University of Macerata
Economics - A.Y. 2022/2023
Dr. Mattia Tassinari

- Money and the financial system
- Monetary policy

REF.
Chapter 23 (only pp. 453-465)
Chapter 24 (only pp. 475-489)

The Financial System

The **financial system** is the system through which economic actors (households, firms and government) **exchange** (borrow from and lend to each other) **financial assets** (e.g., cash, stocks, bonds, mutual funds, bank deposits) in order to finance their consumption and investment.

It encompasses the financial markets (**money market**, markets for fixed-interest assets like **bonds or mortgages**, **stock markets** for the ownership of firms, and **foreign exchange markets** which trade the monies of different countries) and financial firms and institutions (**financial intermediaries**) which carry out the financial decisions of households, businesses, and governments.

Financial intermediaries are institutions which provide **financial services** and **products** (e.g., **banks**, **insurance companies**, **pension funds**). Many retail financial transactions (such as banking or purchase of insurance) take place through financial intermediaries rather than directly in financial markets.

The Functions of the Financial System

- **transfers resources across time, sectors, and regions** (e.g. transfers resources from savings to different investment). This function allows investments to be devoted to their most productive uses.
- **manages risks** (e.g., fire insurance on house takes a risk that a person may lose a $200,000 investment and spreads that risk among hundreds or thousands of stockholders of the insurance company)
- **pools and subdivides funds depending upon the need of the individual saver or investor** (e.g., large-scale firms may want to invest billions of dollars in plant and equipment and no single person may be able to afford that, requiring pooling funds)
- **facilitates transactions** between payers (purchasers) and payees (sellers) by anticipating payments (e.g., through credit card) (so called *clearinghouse function*).

The Financial System

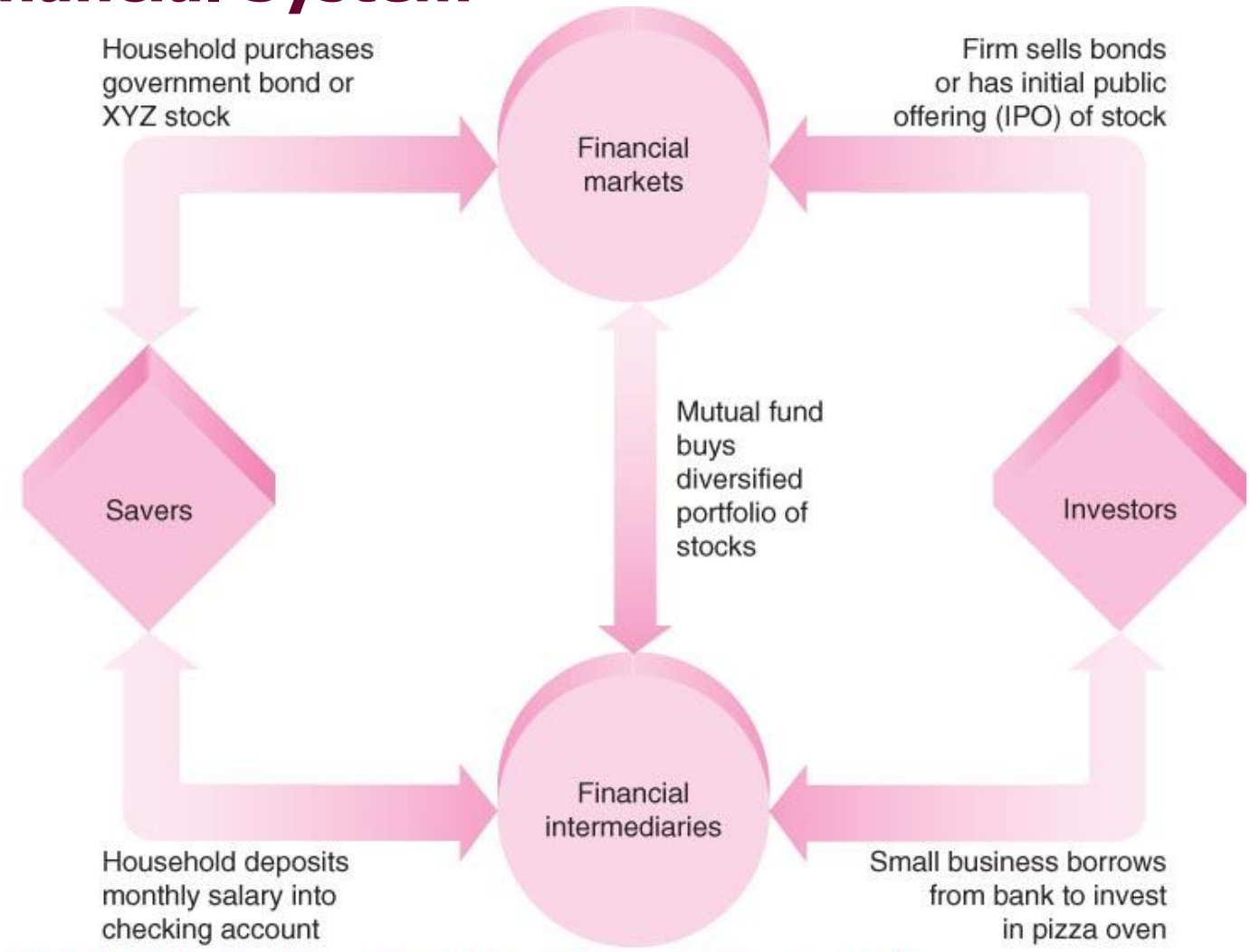


FIGURE 23-1. The Flow of Funds Tracks Financial Flows in the Economy

Savers and investors transfer funds across time, space, and sectors through financial markets and financial intermediaries. Some flows (such as buying 100 shares of XYZ) go directly through financial markets, while others (such as purchasing shares of mutual funds or depositing money in your checking account) go through financial intermediaries.

Financial assets (or financial instruments)

Financial assets are instruments exchanged on the financial markets as **means of payment** or as a vehicle for realizing actions of **financing/investment**

- **Money** (monete metalliche; moneta cartacea; conti correnti).
- **Savings accounts** are deposits with banks or credit institutions.
- **Credit market instruments** are obligations of governments or private entities (federal securities are generally thought to be risk-free assets).
- **Common stocks** are ownership rights to companies. They yield **dividends**, which are payments drawn from company profits.
- **Money market funds** and **mutual funds** are funds that hold millions or billions of dollars in either short-term assets or stocks and can be subdivided into fractional shares to be bought by small investors.
- **Pension funds** represent ownership in the assets that are held by companies or pension plans. Workers and companies contribute to these funds during working years. These funds are then drawn down to support people during their retirement years.
- **Financial derivatives** are included in the credit market instruments. These are new forms of financial instruments whose values are based on or derived from the values of other assets.

Interest Rates

The interest rate is the **price paid for borrowing money**. It is usually calculated as **percent per year** on the amount of **borrowed funds**.

There are different interest rates, depending upon the **maturity** (the date on which a borrower's final loan payment is due), **risk**, **tax status**, and other attributes of the **loan**.

Nominal interest rates: measured in monetary terms without considering inflation.

Real interest rates: adjusted for inflation, they are important because they constitute the means by which the financial markets interact with the real economy

MONEY (a brief history)

Money is the means of payment or medium of exchange, and it came into human history through several steps:

- ✓ **Barter economy**: consists of the exchange of goods for other goods (it operates under grave disadvantages because an elaborate **division of labor** – and **specialization** - would be unthinkable without the introduction of the social invention of money).

- ✓ **Commodity Money**: money as a medium of exchange first came into human history in the form of commodities. A great variety of items have served as money at one time or another: cattle, olive oil, beer or wine, copper, iron, gold, silver, rings, diamonds, and cigarettes (**goods with high intrinsic value**).

MONEY (a brief history)

- ✓ **Modern Money**:
  - ✓ **Paper money**: **cash** (paper currency and coins), it has no intrinsic value but is *legal tender*, which means that must be accepted by law if offered in payment of a debt (it is wanted not for its own value but for the things it will buy). Paper currency is easily carried and stored and the fact that private individuals cannot legally create money keeps it scarce and of value.
  - ✓ **Bank money**: the **checking accounts** and **demand deposits,** consists of funds, deposited in banks and other financial institutions, on which you can write *checks* and withdraw your money on demand.
  - ✓ To some extent **electronic transfers**, **debit cards**, and **e-banking** have replaced cash and checking accounts, but these should be seen as **different ways of using a checking account** rather than as different kinds of money.

Monetary aggregates

Monetary aggregates "aggregate" different typology of money circulating in an economy to satisfy its current monetary needs. There are two indicators for monetary aggregates "**narrow money**" (a means of exchange); and "**broad money**" (a way to store value):

- **Narrow money (or M1)** consists of **coins** and **paper money (*currency*)** held outside the banking system + the demand deposits and other checkable deposits **(i.e. the *bank money*)**. M1 is ***transactions money***

=> it is the aggregate used today in monetary policy.

- **Broad money** includes all items in **M1** plus certain **liquid financial assets** or near-monies (e.g., savings deposits, money market funds, and the like) => this monetary aggregate was often useful for looking at broad trends in money supply, but it is little used in monetary policy today.

In short, money is anything that serves as a commonly accepted medium of exchange. Today, we define **transactions money** as **M1**, which is the sum of currency held by the public and checking deposits. Note how the relevance of M1 compare to other financial assets is declined over years (the so-called *financialization* of the economy).

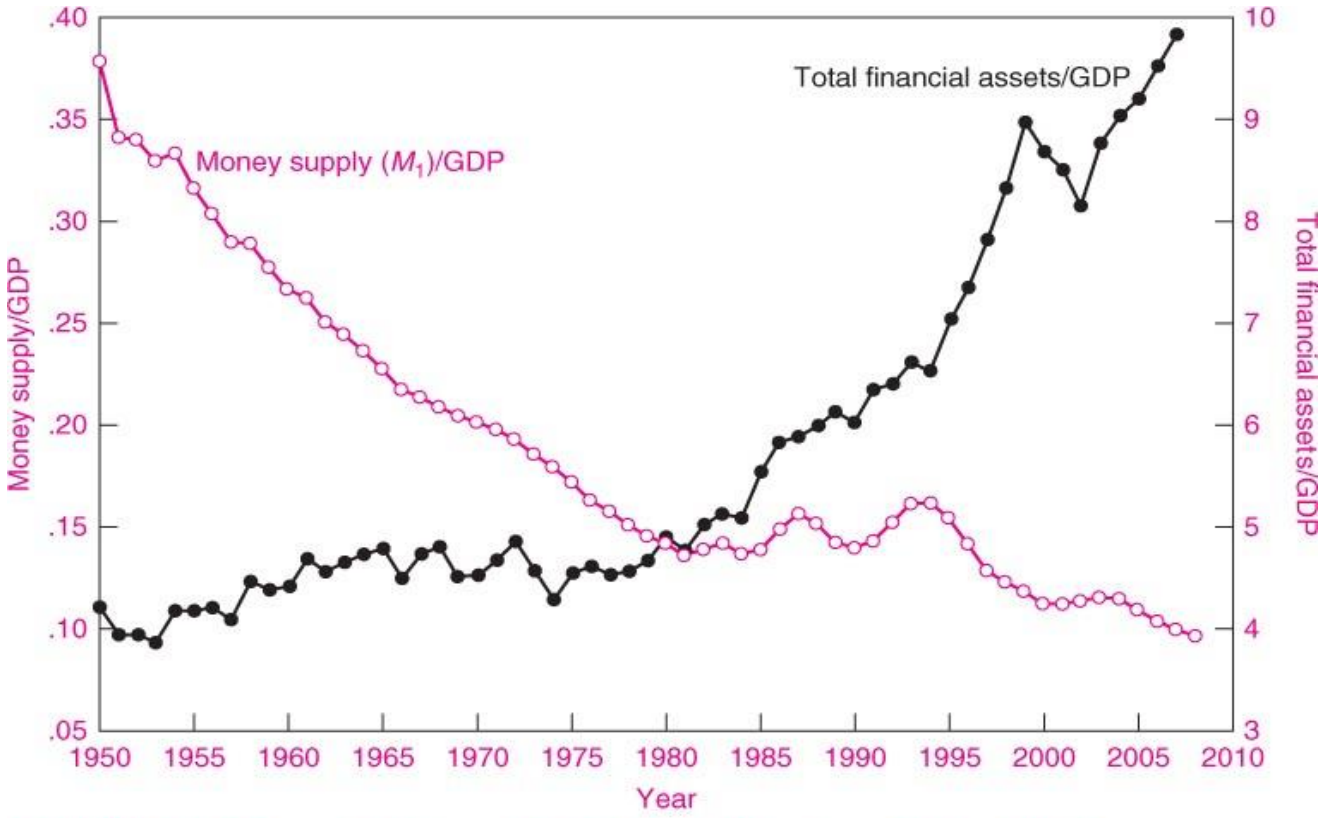


FIGURE 23-2. Money Holdings and Total Financial Assets per Unit of GDP

Total financial assets have risen sharply relative to GDP, while the ratio of the money supply to GDP has gradually declined. Note the vast difference in scale.

Money's Functions

1. Money serves as a **medium of exchange**: without money, we would be constantly looking for someone to barter with.
2. Money is also used as the **unit of account**, the unit by which we measure the value of goods and services.
3. Money can be used as a **store of value**: it can be used to buy goods and services in the future and to transfer wealth over time (instead of assets like stocks or real estate or gold).

Money Demand

Two Sources of **Money Demand**:

- ***Transactions* Demand for Money**: the need to have **money to pay for purchases, or transactions**, of goods, services, and other items. The demand for money for transactions depends on the consumption necessities, that push people to keep money as **cash or in the checking account**. When the interest rate raises people decide to keep less money and to put it in savings accounts, earning a higher interest rate (this also means that keeping money for consumption or investment in durable goods becomes more expensive as the interest rate payed is higher => money demand reduces).

- ***Asset* Demand for Money**: In addition to its use for transaction needs, people might use money **as a store of value**, especially when the interest rate payed by other financial assets is low, waiting for better financial investments.

In short, there is a trade-off between liquidity needs and **the cost of holding money** (sacrifice, in terms of "missed" interest, which must be accepted in order to have cash instead of other financial assets.

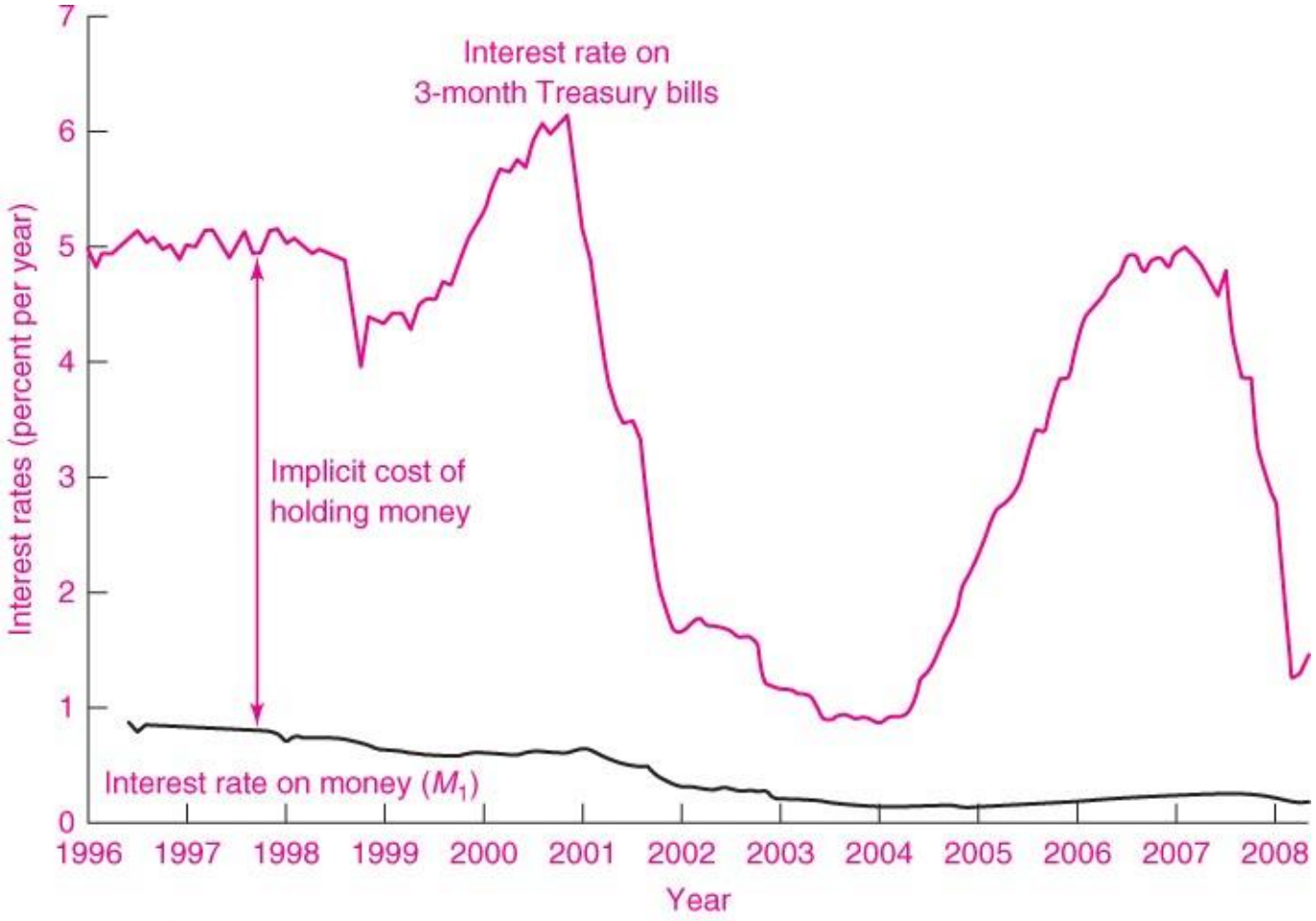
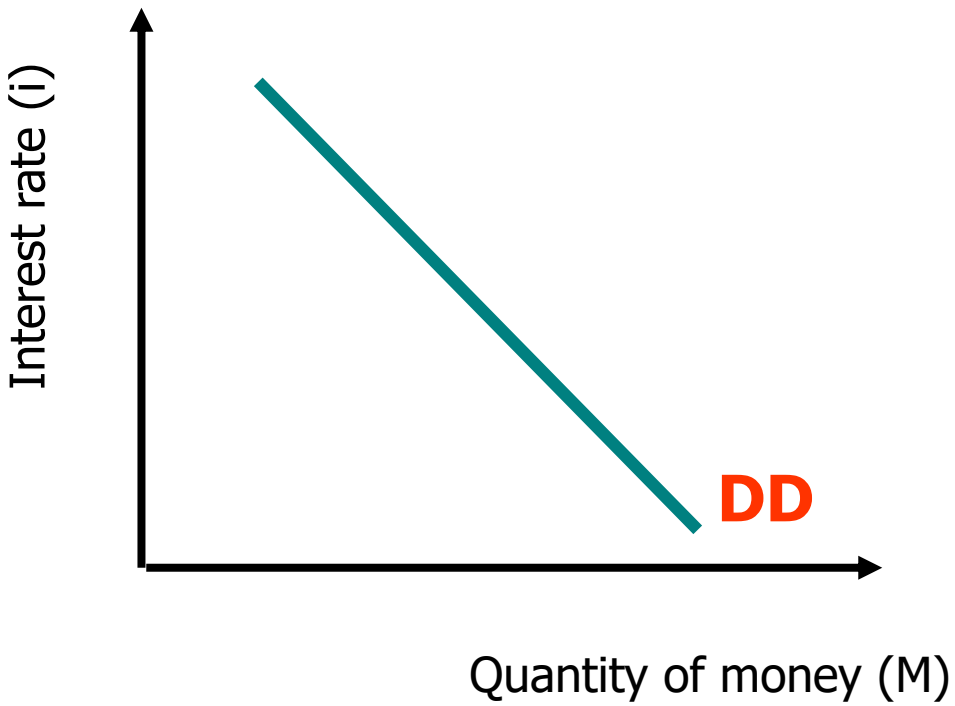


FIGURE 23-3. Interest Rates on Money and Safe Short-Term Assets

This figure shows the interest rate on money (which is the average of zero on currency and the rate on checking accounts) as compared to the interest rate on short-term Treasury securities. The difference between these two interest rates is the implicit **cost of holding money**.

Money Demand



When the interest rate raises people decide to keep less money as cash or in checking account (for *transactions* or as *a store of value*) and to buy other financial assets by putting money in a savings account, earning the higher interest rate. This also means that keeping money for consumption or investment in durable goods becomes more expensive as the interest rate payed is higher => **money demand reduces**

Money Supply (namely, M1, the *transactions money*)

- It does not depend only on the **Central Bank** in terms of paper currency and coins issued (**paper money**)
- It depends also on the **banking system** in terms of the demand deposits and other checkable deposits (i.e. the **bank money**). Commercial banks **collect savings**, **lend money** (make loans), and **manages checking accounts** for those who need liquidity: they need to keep only a fraction of the liquidity collected from customers (i.e., savings deposits) to face day-to-day transactions. This allows banks to lend money (grant loans, buy stocks or other financial products) net of the amount of the mandatory **Reserve (R)**.

Reserve (R) is the portion of deposits that a bank sets aside in the form of vault cash or noninterest-earning deposits with the national central bank (in the US, the Federal Reserve Banks). E.g., in the United States, banks are required to hold at least 10 percent of checking deposits (or transactions accounts) in the form of reserves.

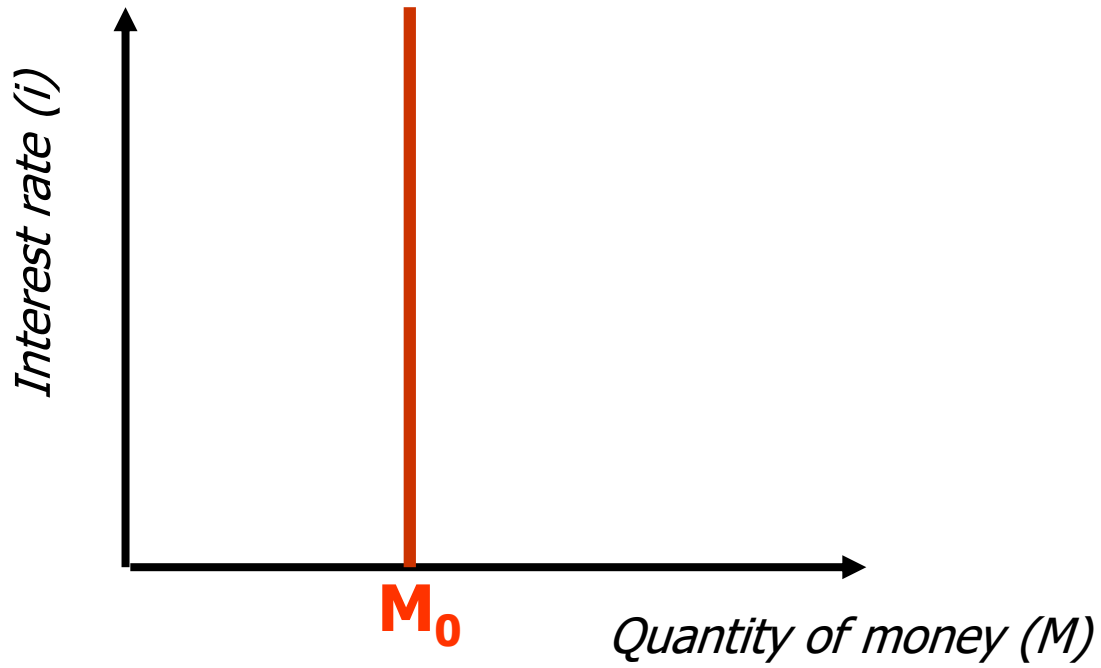
=> the higher the R, the less the money supply in the economy

Balance Sheet of All Commercial Banking Institutions, 2008 (billions of dollars)			
Assets		**Liabilities and Net Worth**	
Reserves	43	Checking deposits	629
Loans	6,250	Savings and time deposits	5,634
Investments and securities	2,265	Other liabilities	2,643
Other assets	1,404	Net worth (capital)	1,056
Total	9,961	Total	9,961

TABLE 23-3. Balance Sheet of All U.S. Commercial Banks

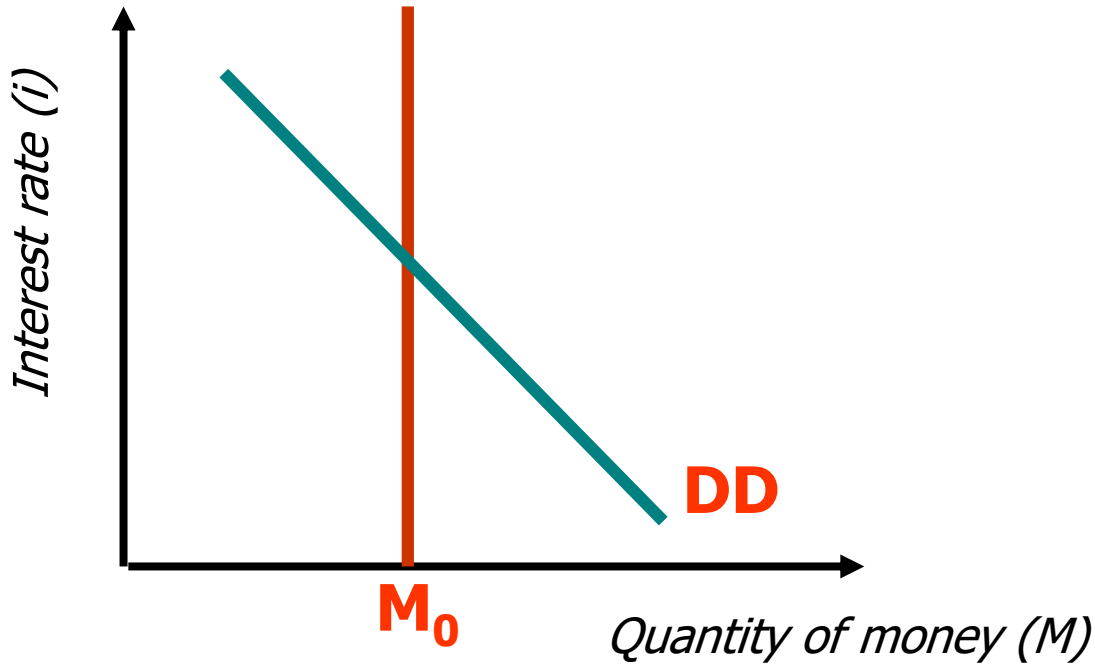
Commercial banks are diversified financial institutions and are the major providers of checking deposits, which is an important component of M1. Checking accounts are payable on demand and thus can be used as a medium of exchange. Reserves are held primarily to meet legal requirements, rather than to provide against possible unexpected withdrawals.

Money Supply



The money supply is the quantity of money (measured according to the aggregates, M1), in circulation at a given moment.
It depends on the decisions of the central bank and the behavior (reserves) of the individual banks.

Money Market (recap)



Money demand is the quantity of money that people decide to keep as cash or in checking account (for transactions or as a store of value). **Money supply** is the quantity of money (cash or in checking account, M1) in circulation at a given moment. Money supply depends on the decisions of the central bank and the behavior (**reserves**) of the individual banks.

The equilibrium between money supply and demand determines the **interest rate**: when the interest rate is high people demand more **other financial assets** and less money for transactions, reducing their **consumption and investments** (=> **the level of aggregate demand – AD - is reduced**).

Monetary policy

Chapter 24 (only pp. 475-489)

Understanding the equilibrium in the economic system

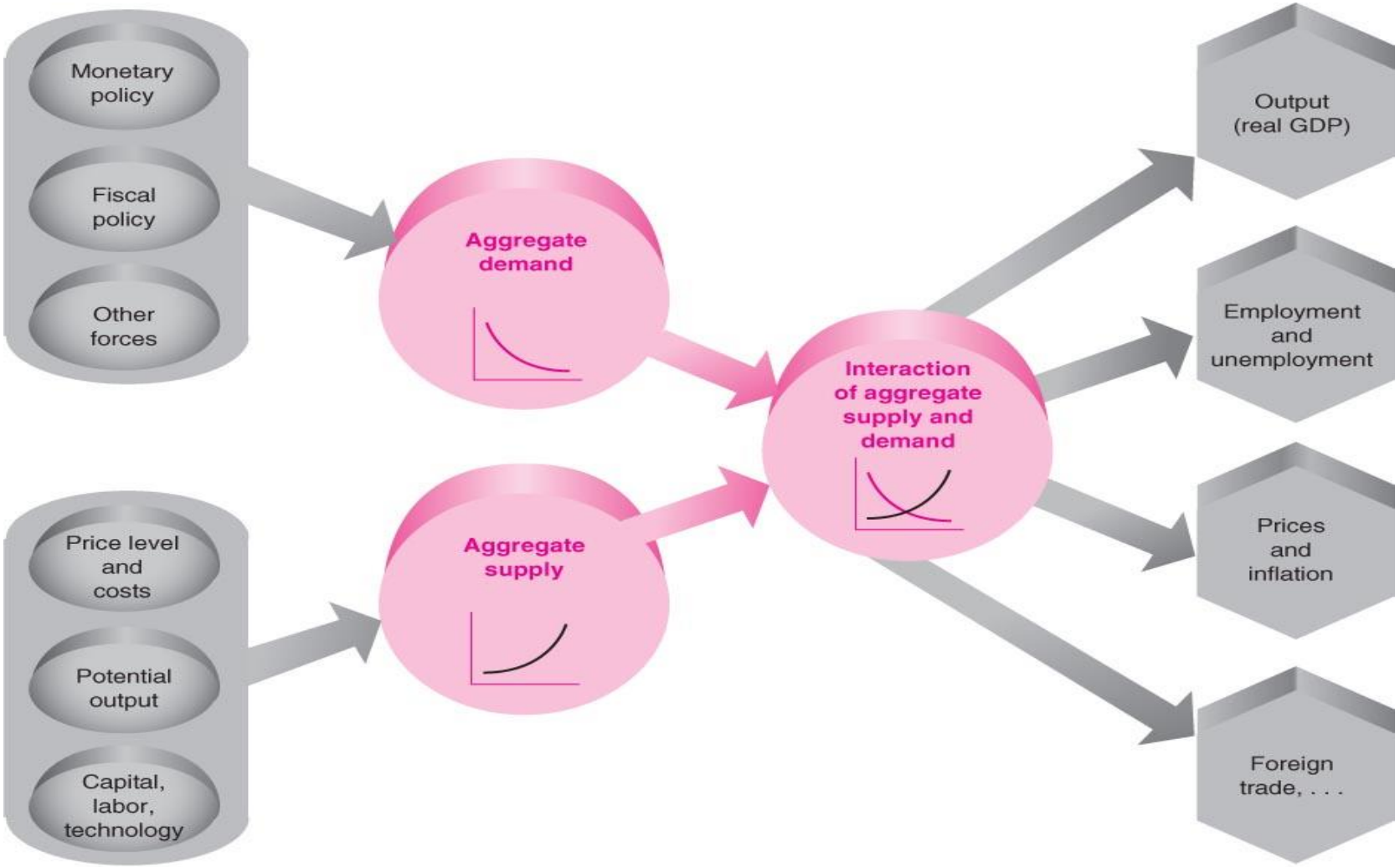


FIGURE 19-5. Aggregate Supply and Demand Determine the Major Macroeconomic Variables

How, if the supply of money in circulation varies, can we obtain changes in output, employment, prices and inflation?

Expansionary Monetary Policy

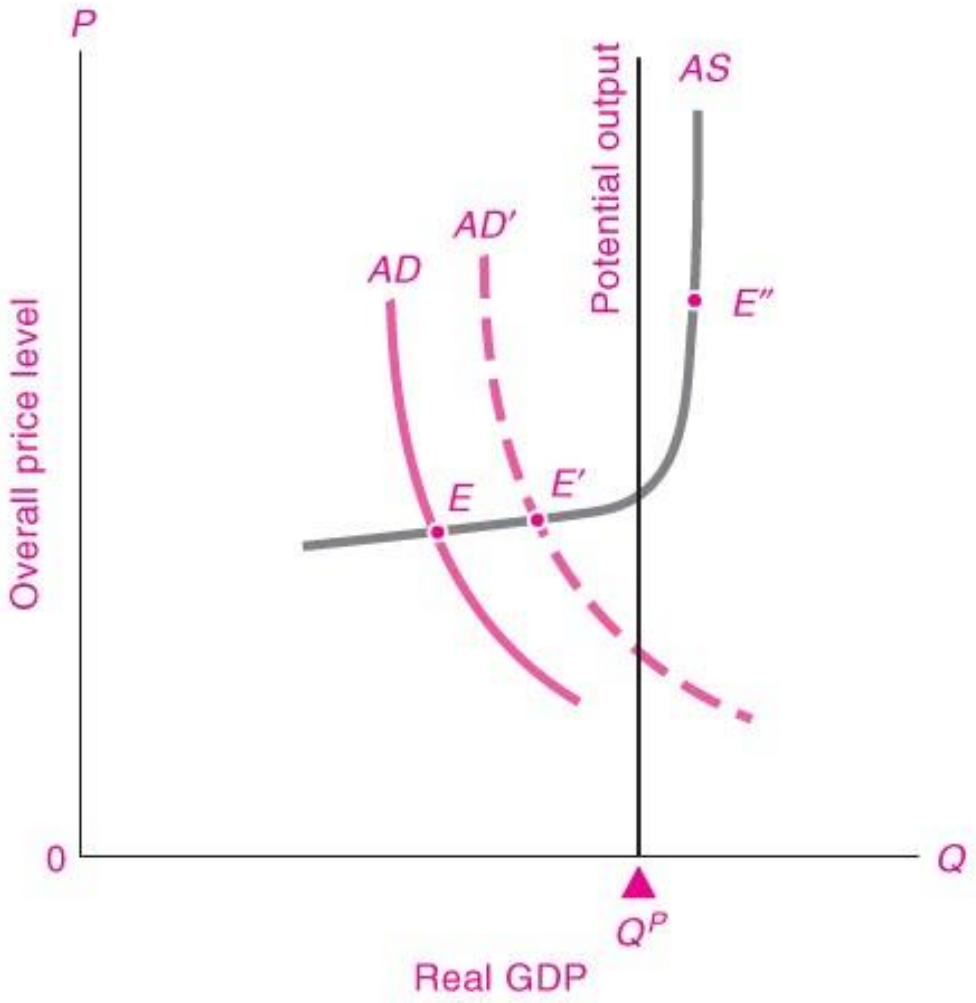


FIGURE 24-8. Expansionary Monetary Policy Shifts Out the *AD* Curve, Increasing Output and Prices

The money supply: the Central Bank

The main tasks of the Central Bank (Fed/ECB) include:

- supplying paper currency and coins (paper money)
- acting as a bank of the national banks (supervision, inspection, controls, lend money, etc ...)
- influencing the economic system, impacting on aggregate demand and inflation through **monetary policy**, that is, by controlling

  - the **supply of money** in the economic system

  - the **interest rates**

The U.S. central bank (Fed)

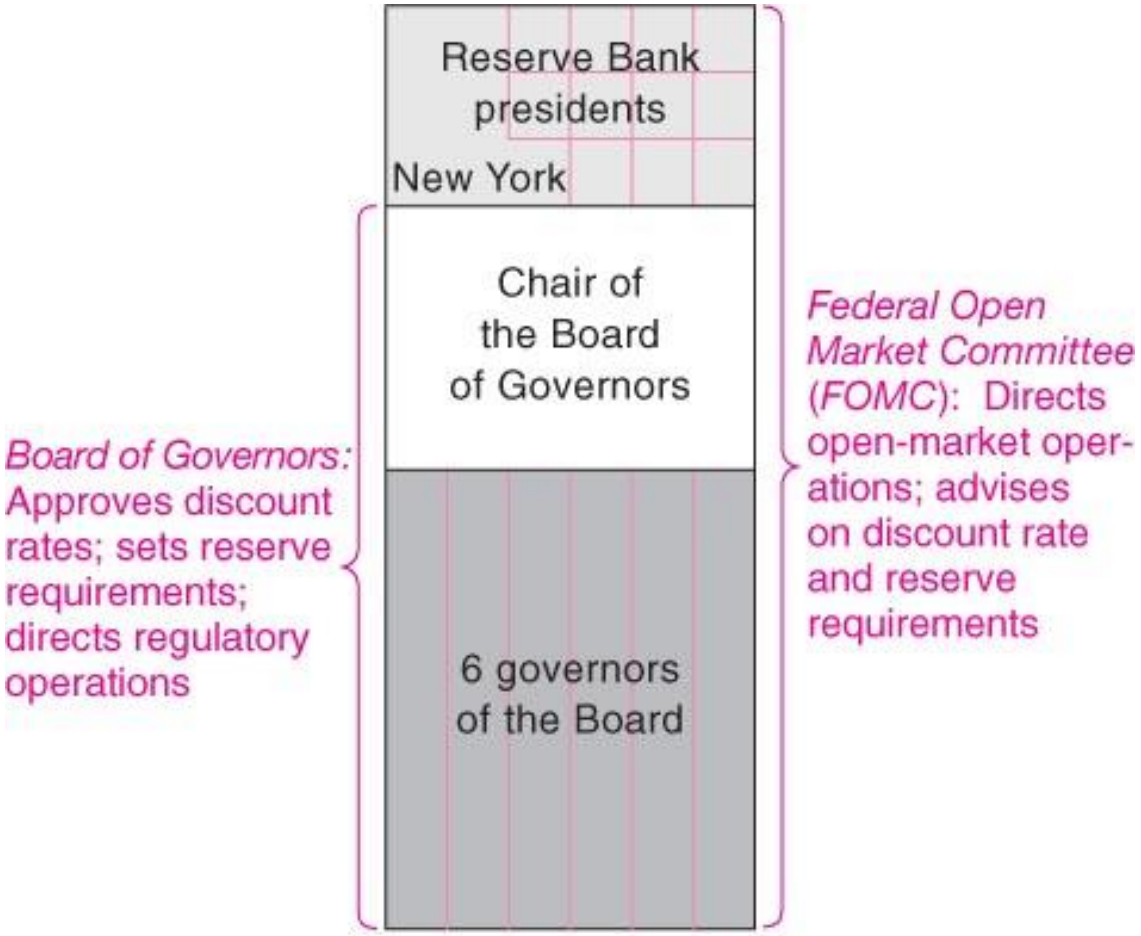


FIGURE 24-1. The Major Players in Monetary Policy

Every modern country has a central bank. The U.S. central bank is composed of the Federal Reserve Board in Washington, together with the 12 regional Federal Reserve Banks. The Fed's primary mission is to conduct the nation's monetary policy by influencing monetary and credit conditions in pursuit of low inflation, high employment, and stable financial markets.

The Central Bank

Instruments
Reserve requirements
Discount rate
Open-market operations

Intermediate goals
Reserves of national banks
Money supply
Interest rates on the money market

Transmission mechanisms

Final objectives
Low and stable inflation
Real GDP growth
Low unemployment

The tools of monetary policy

- **Reserve-requirements policy**
  - setting and changing the legal reserve-ratio requirements on deposits with banks and other financial institutions: if the legal reserve ratio increases national banks must keep a higher amount of money as reserve of liquidity => reduction of the money supply

- **Discount-window lending (variation of the discount rate)**
  - setting the **interest rate**, called the **discount rate**, and the collateral requirements with which commercial banks or other depository institutions, can borrow from the central bank: an increase in the discount rate causes ordinary banks to reduce loans at the central bank and to hold more reserves (because borrowing liquidity is very expensive and therefore they hold money instead of putting it into the economy through lending money (granting loans, buying stocks or other financial products) => reduction of the money supply

- **Open-market operations**
  - buying or selling of **government securities** (government financial assets) in the open market to influence money supply: if the central bank sells securities it means that it is withdrawing money => reduction of the money supply

Basic description of monetary policy transmission mechanisms

When **economic conditions** change, the central bank determines whether the economy is departing from the desired path of inflation, output, and employment.

If so, the central bank announces a change in its **target interest rate**.

To implement this change, the central bank undertakes **open-market operations**, changes the **discount rate**, or the **legal reserve ratio**.

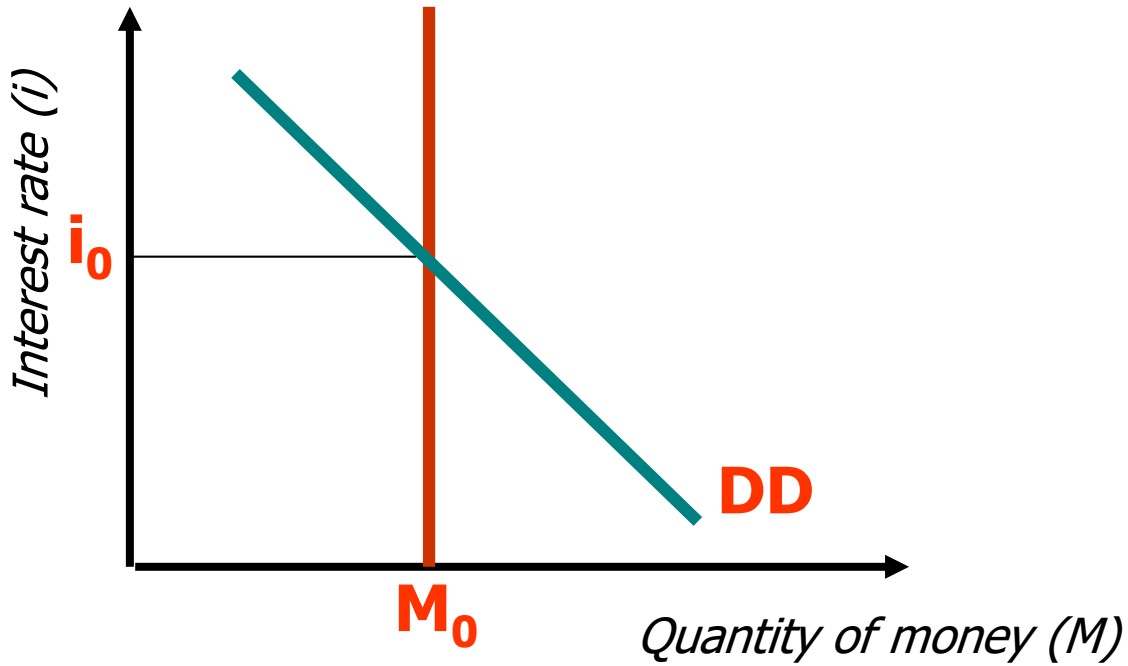
These changes impact on the **interest rate**: when the interest rate increases, people demand more other financial assets and **less money** for transactions, reducing their **consumption and investments** (=> the level of aggregate demand (**AD**) is reduced), and eventually changing the overall direction of the economy.

Monetary policy transmission mechanism: an example

If there is excess of growth in the economic system, with inflation, the CB can **"cool" the economy** as follows:

1. It sells goverment securities (open-market operations) and thus reduces the amount of liquidity in the banking system ...
2. the money supply (M) and the money held with the public are reduced (less deposits);
3. the reduction of M causes interest rates to rise and credit conditions to "tighten";
4. all components of the AD sensitive to interest rates are reduced (investments or housing, for example);
5. aggregate demand contracts and income, output, employment and inflation fall.

How are interest rates determined? The equilibrium on money market



Money demand is the desire of people to have money. When the real money supply is M_0, the money market is in equilibrium with an interest rate equal to i_0. When money supply is reduced (goes on the left), then the interest rate is reduced, reducing the quantity of money demanded.

Comprendere l'equilibrio nel sistema economico

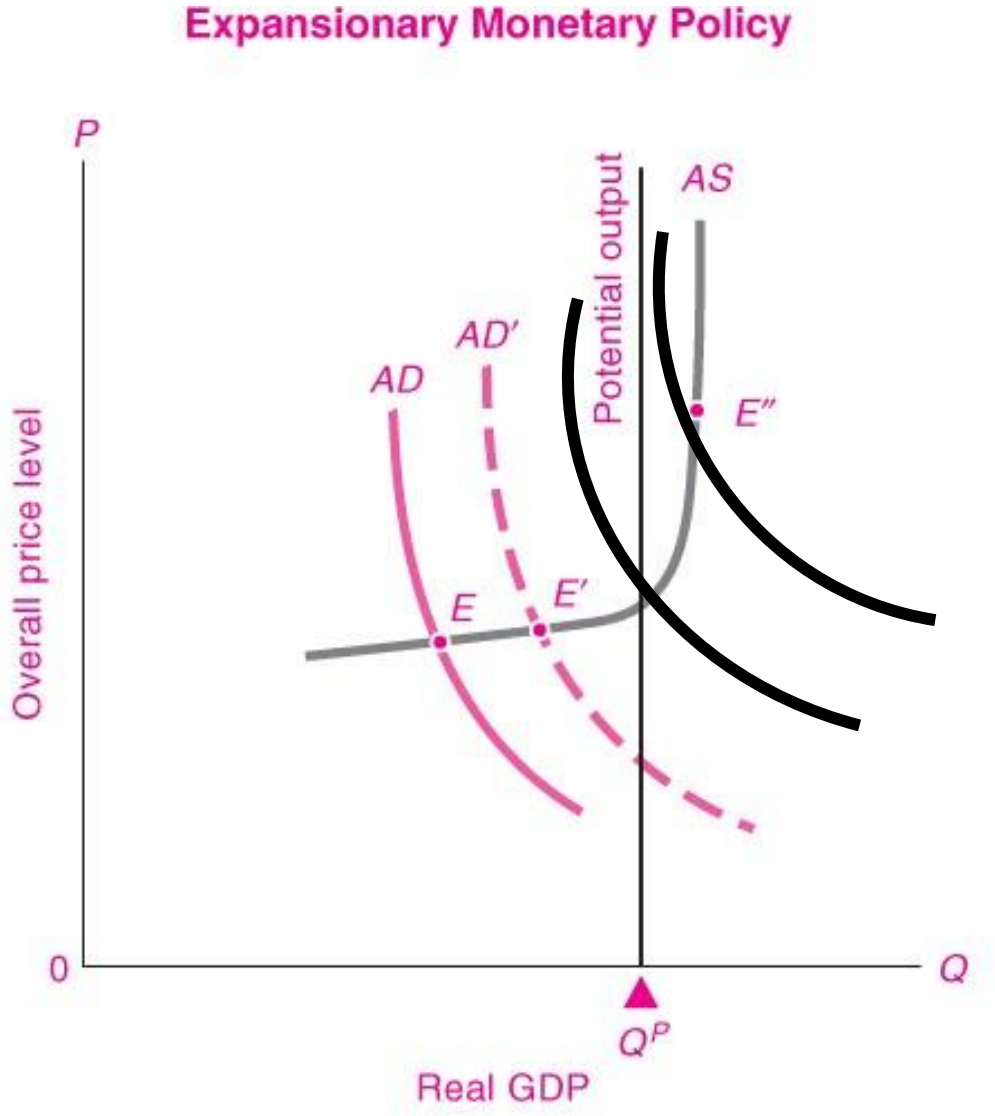


FIGURE 24-8. Expansionary Monetary Policy Shifts Out the *AD* Curve, Increasing Output and Prices

In the Keynesian region where the AS curve is relatively flat, a monetary expansion has its primary effect on real output, with only a small effect on prices. In a fully employed economy, the AS curve is near-vertical (shown at point E''), and a monetary expansion will primarily raise prices and nominal GDP, with little effect on real GDP. Can you see why in the long run monetary policy would have no impact on real output if the AS curve is vertical?

Ineffectiveness of monetary policy: the Liquidity Trap

In case of **negative expectations** on the economy (such as deflation, civil war or international conflicts, fall in aggregate demand) consumers and enterprises prefer save money and do not increase their consumption and investment.

Normally, central bank can stimulate the AD by reducing interest rates. But when **interest rates approach zero**, if negative expectations persist, **central bank cannot bring them down further**, and the tools available to monetary policy become ineffective: **people continue to keep liquidity** without increasing consumption and investment even if the interest rates are near to zero.

This is referred to as the liquidity trap. Such a situation occurred in the Great Depression of the 1930s and then again in 2008 –2009 in the United States.