذا كان يمكن مبادلة ألة معينة بعشرين طن من الحنطة وكان ثمن الحنطة عشرين ديناراً, فإن هذا يعني أن ثمن الألة 400 دينار، وفي حالة تواجد النقود ليس من الضروري ان يكون كل طرف محتاجاً لسلعة الاخر، وإنما يكفي تقديم النقود للحصول على السلعة وهكذا قضت هذه الوظيفة على صعوبات المقايضة التي كانت تقضي ضرورة وجود اتفاق مزدوج للحاجات بين الطرفين.

- **Store of value:** النقود كمخزن للقيمة

  Money enables people to transfer purchasing power from the present to the future. People normally do not spend all their incomes on the day they receive them. In order to buy things later, they store some of their wealth as money.

إن أحد صعوبات المقايضة تمثلت في صعوبة اختزان الأفراد لثرواتهم (الفوائض من نتاج عملهم) في صورة سلعية ، إذ أن معظم السلع خصوصاً الاستهلاكية لا تعمر طويلاً . ولذلك أدى استخدام النقود إلى التغلب على هذه الصعوبة ، حيث يمكن للأفراد عن طريق الاحتفاظ بالنقود في شكلها "السيولي" اختزان "قوة شرائية" يستطيعون الاستفادة منها مستقبلاً في الوقت الذي يختارونه

Example

If whole tomatoes were money, which of the following functions of money would be the hardest (صعب) for tomatoes to satisfy?
(a) Unit of account
(b) Store of value
(c) Medium of exchange
(d) Certificate of gold

Liquidity of money:

An asset's **liquidity** is the ease with which it can be converted quickly into the most widely accepted and easily spent form of money, cash, with little or no loss of purchasing power.

The more liquid an asset is, the more quickly it cab be converted into cash and used for either purchases of goods and services, or purchases of other assets. By definition, cash is perfectly liquid. By contrast, a house is highly illiquid for two reasons. First, it may take several months before buying it. Second, there is a loss of purchasing power when the house is sold.

السيولة : هي القدرة على تحويل بعض الموجودات إلى نقد جاهز خلال فترة قصيرة دون خسارة.

The Components of the Money Supply: مكوّنات العرض النقدى

Money Definition M1

It consists of:

(1) Currency (coins and paper money) in the hands of the public العملة المتداولة بين الناس .

(2) All checkable deposits (all deposits in commercial banks and saving institutions جميع الودائع الموجودة في البنوك التجارية ومؤسسات الادخار

Money, M1 = Currency + Checkable Deposits

- Government and government agencies (central bank البنك المركزي) supply coins and paper money. Commercial banks and savings institutions (thrifts) provide checkable deposits.

Currency: Cons + Paper Money

The currency consists of metal coins and paper money. The coins are issued by the treasury (يتم إصدارها من قبل الخزينة) while paper money consists of central bank notes.

The currency is **token money**. This means that the face value of any prices of currency is unrelated to its intrinsic value (القيمة الذاتية) -the value of the physical material (metal or paper and ink).

Checkable Deposits:

The safety and convenience of checks has made checkable deposits a large component of the M1 money supply. Checks are less accepted than currency for small purchases, for major purchases most sellers will accept checks as payment.

People can convert checkable deposits into paper money and coins on demand; checks drawn on those deposits are the equivalent of currency.

Money Definition M2

Money definition M2 includes M1 plus several near monies (الودائع الآجلة).

Near- monies are certain highly liquid financial assets that do not function directly or fully as a medium of exchange but can be readily converted into currency or checkable deposits.

There are three categories of near monies included in the M2:

a. Saving deposits, including money market deposit accounts (MMDA).

b. Small (less than $100,000) time deposits "certificate of deposits CD" (funds from time deposit become available at their maturity).

c. Money market mutual funds held by individuals (MMMF)

Money, M2 = M1 + MMDA + Small time deposits + MMMF

Total money supply = Money M2

Example:-

Use the following to answer equations below:

Money market mutual fund	$220
Currency and coins in banks	$10
Currency and coins in circulation	$60
Saving deposits, including money market deposit accounts	$50
Large ($100,000 or more) time deposit	$180
Small (less than $100,000) time deposits	$80
Checkable deposits	$70

1. Refer to the above information. What is the amount of money supply M1 for this economy?

   Money, M1 = Currency and coins in circulation + Checkable Deposits = 60 + 70 = $130

2. Refer to the above information. What is the amount of money supply M2 for this economy?

   Money, M2 = M1 + MMDA + Small time deposits + MMMF

   M2 = 130 + 50 + 80 + 220 = $480

Money as Debt:

The components of the money supply (paper money and checkable deposits) are debts, or promises to pay. Paper money is the circulating debt of the central bank. Checkable deposits are the debts of commercial banks and thrift institutions.

Value of Money

Why are currency and checkable deposits money?

The answer to these questions has three parts:

Acceptability

Currency and checkable deposits are money because people accept them as money.

ان تلقى قبولا عاما فى المجتمع حتى يستخدمها الجميع كوسيط في المبادلات ان كل فرد في المجتمع يقبل النقود في تعاملاته مع الآخرين، لأنه يستطيع كذلك أن يدفعها مقابل الحصول على اية سلعة أو خدمة

Legal Tender الغطاء النقدي

The confidence in the acceptability of paper money is strengthened because government has designated currency as legal tender.

النقود القانونية هي النقود الأساسية المعاصرة. وسميت "بالنقود القانونية" لأنها تستمد قوتها من قوة القانون وقبول الأفراد لها قبولاً عاماً ونظراً لاحتكار البنك المركزي حق إصدارها.
و تمثل هذه النقود ديناً على الدولة تجاه القطاع الخاص، ويتحتم على البنك المركزي الاحتفاظ بأصول مساوية في قيمتها لقيمة ما أصدره من نقود، وتسمى هذه الأصول بالغطاء النقدي.

Relative Scarcity الندرة النسبية

The value of money depends on its supply and demand for money. Money derives its value from its scarcity relative to its utility. The utility of money lies in its capacity to be exchanged for goods and service now or in the future. The demand for money depends on the total dollar volume of transactions in any period plus the amount of money individuals and businesses want to hold for future transactions. With a constant demand for money, the supply of money provided by monetary authorities will determine the domestic value or “purchasing power" of the monetary unit.

أن يتم اختيار المادة التي تصنع منها النقود بحيث تكون ذات ندرة نسبية وذلك حتى لا تفقد قيمتها سريعاً . أما في عصر النقود الورقية فالندرة تتمثل في سلطة الدولة في وضع القيود والحدود للإصدار النقدي والورقي أي أن يتم تحديد ثمنها بتفاعل العرض والطلب على النقود في السوق.

Money and Prices

Purchasing Power of Money: Is the amount of goods and services a unit of money will buy.

Purchasing Power of the Dollar: The amount a dollar will buy varies inversely with the price level.

When the consumer price index (CPI) or "cost of living" index goes up, the value of the dollar goes down, and vice versa.

Higher prices lower the value of the dollar because more dollars are needed to buy a particular amount of goods and services, or resources.

$$\$V = \frac{1}{P}$$

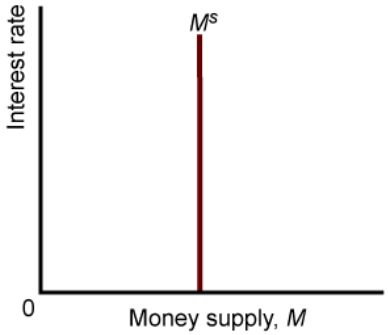
Where $V is the value of dollar, P is the price level.

For example, if the price level is 1, then the value of dollar is 1. If the price level rises to, say, 1.2, the value of dollar falls to 0.833.

Money supply curve

A line showing the total quantity of money in the economy at each interest rate. The money supply is determined by the central bank.

منحنى عرض النقد M^S يرسم عموديا حيث يتعبر عرض النقد ثابتة يحدده البنك المركزي . لذلك لا توجد علاقة بين سعر الفائدة والعرض النقدي لأن العرض النقدي ثابت يحدده البنك المركزي.



Interest rates: Is the price paid for the use of money. It also the price that borrowers need to bay lenders for transferring purchasing power to the future.

- The supply of money is independent of the interest rate (interest rate change ⇨ money supply constant).

- The central bank changes the supply of money by buying or selling bonds in the bonds market.

The Demand for Money

Why does the public want to hold some of its wealth as money?

The public wants to hold some of its wealth in money for two reasons: to make purchases with it and to hold it as an asset

Transactions Demand (D_t)

People hold money because it is convenient for purchasing goods and services.Households need money to pay for groceries and to pay mortgage and utility bills. Businesses need money to pay for labor, materials, power, and other inputs they both have a transactions demand

- The level of GDP is the main determinant of the amount of money demanded for transactions
- Larger the total money value=larger the amount of money needed

- The demand for money as a medium of exchange is called the transactions demand for money.

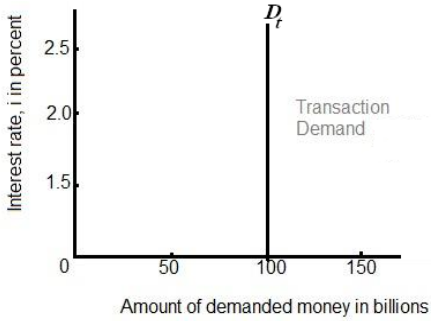
- The level of nominal GDP is the main determinant of the amount of money demanded for transactions.

- The larger the total money value of all goods and services exchanged in the economy, the larger the amount of money needed to negotiate those transactions.

- The transactions demand for money varies directly with nominal GDP. (NGDP ↑ ⇨ D_t ↑).

- The transactions demand for money is independent of the interest rate (interest rate change ⇨ transactions demand for money constant).

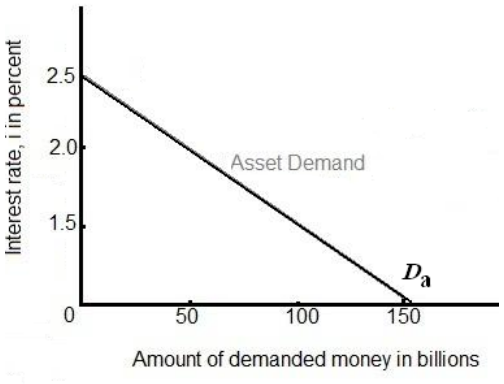
- The transactions demand is vertical because it is assumed to depend on nominal GDP rather than on the interest rate.



Asset Demand for Money (D_a)

The second reason for holding money derives from money's function as a store of value.
People may hold their financial assets in many forms, including corporate stocks, corporate or government bonds, or money. To the extent they want to hold money as an asset, there is an asset demand for money.

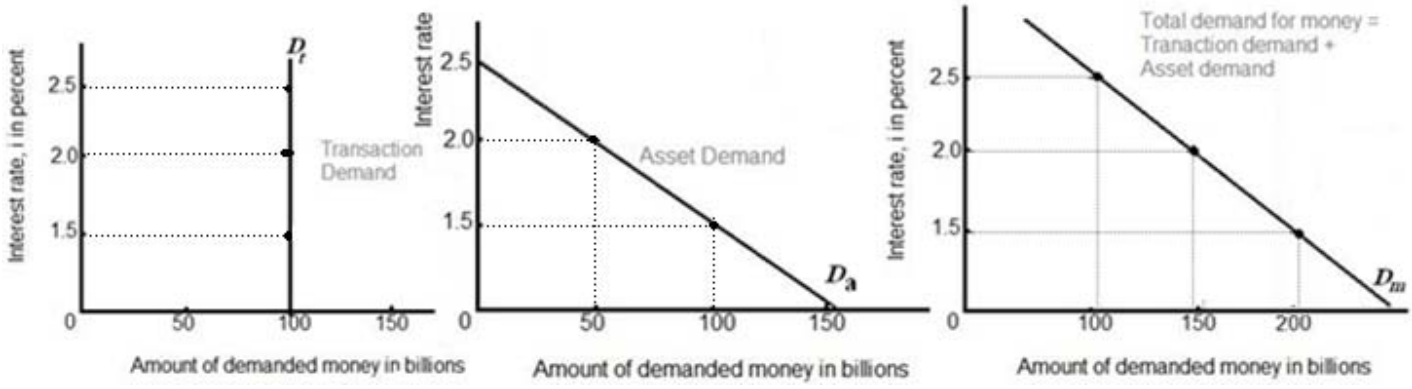
- The asset demand for money varies inversely with the interest rate because of the opportunity cost involved in holding currency and checkable deposits that pay no interest or very low interest.



Total Money Demand (D_m)

The total demand for money D_m is determined by horizontally adding the asset demand for money D_a to the transactions demand D_t.

$$D_m = D_t + D_a$$



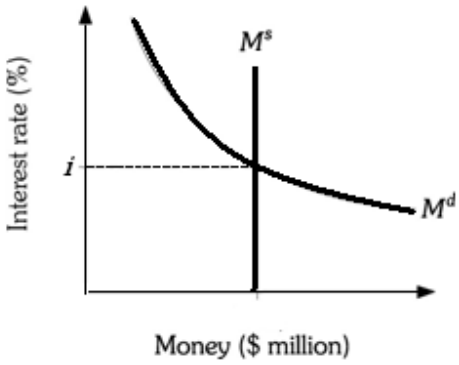
The Equilibrium Interest Rate

We can combine the demand for money with the supply of money to determine the equilibrium interest rate.

At equilibrium interest rate:

Amount of money demanded = amount of money supply

The intersection of demand and supply determines the equilibrium interest rate.



Example

Assume that the following data characterize an economy: money supply = 200 billion, quantity of money demanded for transactions = 150 billion; quantity of money demanded as an asset = 10 billion at 12 percent interest, increasing by 10 billion for each 2 percentage point fall in the interest rate.

a. What is the equilibrium interest rate?

Interest rate	Transactions demand for money	Asset demand for money	Total demand for money $Dm = D_a + D_t$	Money supply (S_m)
12	150	10	160	200
10	150	20	170	200
8	150	30	180	200
6	150	40	190	200
4	**150**	**50**	**200**	**200**
2	150	60	210	200

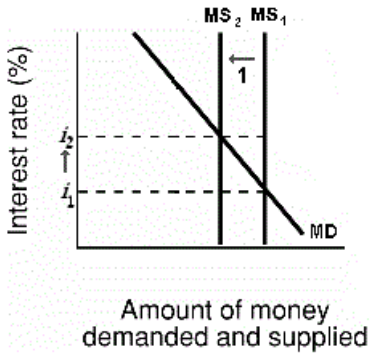
b. Suppose that money supply decrease to 180, what is the new equilibrium interest rate?

At equilibrium interest rate: $D_m = S_m = 180$

When i = 8%

c. Considering your answers in part b, what is the impact of a decrease in money supply on the interest rate (show graphically)

A decrease money supply shifts the money supply curve to the left. That leads to increase on the interest rate from i_1 to i_2.



Example

Suppose the asset demand for money schedule is given by the following table. All figures are in billions of dollars:

Interest rate	Asset Demand
10%	$ 80
8	120
6	160
4	200
2	240

Further suppose that each dollar held for transactions purposes is spent an average of 4 times per year.

1. *If the economy's nominal GDP is $800 billion, how much money is demanded for transactions?*

   If each dollar is spent 4 times per year, then $200 billion is required to purchase a nominal GDP of $800 billion. $800/4 = $200.

2. *What is the total amount of money demanded at an interest rate of 6%? At 8%?*

   The total amount demanded is the sum of the transactions demand and the asset demand. At 6%, the total demand is $360 billion = $200 billion in transactions demand and $160 billion in asset demand.

   At 8%, the amount demanded as an asset falls to $120 billion, so the total amount demanded falls to $320 billion (= $200 + $120).

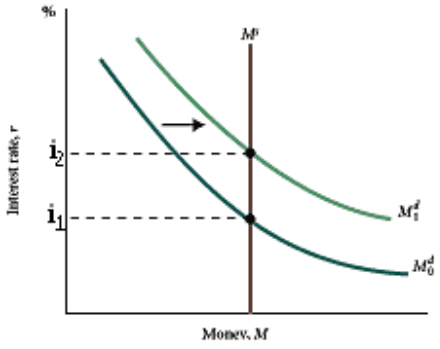
3. *Suppose money demanded for transactions increases to $225 billion. What is the total amount of money demanded at an interest rate of 6%? At 8%?*

   Total demand rises to $385 billion (= $225 + $160) at 6% and $345 billion (= $225 + $120) at 8%.

4. *Considering your answers, what is the impact of an increase in transactions demand for money on the total demand for money?*

   An increase in transactions demand for money shifts the total demand for money curve to the right. There is a greater amount demanded at each possible interest rate.

   Increase in money supply leads to increase in the equilibrium interest rate from i_1 to i_2.



BIRZEIT UNIVERSITY

Macroeconomics Principles

Econ132

1st Semester 2013/2014 أ. محمد عامرية

Chapter 32

Money Creation

The Commercial Bank's Balance Sheet:

Is a statement of assets and claims on assets that summarizes the financial position of the bank at a certain time.

Every balance sheet must be balance; this means that the value of assets must equal the amount of claims against those assets.

The claims shown on a balance sheet are divided into two groups: the claims of nonowners against the firm's assets, called *liabilities*, and the claims of the owners of the firm against the firm's assets, called *net worth*.

Total Assets = Total liabilities + capital or *Assets = Liabilities + Net worth.*

Every $1 change in assets must be offset by a $1 change in liabilities + net worth.

تتضمن الميزانية العمومية لأي مصرف تجاري من جانبين ، الجانب الأيمن منها يمثل الموجودات (أواستخدامات أموال المصرف) ، والجانب الأيسر منها يمثل المطلوبات(أو مصادر أموال المصرف) .

وتظهر مكونات الموجودات (الأصول) في الميزانية العمومية متسلسلة حسب سيولتها ، فتظهر الأصول الأشد سيولة (أرصدة نقدية سائلة) في مقدمة الموجودات ، تليها الأقل سيولة ثم الأقل وهكذا ، أما مكونات المطلوبات (الخصوم) فإنها تنظم حسب كلفتها وحجمها ، فتظهر الودائع في البدء فالأصول المقترضة ثم رأس المال الممتلك.

How Banks Create Money

A Single Commercial Bank:

Commercial banks create money by making *loans*.

Let's a series of bank transactions involving balance sheet to establish how individual bank can create money:

Transaction 1: Creating a Bank

Suppose people of the town of Birzeit decide their town needs a new commercial bank to provide banking services for that growing community. Suppose the bank sell, say, $250,000 worth of stock (equity shares) to buyers. What does its balance sheet look like at this stage?

The bank now has $250,000 in cash on hand and $250,000 worth of stock shares outstanding. The cash is an asset to the bank. Cash held by a bank is sometimes called *vault cash* or till money.

Vault cash: cash held by the bank

Creating a bank
Balance Sheet 1: Birzeit Bank

Assets		*Liabilities and net worth*	
Cash	*$250,000*	*Stock shares*	*$250,000*

Transaction 2: Acquiring Property and Equipment

Suppose the directors' purchases a building and office equipment for $240,000.

Cash ↓ by 240,000 and new assets; property = 240,000

Acquiring Property and Equipment
Balance Sheet 2: Birzeit Bank

Assets		*Liabilities and net worth*	
Cash	*$10,000*	*Stock shares*	*$250,000*
Property	*$240,000*		

Transaction 3: Accepting Deposits

Commercial banks have two basic functions:

- To accepting deposits of money
- To make loans to individuals

Suppose that the citizens and businesses of Birzeit decide to deposits $100,000 in the Birziet bank. What happens to the bank's balance sheet?

The bank receives cash, which is an asset to the bank (cash ↑ 100,000).

Suppose this money is deposited in the bank as checkable deposits. These newly created checkable deposits constitute claims that the depositors have against the assets of the bank. (New liability account: checkable deposits = 100,000).

Accepting Deposits
Balance Sheet 3: Birzeit Bank

Assets		*Liabilities and net worth*	
Cash	*$110,000*	*Checkable deposits*	*$ 100,000*
Property	*$240,000*	*Stock shares*	*$250,000*

Transaction 4 : Depositing reserves in a Central bank

All commercial banks and thrift institutions that provide checkable deposits must keep required reserves.

يمكن تعريف الإحتياطي الإلزامي بأنه نسبة تفرض على ودائع البنوك التجارية من قبل البنك المركزي لحماية أصحاب الودائع من إفلاس هذه البنوك في المستقبل من ناحية احترازية، ومن ناحية أخرى تستخدم هذه النسبة التحكم في الاقتصاد وكمية النقد في الأسواق عن طريق زيادة النسبة أو تقليلها.

Required Reserves: are an amount of funds equal to a specified percentage of the bank's own deposits liabilities.

Reserves ratio: the specified percentage of checkable deposit liabilities that a commercial bank must keep as reserves.

$$Reserves\ ratio = \frac{Commercial\ bank's\ required\ reserves}{Commercial\ bank's\ checkable\ deposits}$$

يقوم البنك المركزي بإلزام البنوك التجارية بالاحتفاظ بنسبة معينة من الودائع كاحتياطي قانوني، حيث لا يمكن للبنك التجاري التصرف بهذا المبلغ. وتسمى هذه النسبة بنسبة الاحتياطي القانوني أو الاحتياطي المطلوب (Required Reserve Ratio).

If the reserves ration is %10, the Birzeit bank, having accepted $100,000 in deposits from the public, would have to keep $10,000 as reserves.

Excess Reserves: a bank's excess reserves are found by subtracting its required reserves from its actual reserves.

Excess reserves (ER) = actual reserves (AR) – required reserves (RR)

After the Birzeit bank deposits $110,000 of reserves at the central bank, its balance sheet becomes:

Cash ↓ by required reserves (110,000) and new assets; reserves = 110,000

Depositing reserves in a Central bank
Balance Sheet 4: Birzeit Bank

Assets		*Liabilities and net worth*	
Cash	*0*	*Checkable deposits*	*$ 100,000*
Reserves	*$110,000*	*Stock shares*	*$250,000*
Property	*$240,000*		

Example

Suppose the National Bank of Commerce has excess reserves of $8000 and outstanding checkable deposits of $150,000. If the reserves ratio is 20%, what is the size of the banks actual reserves?

Required Reserves = reserves ratio x checkable deposits = 150,000 x 20% = $30,000

Excess reserves (ER) = actual reserves (AR) – required reserves (RR)

8000 = AR – 30,000

AR = 30,000 + 3000 = $38,000

Example

The Third National Bank has reserves of $20,000 and checkable deposits of $100,000. The reserves ratio is 20%. Households deposit $5000 in currency into the bank that is added to reserves. What level of excess reserves does the bank now have?

After deposit: new actual reserves = 20,000 + 5000 = 25,000

New checkable deposits = 100,000 + 5000 = 105,000

Required reserves = 20% x 105,000 = 21,000

Excess reserves = actual reserves – required reserves = 25,000 – 21,000 = 4,000

Transaction 5: Clearing a Check Drawn against the Bank

Assume that Fadi, a Birzeit farmer, deposited in the Birzeit Bank. Suppose that Fadi buys $50,000 of farm machinery from the AC farm company of Surprise, Fadi pays for this machinery by writing a $50,000 check against his deposit in the Birzeit Bank. He gives the check to the AC Company. What are the results?

- AC company deposits the check in its account with the Surprise bank
- The Surprise bank increases AC company checkable deposits by $50,000 when AC deposits the check.
- Now the Surprise bank has Fadi's check. This check is simply a claim against the assets of the Birzeit Bank.
- The Surprise bank will collect this claim by sending the check to the central bank.
- A bank employee will clear, or collect, the check for the Surprise bank by increasing Surprise's reserves in the central bank by $50,000 and decreasing the Birzeit bank's reserves by that same amount.
- Finally, the central bank sends the cleared check back to the Birzeit Bank and for the first time the Birzeit bank discovers that one of its deposits has drawn a check for $50,000 against his checkable deposit. According, the Birzeit bank reduces Fadi's checkable deposit by $50,000 and notes that the collection of this check has caused a $50,000 decline in its reserves at the central bank.

Reserves ↓ by 50,000 and Checkable deposits ↓ by 50,000

Clearing a Check Drawn against the Bank

Balance Sheet 5: Birzeit Bank

Assets		*Liabilities and net worth*	
Reserves	*$60,000*	*Checkable deposits*	*$ 50,000*
Property	*$240,000*	*Stock shares*	*$250,000*

Money Creating Transactions of a Commercial Bank

Commercial banks create money by: *Making loans* and by *purchasing government bonds from the public*.

Transaction 6: Granting a Loan

Suppose the Packing Company decides it is time to expand its facilities. Suppose, too, that the company needs exactly $50,000. The company goes to the Birzeit bank and requests loans for this amount.

Checkable deposits ↑ by 50,000 and new asset: Loans = 50,000

When a loan is Negotiated

Balance Sheet 6a : Birzeit Bank

Assets		*Liabilities and net worth*	
Reserves	*$60,000*	*Checkable deposits*	*$ 100,000*
Loans	*$ 50,000*	*Stock shares*	*$250,000*
Property	*$240,000*		

In summary, assuming a check is drawn by the borrower for the entire amount of the loan ($50,000). The Birzeit bank's balance sheet will read as follows after the check has been cleared against it:

Reserves ↓ by 50,000 and Checkable deposits ↓ by 50,000

After a Check is Drawn on the Loan

Balance Sheet 6b : Birzeit Bank

Assets		*Liabilities and net worth*	
Reserves	*$10,000*	*Checkable deposits*	*$ 50,000*
Loans	*$ 50,000*	*Stock shares*	*$250,000*
Property	*$240,000*		

- Banks creates money when they make loans
- A single commercial bank in a banking system can lend only an amount equal to its excess reserves.
- A single bank can lend money to customers only if it has excess reserves.
- Deposits of currency does not alter (تغير) money supply

For example, if a person deposits $75 of currency in his checking account (demand deposits) with a commercial bank. This transaction by itself causes the money supply in the economy to *remain the same*.

Example

If you deposits $80 in a commercial bank which has a 15% reserves ratio, what is the additional amount that bank will be able to lend?

Required reserves = reserves ratio x deposits = 0.15 x 80 = $12

Excess reserves = 80 – 12 = $68

A single commercial bank can lend only an amount equal to its excess reserves = $68

Example

Suppose that commercial bank has the balance sheet shown below and that the reserve ratio is 20%.

Assets		(1)	(2)	Liabilities and net worth		(1)	(2)
Reserves	$22,000	----------	---------	Checkable deposits	$100,000	----------	----------
Loans	$ 40,000	----------	----------				
Securities -	$38,000	----------	---------				

a. What is the maximum amount of new loans that is bank can make?

Required reserves = reserves ratio x Checkable deposits = 0.20 x 100,000 = $20,000

Excess reserves = actual reserves – required reserves = 22,000 – 20,000 = $2,000

A single commercial bank can lend only an amount equal to its excess reserves = $2,000

b. Show in column 1 how the bank's balance sheet will appear after the bank gas lent this additional amount.

Loans ↑ by 2000 and Checkable deposits ↑ by 2000

Assets		*(1)*	*(2)*	*Liabilities and net worth*		*(1)*	*(2)*
Reserves	*$22,000*	*$22,000*	---------	*Checkable deposits*	*$100,000*	*102,000*	----------
Loans	*$40,000*	*$42,000*	---------				
Securities	*$38,000*	*$38,000*	---------				

c. How will the bank's balance sheet appear after checks drawn for the entire amount of the new loans have been cleared against the bank? Show the new balance sheet in column 2.

Reserves ↓ by 2000 and Checkable deposits ↓ by 2000

Assets				*Liabilities and net worth*			
		(1)	*(2)*			*(1)*	*(2)*
Reserves	*$22,000*	*$22,000*	*$20,000*	*Checkable deposits*	*$100,000*	*102,000*	*$100,000*
Loans	*$40,000*	*$42,000*	*$42,000*				
Securities	*$38,000*	*$38,000*	*$38,000*				

Transaction 7: Buying Government Securities

When a commercial bank buys government bonds (securities) form the public new money is created.

Assume that the Birzeit bank's balance sheet initially stands as it did at the end of transaction 5. Now suppose the bank buys $50,000 of government securities.

Buying Government Securities

Balance Sheet 7 : Birzeit Bank

Assets		*Liabilities and net worth*	
Reserves	*$60,000*	*Checkable deposits*	*$ 100,000*
Securities	*$ 50,000*	*Stock shares*	*$250,000*
Property	*$240,000*		

- Bond purchases from the public by commercial banks increase the supply of money in the same way as lending to the public does.
- The bank accepts government bonds (which are not money) and gives the securities dealer an increase in its checkable deposits (which are money).
- The selling of government bonds to the public by a commercial bank reduces the supply of money.

The Banking System: Multiple Deposit Expansion

- A single bank in a banking system can lend one dollar for each dollar of its excess reserves.
- The commercial banking system can lend (can create money) by a multiple of its excess reserves.

Suppose Ahmad deposits $100 in bank A. if the reserves ratio for all commercial banks is 20%.
The deposit changes bank's A balance sheets as shown by entries (a1)

Multiple deposits expansion process

Balance Sheet : Commercial Bank A

Assets		**Liabilities and net worth**	
Reserves	+ $100 (a1)	Checkable deposits	+ $100 (a1)
	- $80 (a3)		+ $80 (a2)
			- $80 (a3)
Loans	+ $80 (a2)		

Required reserves = reserves ratio x deposits = 20% x 100 = $20

Excess reserves = 100 – 20 = $80

A single commercial bank can lend only an amount equal to its excess reserves, we conclude that bank A can lend a maximum of $80.

When a loan for this amount is made, bank A loans increase by $80 and the borrower gets an $80 checkable deposits. The bank's A balance sheets as shown by entries (a2).

If the borrower draws a check ($80) for the entire amount of the loan, and gives it to someone who deposits it in bank B. Bank A loses both reserves and deposits equal to the amount of the loan, as indication in entries (a3).

The net results of these transactions:

Reserves = + 100 – 80 = $20.
Loans + 80
Checkable deposits = + 100 + 80 – 80 = $100.

When a borrower deposits $80 in bank B. Bank B balance sheet is changed as in entries (b1).

Multiple deposits expansion process

Balance Sheet : Commercial Bank B

Assets		Liabilities and net worth	
Reserves (b1)	+ $80	Checkable deposits (b1)	+ $80
(b3)	- $64	(b2)	+ $64
Loans (b2)	+ $64	(b3)	- $64

Required reserves = reserves ratio x deposits = 20% x 80 = $16

Excess reserves = 80 – 16 = $64

A single commercial bank can lend only an amount equal to its excess reserves, we conclude that bank B can lend a maximum of $64.

When a loan for this amount is made, bank B loans increase by $64 and the borrower gets an $64 checkable deposits. The bank's B balance sheets as shown by entries (b2).

If the borrower draws a check ($64) for the entire amount of the loan, and gives it to someone who deposits it in bank C. Bank B loses both reserves and deposits equal to the amount of the loan, as indication in entries (b3).

Expansion of the money supply by the commercial banking system:

Bank	(1) Acquired Reserves and Deposits	(2) Required Reserves (Reserve Ratio = .2)	(3) Excess Reserves (1)-(2)	(4) Amount Bank Can Lend; New Money Created = (3)
Bank A	$100.00	$20.00	$80.00	$80.00
Bank B	80.00	16.00	64.00	64.00
Bank C	64.00	12.80	51.20	51.20
Bank D	51.20	10.24	40.96	40.96
Bank E	40.96	8.19	32.77	32.77
Bank F	32.77	6.55	26.21	26.21
Bank G	26.21	5.24	20.97	20.97
Bank H	20.97	4.20	16.78	16.78
Bank I	16.78	3.36	13.42	13.42
Bank J	13.42	2.68	10.74	10.74
Bank K	10.74	2.15	8.59	8.59
Bank L	8.59	1.72	6.87	6.87
Bank M	6.87	1.37	5.50	5.50
Bank N	5.50	1.10	4.40	4.40
Other Banks	21.99	4.40	17.59	17.59
				$400.00

The Money Multiplier

The monetary multiplier or *checkable deposits multiplier* exists because the reserves and deposits lost by one bank become reserves of another bank.

$$\textbf{\textit{Monetary multiplier (m)}} = \frac{1}{\textbf{\textit{Required reserves ratio (RRR)}}}$$

Monetary multiplier (m) represents the maximum amount of new checkable deposits money that can be created by a single dollar of excess reserves.

Multiplying the excess reserves (E) by ***m***, we can find the maximum amount of new checkable deposit money that can be created by the banking system.

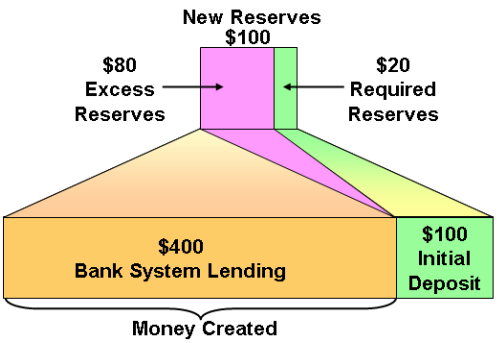
Maximum Checkable Deposit Creation = excess reserves x money multiplier.

For example, a deposit of $10 into a checking account creates an initial checkable deposit of $100. if the reserves ratio is 20%.

Required reserves = reserves ratio x deposits = 20% x 100 = $20

Excess reserves = 100 – 20 = $80
Money multiplier = 1/0.2 = 5

Maximum Checkable (change in money supply) = excess reserves x money multiplier = 80 x 5 = $400 Deposit Creation



- Total money supply = initial deposits + money creation = 100 + 400 = $5
- Higher reserves ratio means lower monetary multiplier (m) and thus less creation of new checkable deposits.
- Smaller reserves ratio means higher monetary multiplier (m) and thus more creation of new checkable deposits.

Example

Suppose the simplified consolidated (تجميعية) balance sheet shown below is for the entire commercial banking system. All figures are in billions. The reserves ratio is 25%.

Assets		(1)	Liabilities and net worth		(1)
Reserves	$52	----------	Checkable deposits	$200	----------
Loans	$ 100	----------			
Securities	$48	----------			

a. *What amount of excess reserves does the commercial banking system have?*

Required reserves = reserves ratio x C.D = 25% x 200 = $50.

ER = AR – RR = 52 – 50 = $2

b. *What is the maximum amount the banking system might lend? Show in column 1 how the consolidated balance sheet would look after this amount has been lent.*

Δ Money supply = money multiplier x ER

Money multiplier (m) = 1 / 0.25 = 4

Δ Money supply = 4 x 2 = $8 (the maximum amount the banking system might lend).

Assets			Liabilities and net worth		
Reserves	$52	**$ 52**	Checkable deposits	$200	**$ 208**
Loans	$ 100	**$108**			
Securities	$48	**$48**			

Example:

Consider the following data:

Assets		Liabilities and net worth	
Actual Reserves	$ 50,000	Checkable	$ 180,000
Loans	$ 380,000	deposits	
Securities	$ 150,000	net worth	$ 400,000

Assume that the required reserves ratio = 25%.

First, if the above balance sheet id for **one commercial bank** (Bank One)

a. *How much is the excess reserves in this bank?*

RR = Resaves ratio x CD = 25% X 180,000 = 45,000

ER = AR – RR = 50,000 – 45,000 = $5,000

b. *Can this bank lend any money? If yes, how much? If not, why?*

Yes it can lend, since a single commercial bank can lend only an amount equal to its excess reserves = $5,000

Second, if the above balance sheet is for the **whole banking system**.

c. *What is the value of the money multiplier?*

Money multiplier (m) = 1 / reserves ratio = 1/0.25 = 4

d. *By how much money supply can be increased or decreased in this economy?*

When a bank make loans its creates money ⇨ money supply increase

Δ Money supply = money multiplier x ER = 4 x 5000 = $20,000 increase in money supply.

Chapter 33

Interest Rates and Monetary Policy

Interest rate and bond prices

- Interest rate and bond prices are inversely related. When the interest rate increases, bond prices fall; when the interest rate falls, bond prices rise.

- The price of bonds is determined by bond demand and bond supply.

  Suppose that a bond pays a fixed $50 annual interest payment and is selling for its face value of $1000. The interest yield on this bond is 5 percent:

$$\text{interest yield} = \frac{\text{Annual interest}}{\text{face value}} = \frac{\$50}{\$1000} = 5\%$$

  Now suppose the interest rate in the economy rises to 7.5% from 5%. Newly issued bonds will pay $75 per $1000 lent.

The Consolidated Balance Sheet of the Central Bank.

The Balance Sheet of the Central Bank:

Assets	Liabilities and net worth
Securities	**Reserves of commercial banks**
Loans to commercial banks	**Treasury deposits**
	Central bank notes

The two main assets of the central banks are securities and loans to commercial banks.

Securities:

- The securities are government bonds that have been purchased by the central bank.

- Securities consist (a) Treasury bills (short term securities) (b) Treasury notes (mid-term securities) (c) Treasury bonds (long- term securities) issued by the government to finance past budget deficits.

- The central bank bought securities from commercial banks and the public thought open market operations.

- The central bank bought and sold securities to influence the size of commercial bank reserves and, the ability of those banks to creates money by lending.

Loans to Commercial Banks:

- Commercial banks borrow from central bank.

- Through borrowing, commercial banks can increase their reserves.

The three liabilities and net worth of the central banks are Reserves to commercial banks, Treasury deposits, and Central bank notes.

Reserves to commercial banks

- The central bank requires that the commercial banks hold reserves against their checkable deposits.

- When hold in the central bank, these reserves are listed as a liability on the central bank balance sheet.

Treasury deposits (الودائع الحكومية)

Treasury keeps deposits in the central bank.

Central bank notes

- The supply of paper money consist of central bank notes issued by the central bank.

- When this money is circulating outside the central bank, it constitutes claims against the assets of the central bank . the central bank treats these notes as a liabilities.

Tools of Monetary Policy: (أدوات السياسة المالية)

- The central bank can influence the money creating abilities of the commercial banking system.

The central bank has four tools of monetary control it can to alter the reserves of commercial banks.

- Open Market Operation
- The Reserves Ratio
- The Discount Rate
- The Term Auction Facility

Open Market Operation

- Bond markets are "open" to all buyers and sellers of corporate and government bonds (securities).

- The open market operations consist of the buying of government bonds from, or the selling of government bonds to, commercial banks and the general public .

- The central bank buys and sells the government bonds to commercial banks and the public through two dozen or so large financial firms, called "primary dealers".

Buying Securities:

Suppose that the central bank decides to buy government bonds. They can purchase these bonds either from commercial banks or from the public. In both cases the reserves of the commercial banks will increase.

From Commercial Banks::

When the central banks buy government bonds from commercial banks:

(a) The commercial banks give up part of their holdings of securities to the central bank.

(b) The central bank, in paying for these securities, place newly created reserves in the account of the commercial banks at the central bank. The reserves of the commercial banks go up by the amount of the purchase of the securities.

Central Bank Buys Bonds from Commercial Banks

Central Bank Balance Sheet

Assets	Liabilities and net worth
+ Securities *(a)*	**+ Reserves of commercial banks** *(b)*

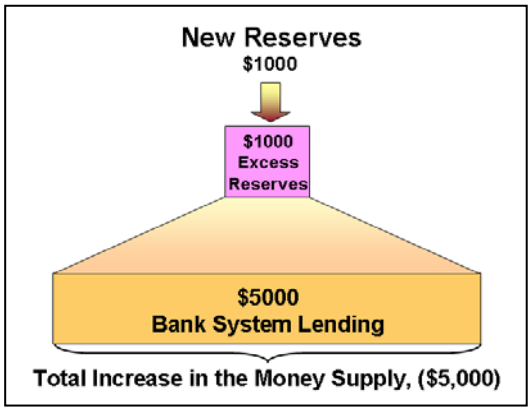
Commercial Banks Balance Sheet

Assets	Liabilities and net worth
- Securities *(a)* **+ Reserves** *(b)*	

❖ When central bank purchases securities from commercial banks, they increase the reserves in the banking system, which then increase the lending ability of the commercial banks ➔ money supply increase.

Example:

Suppose that the central bank purchases of a $1000 bonds from a commercial bank. If the reserves ratio is 20%, by how much has the supply of money changed?



The purchases of a $1000 bond from a commercial bank creates $1000 of excess reserves

Δ in money supply = m x ER

m = 1 / 0.20 = 5

Δ in money supply = m x ER = 5 x 1000 = $5,000 (total increase in money supply)

From the Public

Suppose Pacing Company has government bonds that it sells in the open market to the central bank. The transaction has several elements:

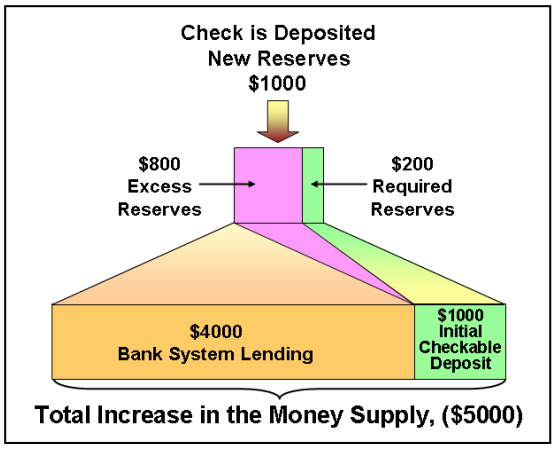
(a) Pacing Company gives up securities to the central bank and gets in payment a check drawn by the central bank on themselves.
(b) Pacing Company deposits the check in its account with the commercial bank.
(c) The commercial bank sends this check against the central bank to a central bank for collection. As a result, the commercial bank enjoys an increase in its reserves.

- Central bank bond purchases from commercial banks increase the actual reserves and excess reserves of commercial banks by the entire of the bond purchases.

- Central bank bond purchases from the public increase actual reserves but also increase checkable deposits when the seller place the central bank check into their personal checking accounts.

Example:

Suppose that the central bank purchases of a $1000 bonds from the public. If the reserves ratio is 20%, by how much has the supply of money changed?



Required reserves = reserves ratio x deposits = 0.2 x 1000 = $200

ER = AR – RR = 1000 – 200 = $800

Δ in money supply = m x ER

m = 1 / 0.20 = 5

Δ in money supply = m x ER = 5 x 800 = $4,000

Total increase in money supply = initial checkable deposits + money creation = 1000 + 4000 = $5,000

Selling Securities:

- When the central bank sell government bond, commercial banks reserves are reduced.
- Whether the central bank sells bonds to the public or to commercial banks, the results is the same.
- When central bank sell securities in the open market, commercial bank reserves are reduced., this decline in commercial bank reserves produces a decline in the money supply .

Selling securities to commercial banks:

When the central bank sell securities in the open market to commercial banks:

(a) the central bank give up securities that the commercial banks acquire.

(b) the commercial banks pay for these securities by drawing checks against their deposit in the central bank. The central bank collects on those checks by reducing the commercial banks reserves .

Central Bank Sells Bonds to Commercial Banks

Central Bank Balance Sheet

Assets	Liabilities and net worth
- Securities *(a)*	**- Reserves of commercial banks** *(b)*

Commercial Banks Balance Sheet

Assets	Liabilities and net worth
+ Securities *(a)* **- Reserves** *(b)*	

Central bank bond sales of $1000 to the commercial banking system reduce the actual and excess reserves by $1000. but a $1000 bond sale to the public reduce excess reserves by $800 because the public's checkable deposits money is also reduced by $1000 by the sale.

In our example, a $1000 sale of government securities results in a $5000 decline in money supply whether the sale is made to commercial banks or to the public.

The Reserves Ratio:

The central bank can manipulate (معالجة) the reserves ratio on order to influence the ability of commercial banks to lend.

Suppose a commercial bank's balance sheet shows that reserves are $5000 and checkable deposits are $20,000. if the reserves ratio is 20%.

Required reserves = 20% x 20,000 = $4000

Excess reserves = actual reserves – required reserves = 5000 – 4000 = $1000

One bank can lend $1000, the banking system as a whole can create a maximum of $5000 of new checkable deposits money by lending. { (1/0.2 x 1000) = 5000}.

Raising the reserves ratio:

If the central bank raised the reserves ratio from 20% to 25%. What happen?

Required reserves = 25% x 20,000 = $5000

Excess reserves = actual reserves – required reserves = 5000 – 5000 = 0

Rising the reserves ratio increases the amount of required reserves bank must keep, this leads to lose excess reserves and diminishing their ability to create money by lending ➔ decrease money supply.

In the example, excess reserves are transformed into required reserves, and the money creating potential of our single bank is reduced from $1000 to zero, moreover, the banking system's money creating capacity declines from $5000 to zero.

Lowering the reserves ratio:

What would happen if the central bank lowered the reserves ratio from 20% to 10%?

Required reserves = 10% x 20,000 = $2000

Excess reserves = actual reserves – required reserves = 5000 – 2000 = $3000

Max checkable deposits creation = m x ER = 1/0.1 x 3000 = 10 x 3000 = $30,000

The single bank's lending (money creation) ability would increase from $1000 to $3000, and the banking system's money creating potential would expand from $5000 to $30,000.

Lowering the reserves ratio transforms required reserves into excess reserves and enhances the ability of banks to create new money by lending ➔ money supply increase.

The change in the reserves ratio affects the money creating ability of the banking system in two ways:

- It changes the amounts of excess reserves
- It changes the size of the money multiplier .

Reserves ratio ↑ ➔ excess reserves ↓ and money multiplier ↓ ➔ money creating ↓ (money creating = m x ER)

Reserves ratio ↓ ➔ excess reserves ↑ and money multiplier ↑➔ money creating ↓ (money supply ↓)

The Discount Rate:

- One of the function of a central bank is to make short term loans to commercial banks.

- As commercial banks charge interest on the loans they make to their clients, so too central bank charge interest on loans they grant to commercial banks. The interest rate they charge is called the **discount rate**.

When a commercial bank borrowing from the central bank:

(a) Loans to commercial banks in central banks increase. And the loans from the central banks in commercial banks increase.

(b) the central bank increases the reserves of the borrowing commercial bank.

Commercial Bank Borrowing from the Central Bank

Central Bank Balance Sheet

Assets	Liabilities and net worth
+ loans to commercial banks ***(a)***	**+ Reserves of commercial banks** ***(b)***

Commercial Banks Balance Sheet

Assets	Liabilities and net worth
+ Reserves ***(b)***	**+ Loans from the central bank (a)**

- Borrowing from the central bank by commercial banks increases the reserves of the commercial banks and enhances (يُحسّنُ) their ability to extend credit ➔ money supply increase.

- A lowering of the discount rate encourages (يُشـجّعُ) commercial banks to obtain additional reserves by borrowing from central bank. When the commercial banks lend new reserves, the money supply increases.

- An increase in the discount rate discourages (يُثبّطُ عزيمـة) commercial banks to obtain additional reserves by borrowing from central bank. So the central bank may raise the discount rate when it wants to restrict (يحدد) the money supply.

Example:

The following table represents the consolidated (تجميعية) balance sheet of the commercial banking system. Assume that the reserves ratio is 25% of the checkable deposits. All figures are in millions of dollars, and each question should be answered independently of changes specified in all preceding ones (كل فرع مستقل عن الفرع الذي يسبقه)

Assets		Liabilities and net worth	
Actual Reserves	**450**	**Checkable Deposits**	**1200**
Securities	**650**	**Net Worth**	**800**
Loans	**500**		
Property	**400**		

a. What is the maximum amount that the whole banking system in this economy can lend?

RR = 0.25 X 1200 = 300

ER = AR – RR = 450 – 300 = 150

ΔMS = m x ER = (1/0.25) X 150 = $600 million

b. Assume that the central bank has decreased the required reserves ratio to 20% (instead of 25%). What is the effect of this action on the money supply? Show your calculation.

RR = 0.2 X 1200 = 240

ER = AR – RR = 450 – 240 = 210

ΔMS = m x ER = (1/0.2) X 210= $1050 million

The ability of banks to create money has increased by $450 m.

c. Assume again that the required reserves ratio to 25% and the central bank wants to decrease the money supply by $200 million to drive up interest rates and slow down the economy. To accomplish (تحقيق) this through open market operations, what should the central bank do? Explain. Give exact numbers.

ΔMS = m x ER

-200 = 4 x ER

➔ ER = - 200 / 4 = - 50

The central bank should decrease ER of banks by $50 m

This could be done by selling government securities in the open market by the $50 m

Example:

The following table represents the consolidated (تجميعية) balance sheet of the commercial banking system. Assume that the reserves ratio is 25% of the checkable deposits. All figures are in millions of dollars, and each question should be answered independently of changes specified in all preceding ones (كل فرع مستقل عن الفرع الذي يسبقه)

Assets		Liabilities and net worth	
Actual Reserves	**50,000**	**Demand Deposits**	**180,000**
Securities	**150,000**	**Net Worth**	**400,000**
Loans	**380,000**		

a. Assume that the central bank buys $300,000 of government securities from commercial banks in the open market, and paid for this transaction by checks drawn against the central bank itself, which are cleared. Would this transaction increase or decrease the money supply? By how much?

When central bank purchases securities from commercial banks, they increase the reserves in the banking system, which then increase the lending ability of the commercial banks ➔ money supply increase.

The purchases of a $300,000 bond from a commercial bank creates $300,000 of excess reserves

Δ in money supply = m x ER

m = 1 / 0.25 = 4

Δ in money supply = m x ER = 4 x 300,000 = $1,200,000 (total increase in money supply).

b. Assume that the central bank has decreased the required reserves ratio to 20%, what happens to the ability of the banking system to create money? By how much can the banking system increase or decrease money supply?

When reserves ratio is 25%

RR = 0.25 X 180,000 = $45,000

ER = AR – RR = 50,000– 45,000 = $5,000

When reserves ratio is 25%

RR = 0.2 X 180,000 = $36,000

ER = AR – RR = 50,000– 36,000 = $14,000

The ability of banks to create money has increased by $9,000 (14,000 – 5,000).

ΔMS = m x ER = (1/0.2) X 14,000= $70,000 million

,

Monetary Policy:

Expansionary Monetary Policy (Easy Money Policy).

- When the economy faces recession and unemployment , the expansionary monetary policy may help control it.

- This policy will lower the interest rate to bolster borrowing and spending, which will increase AD and expand output (GDP).

- To make expansionary monetary policy the central bank will take some combination of the following actions: (1) buy government securities from banks and the public in open market (2) lower the reserves ratio (3) lower the discount rate.

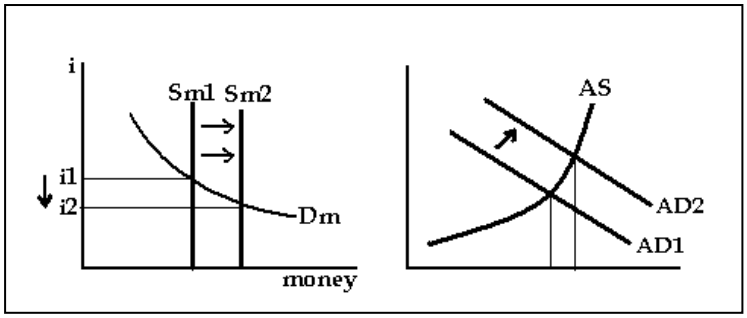
  To make expansionary monetary: central bank buys bonds, or lower reserves ratio, or lower the discount rate.

- The outcome of the expansionary monetary policy will be an increase in excess reserves in the commercial banking system. Because excess reserves creates checkable deposits money, the money supply will rise.

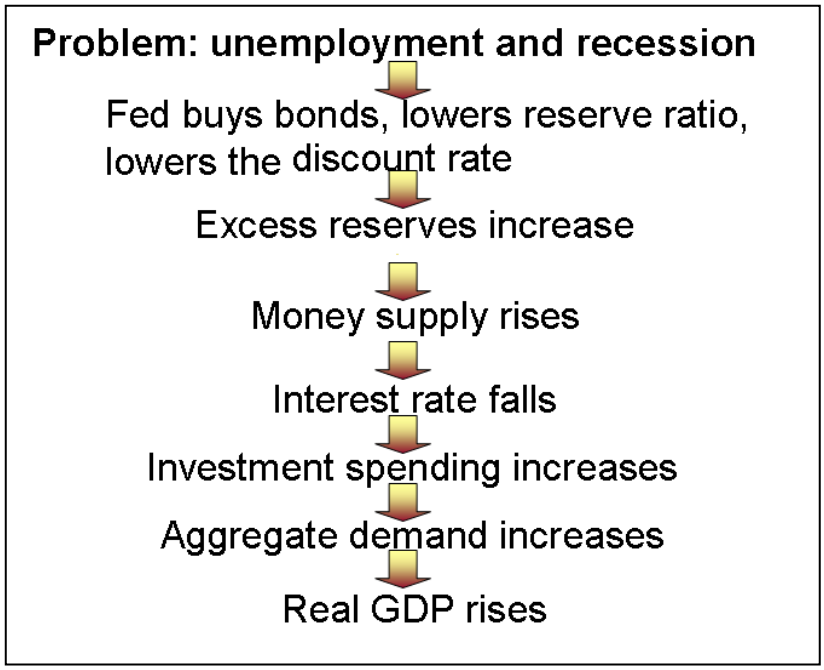
  expansionary monetary policy ➔ increase in excess reserves ➔ money supply ↑ (ΔMS = m x ER)

The effect of an expansionary monetary policy on output.

The expansionary monetary policy shift money supply curve to the right ➔ lower the interest rate ➔ investment spending increase (I↑) ➔ shift AD curve to the right ➔ output (GDP) increase.



Expansionary Monetary Policy



Restrictive Monetary Policy (tight Money Policy).

- Restrictive Monetary Policy is in order for periods of rising inflation.

- This policy will increase the interest rate in order to reduce borrowing and spending, which will decrease AD and hold down price level.

- To make Restrictive monetary policy (*tight Money Policy*) the central bank will take some combination of the following actions: (1) sell government securities to banks and the public in open market (2) rises the reserves ratio (3) rises the discount rate.

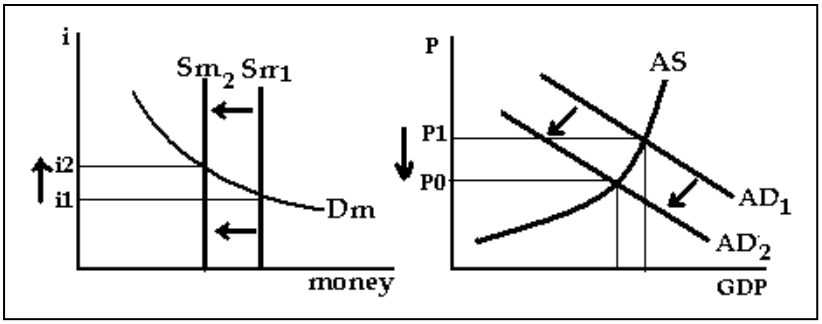
  To make restrictive monetary: central bank sells bonds, or rises reserves ratio, or rises the discount rate.

- The outcome of the tight money policy will be a decrease in excess reserves in the commercial banking system. Because less excess reserves creates less checkable deposits money, the money supply will decline.

  restrictive monetary policy ➔ decrease in excess reserves ➔ money supply ↓ (ΔMS = m x ER).

The effect of a restrictive monetary policy on output.

The restrictive monetary policy shift money supply curve to the left ➔ rises the interest rate ➔ investment spending decrease(I ↓) ➔ shift AD curve to the left ➔ output (GDP) decrease, and prices decrease (reduce inflation).



Restrictive Monetary Policy