Chapter

24

Money Demand, the Equilibrium Interest Rate, and Monetary Policy

Prepared by:
Fernando & Yvonn Quijano

Money Demand, the Equilibrium Interest Rate, and Monetary Policy

24

Chapter Outline

The Demand for Money
The Transaction Motive
Money Management and the Optimal Balance
The Speculation Motive
The Total Demand for Money
Transactions Volume and the Price Level
The Determinants of Money Demand: Review
The Equilibrium Interest Rate
Supply and Demand in the Money Market
Changing the Money Supply to Affect the Interest Rate
Increases in Y and Shifts in the Money Demand Curve
Looking Ahead: The Federal Reserve and Monetary Policy
Appendix A: The Various Interest Rates in the U.S. Economy
Appendix B: The Demand for Money: A Numerical Example

MONEY DEMAND, THE EQUILIBRIUM INTEREST RATE, AND MONETARY POLICY

monetary policy The behavior of the Federal Reserve concerning the money supply.

interest The fee that borrowers pay to lenders for the use of their funds.

interest rate The annual interest payment on a loan expressed as a percentage of the loan. Equal to the amount of interest received per year divided by the amount of the loan.

$$\text{Interest rate} = \frac{\text{interest received per year}}{\text{amount of the loan}} x100$$

THE DEMAND FOR MONEY

When we speak of the demand for money, we are concerned with how much of your financial assets you want to hold *in the form of money*, which does not earn interest, versus how much you want to hold in interest-bearing securities, such as bonds.

THE TRANSACTION MOTIVE

transaction motive The main reason that people hold money—to buy things.

THE DEMAND FOR MONEY

Assumptions

- There are only two kinds of assets available to households: bonds and money.
- The typical household's income arrives once a month, at the beginning of the month.
- Spending occurs at a completely uniform rate—the same amount is spent each day.
- Spending is exactly equal to income for the month.

THE DEMAND FOR MONEY

Assumptions

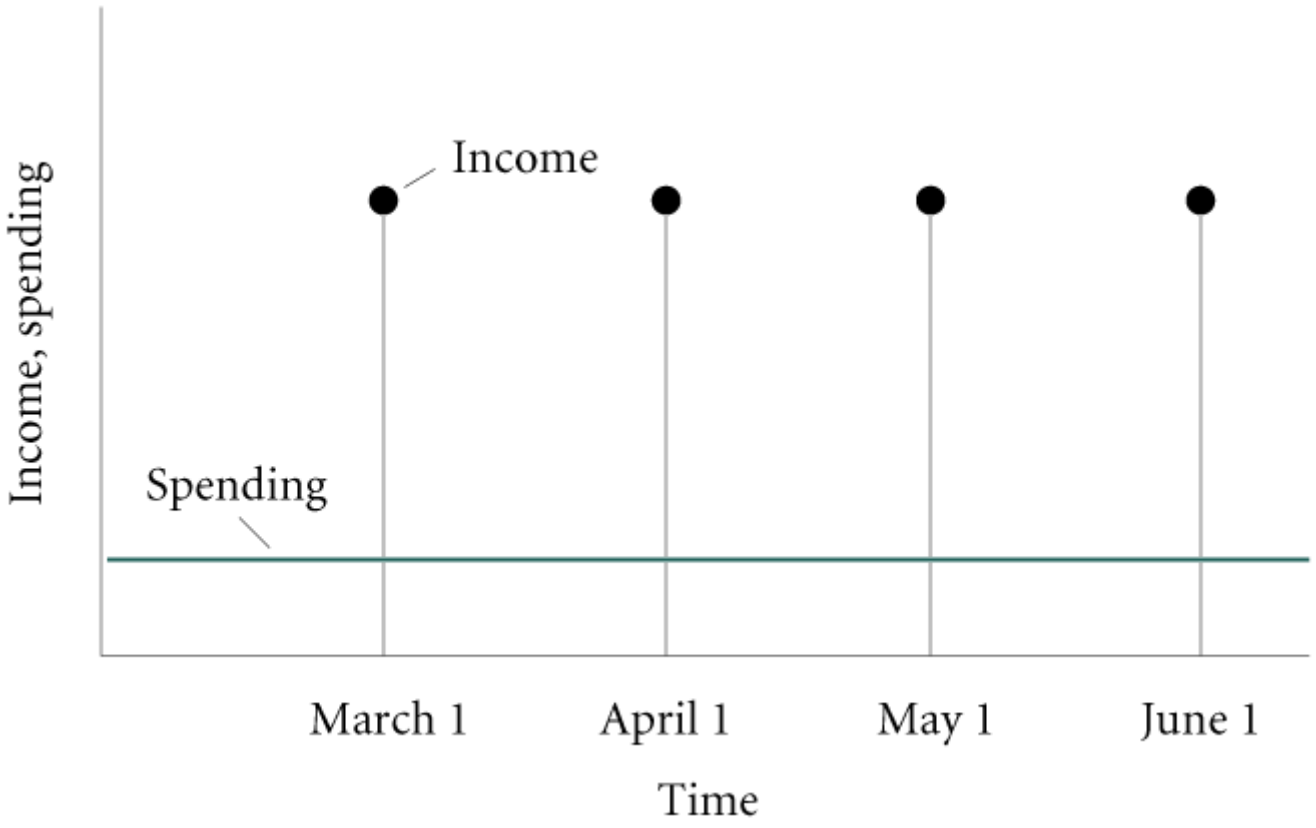


FIGURE 11.1 The Nonsynchronization of Income and Spending

THE DEMAND FOR MONEY

nonsynchronization of income and spending The mismatch between the timing of money inflow to the household and the timing of money outflow for household expenses.

THE DEMAND FOR MONEY

MONEY MANAGEMENT AND THE OPTIMAL BALANCE

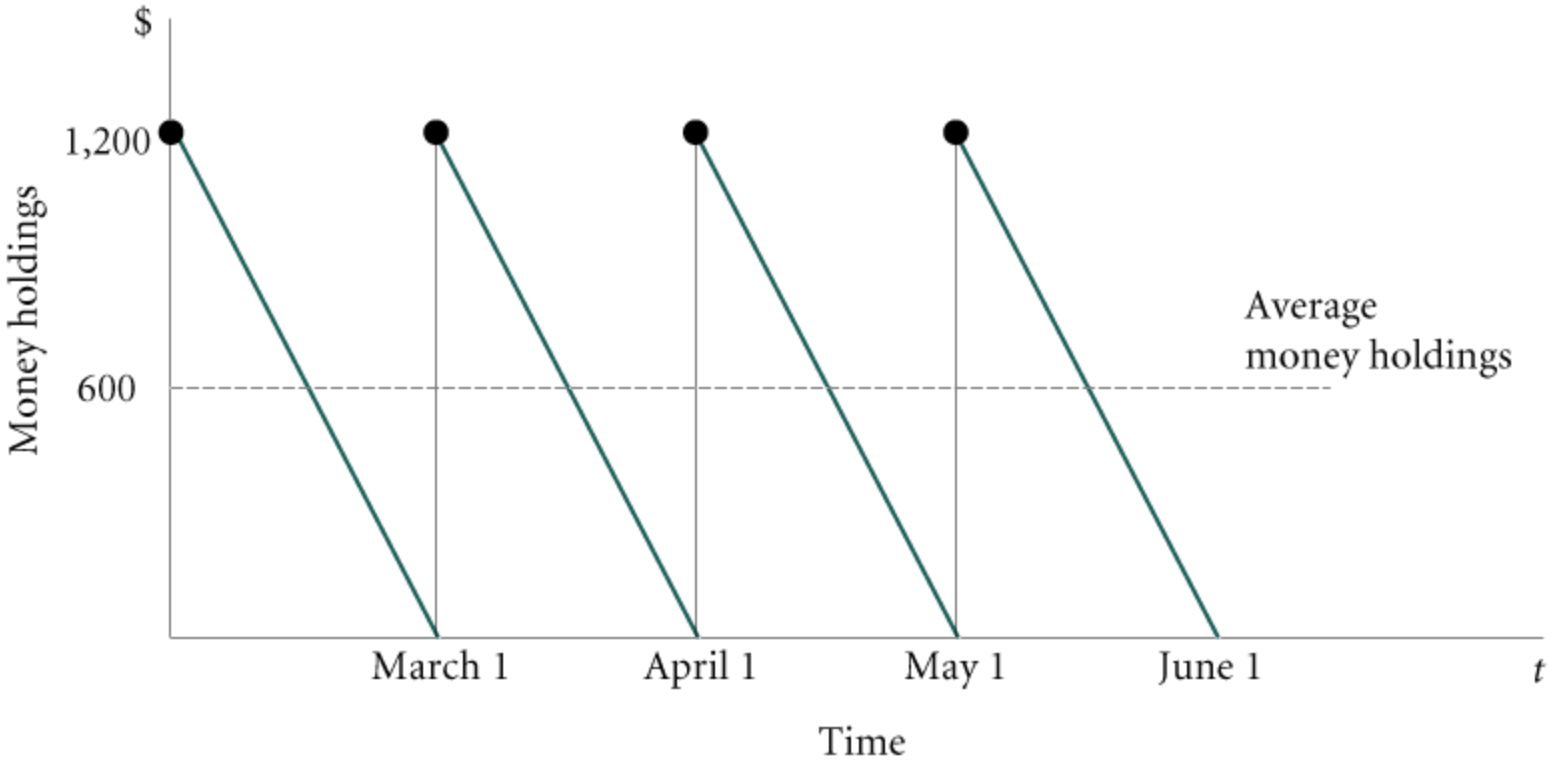


FIGURE 11.2 Jim's Monthly Checking Account Balances: Strategy 1

THE DEMAND FOR MONEY

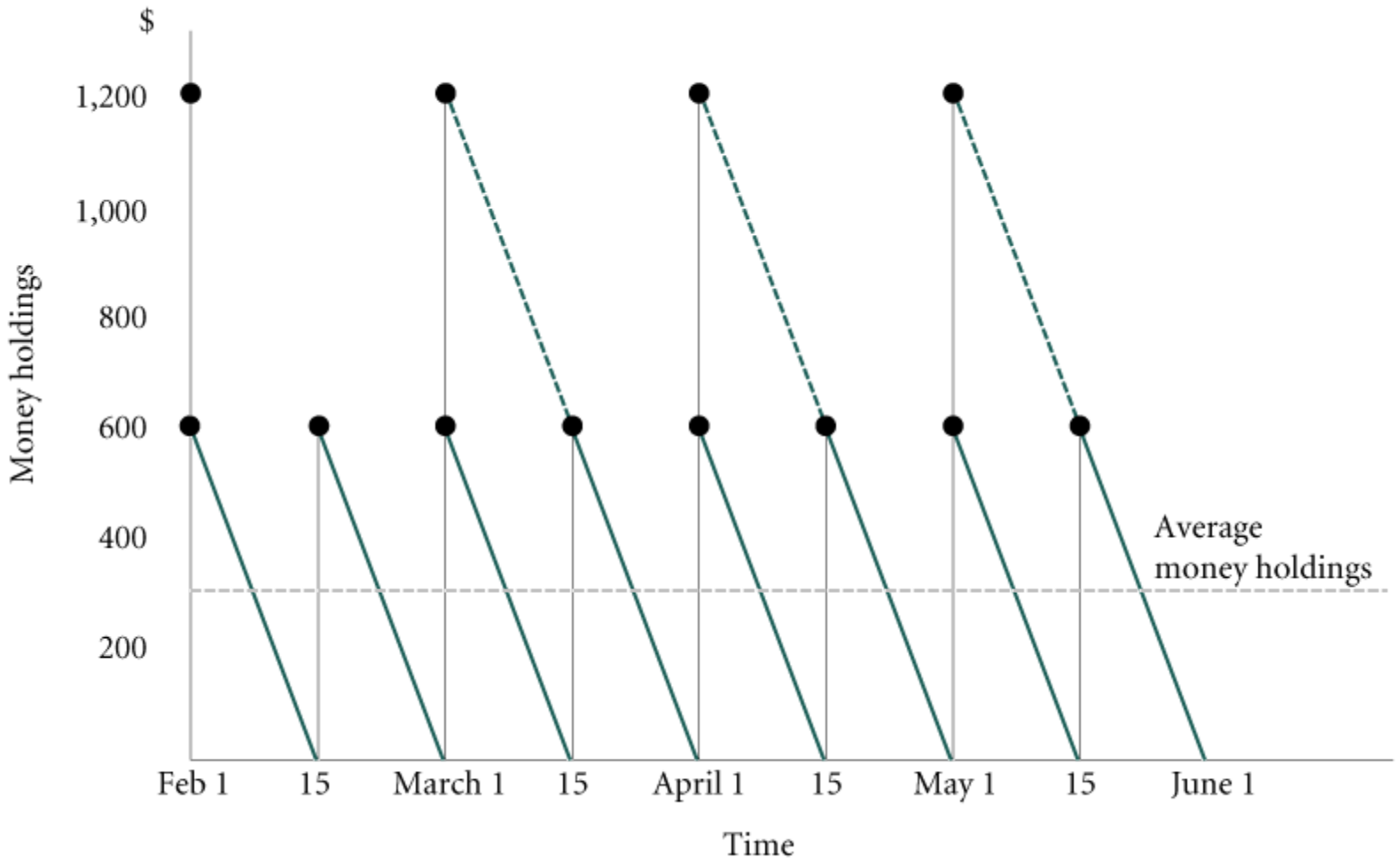


FIGURE 11.3 Jim's Monthly Checking Account Balances: Strategy 2

THE DEMAND FOR MONEY

The Optimal Balance

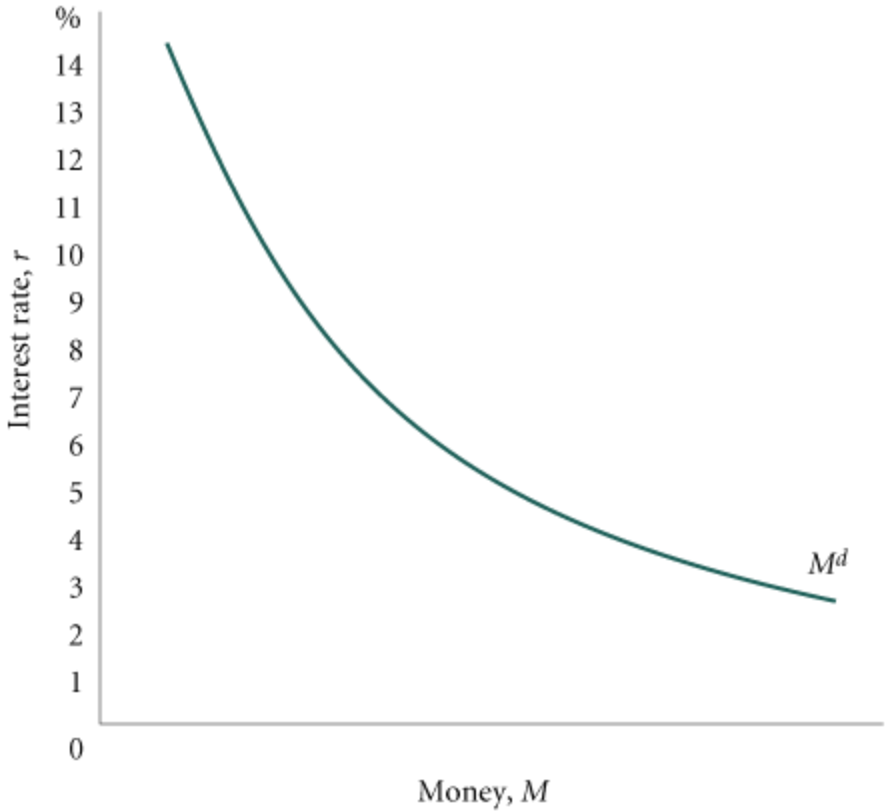


FIGURE 11.4 The Demand Curve for Money Balances

When interest rates are high, people want to take advantage of the high return on bonds, so they choose to hold very little money.

THE DEMAND FOR MONEY

THE SPECULATION MOTIVE

When market interest rates fall, bond values rise; when market interest rates rise, bond values fall.

speculation motive One reason for holding bonds instead of money: Because the market value of interest-bearing bonds is inversely related to the interest rate, investors may wish to hold bonds when interest rates are high with the hope of selling them when interest rates fall.

THE DEMAND FOR MONEY

THE SPECULATION MOTIVE

When market interest rates fall, bond values rise; when market interest rates rise, bond values fall.

If someone buys a 10-year bond with a fixed rate of 10%, and a newly issued 10-year bond pays 12%, then the old bond paying 10% will have fallen in value.

Higher bond prices mean that the interest a buyer is willing to accept is lower than before.

When interest rates are high (low) and expected to fall (rise), demand for bonds is likely to be high (low) thus money demand is likely to be low (high).

THE DEMAND FOR MONEY

THE TOTAL DEMAND FOR MONEY

The total quantity of money demanded in the economy is the sum of the demand for checking account balances *and cash* by both households *and firms*.

At any given moment, there is a demand for money—for cash and checking account balances. Although households and firms need to hold balances for everyday transactions, their demand has a limit. For both households and firms, the quantity of money demanded at any moment depends on the opportunity cost of holding money, a cost determined by the interest rate.

THE DEMAND FOR MONEY

TRANSACTIONS VOLUME AND THE PRICE LEVEL

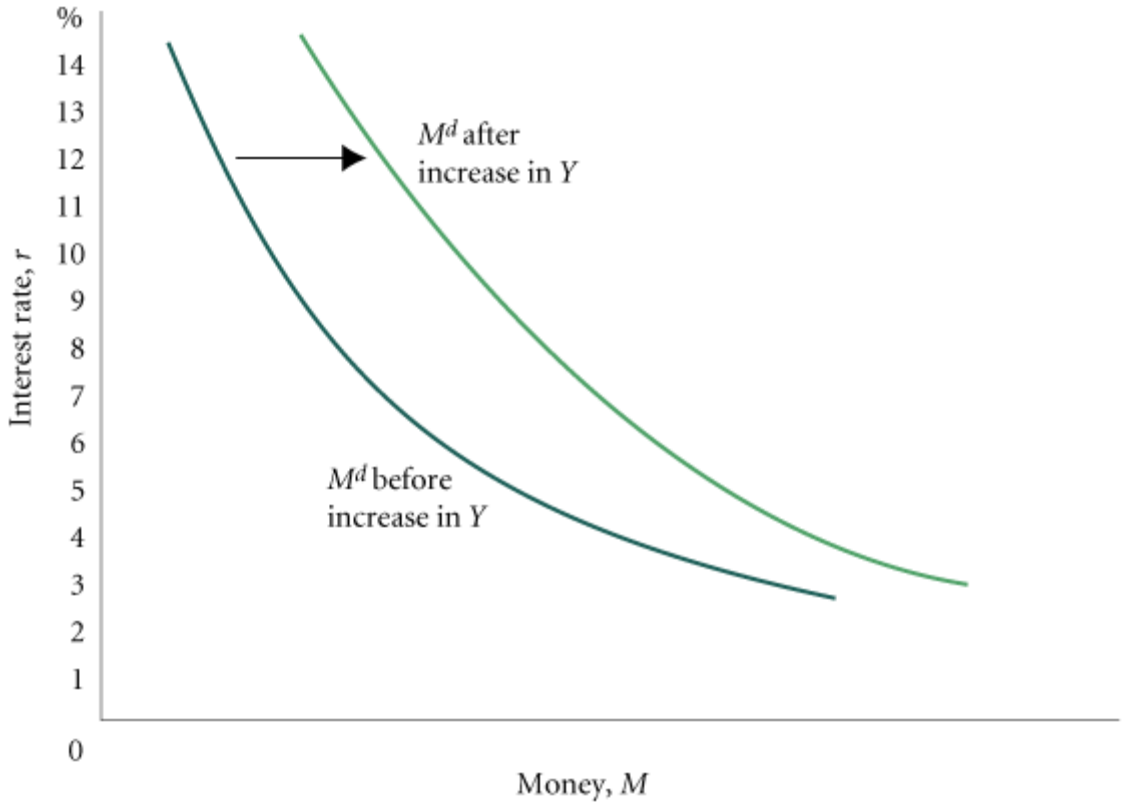


FIGURE 11.5 An Increase in Aggregate Output (Income) (*Y*) Will Shift the Money Demand Curve to the Right

THE DEMAND FOR MONEY

For a given interest rate, a higher level of output means an increase in the *number* of transactions and more demand for money. The money demand curve shifts to the right when *Y* rises. Similarly, a decrease in *Y* means a decrease in the number of transactions and a lower demand for money. The money demand curve shifts to the left when *Y* falls.

The amount of money needed by firms and households to facilitate their day-to-day transactions also depends on the average *dollar amount* of each transaction. In turn, the average amount of each transaction depends on prices, or instead, on the *price level*.

Increases in the price level shift the money demand curve to the right, and decreases in the price level shift the money demand curve to the left. Even though the number of transactions may not have changed, the quantity of money needed to engage in them has.

THE DEMAND FOR MONEY

THE DETERMINANTS OF MONEY DEMAND: REVIEW

TABLE 11.1 Determinants of Money Demand

1. The interest rate: *r* (negative effect causes downward-sloping money demand)
2. The dollar volume of transactions (positive effects shift the money demand curve)

   a. Aggregate output (income): *Y* (positive effect: money demand shifts right when Y increases)

   b. The price level: *P* (positive effect: money demand shifts right when P increases)

THE DEMAND FOR MONEY

Some Common Pitfalls

Money demand is not a flow measure. Instead, it is a *stock variable*, measured at a given point in time.

Many people think of money demand and saving as roughly the same—they are not.

Recall the difference between a shift in a demand curve and a movement along the curve. Changes in the interest rate cause movements *along* the curve—*changes in the quantity of money demanded*.

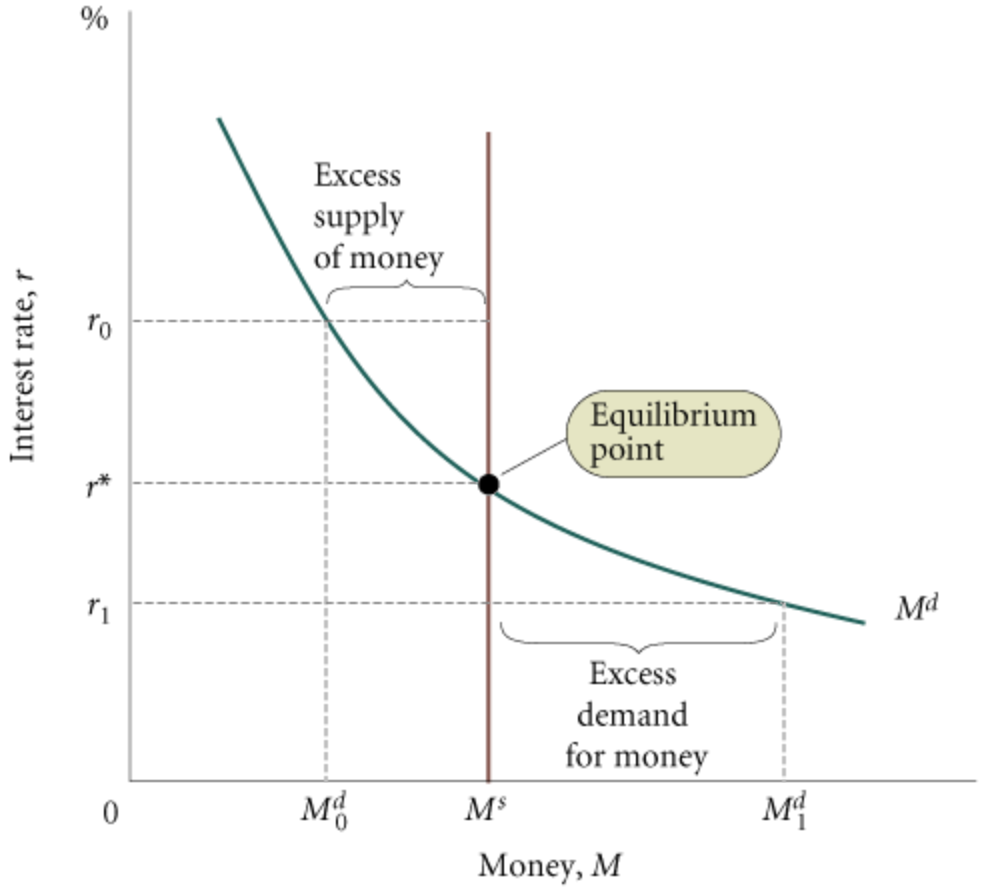
THE EQUILIBRIUM INTEREST RATE

We are now in a position to consider one of the key questions in macroeconomics: How is the interest rate determined in the economy?

The point at which the quantity of money demanded equals the quantity of money supplied determines the equilibrium interest rate in the economy.

THE EQUILIBRIUM INTEREST RATE

SUPPLY AND DEMAND IN THE MONEY MARKET



If the interest rate is initially high enough to create an excess supply of money, the interest rate will immediately fall, discouraging people from moving out of money and into bonds.

If the interest rate is initially low enough to create an excess demand for money, the interest rate will immediately rise, discouraging people from moving out of bonds and into money.

FIGURE 11.6 **Adjustments in the Money Market**

THE EQUILIBRIUM INTEREST RATE

CHANGING THE MONEY SUPPLY TO AFFECT THE INTEREST RATE

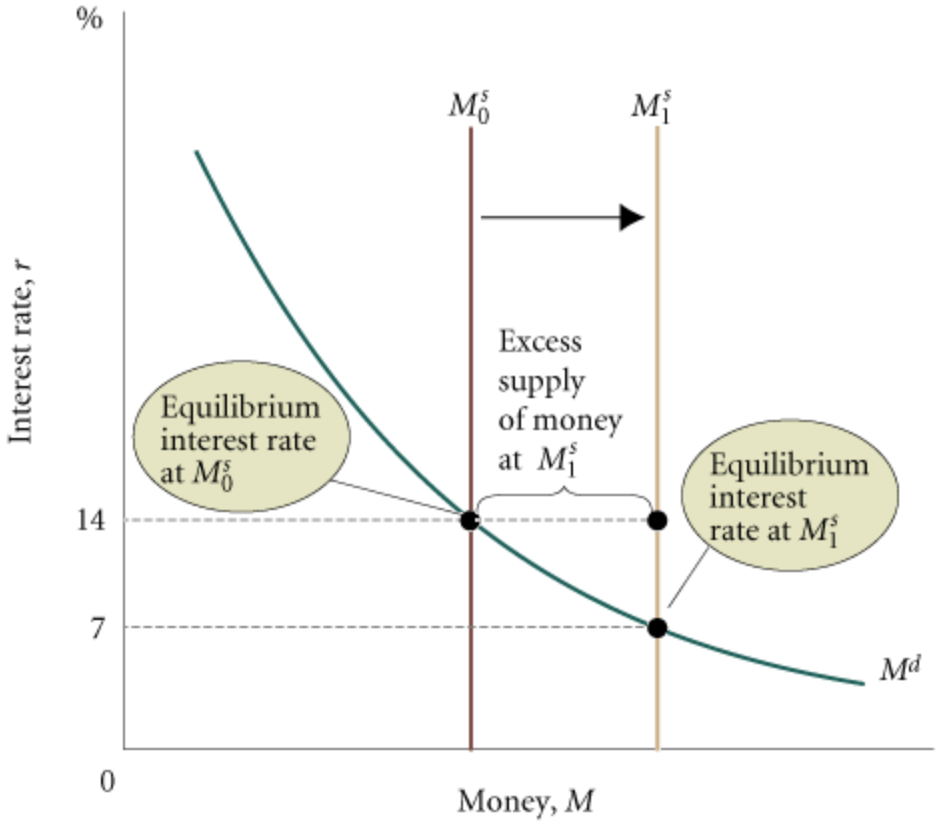


FIGURE 11.7 The Effect of an Increase in the Supply of Money on the Interest Rate

THE EQUILIBRIUM INTEREST RATE

INCREASES IN *Y* AND SHIFTS IN THE MONEY DEMAND CURVE

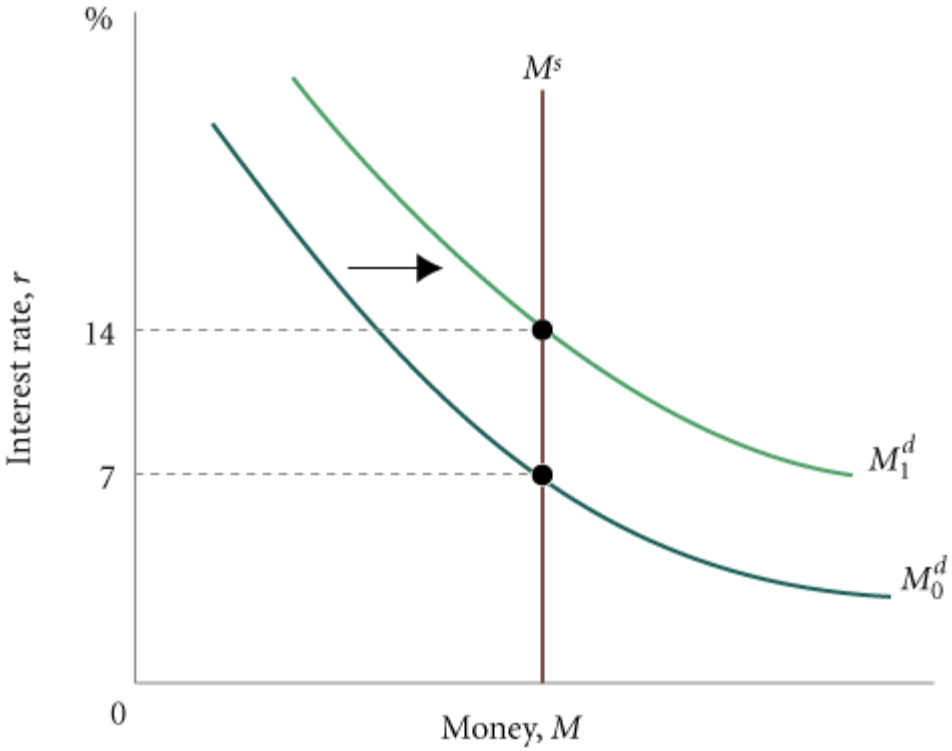


FIGURE 11.8 The Effect of an Increase in Income on the Interest Rate

An increase in *Y* shifts the money demand curve to the right.

An increase in the price level is like an increase in *Y* in that both events increase the demand for money. The result is an increase in the equilibrium interest rate.

A decrease in the price level leads to a decrease in the equilibrium interest rate.

LOOKING AHEAD: THE FEDERAL RESERVE AND MONETARY POLICY

The Fed's use of its power to influence events in the goods market, as well as in the money market, is the center of the government's monetary policy.

tight monetary policy Fed policies that contract the money supply in an effort to restrain the economy.

easy monetary policy Fed policies that expand the money supply in an effort to stimulate the economy.

REVIEW TERMS AND CONCEPTS

easy monetary policy
interest
interest rate
monetary policy
nonsynchronization of income and spending
speculation motive
tight monetary policy
transaction motive

Appendix A

THE VARIOUS INTEREST RATES IN THE U.S. ECONOMY

THE TERM STRUCTURE OF INTEREST RATES

The term *structure of interest rates* is the relationship among the interest rates offered on securities of different maturities.

According to a theory called the *expectations theory of the term structure of interest rates*, the 2-year rate is equal to the average of the current 1-year rate and the 1-year rate expected a year from now.

People's expectations of future short-term interest rates are reflected in current long-term interest rates.

Appendix A

TYPES OF INTEREST RATES

- Three-Month Treasury Bill Rate
- Government Bond Rate
- Federal Funds Rate
- Commercial Paper Rate
- Prime Rate
- AAA Corporate Bond Rate

Appendix B

THE DEMAND FOR MONEY: A NUMERICAL EXAMPLE

TABLE 11B.1 Optimum Money Holdings

1 NUMBER OF SWITCHES[a]	2 AVERAGE MONEY HOLDINGS[b]	3 AVERAGE BOND HOLDINGS[c]	4 INTEREST EARNED[d]	5 COST OF SWITCHING[e]	6 NET PROFIT[f]
		r = 5 percent			
0	$600.00	$ 0.00	$ 0.00	$0.00	$ 0.00
1	300.00	300.00	15.00	2.00	13.00
2	200.00	400.00	20.00	4.00	16.00
3	150.00*	450.00	22.50	6.00	16.50
4	120.00	480.00	24.00	8.00	16.00

Assumptions: Interest rate *r* = 0.05. Cost of switching from bonds into money equals $2 per transaction.

		r = 3 percent			
0	$600.00	$ 0.00	$ 0.00	$0.00	$ 0.00
1	300.00	300.00	9.00	2.00	7.00
2	200.00*	400.00	12.00	4.00	8.00
3	150.00	450.00	13.50	6.00	7.50
4	120.00	480.00	14.40	8.00	6.40

Assumptions: Interest rate *r* = 0.03. Cost of switching from bonds into money equals $2 per transaction.

*Optimum money holdings. [a]That is, the number of times you sell a bond. [b]Calculated as 600/(col. 1 + 1). [c]Calculated as 600 − col. 2.
[d]Calculated as *r* × col. 3, where *r* is the interest rate. [e]Calculated as *t* × col. 1, where *t* is the cost per switch ($2). [f]Calculated as col. 4 − col. 5

