

Unit 4: Financial Sector

Unit 4 is where the interest rate gets determined, twice, in two different graphs that look alike and mean different things. It covers financial assets like stocks and bonds, the difference between nominal and real interest rates, what money is and how it is measured, how banks expand the money supply, the money market, monetary policy, and the loanable funds market. The two interest-rate graphs get extra attention because confusing them is the most common way students lose points in this unit.

AP Macroeconomics

Financial Sector

About 13 minutes to read

How to use this guide

Read it in order the first time because the topics build on each other. Financial assets set up interest rates, interest rates need money to be defined and measured, banks show where the money supply comes from, the money market sets the short-run nominal rate, monetary policy moves that rate on purpose, and the loanable funds market sets the long-run real rate. The comparison table on the money market versus loanable funds page is worth reading twice.

After the first read, use the trap boxes and the two comparison tables to review the distinctions the exam tests most often. Finish with the practice questions, then complete the recall check on the last page out loud and note any items you cannot explain yet.

What this unit is worth. The Financial Sector is about 18 to 23 percent of the AP Macroeconomics exam. It is also the unit that feeds the rest of the course. Monetary policy in topic 4.6 shifts aggregate demand in Unit 5, and the loanable funds market in topic 4.7 is the engine behind long-run growth. Weakness here carries forward.

4.1 Financial Assets

A **financial asset** is a claim to future income. Two kinds show up constantly. A **stock** is a share of ownership in a company. The stockholder gets a claim on profits, usually through dividends or a rising share price, but bears the risk of loss if the company does poorly. A **bond** is a loan to a borrower, usually a company or a government. The bondholder receives fixed payments, called coupon payments, plus repayment of the face value at maturity, regardless of how well the borrower does.

Stocks carry higher risk and a higher expected return. Bonds carry lower risk and lower expected return, because the bondholder is paid before the stockholder if the borrower runs into trouble. Neither is as liquid as money. You can sell a stock or bond quickly, but the price you get can move, so they are less useful than cash for buying things on short notice.

The price of a bond moves opposite to the interest rate. When market interest rates rise, newly issued bonds pay more, so existing bonds with their fixed coupon payments become less attractive and their prices fall. When market interest rates fall, existing bonds become more attractive and their prices rise. The general rule is that an asset is worth the present value of its expected future payments, and a higher interest rate discounts those future payments more heavily. For a single future payment, present value = $FV / (1 + i)^n$, where i is the interest rate and n is the number of years until payment.

Trap. Bond prices and interest rates move in opposite directions. The mistake is reading "interest rates rose" and concluding "bond prices rose." Rising rates make old fixed payments less attractive, so the old bonds sell for less.

4.2 Nominal vs. Real Interest Rates

The **nominal interest rate** is the rate stated in dollars, unadjusted for inflation. The **real interest rate** is the rate adjusted for inflation, and it measures the true change in purchasing power. The **Fisher equation** connects them: real interest rate = nominal interest rate minus expected inflation. If a loan pays 8 percent nominal interest and inflation is expected to be 3 percent, the real return is about 5 percent.

Borrowers and lenders care about the real rate, because it tells them what the loan actually costs or earns in terms of goods and services. Unexpected inflation helps borrowers and hurts lenders, since the borrower repays with dollars that buy less. Expected inflation, however, gets built into nominal rates, which is why the Fisher equation uses expected inflation rather than actual inflation.

Trap. The money market graph finds the nominal interest rate, not the real one. If a question asks for the real rate and hands you the money market, you still need the Fisher equation and an expected inflation rate to finish the job.

4.3 Definition, Measurement, and Functions of Money

Money is whatever is generally accepted as payment, and it performs three functions. As a **medium of exchange**, it is what people accept in trade, which removes the need for barter. As a **unit of account**, it provides the common measure in which prices are stated, so a sandwich and a haircut can be compared in the same dollars. As a **store of value**, it holds purchasing power over time, which is why people are willing to accept it today for use later. Of the three, the medium of exchange function is the defining one. Plenty of assets store value, but only money is accepted everywhere in trade.

The money supply is measured in layers by liquidity, which is how quickly and cheaply an asset can be turned into spendable cash. **M1** is the narrowest and most liquid measure. It includes currency in circulation, checkable deposits, and traveler's checks. **M2** is broader and includes everything in M1 plus savings deposits, small time deposits, and money market mutual funds. Every dollar of M1 is also in M2. Liquidity falls as you move from M1 to M2, because savings and time deposits take more time or carry penalties to convert.

MEASURE	INCLUDES
M1	Currency, checkable deposits, traveler's checks. The money you can spend right now.
M2	Everything in M1, plus savings deposits, small time deposits, and money market mutual funds. Broader but less liquid.

Trap. Savings deposits are in M2 but not in M1. The common error is counting a savings account as M1 because it is "in the bank." M1 is spendable money. If you cannot write a check on it or hand it to a cashier, it is not M1.

4.4 Banking and the Expansion of the Money Supply

Banks operate on **fractional reserve banking**, which means they keep only a fraction of deposits as reserves and lend out the rest. The **required reserve ratio** is the fraction the central bank requires them to hold. Reserves above the requirement are **excess reserves**, and excess reserves are what a bank can lend.

When a bank makes a loan, it credits the borrower's checking account, and that new deposit is new money. Banks do not print currency. They create checkable deposits by lending. The borrower spends the loan, the recipient deposits the funds in another bank, and that bank lends its excess reserves, and the cycle continues. The **money multiplier** gives the maximum total expansion: $\text{money multiplier} = 1 / \text{required reserve ratio}$. With a 10 percent reserve ratio, the multiplier is 10, so \$1,000 of new excess reserves can support a maximum of \$10,000 in new checkable deposits.

The word "maximum" matters. The full multiplier only happens if banks lend all their excess reserves and the public redeposits everything rather than holding cash. If banks hold extra reserves or people hold currency, the actual expansion is smaller. This formula also differs from the **spending multiplier** from Unit 3, which is $1 / (1 - \text{MPC})$. Same name pattern, different formula, different job.

ITEM	FORMULA OR RULE
Money multiplier	$1 / \text{required reserve ratio}$
Maximum new deposits	$\text{Excess reserves} \times \text{money multiplier}$
Spending multiplier (Unit 3)	$1 / (1 - \text{MPC})$. Do not use this for bank lending.

Trap. Two errors repeat here. First, students say banks lend out deposits. Banks lend from excess reserves, and the lending creates new deposits. Second, students use the spending multiplier $1 / (1 - \text{MPC})$ on a banking question. If the question gives a reserve ratio, the multiplier is $1 / \text{rr}$.

4.5 The Money Market

The **money market** is the market for holding money, and it determines the **nominal interest rate** in the short run. The vertical axis is the nominal interest rate and the horizontal axis is the quantity of money. **Money demand** slopes downward: at higher interest rates, the opportunity cost of holding cash instead of earning interest is higher, so people hold less money. **Money supply** is vertical, because the central bank sets it and the quantity does not respond to the interest rate. Their intersection gives the equilibrium nominal rate.

Money demand shifts when the need for transactions changes. The main shifter is **nominal GDP**: higher income or a higher price level means people need more money for everyday purchases, so money demand shifts right and the nominal rate rises. Changes in expectations about future prices or interest rates can also shift it. Money supply shifts only when the central bank acts, through the tools in topic 4.6. A rightward shift in money supply lowers the nominal rate. A rightward shift in money demand raises it.

Trap. When money demand shifts, the money supply curve does not move. A rise in nominal GDP shifts money demand right and raises the nominal rate along a fixed vertical supply curve. Shifting the supply curve too is double-counting one change.

Trap. The money market equilibrium rate is nominal, and it is the short-run rate. If the question is about the real rate, or about investment in the long run, you are in the wrong graph. Turn to the loanable funds market in topic 4.7.

4.6 Monetary Policy

Monetary policy is the central bank's management of the money supply to influence interest rates and the economy. In the United States the central bank is the Federal Reserve. **Expansionary monetary policy** increases the money supply and lowers the nominal interest rate. The Fed does this by buying government bonds in **open market operations**, which puts reserves into banks; by lowering the **discount rate**, the rate the Fed charges banks that borrow from it; or by lowering the **reserve requirement**, which frees up excess reserves for lending. **Contractionary monetary policy** does the reverse: sell bonds, raise the discount rate, or raise the reserve requirement, which shrinks the money supply and raises the nominal rate.

The policy works through a chain. Expansionary policy raises the money supply, which lowers the nominal interest rate in the money market. A lower rate makes borrowing cheaper, so investment spending rises. Higher investment is a component of aggregate demand, so the AD curve shifts right, raising real GDP and the price level in the short run. Contractionary policy runs the chain backward: smaller money supply, higher rate, less investment, AD shifts left, lower output and prices. The Fed implements this day to day by targeting the **federal funds rate**, the rate banks charge each other for overnight loans, adjusting its bond buying and selling to hit the target.

POLICY	TOOLS	EFFECT
Expansionary	Buy bonds, lower discount rate, lower reserve requirement	Money supply rises, nominal rate falls, investment rises, AD shifts right
Contractionary	Sell bonds, raise discount rate, raise reserve requirement	Money supply falls, nominal rate rises, investment falls, AD shifts left

Trap. Buying bonds is expansionary and selling bonds is contractionary. The confusion comes from thinking about the Fed's perspective: when the Fed buys bonds, it pays with new reserves, and those reserves expand the banking system's ability to lend.

4.7 The Loanable Funds Market

The **loanable funds market** is the market for borrowing and lending for investment, and it determines the **real interest rate** and the quantity of investment. Both axes differ from the money market: the vertical axis is the real interest rate and the horizontal axis is the quantity of loanable funds. The **supply of loanable funds** comes from **national saving**, which is private saving plus public saving (the government budget surplus, or minus the deficit). It slopes upward because a higher real rate rewards savers more. The **demand for loanable funds** comes from firms wanting to invest, plus government borrowing when there is a deficit. It slopes downward because a higher real rate makes investment projects more expensive.

Supply shifts when saving changes: a larger budget surplus or a rise in private saving shifts supply right, lowering the real rate and raising investment. Demand shifts when investment incentives change: stronger expected profits shift demand right, and a larger government deficit adds government borrowing to demand, shifting it right as well. When the government borrows more, the real rate rises and some private investment gets priced out. That is **crowding out**.

This is the long-run, real-side graph. The money market answers "what is the nominal rate right now, and how does the Fed move it." The loanable funds market answers "what is the real rate, and how much investment does the economy get." The comparison table below is the single most important reference in this guide. Learn to name, for any question, which graph it belongs in before you start shifting curves.

FEATURE	MONEY MARKET (4.5)	LOANABLE FUNDS MARKET (4.7)
Rate determined	Nominal interest rate	Real interest rate
Time frame	Short run	Long run, real side of the economy
Supply curve	Vertical. Set by the central bank.	Upward sloping. National saving.
Demand curve	Downward sloping. Demand for holding money.	Downward sloping. Demand for investment funds.
Supply shifts when	The central bank buys or sells bonds, or changes the discount rate or reserve requirement.	Saving changes: budget surpluses or deficits, private saving, capital inflows from abroad.
Demand shifts when	Nominal GDP, the price level, or expectations change.	Expected profits, business taxes, or government deficit borrowing change.
Answers the question	What is the nominal rate, and how does monetary policy move it?	What is the real rate, and how much investment results?

Confusions That Cost Points

PAIR	HOW TO KEEP THEM STRAIGHT
Money market vs loanable funds	Money market gives the nominal rate in the short run with a vertical supply curve set by the Fed. Loanable funds gives the real rate in the long run with an upward-sloping supply of national saving. Check the question for the words "nominal" or "real" before choosing.
Nominal vs real interest rate	Real = nominal minus expected inflation. Borrowers and lenders care about real. The money market only hands you nominal.
Money multiplier vs spending multiplier	Money multiplier = $1 / \text{required reserve ratio}$, used for bank lending. Spending multiplier = $1 / (1 - \text{MPC})$, used for changes in spending. Reserve ratio in the question means the first one.
Money demand shift vs money supply shift	Nominal GDP and the price level shift money demand. Only the central bank shifts money supply. A demand shift moves along a fixed vertical supply curve.
Banks lend deposits vs banks create deposits	Banks lend from excess reserves. The loan creates a new checkable deposit, which is how new money appears. Required reserves are never lent.
M1 vs M2	M1 is spendable money: currency, checkable deposits, traveler's checks. M2 adds savings, small time deposits, and money market funds. Savings accounts are M2 only.
Buy bonds vs sell bonds	The Fed buys bonds to expand the money supply and sells bonds to contract it. Buying puts reserves into banks. Selling takes reserves out.
Bond prices vs interest rates	They move in opposite directions. Higher market rates make existing fixed-payment bonds less attractive, so their prices fall.
Stocks vs bonds	Stocks are ownership with higher risk and higher expected return. Bonds are lending with fixed payments and lower risk. Bondholders are paid before stockholders.

Practice Questions

Original questions written for this guide in the style of the AP exam. Answers and explanations are on the next page, so complete the questions before checking them.

1. A bank has \$2,000 in excess reserves and the required reserve ratio is 20 percent. What is the maximum increase in checkable deposits that can result from these excess reserves?

1. \$2,000
2. \$8,000
3. \$10,000
4. \$40,000

2. Which of the following is included in M2 but not in M1?

1. Currency in circulation
2. Checkable deposits
3. Savings deposits
4. Traveler's checks

3. The Federal Reserve sells government bonds in the open market. In the money market model, this action will

1. shift the money supply curve to the right and lower the nominal interest rate
2. shift the money supply curve to the left and raise the nominal interest rate
3. shift the money demand curve to the right and raise the nominal interest rate
4. shift the money demand curve to the left and lower the real interest rate

- 4.** The nominal interest rate on a loan is 9 percent and the expected inflation rate is 4 percent. The real interest rate is
1. 13 percent
 2. 9 percent
 3. 5 percent
 4. 4 percent
- 5.** All else equal, an expansionary monetary policy is most likely to
1. decrease the money supply, raise nominal interest rates, and shift aggregate demand to the left
 2. increase the money supply, lower nominal interest rates, and shift aggregate demand to the right
 3. increase government spending directly, shifting aggregate demand to the right
 4. decrease investment spending by raising the real interest rate
- 6.** If market interest rates rise, the price of existing bonds will most likely
1. rise, because higher rates increase the coupon payments on existing bonds
 2. fall, because the fixed payments on existing bonds become less attractive
 3. remain unchanged, because coupon payments are fixed
 4. rise, because investors demand more bonds when rates are high
- 7.** In the loanable funds market, an increase in the federal budget deficit will
1. shift the supply of loanable funds to the right, lowering the real interest rate
 2. shift the demand for loanable funds to the right, raising the real interest rate and crowding out private investment
 3. shift the supply of loanable funds to the left, lowering the nominal interest rate
 4. have no effect, because government borrowing does not appear in the loanable funds market
- 8.** In the money market, an increase in nominal GDP will
1. shift the money supply curve to the right, lowering the nominal interest rate
 2. shift the money demand curve to the right, raising the nominal interest rate
 3. shift the money supply curve to the left, raising the nominal interest rate
 4. leave both curves unchanged, because GDP is measured in the goods market

Answer Key

- 1. C.** The money multiplier is $1 / 0.20 = 5$, and maximum new deposits = $\$2,000 \times 5 = \$10,000$. A uses the excess reserves alone and forgets the multiplier. B subtracts the required 20 percent from the reserves instead of applying the multiplier. D multiplies the reserves by 20 instead of by the multiplier of 5.
- 2. C.** Savings deposits are part of M2 but not M1. A, B, and D are all components of M1, and since everything in M1 is also in M2, none of them is "in M2 but not in M1." The distractor logic here is the common error of treating any bank account as M1.
- 3. B.** When the Fed sells bonds, buyers pay with reserves, so reserves leave the banking system and the money supply curve shifts left. A smaller money supply along the downward-sloping money demand curve gives a higher nominal rate. A reverses both the direction of the shift and the rate effect. C and D move the wrong curve: open market operations change the money supply, not money demand.
- 4. C.** By the Fisher equation, $\text{real} = \text{nominal} - \text{expected inflation} = 9 - 4 = 5$ percent. A adds inflation instead of subtracting it. B reports the nominal rate without adjusting. D reports the inflation rate itself rather than the adjusted rate.

5. B. Expansionary policy increases the money supply, which lowers the nominal interest rate in the money market. Cheaper borrowing raises investment spending, a component of aggregate demand, so AD shifts right. A describes contractionary policy. C confuses monetary policy with fiscal policy; the Fed does not change government spending. D reverses the chain: expansionary policy lowers rates and raises investment.

6. B. Bond prices and market interest rates move in opposite directions. When rates rise, new bonds pay more, so existing bonds with fixed coupon payments lose appeal and sell for less. A wrongly assumes coupon payments change; they are fixed at issue. C confuses fixed payments with fixed prices. D gets the investor response backward: higher rates draw buyers to new bonds, not existing ones.

7. B. A deficit means the government borrows, and government borrowing adds to the demand for loanable funds. The demand curve shifts right, the real interest rate rises, and higher rates crowd out some private investment. A shifts the wrong curve and gets the deficit's effect on saving backward; a deficit reduces public saving. C mixes the loanable funds graph with the money market by naming the nominal rate. D ignores that government borrowing is a standard component of loanable funds demand.

8. B. Higher nominal GDP means more income and higher prices, so people need more money for transactions. Money demand shifts right along the fixed vertical money supply curve, and the nominal rate rises. A and C shift money supply, which only the central bank can do. D treats the money market as isolated from the goods market, but nominal GDP is the main money demand shifter.

When you check your answers, note which confusion each miss came from. Make a flashcard for that distinction and drill it spaced out over the next few days instead of rereading the whole section. If you missed one of these questions, the same distinction is worth practicing again in Rycal, where the Financial Sector deck has flashcards for it and more practice questions use the same kinds of traps.

One-Page Recall Check

Say each answer out loud before you look back, and mark the ones you cannot finish. Anything you cannot say out loud yet belongs in your flashcard deck. In Rycal, add those items to the Financial Sector deck and let spaced review bring them back over the next few days.

- Define a stock and a bond, and explain which carries more risk and why.
- Explain why bond prices fall when market interest rates rise.
- State the Fisher equation and explain why borrowers and lenders care about the real rate.
- Name the three functions of money and identify which one is the defining function.
- List what is in M1 and what M2 adds, and explain which is more liquid.
- Define the required reserve ratio, excess reserves, and the money multiplier, and compute the maximum new deposits from a given amount of excess reserves.
- Explain how bank lending creates new money, and why the multiplier gives a maximum rather than an exact amount.
- Draw the money market from memory: label both curves, both axes, and mark the equilibrium nominal rate.
- Name the shifters of money demand and explain why the money supply curve does not shift when money demand changes.
- State the three tools of expansionary and contractionary monetary policy and trace the chain from a bond purchase to aggregate demand.
- Draw the loanable funds market from memory: label both curves, both axes, and mark the equilibrium real rate.
- Explain what shifts the supply of and demand for loanable funds, and define crowding out.
- Without looking, state three differences between the money market and the loanable funds market.

Where to go next. Turn every missed item above into flashcards and drill them spaced out over several days rather than in one sitting. In Rycal, open the Financial Sector deck under AP Macroeconomics. The deck covers the terms in this guide, and its practice questions target the same traps named here. If you have a test date, add it in the Test Planner. You can also start your next review with a Brain Dump, then check what you missed against this guide.

Key terms for this unit

Financial asset, Stock, Bond, Coupon payment, Present value, Nominal interest rate, Real interest rate, Fisher equation, Expected inflation, Medium of exchange, Unit of account, Store of value, Liquidity, M1, M2, Fractional reserve banking, Required reserve ratio, Excess reserves, Money multiplier, Spending multiplier, Money market, Money demand, Money supply, Monetary policy, Open market operations, Discount rate, Reserve requirement, Federal funds rate, Expansionary monetary policy, Contractionary monetary policy, Loanable funds market, National saving, Private saving, Public saving, Crowding out.

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