Fiscal and Financial System in Japan

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THE BEHAVIOR OF INTEREST RATES (MISHKIN, CHAPTER 5)

How is the Interest Rate Determined?

How is the interest rate determined in markets?

- Negative relationship
  between the interest rate and the bond price
- Determination of the interest rate
  ⇕
  Determination of the bond price
- How is the bond price determined
  in the market?

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How is the Bond Price Determined?

The demand for and the supply of bonds
determines the price of the bond.

Large demand for bonds Small demand for bonds	➡	Higher bond price Lower bond price
Large supply of bonds Small Supply of bonds	➡	Lower bond price Higher bond price

What affects the demand and supply of bonds?

The Demand and supply of "money"

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Bonds and Money

Total Wealth(100)

Money(50)	Bonds(50)
"supply" of money	"supply" of bonds

Quantity of money and bonds **in circulation**

Supply

Money(70)	Bonds(30)
"demand" for money	"demand" for bonds

Desired quantity of money and bonds

Demand

Having ¥20 more money = Having ¥20 fewer bonds

Larger demand for money = Smaller demand for bonds

Opportunity Cost

Holding more money = Holding fewer bonds

Enjoying more liquidity and giving up interest payments

↓

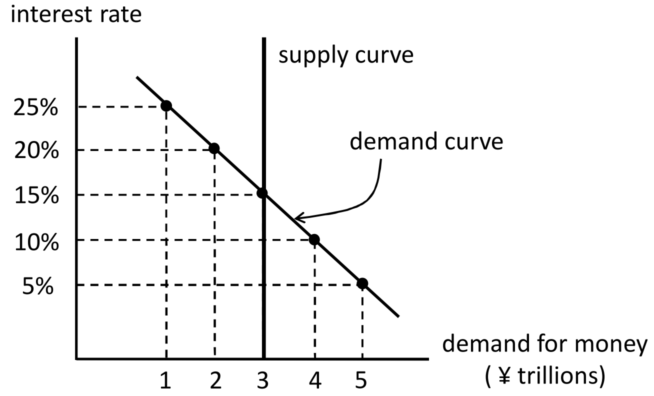
Cost of holding more money

Opportunity Cost

Interest Rate	High	Low
Opportunity Cost of Holding Money	**Large**	**Small**
Demand for Money	**Small**	**Large**
Demand for Bond	**Large**	**Small**

The interest rate affects money demand, thus bond demand.

The Demand for and Supply of Money



interest rate ↓ ➡ demand for money ↑

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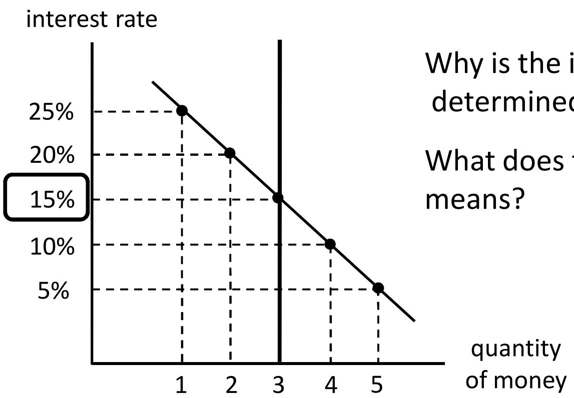
"Determination" of Interest Rate

The interest rate is "determined" at
<u>the level that equates the supply and demand for money.</u>

Equilibrium Interest Rate



Why is the interest rate determined at the level?

What does the "determination" means?

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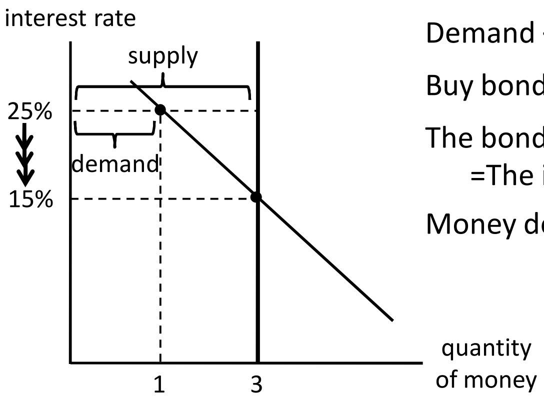

Demand < Supply

Buy bonds and reduce money

The bond price rises
=The interest rate falls

Money demand rises

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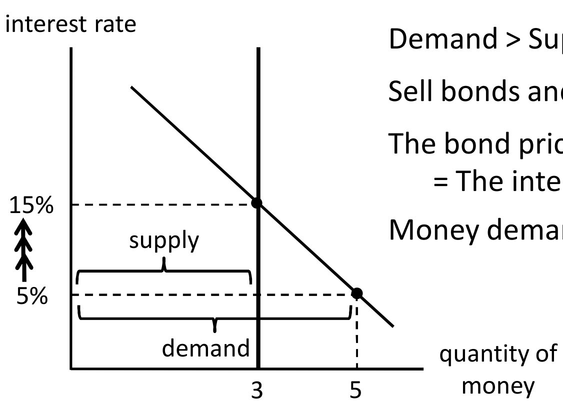

Demand > Supply

Sell bonds and increase money

The bond price falls
= The interest rate rises

Money demand falls

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Why the Equilibrium Interest Rate?

The interest rate is "determined" at
the level that equates the supply and demand for money.

(1) At any other level of interest rate, people want to hold more / less money, thus fewer / more bonds, so the bond price (interest rate) does not stay the same.

(2) Only at the equilibrium interest rate, there is no incentive to hold more / less money, thus fewer/ more bonds, so the bond price (interest rate) stays.

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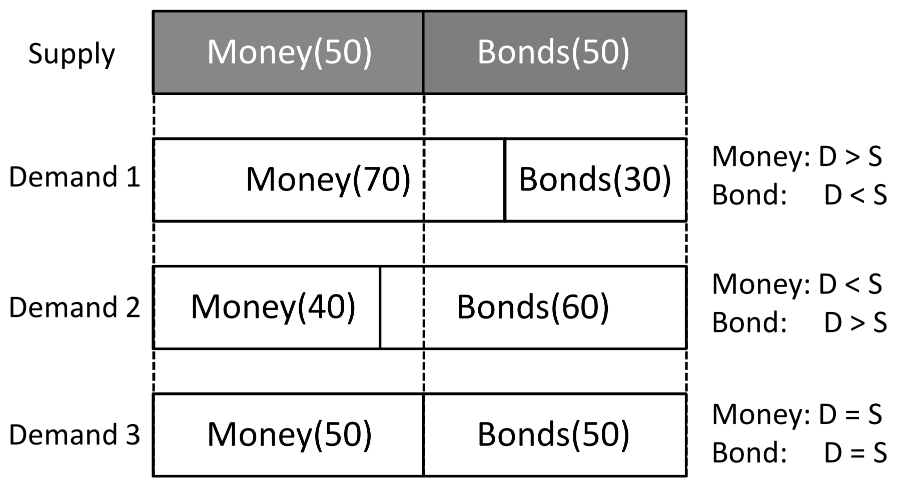
Money and Bond Market

Total Wealth(100)



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Changes in Equilibrium Interest Rate

Changes in interest rate we observe are:

≠ movements toward the equilibrium

= <u>changes in equilibrium itself</u>

What causes changes in equilibrium?

Shifts in demand / supply curve

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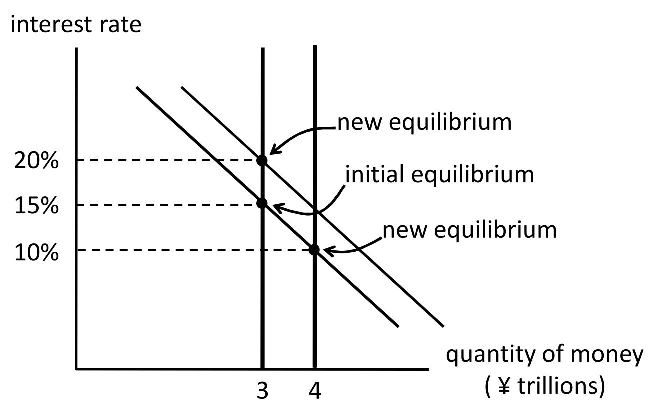

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Shifts in the Demand/Supply Curve

What causes the demand/supply curve to shift?

(1) Change in income level ⇒ demand curve

(2) Change in price level ⇒ demand curve

These are the factors which affect the demand for money, besides interest rate.

(3) Change in money supply ⇒ supply curve

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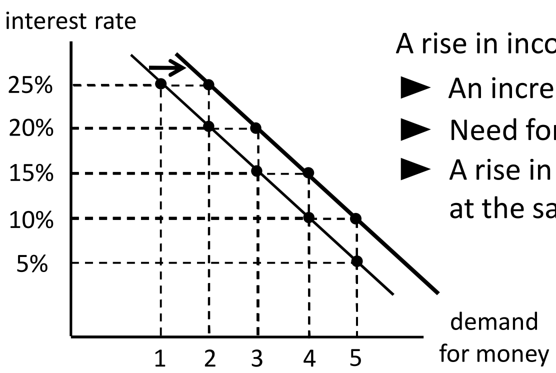
Change in Income



A rise in income

► An increase in transaction

► Need for liquidity

► A rise in the demand for money at the same interest rate

At the same level of interest rate, people want to hold more(less) money, when their income is large(small).

A rise(fall) in income shifts the demand curve to the right(left).

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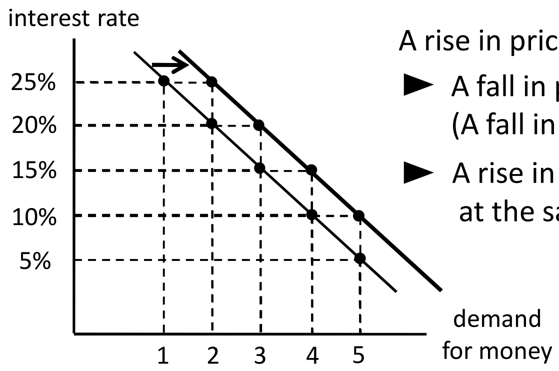
Change in Price Level



A rise in price level

► A fall in purchasing power
(A fall in "real money balance")

► A rise in the demand for money at the same interest rate

At the same level of interest rate, people want to hold more(less) money, when the price level rises(falls).

A rise(fall) in prices shifts the demand curve to the right(left).

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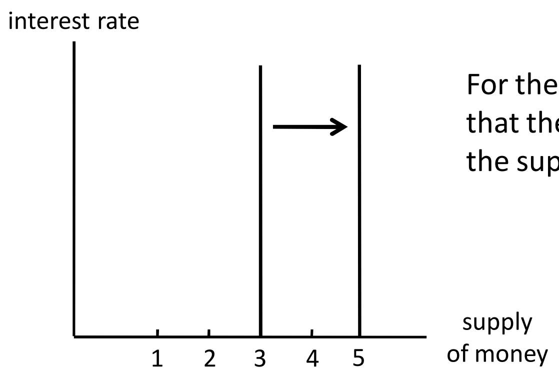
Change in Money Supply



For the present, suppose that the BOJ can control the supply of money.

A rise(fall) in the money supply shifts the supply curve to the right(left).

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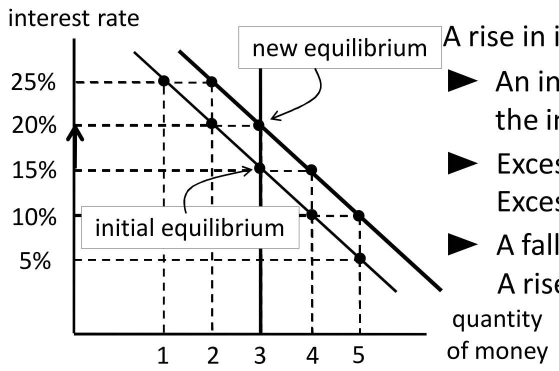
Income Effect on Interest Rate

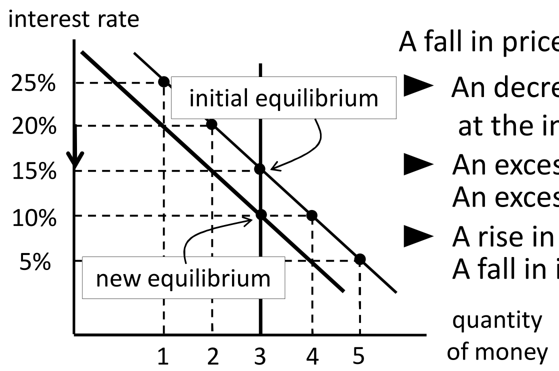


A rise in income

- ► An increase in demand at the initial interest rate
- ► Excess demand for money
  Excess supply of bond
- ► A fall in the bond price
  A rise in the interest rate

A rise(fall) in income drives the interest rate up(down).

Price Level Effect on Interest Rate

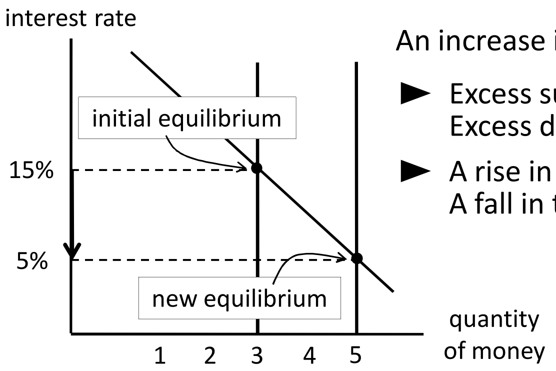


A fall in price level

- ► An decrease in demand
  at the initial interest rate
- ► An excess supply of money
  An excess demand of bonds
- ► A rise in bond price
  A fall in interest rate

A rise(fall) in prices drives the interest rate up(down).

Money Supply Effect on Interest Rate



An increase in the money supply

► Excess supply of money
Excess demand for bonds

► A rise in the bond price
A fall in the interest rate

A rise(fall) in the money supply drives the interest rate down(up).

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Conclusion

The interest rate is "determined" at the level that equates the money demand with the money supply, the equilibrium interest rate.

The equilibrium interest rate changes as the level of income, prices, or the money supply change.

Income ↑(↓)	Interest rate ↑(↓)
Price level ↑(↓)	Interest rate ↑(↓)
Money supply ↑(↓)	Interest rate ↓(↑)

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