UNIT 1 VISUAL 1-1.1

The Economic Way of Thinking

- Everything has a cost.
- People choose for good reasons.
- Incentives matter.
- People create economic systems to influence choices and incentives.
- People gain from voluntary trade.
- Economic thinking is marginal thinking.
- The value of a good or service is affected by people’s choices.
- Economic actions create intended and unintended consequences.
- The test of a theory is its ability to predict correctly.
UNIT 1 VISUAL 1-3.1

Production Possibilities Curve

1. What trade-offs are involved?
2. Why is the PPC concave, or bowed out, from the origin?
3. What does a point inside the PPC illustrate?
4. What is a historical example of a point inside the PPC?
5. What is the significance of a point outside the PPC?
6. Under what conditions can a point outside the PPC be reached?
7. What would a country's PPC look like if it did not have a scarcity of resources?
Absolute Advantage

• The ability to produce more of a good or service than some other producer, using the same amount of resources.

Comparative Advantage

• The ability to produce a good or service at a lower opportunity cost than another producer.
The Input Method

Input Method of Calculating Comparative Advantage

Uses data to calculate the amount of resources or INPUT that goes into producing a good.

PRODUCTIVITY DATA USING THE INPUT METHOD

<table>
<thead>
<tr>
<th>Time required to produce one radio</th>
<th>Time required to produce one bushel of wheat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hakeem</td>
<td></td>
</tr>
<tr>
<td>20 minutes</td>
<td>5 minutes</td>
</tr>
<tr>
<td>Sita</td>
<td></td>
</tr>
<tr>
<td>30 minutes</td>
<td>15 minutes</td>
</tr>
</tbody>
</table>

OPPORTUNITY COST OF PRODUCING RADIOS AND WHEAT

<table>
<thead>
<tr>
<th>Opportunity cost of producing one radio</th>
<th>Opportunity cost of producing one bushel of wheat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hakeem</td>
<td></td>
</tr>
<tr>
<td>$1 \text{ radio} = \frac{20 \text{ minutes}}{5 \text{ minutes}} = 4 \text{ bushels}$</td>
<td>$1 \text{ wheat} = \frac{5 \text{ minutes}}{20 \text{ minutes}} = \frac{1}{4} \text{ radio}$</td>
</tr>
<tr>
<td>Sita</td>
<td></td>
</tr>
<tr>
<td>$1 \text{ radio} = \frac{30 \text{ minutes}}{15 \text{ minutes}} = 2 \text{ bushels}$</td>
<td>$1 \text{ wheat} = \frac{15 \text{ minutes}}{30 \text{ minutes}} = \frac{1}{2} \text{ radio}$</td>
</tr>
</tbody>
</table>
UNIT 1 VISUAL 1-4.3

The Output Method

Output Method of Calculating Comparative Advantage

Uses data to calculate the amount of the product or OUTPUT that can be produced with the same amount of resources.

PRODUCTIVITY DATA USING THE OUTPUT METHOD

<table>
<thead>
<tr>
<th></th>
<th>Radios produced per hour</th>
<th>Wheat produced per hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hakeem</td>
<td>60 minutes = 3 radios</td>
<td>60 minutes = 12 bushels</td>
</tr>
<tr>
<td></td>
<td>20 minutes</td>
<td>5 minutes</td>
</tr>
<tr>
<td>Sita</td>
<td>60 minutes = 2 radios</td>
<td>60 minutes = 4 bushels</td>
</tr>
<tr>
<td></td>
<td>30 minutes</td>
<td>15 minutes</td>
</tr>
</tbody>
</table>

OPPORTUNITY COST OF PRODUCING RADIOS AND WHEAT

<table>
<thead>
<tr>
<th></th>
<th>Opportunity cost of producing one radio</th>
<th>Opportunity cost of producing one bushel of wheat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hakeem</td>
<td>3 radios = 1 hour = 12 bushels</td>
<td>12 bushels = 1 hour = 3 radios</td>
</tr>
<tr>
<td></td>
<td>1 radio = 12/3 = 4 bushels</td>
<td>1 bushel = 3/12 = ¼ radio</td>
</tr>
<tr>
<td>Sita</td>
<td>2 radios = 1 hour = 4 bushels</td>
<td>4 bushels = 1 hour = 2 radios</td>
</tr>
<tr>
<td></td>
<td>1 radio = 4/2 = 2 bushels</td>
<td>1 bushel = 2/4 = ½ radio</td>
</tr>
</tbody>
</table>
PRODUCTION POSSIBILITIES CURVES FOR HAKEEM AND SITA

Hakeem

Sita
Determining Comparative Advantage (output method)

<table>
<thead>
<tr>
<th>Output per hour</th>
<th>Argentina</th>
<th>Brazil</th>
</tr>
</thead>
<tbody>
<tr>
<td>One bushel of soybeans</td>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>One pound of beef</td>
<td>5</td>
<td>15</td>
</tr>
</tbody>
</table>

1. Which country has an absolute advantage in producing soybeans?
2. Which country has an absolute advantage in producing beef?
3. Which country has a comparative advantage in producing soybeans?
4. Which country has a comparative advantage in producing beef?
5. Which country should specialize in soybean production?
6. Which country should specialize in beef production?
Determining Comparative Advantage (input method)

<table>
<thead>
<tr>
<th></th>
<th>Time required for one unit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>One bushel of soybeans</td>
</tr>
<tr>
<td>Argentina</td>
<td>3 minutes</td>
</tr>
<tr>
<td>Brazil</td>
<td>2 minutes</td>
</tr>
</tbody>
</table>

1. Which country has an absolute advantage in producing soybeans?
2. Which country has an absolute advantage in producing beef?
3. Which country has a comparative advantage in producing soybeans?
4. Which country has a comparative advantage in producing beef?
5. Which country should specialize in soybean production?
6. Which country should specialize in beef production?
Illustrating the Difference between a Change in Demand and a Change in Quantity Demanded
Determinants of Demand

Factors that Shift the Demand Curve

• Change in consumer tastes
• Change in the number of buyers
• Change in consumer incomes
• Change in the prices of complementary and substitute goods
• Change in consumer expectations
Illustrating the Difference between a Change in Supply and a Change in Quantity Supplied
Determinants of Supply

Factors that Shift the Supply Curve

- Change in resource prices or input prices
- Change in technology
- Change in taxes and subsidies
- Change in the prices of other goods
- Change in producer expectations
- Change in the number of suppliers

Any factor that increases the cost of production decreases supply.

Any factor that decreases the cost of production increases supply.
Equilibrium and Disequilibrium

![Graph showing equilibrium and disequilibrium in the market for gumballs. The graph has a grid with price per gumball on the y-axis and quantity (in hundreds of gumballs per week) on the x-axis. The supply curve (S) and demand curve (D) intersect at a point indicating equilibrium price and quantity. The graph also shows a 800 gumball surplus at a price of $4 and a 800 gumball shortage at a price of $3.](image-url)
The Effects of Shifts in Demand or Supply

A. INCREASE IN DEMAND

B. DECREASE IN DEMAND

C. INCREASE IN SUPPLY

D. DECREASE IN SUPPLY
UNIT 1 VISUAL 1-SA.1
Introducing the Circular Flow
Injections and Leakage in the Circular Flow

**Leakage** – when money moves out of the Circular Flow

Households/Businesses don’t spend all of their income.

- Savings
- Pay taxes
- Buy imports from other countries

**Injection** – when money is added to the circular flow

- Households/Businesses borrow money
- Government buys goods/services
- Sell exports to other countries

Injections are not from:

- Businesses selling goods/services
- Households selling resources
Circular Flow Diagram

The Circular Flow of Resources, Goods, Services, and Money Payments

Money that flows out of the Circular Flow 1. ________

Money that flows into the Circular Flow 12. ________
GDP Measures the Health of the Economy

**Gross Domestic Product** is

- the total value
- of all final goods and services
- produced in a given year
- within the borders of a country.
Determining GDP Using the Expenditures Approach

Economists often measure GDP by totaling the money spent on four major categories of goods and services:

\[ GDP = C + I + G + (X - M) \]

- **Consumption (C):** Spending by households on goods and services. Includes durable and non-durable goods.
- **Investment (I):** Spending by businesses on machinery, factories, equipment, tools, and construction of new buildings. Includes changes in inventory.
- **Government (G):** Spending by all levels of government on goods and services.
- **Net Exports (X – M):** Spending by people abroad on U.S. goods and services (exports, or X) minus spending by people in the U.S. on foreign goods and services (imports, or M). Also written as \( X_N \).
Limitations of Expenditures Approach to Calculating GDP

What is Not Counted?

Produced But Not Counted

**Illegal Goods**
Any “black market” or illegal goods; the underground economy of services paid for in cash or “under the table”.

**Intermediate Goods**
Goods used in the production of other goods and services are not counted, so the steel used to produce a car would not count, only the value of the car itself.

**Non-Market Transactions**
Fixing your own car is a service, as is volunteering, but these are seen as occurring outside of any marketplace.

No Production Taking Place

**Used Goods**
A used textbook or car would not count because it was already counted the year it was produced.

**Financial Transactions**
Purchases of stocks or other investments do not count because no good or service was produced.
Calculating GDP

Expenditures Approach

\[ GDP = C + I + G + (X - M) \]

- \( C \) = Consumer spending on goods and services
- \( I \) = Investor spending on business capital goods
- \( G \) = Government spending on public goods and services
- \( X \) = exports
- \( M \) = imports

Income Approach

Total Income (wages, rents, profits, interest)
- plus taxes on production and imports (indirect business taxes)
- plus consumption of fixed capital/deprediation
- minus net foreign factor income
- plus statistical discrepancies

Value Added Approach

The value of all final goods and services produced in the economy minus the value of intermediate goods and services used to produce the final goods.
UNIT 2 ACTIVITY 2-2.2

Three Approaches for Calculating GDP

Econo Island produces tomatoes and tomato soup, but nothing else. Some of the tomatoes are consumed domestically, some are exported, and some are used to make soup. Some cans of soup are consumed domestically and some are exported. All ingredients for making soup are imported except for tomatoes. Labor is the only factor of production on Econo Island. The government of Econo Island purchases soup to supplement the public schools’ lunch program.

Consider the following data:

<table>
<thead>
<tr>
<th>Data from Tomato Factories</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total labor hours worked:</td>
<td>200,000 hours</td>
</tr>
<tr>
<td>Tomato factory wage:</td>
<td>$6/hour</td>
</tr>
<tr>
<td>Total pounds of tomatoes sold:</td>
<td>240,000 lbs.</td>
</tr>
<tr>
<td>Price per pound of tomatoes:</td>
<td>$5 per lb.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data from Soup Factories</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total labor hours worked:</td>
<td>75,000 hours</td>
</tr>
<tr>
<td>Soup factory wage:</td>
<td>$12/hour</td>
</tr>
<tr>
<td>Total pounds of non-tomato ingredient inputs:</td>
<td>80,000 lbs.</td>
</tr>
<tr>
<td>Price of non-tomato ingredients:</td>
<td>$2.50/lb.</td>
</tr>
<tr>
<td>Total tomato inputs:</td>
<td>60,000 tomatoes</td>
</tr>
<tr>
<td>Total tomato soup sales:</td>
<td>140,000 cans</td>
</tr>
<tr>
<td>Price of soup per can:</td>
<td>$10/can</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data from Households</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Tomatoes consumed:</td>
<td>160,000 lbs.</td>
</tr>
<tr>
<td>Cans of soup consumed:</td>
<td>120,000 cans</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Government Data</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Soup purchased by government:</td>
<td>10,000 cans of soup</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Trade Data</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Soup exported:</td>
<td>10,000 cans</td>
</tr>
<tr>
<td>Tomatoes exported:</td>
<td>20,000 lbs. tomatoes</td>
</tr>
<tr>
<td>Ingredients imported:</td>
<td>80,000 lbs.</td>
</tr>
</tbody>
</table>
Measuring Inflation

A Price Index is a measure of the overall price level.

\[ \text{Price Index} = \frac{\text{Current-year cost}^*}{\text{Base year cost}^*} \times 100 \]

*Cost = cost of your market basket full of goods and services

The Consumer Price Index (CPI) is used to measure the change in prices over time (inflation or deflation).

\[ \text{Rate of Inflation} = \frac{\text{Change in CPI}}{\text{Beginning CPI}} \times 100 \]
Shortcomings of CPI

1. **Substitution Bias**

   The CPI assumes that consumers continue to purchase the same basket of goods and services even as prices change.

2. **Basket of Goods**

   CPI may not reflect the consumption patterns of all households. Households with different income levels or demographic characteristics may have different consumption patterns that are not fully captured by the CPI.

3. **Quality Adjustments**

   CPI does not account for changes in quality. If a new smartphone is introduced with better features than the previous model, the CPI may not reflect the increase in value that consumers receive from the improved technology.
Inflation

Who is hurt?

- Lenders (banks)
- Savers
- Retired or on fixed income without a Cost-of-Living Adjustment (COLA)

Who is not hurt?

- Borrowers with fixed rate loans
- Businesses who raise prices quickly
- Government—gain more revenue from taxes and cheaper to pay back their debts.
Costs of Inflation

**Shoe leather costs**

- Increased transaction costs caused by inflation.

**Menu costs**

- The cost of changing a listed price.

**Unit of account costs**

- The cost of having a less reliable unit of measurement.
In and Out of the Labor Force

Population

**IN the labor force**
- Employed
  - Currently holds a full- or part-time job
  - Includes those who are underemployed
- Unemployed
  - Not working but actively seeking work (sent out resumes, interviewed, etc.)
  - Does not include discouraged workers

**OUT of the labor force**
- Children under age 16
- Retired
- Full-time student (not working)
- Choose not to work
- Want a job but not actively seeking work
- Stay-at-home parent
- Institutionalized
- Discouraged workers
- Active-duty military
Calculating Employment

The labor force participation rate (LFPR) – the percentage of the population that is considered part of the labor force.

\[ LFPR = \frac{\text{labor force}}{\text{population}} \times 100. \]

The unemployment rate (UR) – the number of people who are unemployed as a percentage of the labor force. To be counted as unemployed you must be jobless, but actively looking for work (sent out resumes, interviewed, etc.) in the past four weeks.

\[ UR = \frac{\text{number of unemployed}}{\text{labor force}} \times 100. \]
Types of Unemployment

Frictional Unemployment
- Someone “between jobs”
- Voluntarily left one job and looking for another
- Looking for your first job
Usually short term
Unavoidable in market economy
Good for the economy

Seasonal Unemployment
- often classified as a type of frictional unemployment – “adjusted seasonally”
- Demand for labor depends on the season – tourism, agricultural, construction, Christmas season
- Students in the summer → unemployment goes up because students move from “not in labor force” to looking for work

Structural Unemployment
- Advances in technology make jobs obsolete or reduce demand for certain skills
- Unemployed workers who don’t have the skills that in-demand jobs require

Cyclical Unemployment
- Due to a decline in business activity during an economic downturn or recession
- NOT due to changing jobs or lack of worker’s skills
Phases of the Business Cycle

**Expansionary**
- **Expansionary** (Recovery)
- **Peak**

**Contractionary**
- **Contractionary** (Recession)
- **Trough**

**Expansionary** (Recovery)

**Long-run trend of real GDP**
Output Gaps and the Business Cycle

- **Expansionary (Recovery)**
  - Positive output gap
- **Peak**
- **Contractionary (Recession)**
  - Negative output gap
- **Trough**

**REAL GDP**

**PERIODS OF TIME**

- Long-run trend of real GDP
UNIT 3 VISUAL 3-1.1

Aggregate Demand

An increase in price from PL to PL₁ results in a decrease in real GDP from Y to Y₁

 Movements along the curve are caused by

- Interest rate effect
- Real wealth effect
- Exchange rate effect
Remind: \( AD = C + I + G + Xn \)

How do the following changes affect the AD curve?

- Increase in government spending
- Increase in income taxes
- Decrease in consumer expectations of future income
- Decrease in foreign income
- Increase in business' expectations of future sales
Determinants of Aggregate Demand

Change in Consumer Spending
- Consumer wealth
- Household borrowing
- Consumer expectations
- Personal taxes

Change in Investment Spending
- Real Interest Rates
- Expected Returns
  - Future expectations
  - Technology
  - Excess Capacity
- Business taxes

Change in Government Spending

Change in Net Export Spending
- National Income Abroad
- Exchange Rates
An interest rate decrease from \( r \) to \( r_1 \) results in an investment increase from \( I \) to \( I_1 \).
Multiplier Equations

C+S = DI
Consumption + Spending = Disposable Income

MPC+MPS = 1
Marginal Propensity to Consume + Marginal Propensity to Save = 1

MPC = ΔC/ΔDI
Marginal Propensity to Consume =
Change in Consumption Divided By Change in Disposable Income

MPS = ΔS/ΔDI
Marginal Propensity to Save =
Change in Saving Divided By Change in Disposable Income
UNIT 3 VISUAL 3-2.2

Saving as a Percentage of Gross National Income

Source: U.S. Bureau of Economic Analysis
How Much Money is Created in the Economy?

Spending multiplier = 1/(1–MPC) or 1/MPS
The Spending Multiplier and the Tax Multiplier

Spending Multiplier = \( \frac{1}{1 - \text{MPC}} \) or \( \frac{1}{\text{MPS}} \)

How to use the spending multiplier:

- Change in GDP = change in AD component x spending multiplier.

When to use the spending multiplier:

- When there is a change in a component of AD.

Tax Multiplier = \( \frac{-\text{MPC}}{1 - \text{MPC}} \) or \( \frac{-\text{MPC}}{\text{MPS}} \)

How to use the tax multiplier:

- Change in GDP = change in taxes x tax multiplier.

When to use the tax multiplier:

- When there is a change in lump-sum taxes.

Note: Remember that the tax multiplier has a negative sign.

Increasing taxes → negative multiplier → decrease in spending

Increasing taxes (+$5 million) x (-3) = -$15 million in spending

Decreasing taxes → negative multiplier→ increase in spending

Decreasing taxes (-$5 million) x (-3) = +$15 million in spending
UNIT 3 VISUAL 3-4.1

Short Run Aggregate Supply Curve

PRICE LEVEL

PL₁

SRAS

REAL GDP

Y₁
Determinants of Short Run Aggregate Supply

Changes in resource (input) prices
- Wages, machinery and equipment, commodity prices (oil)

Changes in productivity
- Improved technology
- Better educated workforce

Changes in taxes and govt. regulations
- Taxes on business – excise, payroll tax
- Subsidies – payment or tax break by the government to producers
- Regulations – safety and environmental laws, for example
**Shifting Aggregate Supply**

- Is it more expensive to produce? Shift the AS curve to the left.
- Is it less expensive to produce? Shift the AS curve to the right.
UNIT 3 VISUAL 3-5.1

Change in Aggregate Demand

![Graph showing the effects of a change in aggregate demand on the price level and real GDP. The graph includes the SRAS and AD curves, showing the shifts from AD₁ to AD₂ and the corresponding changes in the price level and real GDP.]
UNIT 3 VISUAL 3-5.2

Change in Short Run Aggregate Supply

![Graph showing the change in Short Run Aggregate Supply (SRAS) with shifts in AD (Aggregate Demand) and price levels (PL)]
UNIT 3 VISUAL 3-6.1

Long-Run Aggregate Supply
Long-Run Equilibrium
Recessionary and Inflationary Gaps

**Recessionary Gap**

Recessionary gap = $Y_p - Y_1$

**Inflationary Gap**

Inflationary gap = $Y_1 - Y_p$
Long-Run Shifting
Expansionary Fiscal Policy
Contractionary Fiscal Policy
The Multiplier and Expansionary Fiscal Policy

- Recessions Decrease AD – Moves from AD₁ to AD₂
- How does the Economy get back to AD₁?
The Multiplier and Contractionary Fiscal Policy

UNIT 3 VISUAL 3-7.4

The graph illustrates the effect of a $3 billion initial decrease in spending on the price level and real GDP. The full $12 billion decrease in aggregate demand is shown by the shift from AD1 to AD2. The graph also highlights the impact on the price level and real GDP, with P1 and P2 representing the initial and final price levels, and $502, $510, and $522 representing the real GDP levels.
Fiscal Policy Summary: Discretionary

Discretionary spending is money formally approved by Congress and the President during the appropriations process each year.

**Expansionary**

- Increase government spending
- Decrease taxes
- Increase transfer payments

**Contractionary**

- Decrease government spending
- Increase taxes
- Decrease transfer payments
Fiscal Policy Summary: Automatic Stabilizers

Automatic stabilizers are built into government budgets, without any vote from legislators, which increase spending or decrease taxes “automatically” when the economy slows and decrease spending and increase taxes when the economy is too hot.

**Expansionary**

- Unemployment insurance claims increase
- Progressive marginal tax rates decrease
- Government transfers increase

**Contractionary**

- Unemployment insurance claims decrease
- Progressive marginal tax rates increase
- Government transfers decrease
UNIT 3 VISUAL 3-8.3

Fiscal Policy Lags

Recognition lags

- The time it takes for policymakers to recognize that the economy is experiencing a recession or inflationary pressures.
- It can take time for data to be collected, analyzed, and reported, leading to a recognition lag of an actual economic problem.

Legislative lags

- The time it takes for policymakers to pass legislation to implement fiscal policy measures.
- With political gridlock, debates, and competing opinions, legislation can take a while to pass, or never pass.

Implementation lags

- The time it takes for fiscal policy measures to be implemented and go into effect.
- For example, it may take months to set up new government programs, hire staff, or allocate funds to specific projects as outlined in legislation.
- By this point, output gaps could have gotten worse, changed, or even disappeared.
Interest, Risk, and Liquidity

What is Interest?

- Interest can be thought of as “the price of money” – the price you pay to borrow money or the cost you charge to lend money.

- Serves as a way to evaluate the opportunity cost of holding a particular financial asset.
  - If the interest rate is relatively low, the opportunity cost is small.
  - If the interest rate is high, the opportunity cost is greater.

Risk refers to the chance of loss.

- Risk tolerance is a balance of what people are comfortable with and their ability and willingness to grow their financial assets.
  - Everyone’s risk tolerance is different.

- For financial investments, **risk** is the degree to which the actual rate of return on an investment can vary from the expected rate of return on the investment.

Liquidity

- Liquidity – How quickly a financial asset can be converted to cash.

- The most liquid forms of money are cash and demand deposits.
Financial Assets

Checking or Savings account

- Cash or cash equivalent – store of value, very little interest
- Cash and demand deposits are the most liquid form of money
- Fully insured by the Federal Deposit Insurance Commission (FDIC) so cannot decrease in value, even if bank closes

Certificates of Deposit (CD)

- Bank savings product that earns interest on a lump sum for a fixed period of time
- Lump sum must remain untouched for the period of time or face withdrawal penalties
- FDIC insured

Money Market

- Deposit account with higher interest rates than a savings account
- Account owner withdrawals are limited
- FDIC insured
Bonds

• Financial asset that is a loan “IOU” to the government or a corporation
• Paid back after a certain period of time
• Ratings system – AAA is the least risky, lowest interest. Moving down (from A to BBB for example) more risk of the bond issuer defaulting or going bankrupt and holder is paid $0

Stocks

• Ownership of a share of a company
• Value of a stock is based on supply and demand
• Technically have an unlimited earnings ceiling based on how a company performs, history, etc.
• Higher risk – if a company goes bankrupt then the stock becomes worthless
Treasury Securities

US Treasury Securities

- The collective name for bonds, bills, and notes that are sold by the US federal government.

- Maturity rate
  - Bonds: 20 to 30 years
  - Notes: 2 to 10 years
  - Bills: 4 to 52 weeks

- The U.S. Department of the Treasury issues Securities to raise the money needed to operate the federal government.

- Treasury securities are considered a safe and secure investment option because the full faith and credit of the U.S. government guarantees that interest and principal payments will be paid on time.

Treasury Bonds are NOT THE SAME as Savings Bonds.

- Treasury bonds are highly liquid and can be traded on the secondary market

- Savings bonds have one owner and cannot be bought and sold between private parties.
Real Rate Calculation

Calculating the Real Rate of Inflation

- The Nominal Interest Rate is the rate unadjusted for inflation.
- It is the “headline” rate that we see when we put money in the bank, borrow with a loan, or pay with a credit card.
- The Real Interest Rate is the true purchasing power adjusted for inflation.
- \[ \text{Real Rate} = \text{Nominal Rate} - \text{Inflation Rate} \]

Fisher’s Hypothesis

- Nominal Rate = Real Rate + Expected Inflation.

Example:

Banks want a real profit of 3%. They will add an expected inflation rate of 2% so that borrowers pay a nominal interest rate of 5%.

\[ 5\% = 3\% + 2\% \]
UNIT 4 VISUAL 4-2.2

Rule of 72

\[ t \approx \frac{72}{r} \]

\[ \frac{72}{\text{Interest rate}} = \text{Years to double investment (or debt)} \]

- \( T \) – number of periods required to double an investment’s value
- \( R \) – interest rate per period as a percentage

What the Rule of 72 Can Determine

- How many years it will take for an investment to double at a given interest rate using compounding interest.
- How long it will take for debt to double if no payments are made.
- The interest rate an investment must earn to double within a specific time period.
The Functions of Money

How does money function in our economy?

- **Medium of Exchange** – Money is used to trade for goods and services.
- **Store of Value** – Money holds purchasing power over time.
- **Unit of Account** – Money is used as a measure to set prices and make economic decisions more easily by comparing the prices of different items and assessing their relative value in monetary terms.

Commodity Money and Fiat Money

- **Commodity money** – money that has intrinsic value – it has value even if it is not used as money. Examples: cattle, tobacco, gold, silver.
- **Fiat money** – currency not backed by a commodity like gold or silver. It is backed by the good faith and credit of the country issuing it. US currency is fiat money.
How the Federal Reserve Categorizes Money

The Federal Reserve (Fed) uses monetary aggregates (called M1 and M2) as a way to measure the money supply.

The formula for categorizing money is $M2 = M1 + M2$

<table>
<thead>
<tr>
<th><strong>M1</strong></th>
<th><strong>M2</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Currency in circulation (not in Federal Reserve Banks or U.S. Treasury)</td>
<td>• Small Denomination Time Deposits (such as certificate of deposits)</td>
</tr>
<tr>
<td>• Demand Deposits and other checkable deposits</td>
<td>• Money Market Funds</td>
</tr>
<tr>
<td>• Traveler’s Checks</td>
<td></td>
</tr>
<tr>
<td>• Checkable Deposits</td>
<td></td>
</tr>
<tr>
<td>• Savings Accounts</td>
<td></td>
</tr>
<tr>
<td>• Money Market Accounts</td>
<td></td>
</tr>
</tbody>
</table>

*Retirement accounts are not included in M1 or M2*
The Vocabulary of Money Creation

**Required Reserve Ratio**

- Also known as the reserve requirement
- The percentage of a bank’s total deposits that it is legally required to hold as reserves.
- Purpose is to ensure that banks maintain a certain level of liquidity and stability in their operations.

**Required Reserves**

- The amount of funds that banks are obligated to hold in reserve based on the required reserve ratio.
- The portion of a bank’s deposits that must be held in cash or deposited with the central bank and not available for lending or investment.
- Serve as a safeguard against potential deposit withdrawals

**Excess Reserves**

- The reserves held by banks above and beyond the required reserves. In other words, it represents the amount of reserves that a bank holds beyond what is mandated by the required reserve ratio.
- Banks can choose to hold excess reserves voluntarily as an additional buffer against unexpected events or as a strategic decision based on their lending and investment activities.

The Federal Reserve discontinued its reserve requirements in 2020, eliminating the difference between excess reserves and required reserves.
### Bank Balance Sheets or T-Accounts

Starting with a Checking Account Deposit of $1,000 and a Required Reserve of 10%

<table>
<thead>
<tr>
<th>Bank #1 Balance Sheet Step 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assets</strong></td>
</tr>
<tr>
<td>Required Reserve:</td>
</tr>
<tr>
<td>Excess Reserves:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bank #1 Balance Sheet Step 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assets</strong></td>
</tr>
<tr>
<td>Required Reserve: $100</td>
</tr>
<tr>
<td>Excess Reserves: $900</td>
</tr>
</tbody>
</table>

The bank makes a loan of $900. Asset or Liability? What happens to Excess Reserves?

<table>
<thead>
<tr>
<th>Bank #1 Balance Sheet Step 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assets</strong></td>
</tr>
<tr>
<td>Required Reserve: $100</td>
</tr>
<tr>
<td>Excess Reserves: $0</td>
</tr>
</tbody>
</table>

Borrower deposits loan in Bank #2 with required reserve of 10% Asset or Liability? Required Reserve? Excess Reserve?

<table>
<thead>
<tr>
<th>Bank #2 Balance Sheet Step 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assets</strong></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bank #2 Balance Sheet Step 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assets</strong></td>
</tr>
<tr>
<td>Required Reserve: $90</td>
</tr>
<tr>
<td>Excess Reserves: $810</td>
</tr>
</tbody>
</table>
The Money Multiplier and Scenarios

The Money Multiplier

- Represents the potential expansion in the money supply that can result from an initial deposit or injection of funds into the banking system.
- Is based on the concept of fractional reserve banking.
- Is the ratio of the money supply to the monetary base.

Money Multiplier = $\frac{1}{rr}$

For example, if the required reserve ratio is 10%, the money multiplier would be 1 divided by 0.10, which equals 10.

$\frac{1}{10\%} = \frac{1}{.10} = 10$

- To calculate maximum change to money supply over time from an initial deposit

  Change in Money Supply = initial Excess Reserves x Money Multiplier

- To calculate maximum change to new deposits over time from an initial deposit

  Money Multiplier x Deposit
UNIT 4 VISUAL 4-5.1

The Money Market
The Demand for Money

The quantity demanded of money has an inverse relationship with the interest rate.

- As the interest rate increases, the opportunity cost of holding money increases and people hold less money.
- As the interest rate falls, the opportunity cost of holding money falls and people hold more money.
- The negatively sloped demand curve for money represents the quantity of money demanded at various interest rates.

Three types of Demand for Money That Shift the Curve

- Transaction demand – money needed to make purchases
- Precautionary demand – money needed for financial emergencies
- Speculative demand – money needed to serve as a store of wealth
Loanable Funds Market

Graph showing the loanable funds market with the quantity of loanable funds on the horizontal axis and the real interest rate on the vertical axis. The supply curve is labeled $S_{lf}$ and the demand curve is labeled $D_{lf}$. The equilibrium point is at $Q_{lf}$.
The Money Market versus The Loanable Funds Market
Three Main Functions of the Federal Reserve

**Financial Services**

- Operates payment systems – ACH, Fedwire
- Provide currency
- Act as a fiscal agent for U.S. government
- Lend money to banks/discount rate
- Hold bank reserves

**Supervision of Banks**

- Enforce regulations set by Congress

**Monetary Policy**

- Charge interest on bank reserves
- Control the money supply
The Federal Reserve System

BOARD OF GOVERNORS
SEVEN MEMBERS APPOINTED BY THE PRESIDENT OF THE UNITED STATES
(AND APPROVED BY THE SENATE)
14 YEAR STAGGERED TERMS
(Chairperson appointed from the Board and serves a four-year term. Can be re-appointed)

OPEN MARKET COMMITTEE
7 Governors plus the President of the NY Fed and 4 regional Presidents who serve on a rotating basis. Make decisions about monetary policy.

FEDERAL ADVISORY BOARD
12 members, one nominated from each Regional Federal Reserve Bank

12 REGIONAL FEDERAL RESERVE BANKS
(1) BOSTON A
(2) NEW YORK B
(3) PHILADELPHIA C
(4) CLEVELAND D
(5) RICHMOND E
(6) ATLANTA F
(7) CHICAGO G
(8) ST. LOUIS H
(9) MINNEAPOLIS I
(10) KANSAS CITY J
(11) DALLAS K
(12) SAN FRANCISCO L

25 BRANCH BANKS

FINANCIAL INSTITUTIONS
Two Central Banks: A Comparison

The Federal Reserve (The Fed)

- The Fed operates in the United States, overseeing monetary policy for the U.S. economy.
- The Fed is a decentralized system consisting of twelve regional Federal Reserve Banks, each with its own board of directors.
- The Fed is an independent entity that operates with a degree of autonomy from the U.S. government.
- Although the Board of Governors is appointed by the President and confirmed by the Senate, the Fed is designed to be independent to insulate monetary policy decisions from short-term political pressures.
- The Fed’s dual mandate is to promote price stability and maximum employment. It uses policy tools such as interest rate adjustments, open market operations, and reserves to influence the U.S. economy.

The European Central Bank (ECB)

- The ECB operates within the Eurozone, which consists of numerous European Union member countries that have adopted the euro currency.
- The ECB is centralized and located in Frankfurt, Germany, with decision-making power held by the ECB’s Governing Council and Executive Board.
- The ECB operates independently as well, but its decision-making is influenced by input from representatives of Eurozone countries and coordinated with EU institutions.
- The ECB’s primary objective is to maintain price stability within the Eurozone. It also considers other economic factors but does not have a formal employment mandate like the Fed. The ECB’s responsibilities extend beyond monetary policy to include maintaining the stability of the euro and fostering harmonious economic and financial conditions among member states.
UNIT 4 VISUAL 4-8.1

Reserves in the Banking System 2000 – 2023

Source: Board of Governors of the Federal Reserve System (US)
**Limited Reserves System**

**Powers for Limited Reserves**

<table>
<thead>
<tr>
<th>Power</th>
<th>Description</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <strong>Reserve Requirement Rate</strong></td>
<td>The Fed sets the percentages of bank deposits that must be held as reserves.</td>
<td>Increase or decrease the excess reserves a bank has available to loan when people deposit money.</td>
</tr>
<tr>
<td>2. <strong>Discount Rate</strong></td>
<td>The rate that commercial banks must pay to borrow from the Fed.</td>
<td>Increase or decrease the availability of excess reserves banks have access to from the Fed.</td>
</tr>
<tr>
<td>3. <strong>Open Market Operations</strong></td>
<td>Fed buying Treasury Bonds from the banks or selling Treasury Bonds to the banks.</td>
<td>Immediately increase excess reserves (Buying Bonds = Bigger Bucks) or decrease excess reserves (Selling Bonds = Smaller Bucks).</td>
</tr>
</tbody>
</table>
Ample Reserves System

The Fed needs to increase or decrease the money supply. It sets a “target” Federal Funds Rate and uses the powers below to drive the market for money towards that rate.

### Powers for Ample Reserves

<table>
<thead>
<tr>
<th>Power</th>
<th>Description</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. IORB - Interest on Reserve Balance (Administered Rates)</strong>&lt;br&gt;<em>New main power of the Fed</em></td>
<td>The savings rate the member banks earn on their reserve deposits at the Fed. Set by the Fed and not determined by the market. It is the price floor in the market for reserves.</td>
<td>This represents the base profit for the bank. By raising or lowering this rate, this encourages or discourages banks to either keep the reserves at the Fed (decreasing the money supply) or to make them available to lend to the public (increasing the money supply).</td>
</tr>
<tr>
<td><strong>2. ON RRP rate - Overnight Reserve Repurchase agreement offering rate</strong></td>
<td>A lower rate than the IORB. Banks purchase securities from the Fed, hold them overnight, and then sell them back to the Fed (the Fed repurchases them) at a determined interest rate.</td>
<td>Works in a similar way to the IORB. However, this rate is lower, and is used as a supplementary tool to help control the Federal Funds rate - a “sub-floor” to the IORB.</td>
</tr>
<tr>
<td><strong>3. Discount Window (and its Discount Rate)</strong></td>
<td>The rate that commercial banks must pay to borrow from the Fed. This is the “lender of last resort” rate for banks that can’t borrow money from anywhere else.</td>
<td>Increase or decrease the availability of excess reserves banks have access to from the Fed.</td>
</tr>
<tr>
<td><strong>4. Open Market Operations</strong></td>
<td>Fed buying Treasury Bonds from the banks or selling Treasury Bonds to the banks.</td>
<td>In an ample reserve system, this tool is still used but now only to maintain that reserves are ample if there is a lot of pressure on borrowing.</td>
</tr>
</tbody>
</table>
Comparing Graphs: Limited Reserves and Ample Reserves

Limited Reserves

Ample Reserves

Discount rate

Demand

Reserves

Supp
Student Alert: Open market operations include buying and selling government bonds. When you are asked about an open market operation, you should answer in terms of buying bonds or selling bonds.

Complete Activity 4-8.1. Illustrate how the Fed’s Monetary Policy creates a chain reaction throughout the banking system to increase or decrease AD.

Fed Actions and Their Effects

<table>
<thead>
<tr>
<th>Type of Reserve</th>
<th>Federal Reserve Action</th>
<th>Bank Reserves</th>
<th>Money Supply</th>
<th>Federal Funds Rate</th>
<th>Nominal Interest Rate</th>
<th>Borrowing &amp; Investment Spending</th>
<th>AD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited</td>
<td>Solid Treasury securities on the open market</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limited</td>
<td>Bought Treasury securities on the open market</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limited /Ample</td>
<td>Raises the discount rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limited /Ample</td>
<td>Lowered the discount rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limited</td>
<td>Lowered the reserve requirement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limited</td>
<td>Raised the reserve requirement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ample</td>
<td>Increase Interest on Reserve Balance Rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ample</td>
<td>Decrease Interest on Reserve Balance Rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Market For Reserves: Limited System – Ample System

Discount rate is the Ceiling rate because

Federal Funds rate is the Equilibrium rate because

In this graph, the Interest on Reserve Balance rate (IORB) is seen as a Floor rate because

Monetary Policy that ΔER is effective here because

Monetary Policy that ΔER is ineffective here because

Limited Reserves Pre 2008

Ample Reserves USA now

This space represents millions of US dollars
Contractionary Monetary Policy

Which way did the graph shift?

What is the purpose of the shift?

What is the macro goal?

Discount rate (ceiling rate) increases to keep this rate higher than interest on reserve rate/federal funds rate.

Fed increases policy rates interest on reserve rates and base profit rate of banks by earning interest on reserves they have at the Fed.

Fed increasing interest on reserve rate causes banks to ____ FFR to each other. If they loan money to each other, they would only do it for a ____ rate rather than the interest rate they are earning by leaving money in the Fed.
Which way did the graph shift?

What is the purpose of the shift?

What is the macro goal?

Fed decreases policy rates interest on reserve rate. Base profit rate of banks by earning interest on reserves they have at the Fed.

Discount rate (ceiling rate) decreases to keep this rate higher than reserve rate/federal funds rate.

Banks demand fewer reserves at the Fed.

Fed decreasing interest on reserve rate causes banks to _______ lending at FFR to each other because
Expansionary Graphs

**Graph 1:**
- **LRAS** and **SRAS** lines intersect at the point **Y_E**.
- **AD** line intersects **LRAS** at **Y_E**, indicating equilibrium real GDP.
- **Recessionary Gap** between **Y_E** and **Y_FE**.
- **PL** and **PLE** lines indicate price level and equilibrium price level, respectively.

**Graph 2:**
- **LRAS** and **SRAS** lines intersect at the point **Y_E**.
- **AD** line shifts to **AD_1**.
- **PLE** and **PLE1** lines indicate price level and new equilibrium price level.
- **Y_E** and **Y_E1** denote real GDP at equilibrium and new equilibrium, respectively.
Contractionary Graphs
UNIT 5 VISUAL 5-1.3

Increasing Aggregate Supply

[Graph showing the relationship between real GDP, price level, and aggregate supply and demand, with labels for LRAS, SRAS, SRAS1, AD, PL, PL1, Y*, Y1, and REAL GDP.]
Long Run Adjustment of Aggregate Supply

![Graph showing LRAS, SRAS, and AD curves with price levels PL₁, PL₂, PL₃ and real GDP Y₁, Y₂.](image)
Money Growth and Inflation

$MV = PQ$

$M =$ the money supply

$V =$ the velocity of money (the number of times an average dollar bill is spent)

$P =$ the average price level

$Q =$ real value of all final goods and services (rGDP)
Debt vs. Deficit

**Budget deficit**
- government spending > tax revenues

**Budget surplus**
- government spending < tax revenues

**National or Public Debt**
- total of all past Federal deficits and surpluses
Loanable Funds Market

- $I$ and $i$ are the initial equilibrium values.
- $D = \text{private sector demand for funds (investment).}$
  $D + (G - T) = \text{private + government demand for funds.}$
- $I_1$ and $i_1$ are the new equilibrium values.
- $I_2 = \text{new level of private investment.}$
- $I_1 - I_2 = \text{government demand for funds (G-T).}$
The Crowding Out Effect

1. When the government borrows money, it increases the demand for money.

2. When aggregate demand increases – the price level rises, raising interest rates

3. When the interest rate rises, some investment spending will be “crowded out.” (It’s harder to borrow money)

**Less likely in a recession**

- Not much investment for government to crowd out.
- If govt debt is used to fund capital improvements – better transportation, education, etc. and improve investment prospects for businesses, it offsets the crowding-out effect.
Loanable Funds Market

UNIT 5 VISUAL 5-4.2

QUANTITY OF LOANABLE FUNDS

INTEREST RATE

S

D+(G–T)

Q_{lf2}  Q_{lf}  Q_{lf1}

i_1  i

QUANTITY OF LOANABLE FUNDS
## Data for a Phillips Curve

<table>
<thead>
<tr>
<th>Unemployment rate (%)</th>
<th>Inflation rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.54</td>
<td>1.7</td>
</tr>
<tr>
<td>6.69</td>
<td>1.1</td>
</tr>
<tr>
<td>5.57</td>
<td>1.2</td>
</tr>
<tr>
<td>5.64</td>
<td>1.2</td>
</tr>
<tr>
<td>5.16</td>
<td>1.3</td>
</tr>
<tr>
<td>4.51</td>
<td>1.6</td>
</tr>
<tr>
<td>3.79</td>
<td>2.9</td>
</tr>
<tr>
<td>3.84</td>
<td>3.1</td>
</tr>
<tr>
<td>3.56</td>
<td>4.2</td>
</tr>
<tr>
<td>3.49</td>
<td>5.5</td>
</tr>
</tbody>
</table>
Bell Ringer Phillips Curve
UNIT 5 VISUAL 5-5.3

Short-Run Phillips Curve

![Graph showing the Short-Run Phillips Curve with points A, A2, and A3.]
Comparing the LRAS Curve and the Phillips Curve

![Graph showing the comparison between the LRAS and Phillips curves.](image-url)
UNIT 5 VISUAL 5-5.5

Explaining the Phillips Curve

[Diagram showing the Phillips Curve with axes for Real GDP on the horizontal axis and Price Level on the vertical axis. The diagram includes lines for LRAS, SRAS, AD, AD1, AD2, SRAS1, and points A, A2, and A3.]

Economic Growth

- **REAL GDP**
- **SRAS**
- **LRAS**
- **PLE**
- **PL**
- **YE**
- **YE1**
- **SRAS1**

**Graphical Representation:**
- Chart 1: Graph showing economic growth with LRAS (Long Run Aggregate Supply) and SRAS (Short Run Aggregate Supply) curves, as well as points PLE and PL.
- Chart 2: Graph showing the trade-off between capital goods and consumer goods.
UNIT 5 VISUAL 5-6.2

Sources of Long-Term Growth

1. The quantity and quality of labor

2. The quantity and quality of capital

3. The level of technology

Increases in any one of these elements will increase real GDP.

- The growth in the quantity of labor is primarily the result of population growth.

- The quality of labor is affected by improvements in education, training, and health of workers.

- Investment and research and development result in improvements in capital and technological advances.

- Increases in capital or technological advances increase productivity and thus increase real GDP.
Factors that Contribute to a Nation’s Productivity

Capital per worker

- “Capital” = the tools of production. A country’s workforce is more productive if the workforce has more and better tools with which to work.
- Private capital – workers use to produce goods and services.
- Public capital – infrastructure and includes roads, bridges, power lines, and information networks.

Human capital per worker

- The workforce uses its collective experience and education to produce goods and services.
- Human capital can be acquired through formal schooling, occupational training, or simply accumulated experience at the workplace.

Natural resources per worker

- Production inputs that come from the world around us.
- Minerals, sources of energy, rivers, forests, and fisheries.
- A country’s workforce can be more productive when they have abundant natural resources.

Technology

- The way that resources are combined to produce output.
  - A country with little technology may see that the best way to farm a crop is with a mule-drawn plow.
  - A country with better technology can also farm that crop but does it with enormous diesel-powered harvesters.
Economic Growth Graphs

[Diagram showing economic growth graphs with labels for LRAS, LRAS₁, SRAS, SRAS₁, PL, PE, YE, YE₁, and capital goods versus consumer goods.]
Domestic Plus Foreign Supply

PRICE

QUANTITY

P

P₁

Q₂

Q

Q₁

Domestic supply

Total supply

Domestic demand
UNIT 6 VISUAL 6-1.2

Why Does a Country Limit Trade?

Positive Consequences

- National Defense
- Protect Infant Industry
- Prevent Dumping and Preserve Fair Competition
- Preservation of Domestic Jobs
- Maintenance of a Diverse and Stable Economy
- Prevention of Exploitation

Negative Consequences

- Retaliation from Trading Partners
- Higher Prices for Consumers
- Reduced Access to Foreign Markets for Domestic Producers.
The Current Account (CA)

A record of all trade between nations. Includes:

- payments for imports and exports of both goods and services.
- monetary gifts or transfer payments to and from other nations.

This account is divided into three categories

- Balance on Goods and Services
- Net Investment Income
- Net Transfers
Capital and Financial Accounts (CFA)

Records the flow of money from the purchase and sale of real and financial assets.

- Real asset – purchase of a hotel building in Tokyo
- Financial asset – purchase of stock in a Swedish company

The Sale of Assets

- A financial asset creates a liability. Stocks and bonds are expected to pay interest and repay the principal in the future.
- This is the difference between the Current Account and the Capital and Financial Account. Current Accounts have no liabilities – when you sell wheat to Germany that is the end of the transaction.

Officials Reserves

- The foreign currency and securities held by the government, usually by its central bank:
  - is used to balance the payments from year to year.
  - is NOT a deficit in the overall account. It’s part of the CFA.
Debit or Credit?

To classify a transaction, consider whether a country uses (loses) or earns (gains) foreign currency.

- If the international transaction uses foreign currency to complete the transaction, it is a debit (negative).
- If it earns foreign currency, it is a credit (positive).

Balance of Payment (BOP) Accounts

**CA+CFA = 0**

The Current Account plus the Capital and Financial Account must always sum to zero.

- The goods and services and financial assets we send out to the world must equal the goods/services/financial assets that we get back.
- Don’t confuse this with a Trade Deficit.

Any transaction that happens in one account, the opposite must happen in the other account. For example, if the current account decreases by $1000, the Capital and Financial Account must increase by $1000.

Therefore -CA = CFA
Foreign Exchange Markets

- If we buy a good from another country, we must use that country’s (domestic) currency. As a result, international trade requires that currencies also be traded.

- Currencies are traded in foreign exchange markets. The equilibrium price at which currencies are traded is called the exchange rate.

  - An exchange rate is the rate at which the currency of one country is exchanged for the currency of another.

- To find the exchange rate: divide the cost of the product in the foreign currency by the cost of the US Dollar in the foreign currency.
Appreciation and Depreciation

**STRONG DOLLARS AND US GDP**

An increase in the exchange rate – appreciation
When a currency appreciates – it strengthens
A “STRONG” dollar

If the US dollar appreciates,
US buys more foreign goods because they are cheaper
Foreign countries buy less US goods
Is “strong” good for US GDP?

**WEAK DOLLARS AND US GDP**

A decrease in the exchange rate – depreciation
When a currency depreciates – it weakens
A “WEAK” dollar

If the US dollar depreciates,
Countries will buy more US goods because they are cheaper
US buys less foreign goods
Is “weak” good for US GDP?
Supply and Demand in the Foreign Exchange Market

- The supply of U.S. dollars is determined by U.S. demand for foreign goods, services, and investments.
- The demand for U.S. dollars is determined by foreign demand for U.S. goods, services, and investments.
Graphing the Foreign Exchange Market

EXAMPLE: The prices of U.S. goods rise relative to the prices of German goods.

Why do the curves shift?

- The price of US goods rise so Americans will demand the less expensive German goods.
- To purchase the German goods, they need euros, so the demand for euros increases (shifts to the right) as shown in the market for euros.
- To buy euros, the Americans will supply U.S. dollars to the foreign exchange market, so the supply of U.S. dollars increases (shifts to the right) as shown in the market for U.S. dollars.
- The U.S. dollar depreciates (the exchange rate decreases; that is, the number of euros it takes to buy a U.S. dollar decreases).
- The euro appreciates (the exchange rate increases; that is, the number of U.S. dollars it takes to buy a euro increases).
Policies and Economic Conditions Affect Exchange Rates

Changes in a nation’s monetary and fiscal policies affect its exchange rates and its balance of trade through the real interest rate, income, and the price level. Changes in the value of a country’s currency affect the balance of trade, which affects aggregate demand. Changes in aggregate demand affect real output and the price level. In other words, domestic policies influence currency values, and currency values influence domestic policies. Policy makers cannot ignore the international effects of changes in monetary and fiscal policies.

For each scenario, show the effect on equilibrium exchange rate and quantity of currency in the foreign exchange market graphs in Figures 6-5.1 through 6-5.5. Use the graphs to show the starting equilibrium exchange rate and equilibrium quantity of currency, the shift that occurs, and the new equilibrium exchange rate and quantity. Following each set of graphs, indicate the short-run effect of the change in the foreign exchange market on net exports, aggregate demand, and the price level in the United States. (Ignore the effects on the financial account, that comes next.)

1. Effect if Japan’s real gross domestic product (GDP) increases:
   Rationale:

   (A) U.S. imports (increase/decrease). Explain.
UNIT 6 ACTIVITY 6-5.1 (continued)

(B) U.S. exports (increase/decrease). Explain.

(C) U.S. aggregate demand (increases/decreases). Explain.

(D) The price level in the United States (increases/decreases). Explain.

Figure 6-5.2
REAL INTEREST RATES IN THE UNITED STATES INCREASE RELATIVE TO GREAT BRITAIN

2. Effect if real interest rates in the United States increase relative to Great Britain:
   Rationale:

   (A) U.S. imports (increase/decrease). Explain.

   (B) U.S. exports (increase/decrease). Explain.

   (C) U.S. aggregate demand (increases/decreases). Explain.

   (D) The price level in the United States (increases/decreases). Explain.
3. Effect if Europe experiences a recession:
   Rationale:
   
   (A) U.S. imports (increase/decrease). Explain.

   (B) U.S. exports (increase/decrease). Explain.

   (C) U.S. aggregate demand (increases/decreases). Explain.

   (D) The price level in the United States (increases/decreases). Explain.
4. Effect if the price level in Canada increases relative to the United States:
   Rationale:

   (A) U.S. imports (increase/decrease). Explain.

   (B) U.S. exports (increase/decrease). Explain.

   (C) U.S. aggregate demand (increases/decreases). Explain.

   (D) The price level in the United States (increases/decreases). Explain.
5. Effect on Taiwan if U.S. government decreases taxes:
   Rationale:

   (A) U.S. imports (increase/decrease). Explain.

   (B) U.S. exports (increase/decrease). Explain.

   (C) U.S. aggregate demand (increases/decreases). Explain.

   (D) The price level in the United States (increases/decreases). Explain.
UNIT 6 VISUAL 6-6.1

Foreign Exchange Market

US Dollars $  

British Pounds £
Loanable Funds Market

![Diagram of Loanable Funds Market]

- REAL INTEREST RATE
- QUANTITY OF LOANABLE FUNDS
- Supply
- Demand
- \( r_e \)
- \( Q_e \)