UNIT 4

The Financial Sector

Money, banking, the money market, monetary policy, and the loanable funds market

18–23%	11–13	7
EXAM WEIGHTING	CLASS PERIODS	TOPICS IN UNIT

Teacher presentation · Aligned to the College Board Course and Exam Description

What This Unit Covers

TOPICS IN THIS UNIT

- 4.1 Financial Assets
- 4.2 Nominal vs. Real Interest Rates
- 4.3 Definition, Measurement & Functions of Money
- 4.4 Banking and the Expansion of the Money Supply
- 4.5 The Money Market
- 4.6 Monetary Policy
- 4.7 The Loanable Funds Market

BIG IDEAS

- MEA — Economic Measurements: What is money?
- MKT — Markets: How is the price of money determined?
- POL — Macroeconomic Policies: How do banks create money? How does a central bank affect the economy?

WHY IT MATTERS

Money makes it possible to compare the value of goods and services, and interest rates measure the price of money borrowed or saved. The banking system expands the money supply, and central banks use monetary policy to pursue goals like price stability.

18–23% of the AP Exam multiple-choice and free-response score

TOPIC 4.1

Financial Assets

Enduring Understanding MEA-3 — Money lets us compare value; interest rates are the price of money borrowed or saved.

LEARNING OBJECTIVES: MEA-3.A — Define liquidity, rate of return, and risk; explain the bond price–interest rate relationship.

Financial Assets and Their Attributes

Every financial asset can be described by three attributes — liquidity, rate of return, and risk.

Liquidity

How easily an asset is converted into cash without loss of value. The MOST liquid assets are cash and demand (checking) deposits.

Rate of Return & Risk

RATE OF RETURN is the gain an asset earns. RISK is the chance of loss. Generally, higher expected return comes with higher risk.

Bonds vs. Stocks

BONDS are interest-bearing assets — a loan to the issuer. STOCKS are equity — a share of OWNERSHIP in a firm. Both are alternatives to holding cash.

The Cost of Holding Money

The opportunity cost of holding money is the interest that could have been earned by holding other financial assets such as bonds instead.

Bond Prices and Interest Rates Move Inversely

The price of previously issued bonds and the interest rate are inversely related — a relationship students must understand cold.

- A bond pays a FIXED dollar amount. Its yield depends on the price you pay for it.
- When market interest rates RISE, new bonds pay more — so existing lower-paying bonds become less attractive and their PRICE FALLS.
- When market interest rates FALL, existing higher-paying bonds become more attractive — their PRICE RISES.
- Bond prices and interest rates always move in OPPOSITE directions.

KEY TAKEAWAY

Interest rates up → existing bond prices down. Interest rates down → existing bond prices up. They are inversely related.

TOPIC 4.2

Nominal vs. Real Interest Rates

Separating the stated interest rate from the rate that reflects true purchasing power.

LEARNING OBJECTIVES: MEA-3.B — Define the nominal and real interest rate; explain and calculate their relationship.

Nominal and Real Interest Rates

Nominal Interest Rate

The rate of interest actually paid on a loan, stated in current dollars and UNADJUSTED for inflation. It is the number you see advertised.

Real Interest Rate

The nominal interest rate adjusted for inflation — it reflects the true change in purchasing power for the lender and the true cost for the borrower.

How Rates Are Set

Lenders and borrowers set the nominal rate as their expected real rate PLUS expected inflation. After the fact, the actual real rate = nominal rate − ACTUAL inflation.

Calculating Real and Nominal Interest Rates

REAL INTEREST RATE

Real rate = Nominal rate - Inflation rate

Example: a 7% nominal rate with 3% inflation gives a 4% real rate — the lender's true gain in purchasing power.

NOMINAL INTEREST RATE

Nominal rate = Real rate + Expected inflation

Lenders and borrowers add expected inflation to the desired real rate when setting the nominal rate on a loan.

TOPIC 4.3

Definition, Measurement, and Functions of Money

What money is, what it does, and how economists measure how much of it exists.

LEARNING OBJECTIVES: MEA-3.C — Define money and its functions; calculate measures of money.

What Is Money? The Three Functions

Money is any asset that is generally accepted as a means of payment. Economists define it by what it DOES.

1 Medium of Exchange

Money is accepted in trade for goods and services, so people do not need the 'double coincidence of wants' required by barter.

2 Unit of Account

Money provides a common measuring stick for value — prices everywhere are quoted in the same units, making comparison easy.

3 Store of Value

Money holds purchasing power over time, so it can be saved and spent later. Inflation erodes this function.

Measuring the Money Supply

Economists use monetary aggregates to measure money, ordered from most to least liquid.

Monetary Base (M0 / MB)

Currency in circulation PLUS bank reserves. This is the raw material the central bank directly controls — the base on which the banking system builds.

M1 — The Most Liquid

Currency held by the public, demand deposits, and other checkable deposits. M1 is money that can be spent immediately.

M2 — Broader Money

M1 PLUS less-liquid 'near monies': savings deposits, small time deposits, and retail money market funds. M2 is larger than M1.

TOPIC 4.4

Banking and the Expansion of the Money Supply

How fractional reserve banking lets the banking system create money.

LEARNING OBJECTIVES: POL-2.A — Define banking terms; explain and calculate how the banking system expands the money supply.

Fractional Reserve Banking

Banks keep only a fraction of deposits on hand as reserves and lend the rest — and lending creates new money.

Balance Sheets (T-Accounts)

Banks organize ASSETS (reserves, loans) and LIABILITIES (demand deposits, owner's equity) on a balance sheet. Assets must equal liabilities plus equity.

Required vs. Excess Reserves

REQUIRED reserves are the portion of deposits a bank must hold (set by the required reserve ratio). EXCESS reserves are anything held beyond that — and banks can lend them out.

Excess Reserves Create Money

When a bank lends its excess reserves, that loan becomes a new deposit somewhere else, which creates more excess reserves to lend again. The banking system multiplies the money supply.

Reading a Bank Balance Sheet

A simple T-account for Bank A, with a 10% required reserve ratio. Assets always equal liabilities plus equity.

ASSETS

- Required reserves: $10,000
- Excess reserves: $5,000
- Loans: $85,000
- TOTAL ASSETS: $100,000

LIABILITIES & EQUITY

- Demand deposits: $100,000
- Owner's equity: $0
- TOTAL: $100,000

HOW TO READ IT

- Deposits of $100,000 × 10% ratio = $10,000 required reserves.
- The bank holds $5,000 in EXCESS reserves — it could lend this out.
- Lending the $5,000 is what expands the money supply.

The Money Multiplier

The money multiplier tells you how much the money supply can expand from new excess reserves.

MAXIMUM MONEY MULTIPLIER

Money multiplier = 1 / required reserve ratio

With a 10% (0.10) required reserve ratio, the maximum multiplier is 1 / 0.10 = 10.

MAXIMUM CHANGE IN MONEY SUPPLY

Δ Money supply = excess reserves x money multiplier

Example: $5,000 in new excess reserves × a multiplier of 10 = up to $50,000 of new money created.

Money Creation in Action

Trace how an initial $1,000 deposit expands the money supply with a 20% required reserve ratio.

1 First Bank

Receives a $1,000 deposit. Keeps 20% ($200) as required reserves; lends out $800 in excess reserves.

2 The Chain Continues

The $800 loan is spent and redeposited in another bank, which keeps $160 and lends $640. Then $640 → $512 → and so on.

3 The Total

Money multiplier = 1 / 0.20 = 5. Maximum new money from the original $800 of excess reserves = $800 × 5 = $4,000 (plus the original $1,000).

TOPIC 4.5

The Money Market

Where the demand for and supply of money determine the nominal interest rate.

LEARNING OBJECTIVES: MKT-3.A–D — Define the money market; explain equilibrium and how shifts change the nominal interest rate.

The Money Market

The money market determines the equilibrium NOMINAL interest rate — the price of holding money.

- MONEY DEMAND (MD) slopes DOWN: a higher nominal interest rate raises the opportunity cost of holding money, so people hold less.
- MONEY SUPPLY (MS) is VERTICAL: it is set by the central bank and does not depend on the interest rate.
- Equilibrium is the nominal interest rate at which the quantity of money demanded equals the quantity supplied.
- The vertical axis is the NOMINAL interest rate; the horizontal axis is the quantity of money.

KEY TAKEAWAY

Money market = nominal interest rate. MD slopes down (opportunity cost of holding money); MS is vertical (set by the central bank).

Equilibrium and Shifts in the Money Market

How the Rate Adjusts

A disequilibrium nominal interest rate creates a surplus or shortage of money. Market forces then drive the rate toward equilibrium — just like any supply-and-demand market.

What Shifts Money DEMAND

A higher PRICE LEVEL or higher REAL GDP increases the demand for money (more transactions need financing), shifting MD right and raising the equilibrium nominal rate.

What Shifts Money SUPPLY

MONETARY POLICY shifts the money supply. An increase in MS lowers the equilibrium nominal interest rate; a decrease raises it.

Changes in the Money Market — The Mechanism

When the central bank changes the money supply, the nominal interest rate moves — and that ripples into the real economy.

- **An INCREASE in the money supply (MS shifts right) creates a surplus of money at the old rate.**
- People use the extra money to buy bonds → bond prices rise → the nominal interest rate falls.
- A lower interest rate makes borrowing cheaper → investment and interest-sensitive consumption rise.
- **A DECREASE in the money supply (MS shifts left) does the reverse — the interest rate rises and borrowing falls.**
- An increase in money DEMAND (higher price level or real GDP) shifts MD right and raises the equilibrium nominal rate.
- **This interest-rate channel is exactly how monetary policy reaches aggregate demand.**

TOPIC 4.6

Monetary Policy

How a central bank uses its tools to influence interest rates, aggregate demand, and the economy.

LEARNING OBJECTIVES: POL-1.D — Define monetary policy and explain & calculate its short-run effects. POL-1.E — Lags.

The Tools of Monetary Policy

Central banks implement monetary policy to achieve macroeconomic goals such as price stability and full employment.

Open Market Operations

The central bank BUYS or SELLS government bonds. A purchase increases bank reserves and the monetary base; a sale decreases them.

Administered Interest Rates

The DISCOUNT RATE (charged on central-bank loans to banks) and INTEREST ON RESERVES (paid to banks on their reserves). In the U.S. ample-reserves system, interest on reserves is the key policy tool.

Required Reserve Ratio

The fraction of deposits banks must hold as reserves. Lowering it frees reserves for lending; raising it restricts lending.

The Policy Rate

Central banks target a range for an overnight interbank lending rate — the POLICY RATE. In the U.S. this is the federal funds rate.

Limited Reserves vs. Ample Reserves

The way a central bank moves interest rates depends on whether its banking system has limited or ample reserves.

Limited-Reserves System

The central bank changes the MONEY SUPPLY to move the interest rate. An open-market purchase raises reserves, and the money multiplier expands the money supply by MORE than the monetary base.

Ample-Reserves System

Changing the money supply does NOT effectively move the rate, because reserves are already plentiful. Instead the central bank adjusts its ADMINISTERED rates (e.g., interest on reserves).

The U.S. Today

The U.S. operates an ample-reserves system. The Federal Reserve's key tool is interest on reserves, and it targets the federal funds rate.

Expansionary Monetary Policy in the Money Market

Expansionary monetary policy lowers the nominal interest rate to stimulate spending.

- To fight a recessionary gap, the central bank eases policy — e.g., an open-market PURCHASE of bonds, or lowering administered rates.
- The money supply rises (MS shifts right) → the nominal interest rate falls.
- Lower rates raise investment and interest-sensitive consumption → aggregate demand shifts RIGHT.
- Contractionary policy reverses every step: MS falls, the rate rises, and AD shifts left.

KEY TAKEAWAY

Expansionary MP: increase MS → lower interest rate → more borrowing → AD shifts right. Contractionary MP does the opposite.

The Reserve Market and the Policy Rate

In an ample-reserves system, the reserve market shows how the central bank sets its policy rate.

- The reserve market plots the policy rate against the quantity of reserves.
- In the ample-reserves region, the demand for reserves is flat at the rate of interest on reserves.
- The central bank sets the policy rate by choosing its administered rates — not by fine-tuning the quantity of reserves.
- This is the model behind how the modern Federal Reserve targets the federal funds rate.

KEY TAKEAWAY

In an ample-reserves system, the central bank sets the policy rate directly through administered rates like interest on reserves.

Effects and Lags of Monetary Policy

What Monetary Policy Influences

Monetary policy affects interest rates, and through them aggregate demand, real output, and the price level. Expansionary policy closes a recessionary gap; contractionary policy closes an inflationary gap.

Models You Can Use

The effects of monetary policy can be shown with the money market model, the reserve market model, and/or the AD–AS model. Free-response questions often require linking two of them.

Lags to Monetary Policy

There are lags — the time to RECOGNIZE a problem and the time for the economy to ADJUST to the policy action. Monetary policy is faster to enact than fiscal policy but still takes time to work.

TOPIC 4.7

The Loanable Funds Market

Where savers and borrowers meet to determine the real interest rate.

LEARNING OBJECTIVES: MKT-4.A–E — Define the loanable funds market and national savings; explain shifts and equilibrium.

The Loanable Funds Market

The loanable funds market describes the behavior of savers and borrowers and determines the equilibrium REAL interest rate.

- DEMAND for loanable funds slopes DOWN: a lower real interest rate makes borrowing for investment more attractive.
- SUPPLY of loanable funds slopes UP: a higher real interest rate rewards saving, so more funds are supplied.
- Equilibrium is the real interest rate at which the quantity of funds demanded equals the quantity supplied.
- A disequilibrium real rate creates a surplus or shortage; market forces drive it back to equilibrium.

KEY TAKEAWAY

Loanable funds market = the REAL interest rate. Borrowers demand funds (downward); savers supply funds (upward).

National Savings and What Shifts the Market

National Savings (Closed Economy)

With no international borrowing or lending, national savings = PRIVATE savings (households and firms) + PUBLIC savings (the government budget balance).

National Savings (Open Economy)

In an open economy, investment = national savings + NET CAPITAL INFLOW. Foreign funds can supplement domestic saving.

What Shifts Loanable Funds

DEMAND shifts with investment opportunities (e.g., an investment tax credit, business optimism). SUPPLY shifts with saving behavior. Government borrowing also raises demand for funds.

Shifts in the Loanable Funds Market

Changes in saving or borrowing shift the curves and change the equilibrium real interest rate.

- An increase in the DEMAND for funds (e.g., government borrowing, an investment tax credit) raises the real interest rate.
- An increase in the SUPPLY of funds (e.g., higher household saving) lowers the real interest rate.
- The loanable funds market shows the effect of government spending, taxes, and borrowing on interest rates.
- When government borrowing raises the real interest rate and reduces private investment, that is CROWDING OUT (Unit 5).

KEY TAKEAWAY

More demand for funds → higher real rate. More supply of funds → lower real rate. Government borrowing shifts demand right and can crowd out private investment.

Money Market vs. Loanable Funds Market

Two interest-rate markets — students must keep them straight.

MONEY MARKET

- **Determines the NOMINAL interest rate.**
- About the demand for and supply of money to HOLD.
- Money supply is VERTICAL — set by the central bank.
- Money demand slopes down (opportunity cost of holding money).
- Used to analyze MONETARY POLICY in the short run.

LOANABLE FUNDS MARKET

- **Determines the REAL interest rate.**
- About SAVING (supply) and BORROWING/investment (demand).
- Supply slopes up (saving rewarded by higher rates).
- Demand slopes down (cheaper borrowing encourages investment).
- Used to analyze GOVERNMENT BORROWING and crowding out.

Common Pitfalls & Exam Tips

Bond prices and rates are inverse

When interest rates rise, existing bond prices fall — and vice versa. Know this cold; it underlies open market operations.

Money multiplier = maximum

1 ÷ required reserve ratio is the MAXIMUM. The real-world figure is smaller due to excess reserves held and currency leakages.

Name the correct OMO

On free-response, name the ONE correct open-market operation (buy or sell). Listing every possible tool loses credit.

Money market ≠ loanable funds

Money market = nominal rate (monetary policy). Loanable funds = real rate (saving, borrowing, crowding out).

Master balance sheets

Practice tracking how deposits, withdrawals, and central-bank actions change required reserves, excess reserves, and loans.

Explain the full chain

Monetary policy: money supply → interest rate → investment & consumption → AD. Never skip the interest-rate step.

Unit 4 — Key Takeaways

1. Financial assets differ in liquidity, return, and risk; bond prices and interest rates move inversely.
2. The real interest rate equals the nominal rate minus inflation; nominal = real + expected inflation.
3. Money is a medium of exchange, unit of account, and store of value; it is measured by M1, M2, and the monetary base.
4. Fractional reserve banking lets the system create money; the maximum money multiplier = 1 ÷ required reserve ratio.
5. The money market sets the nominal interest rate; monetary policy shifts money supply to move it and shift AD.
6. The loanable funds market sets the real interest rate from saving and borrowing — the basis for analyzing crowding out.