The Financial Side of the Economy

Chapter 5

Chapter highlights

- The link between the real and the financial side of the economy
- Why we need money and how its price, the interest rate, is determined
- How this link depends on the transmission mechanisms of monetary policy
- How banks provide liquidity, transfer maturity and reallocate risks
- The regulation of financial systems and the emergence of financial crises
- Are some banks too big to fail?
- How central banks operate monetary policy
- The quantity theory of money
- Quantitative easing and the rise of unorthodox policies

Quantitative easing and the financial crisis

The Great Financial Crisis of 2007/2008:

articulation through aggregate investment = function of interest rate.

After the crisis:

Developed countries drove interest rates down to zero, and even into negative territory;
Used quantitative easing.

Quantitative Easing

Goal: increasing money supply to foster economic activity aims to jumpstart a sluggish financial system when the traditional mechanisms of monetary policy fail.

Japan in early 2000s:

- country didn't recover fully after 1991;
- zombie banks emerged.

Chapter 5.1

Money and Its Role

What is Money?

- In the past salt, rice, animals, copper, gold were used as currencies
- In the 20th century mostly gold or dollar
- After Bretton Woods agreement in 1971, no more fungible money

Money Properties

1. Helps communicate prices
2. Is a financial asset that stores value
3. Is the universal medium of exchange

(During hyperinflation money may lose the first two properties)

Hyperinflation in Brazil 1985–1994

- Between 1987–1990 inflation averaged 1,233% a year
- The currency was changed three times
  - Cruzeiro → Cruzado → Cruzeiro
- Before 1994 the currency was "cruzeiro real" which turned into real, Brazil's current official currency

Brazil's currency lost its property of communicating prices

- Prices changed every day.
- USD as reference:
  - convert prices into dollars to see whether something is cheap or expensive.
- Many arbitrage opportunities.

Brazil's currency lost its place as a store of value

- Hyperinflation increased the velocity of money.
- Unspent currency could lose 1% of its value in a single day.
- USD acted as a store of value.

Brazil's currency kept its role as local money

Transactions were supposed to be done in local currency

Money as legal tender:

- is the most liquid asset;
- does not generate any cash flow.

Chapter 5.2

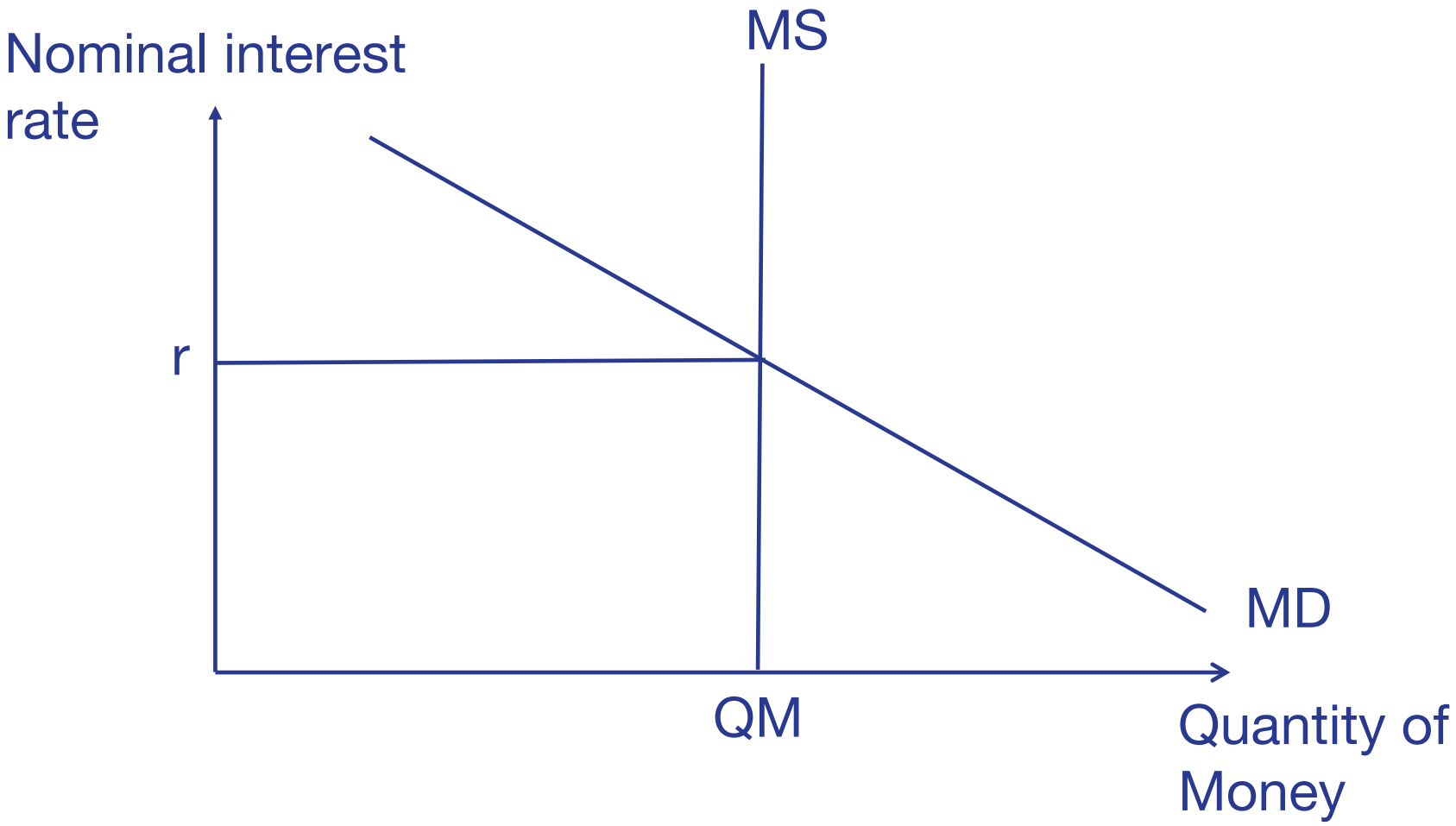
Money Market

Money = medium of exchange for goods and services

Money market= the market in which economic agents buy and sell money

Money Market Characteristics

- the price of money is the interest rate (nominal interest rate);
- economic agents demand money to make transactions, in a broad sense;
- the central bank is a monopolist supplier of money.



~ Supply determined by the Central bank

~ Demand comes from society

Motives for Holding Money:

- **Precaution**
  - cash on hands for unexpected expenses.
- **Transaction**
  - use money to buy things.
- **Speculation**
  - demand cash to buy financial assets that bring money in the future.

Modern Banks

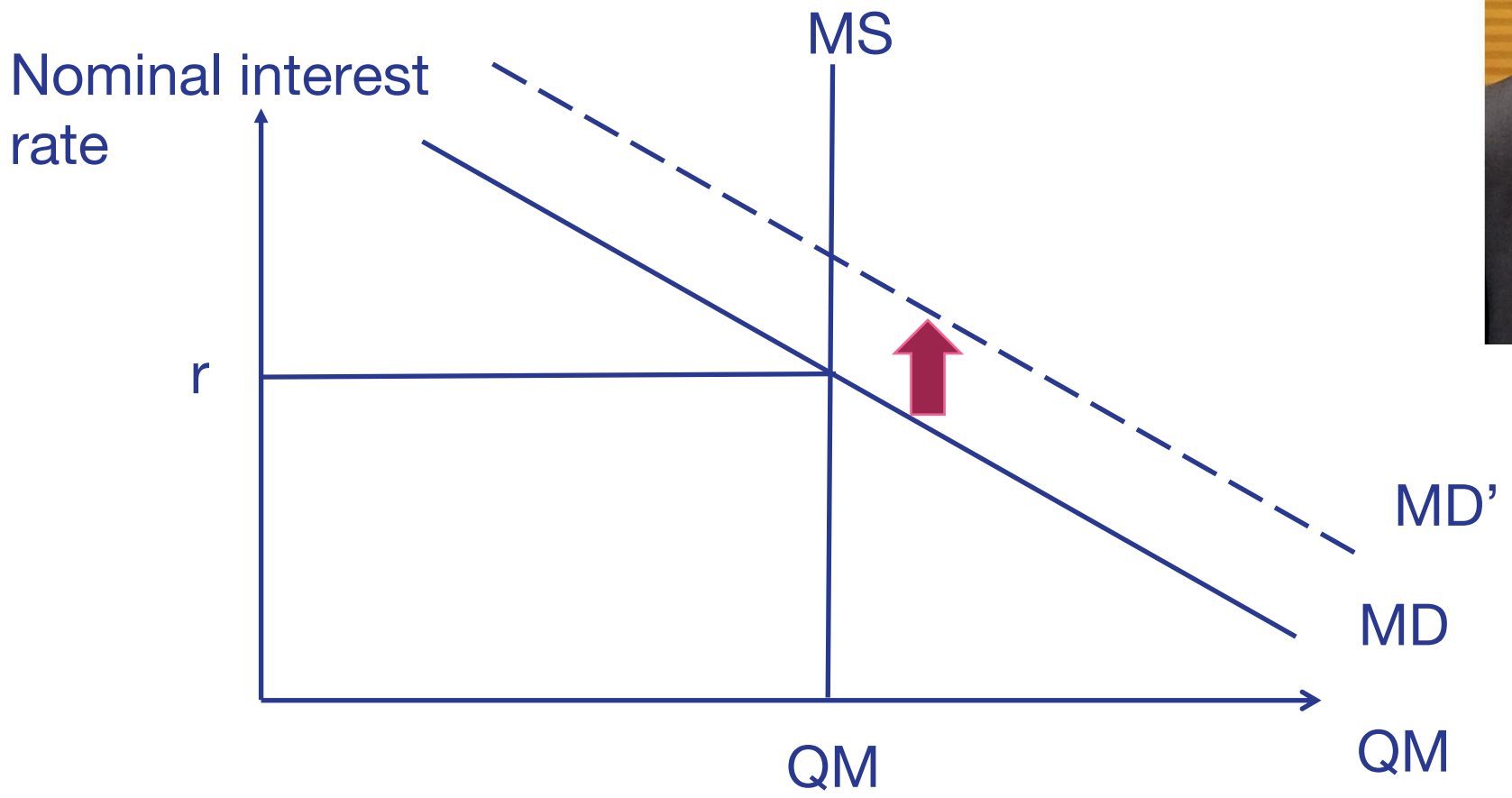
- determine the nominal interest rate to influence inflation and economic growth.
- adjust the money supply to changes in the demand for money or the target interest rate.

Central Bank is Essentially a Monopoly

It has to react to any changes in the money demand in order to control the target interest rate.

South Korea Example

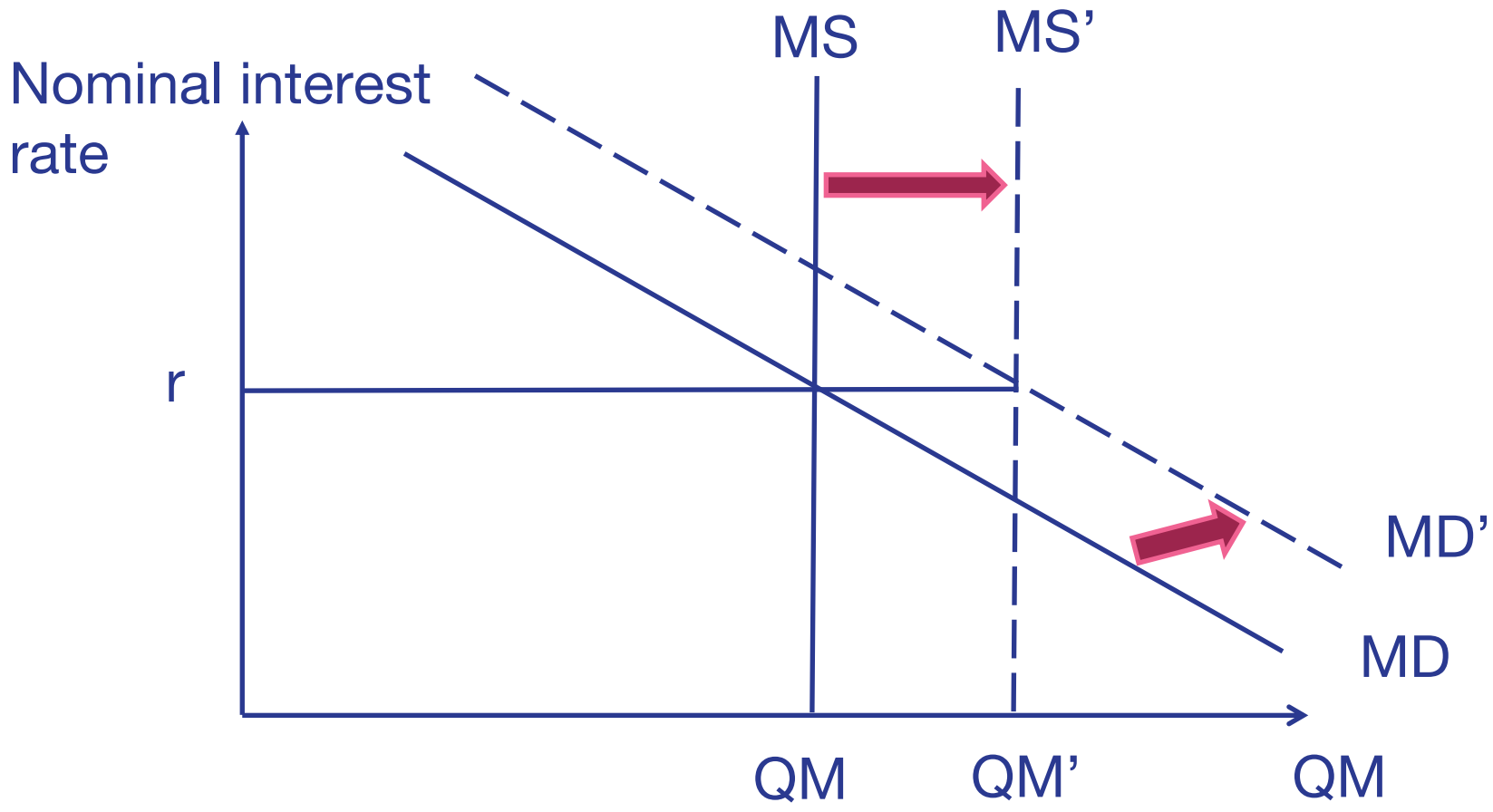
- BoK wants to keep the interest rate at 1.25% a year;
- at this interest rate people actively borrow money.



Lee Ju-yeol, governor of the BOK

South Korea Example

- BoK wants to keep the interest rate at 1.25% a year;
- BoK increases money supply to match higher MD.



Chapter 5.3

A Simple Banking System

Money in a Capitalist Economy:

- ❑ Mean of exchange
- ❑ Unit of account
- ❑ Store of value

The financial system:

= acts as intermediary between savers and borrowers;

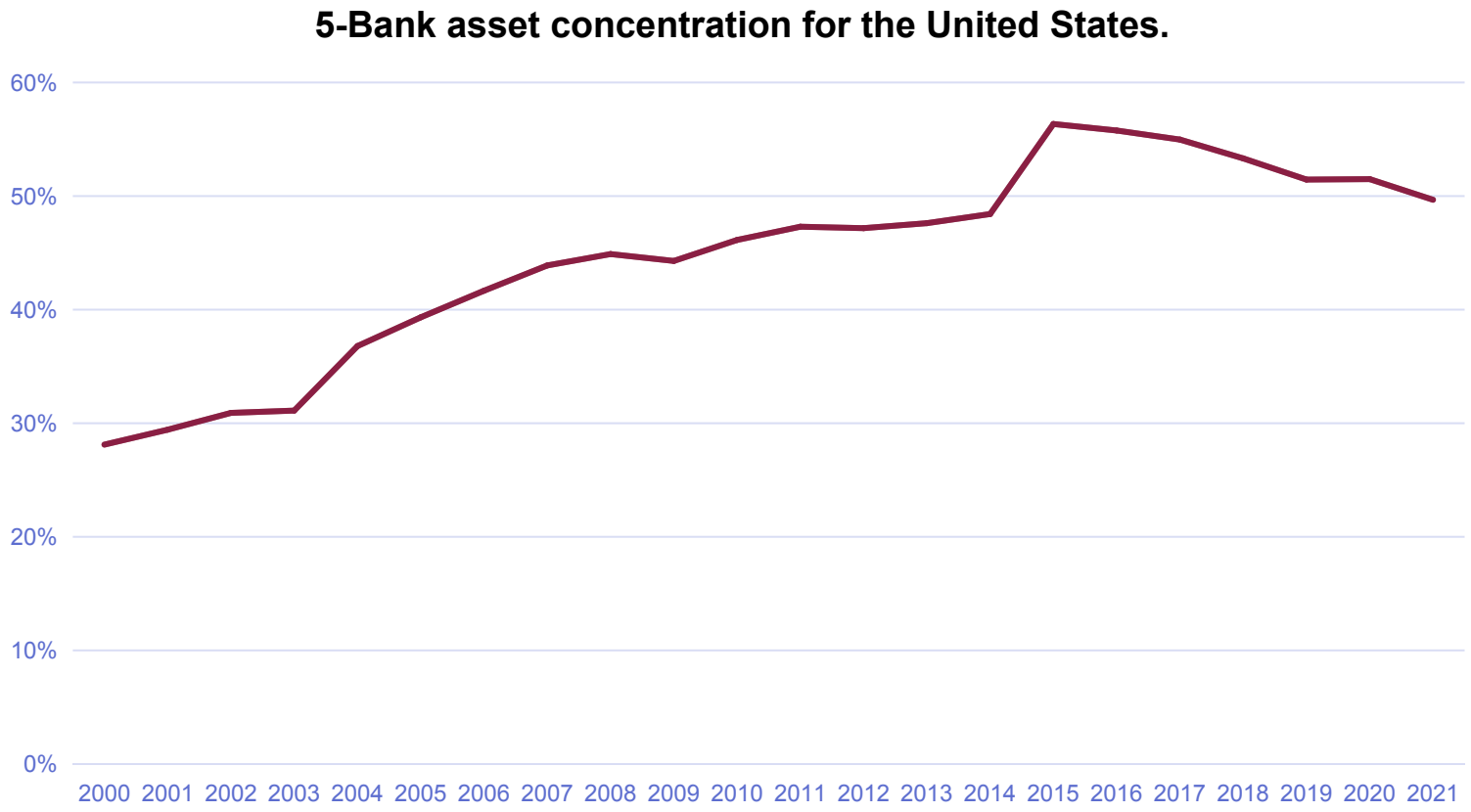
= provides liquidity.

Financial Institutions

- transform maturity of financial assets;
- reallocate risks throughout the economic system;
- create credit.

Banks:

- ✓ Commercial
- ✓ Investment
- ✓ Universal



Source: Fed St. Louis.

Commercial Banks

- Create money.
- Turn time deposits into longer-maturity loans, generating credit that is a fundamental part of economic activity.

Example:

There is only one commercial bank in the economy;
A person deposits USD100 in her account.

Bank is required to set aside 20% of any deposit to cover liquidity risk:

- Lends USD80.

Assets	Liabilities
Loans: 80	100
Reserves: 20	80

Because there's only one bank in the economy, the money flows back to the bank.

Assets	Liabilities
	100
Loans: 144	80
Reserves: 36	64

The process generates USD500 of time deposits:

- USD400 for loans & USD100 as reserve.

Assets	Liabilities
Loans: 400	
Reserves: 100	500

Commercial banks create money depending on:

1. the amount of currency in circulation;
2. required reserve ratio.

Money Multiplier: Q_m

***CB**:* the currency base

***rr**:* the required reserve ratio

$$Q_m = \frac{CB}{rr}$$

Chapter 5.4

Banks Runs

“Too Big to Fail”

Financial Crises

Commercial banks leverage their own capital to make profits on lending.

Assets		Liabilities	
Property and Buildings	USD 5 million	Demand deposits	USD 100 million
Government and corporate bonds	USD 25 million	Net worth	USD 5 million
Loans	USD 65 million		
Cash in vault	USD 2 million		
In accounts with Federal Reserve	USD 8 million		
Total Assets	USD 105 million	Liabilities + Net Worth	USD 105 million

International regulations promulgated by the *Bank of International Settlements thought the Basel Committee on Banking Supervision* aim:

- to improve the banking sector's ability to absorb shocks arising from financial and economic stress, whatever the source;
- to improve risk management and governance;
- to strengthen banks' transparency and increase information disclosure.

Bank Run = banks operate without ever having enough holding to cover their short-term liabilities.

Commercial banks are interconnected because when one fails, the probability of other institutions failing increases.

"Too big to fail":

- when a small bank fails, the reliability of the large banks is not compromised;
- when a large bank goes under, depositors in all institutions start to pay attention, increasing the possibility of a bank run.

Bank runs and financial crises are **EXTREMELY** painful events for the **WHOLE** society

- Governments try to prevent them, and even resort to bailouts

but

bailouts cost taxpayers and incentivize moral hazard.

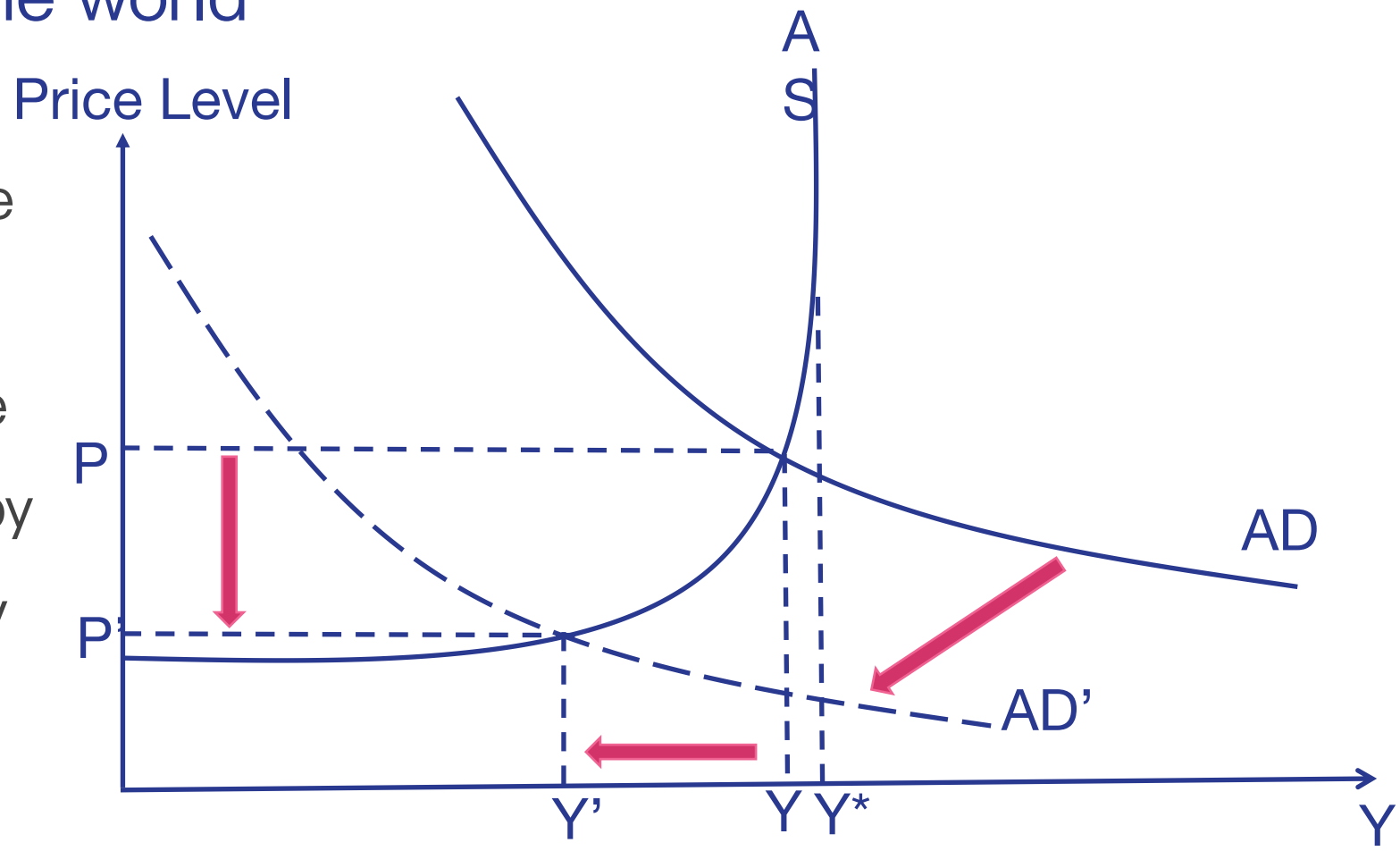
(one of the reasons why the Federal Reserve stopped lending money to Lehman Brothers in 2008):

- Some countries nationalize banks that fail, insuring depositors but not the shareholders or the bankers.

Japan, Argentina and the consequences of financial crises

Financial crisis around the world

- In 1990–1991 an asset bubble burst in Japan;
- In 2001/2002 in Argentina the financial crisis was followed by events in the foreign currency market.



Country Name	Crisis	Real GDP % t	Real GDP % t+1	CPI % t	CPI % t+1
Argentina	2001	-4.41	-10.0	-0.94	-1.07
Japan	1991	3.32	0.82	3.30	1.71
United States	2008	-0.29	-2.78	3.84	-0.36

Systemic risk and losses in commercial bank: the case of Sweden

Reported Credit Losses 1990–96

Another source of systemic risk comes from a credit squeeze to non-financial institutions.

↓

Companies that need working capital or plan having the maturity of their debt extended cannot be financed.

↓

Banks reduce lending to protect against losses.

Reported credit losses 1990-96, billion SEK (Source: Peter Englund, 1995)

Bank	1990	1991	1992	1993	1994	1995	1996
Handelsbanken	0.7	2.8	7.1	6.0	2.5	1.6	1.6
SEB	1.7	4.3	9.6	9.0	8.1	3.6	0.9
Nordbanken	3.6	9.8	18.2	14.3	1.7	1.1	0.6
Gota	0.9	3.7	12.5	12.0	-	-	-
Sparbanken Sv	2.8	9.8	16.6	9.6	-	-	-
Föreningsbanken	0.8	2.7	3.3	4.0	-	-	-

Chapter 5.5

The Instruments of Monetary Policy

Mechanisms by which central banks can adjust the target interest rate

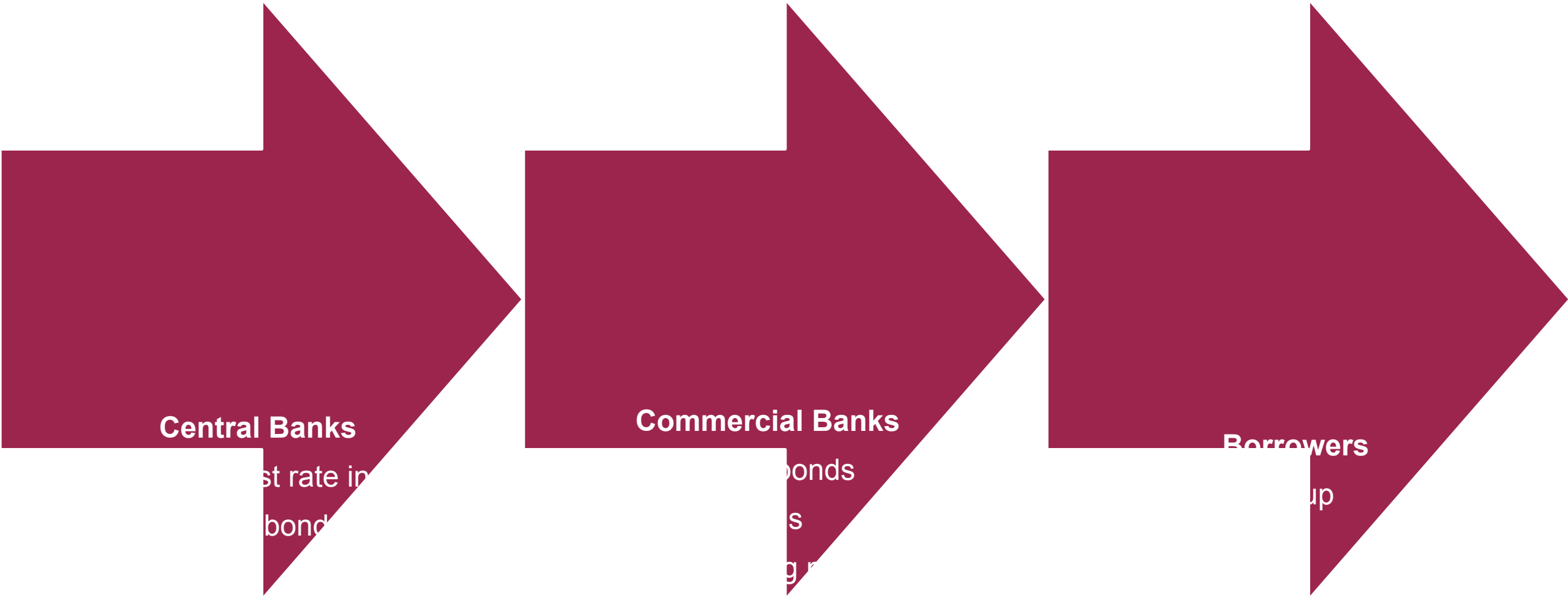
1. Changes in the currency base;
2. Setting required reserves;
3. Open market operations;
4. Discount window lending;
5. Unconventional measures, such as quantitative easing.

1. Changes in the currency base:
   Print or destroy notes and coins:
   transaction costs.
2. Setting required reserves:
   Relatively inefficient:
   potential consequences for the quality of the balance sheet and the profitability of commercial banks.
3. Open market operations:
   Most common:
   CB buys and sells government bonds.
4. Discount window lending:
   Commercial banks can borrow for brief periods from central banks through discount lending. If the rate is high, it provides incentives for the banks to lend less and decrease the probability that they need to borrow from the central bank.
5. Unconventional measures, such as quantitative easing.

Central Bank Balance Sheet

Government's Bank	Securities (e.g. government bonds)	Currency Government's account
Bankers' Bank	Loans to Banks	Required reserves of commercial banks
Foreign Currency	Foreign Reserves	Swaps and other derivatives in foreign currency

Source: Eisner, Emily, Antoine Martin, and Ylva Søvik (2016).


Central Banks
st rate in
bond
Commercial Banks
onds
s
Borrowers
up

Monetarist Theory

- the best course for monetary policy would be to set predictable targets for money supply increases over time, instead of targeting interest rates

Nowadays, central banks set the target interest rate instead of enacting a rule for money supply growth.

Chapter 5.6

The Transmission Mechanisms of Monetary Policy

The transmission mechanisms of monetary policy are the conditions and links that make it possible for Central Banks to affect real decisions through changes in the nominal interest rate.

- Credibility of monetary authority;
- Trajectory of public debt.

For now, we assume the country has well-functioning financial markets and credible monetary institutions.

Major channels through which changes in money supply relate to investment and consumption decisions:

1. Credit;
2. Balance sheet;
3. Expectations;
4. Exchange rate.

1. **Credit** (most important one)
   As central banks increase the quantity of money, commercial banks can use it to increase credit in the economy.

2. **Balance Sheet**
   Lower interest rates or increase in money supply affect the price of financial assets such as stocks or even intangible assets like art, comic books, gold etc.

3. **Expectations**
   Agents adjust their expectations to the actions of the monetary authority
   Fed has credibility. Every announcement from the Fed is closely followed by financial markets.

4. **Exchange rate**
   Lowering the interest rate tends to depreciate the country's currency, resulting in increased exports and lower imports.

If the transmission mechanisms of monetary policy are working well, changes in money supply affect **aggregate demand**.

Monetary Policy in Action: required reserves in emerging markets

In emerging countries a secondary policy instrument is the required reserve ratio

Examples:

- "China cuts bank reserve requirement to spur growth, by Kevin Yao and Judy Hua
  BEIJING (Reuters) Wed Feb 4, 2015
- "Brazil Central Bank Reduces Bank Reserve Requirements, By Daniel Horch
  Sao Paulo (MNI) –Friday, July 25, 2014
- "More Reserves, by Novrida Manurung
  August 15, 2013

The Independence of Central Banks

On the one hand, a politically integrated central bank allows for better coordination between monetary and fiscal policies.

On the other hand, an independent central bank may constrain the politically motivated efforts of the executive branch.

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1. Monetary policy can be effective at stimulating growth but only temporarily;
2. Independence is one possible way of generating credibility

Chapter 5.7

Quantity Theory of Money

QTM links nominal variable to real ones

$$MV = PT$$

M = nominal quantity of money

V = velocity of money (the speed with which commercial banks turn their deposits into credit)

P = price level

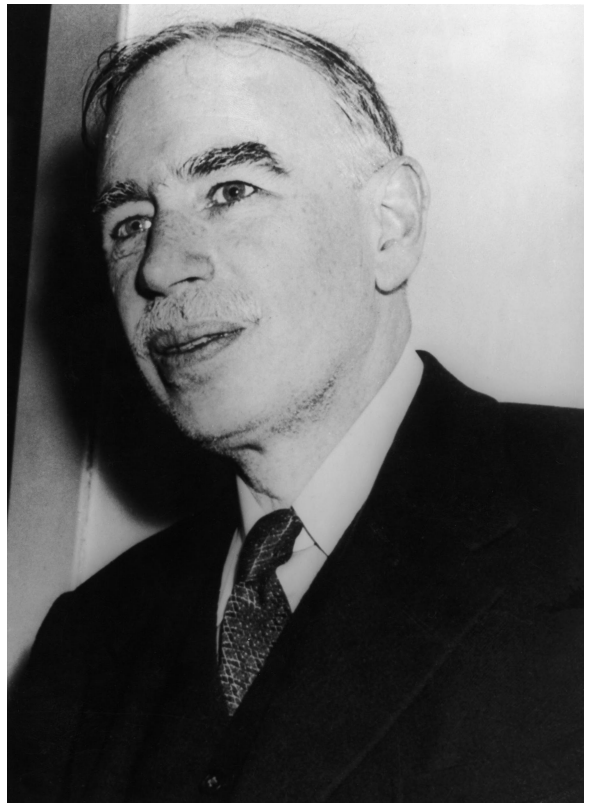
T = number of transactions

Money may not be neutral in the short run, but it is neutral in the long run

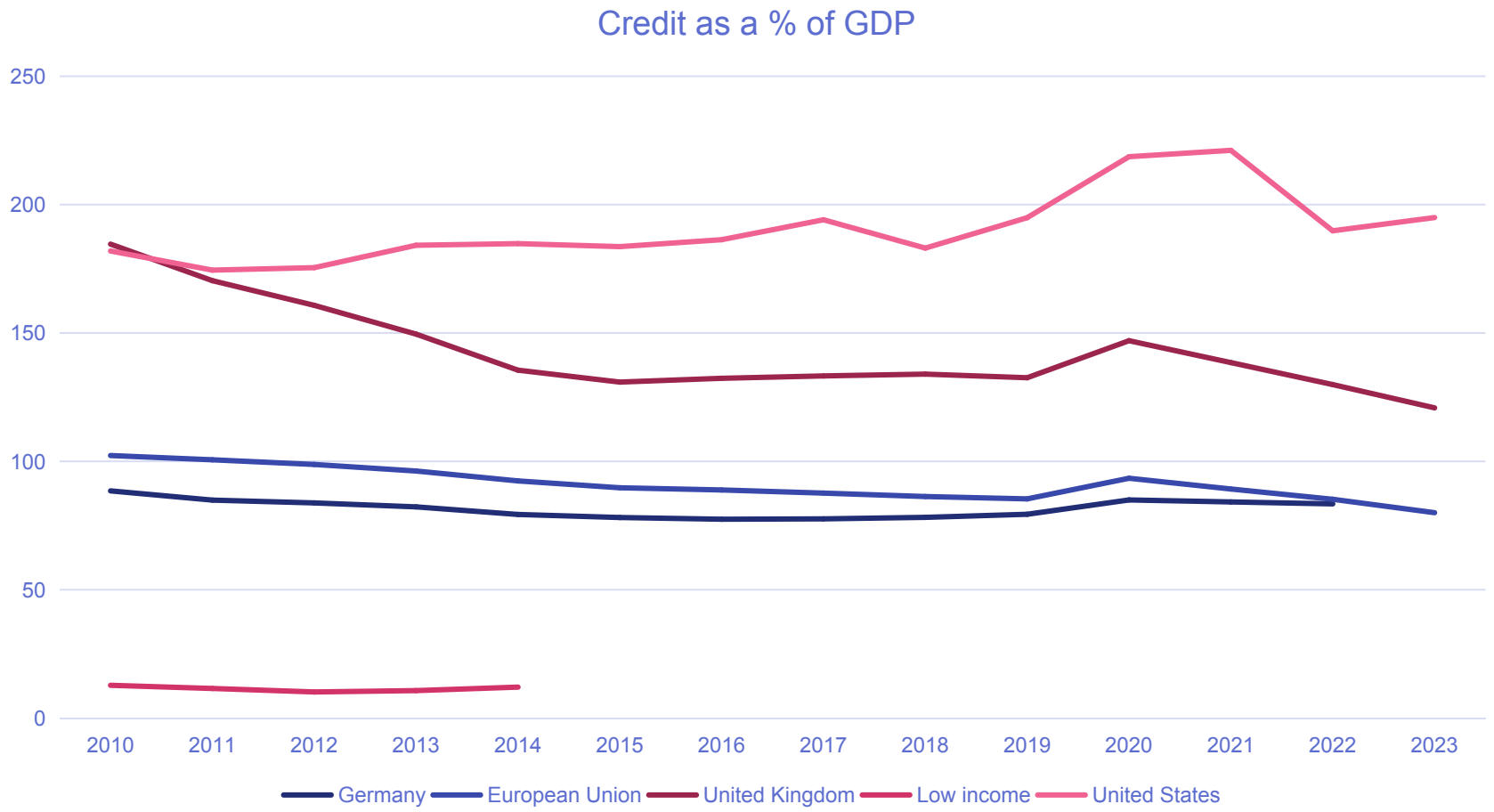
- Changes in interest rates don’t have an effect on aggregate supply.
- In short run dynamics, money is not neutral if it can disturb real decisions made by households and businesses.
- Central banks cannot generate long–term prosperity.

Keynes about liquidity trap

"There is the possibility ... that, after the rate of interest has fallen to a certain level, liquidity-preference may become virtually absolute in the sense that almost everyone prefers cash to holding a debt which yields so low a rate of interest. In this event the monetary authority would have lost effective control over the rate of interest. But whilst this limiting case might become practically important in future, I know of no example of it hitherto."



Credit is strongly correlated with income per capita



Source: World Bank (2023)