

# Macroeconomics

## Essential Organizational Aspects

- **The Final Mark =  $0.3 \times \text{InClass Test} + 0.3 \times \text{Activity in the Class} + 0.4 \times \text{Final Exam}$**
- 8 lectures & 8 classes in English + Informal Voluntary Zoom Consultations in Russian 😊
- InClass Test will be – perhaps – in Class #6 (2022-10-17 & 2022-10-19)

### 2 Special Classes:

- *Class #4 – reports/presentations about an application of the AD-AS model to the countries whose languages you learn*
- *Class #7 – reports/presentations about various economic problems of the countries whose languages you learn*
- Do not be afraid to ask questions! 😊

# Macroeconomics

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# Macroeconomics

## Themes of Lectures

- Capitalism, money, banking and monetary policy (*Lecture #1*)
- Determination of GDP under the fixed price level (by the Keynesian Cross model and by the IS-LM model) (*Lecture #2*)
- Determination of GDP under the flexible price level (by the AD-AS model) (*Lectures ##3-4*)
- Business Cycles (Financial Instability Hypothesis etc.) (*Lecture #5*)
- Unemployment (Shapiro – Stiglitz model) (*Lecture #6*)
- Growth (Solow model and Post-Solow models) (*Lectures ##7-8*)

# Macroeconomics

## Themes of Classes

- Calculation of GDP by 3 Methods (*Class #1*)
- Keynesian Cross model (*Class #2*)
- Deposit/Money Multiplier (*Class #3*)
- The IS-LM model (*Class #5*)
- Solow Model (*Class #8*)

# Macroeconomics

## Lecture 1.

Capitalism, money, banking and monetary policy

# What is Capitalism?

- This is the special economic system analyzed by Macroeconomics!
- Features of Capitalism include:
  - *Private property*
  - *Market exchange*
  - *Capitalist firm as the main productive unit*
  - *Competition*
  - *Fixed capital and advanced technologies*
  - *The special role of Money!*

# What is Money?

- Money is what money does!
- That is: any asset performing all functions of money is money
- Money has three functions in the economy:
  - Medium of exchange
  - Unit of account
  - Store of value

# In other words: Money is...

- **Money** is the set of assets in the economy that people regularly use to buy goods and services from other people.
- The market capitalist economy is monetary economy! Almost all transactions and almost all business are based on use of money!



# The brief history of money

- First, there was barter
- Then, there was commodity money
  - This money takes the form of a commodity with intrinsic value.
  - Examples: Gold, silver, cigarettes.
- Finally there was fiat money is used as money because of government decree.
  - It does not have intrinsic value, it has value because of decree.
  - Examples: Coins, paper money, check deposits.

# The types of contemporary money

- **Currency** is the paper bills and coins in the hands of the public.
- **Demand deposits** are balances in bank accounts that depositors can access on demand by writing a check.
- **Time deposits** are balances in bank accounts that depositors can access only after a certain period. In other words, a time deposit is an interest-bearing bank account that has a pre-set date of maturity

# The story about monetary aggregates

- **Monetary Aggregates** are broad categories that measure the money supply in an economy.
- M0: Currency.
- M1: All of M0, plus demand deposits.
- M2: All of M1, plus small time deposits.
- M3: All of M2, plus large time deposits.
- Statisticians usually take into account M2, economists in their macroeconomic models usually assume that money is M1.

# The simplest structure of contemporary money supply

- The **money** supply equals **currency** plus demand (checking account) deposits:

$$M = C + D$$

- Since the money supply includes deposits, the banking system plays an important role.

# Some basic concepts of Banking

- **Reserves ( $R$ )**: the portion of deposits that banks have not lent.
- To a bank, **liabilities** include deposits, **assets** include reserves and outstanding loans
- **100 percent reserve banking**: a system in which banks hold all deposits as reserves.
- **Fractional reserve banking**:  
a system in which banks hold a fraction of their deposits as reserves.
- The contemporary capitalist economy is based on fractional reserve banking!

# How the commercial banks can create money

Suppose that total deposits of “Firstbank” are \$1000, and this bank holds 20% of deposits in reserve, making loans with the rest.

It means that Firstbank can make \$800 in loans.

The money supply now equals \$1800: the depositor still has \$1000 in demand deposits, but now the borrower holds \$800 in currency.

Thus, in a fractional reserve banking system, banks create money via lending!

# The balance sheet of Firstbank

Assets	Liabilities
Reserves \$200 Loans \$800	Deposits \$1000

# The story continues...

- Suppose the borrower deposits the \$800 in Secondbank.
- But then Secondbank will loan 80% of this deposit



# The balance sheet of Secondbank

Assets	Liabilities
Reserves \$160 Loans \$640	Deposits \$800

# The next stage of this story...

- If this \$640 is eventually deposited in Thirdbank
- then Thirdbank will keep 20% of it in reserve, and loan the rest out.

# The balance sheet of Thirdbank

Assets	Liabilities
Reserves \$128 Loans \$512	Deposits \$640

# Finding the total money supply

Original deposit = \$1000

+ Firstbank lending = \$ 800

+ Secondbank lending = \$ 640

+ Thirdbank lending = \$ 512

+ other lending

Total money supply =  $(1/rr) \times \$1000$  where ***rr*** = ratio of reserves to deposits

In our example, ***rr*** = 0.2, so ***M*** = \$5000 ; **Deposit (or Money)**

**Multiplier** =  $1/rr$  ; it shows how total money supply will be changed if some deposits would be put in the banking system.

# Some important conclusions about the role of banks in the money-creating process

- A fractional reserve banking system allows to create money.
- Bank loans give borrowers some new money and an equal amount of new debt.
- When banks give loans they create money; when the loans are repaid, money is destroyed
- The central bank fixes ratio of reserves to deposits in order to affect the trade-off between profitability and solvency. It is the important part of monetary policy.

# What is monetary policy?

- **Monetary policy** is policy adopted by the monetary authority of a nation to control either the interest rate or the money supply in order to affect – via aggregate demand – the important macroeconomic variables like real GDP, inflation rate etc.
- Monetary policy should be distinguished from **fiscal policy** that tries to affect real GDP via taxation, government spending and government borrowing.

# Monetary policy can be expansionary or restrictive

- Monetary policy is expansionary if the central bank tries – via instruments of monetary policy – increase aggregate demand and real GDP.
- Monetary policy is restrictive if the central bank tries – via instruments of monetary policy – decrease aggregate demand and the price level/the inflation rate.

# The main instruments of monetary policy

- Reserve requirements.
- Discount rate/base rate
- Open market operations



# Reserve requirements

- The **reserve requirement** is regulation that sets the minimum amount of **reserves** that must be held by a commercial bank.
- The minimum reserve is generally determined by the central bank to be no less than a specified percentage of the amount of deposit liabilities the commercial bank owes to its customers.
- The commercial bank's reserves normally consist of cash owned by the bank and stored physically in the bank vault (vault cash), plus the amount of the commercial bank's balance in that bank's account with the central bank.

# The discount rate/base rate

- The discount rate/base rate is price of borrowing money from the central bank by commercial banks, usually on a short-term basis.
- Usually the discount rate sets the “floor” for market short-term interest rate set by the commercial banks for their borrowers.

# Open market operations

- Open market operations are an activity by a central bank to give (or take) liquidity in its currency to (or from) a bank or a group of banks.
- The central bank can either buy or sell government bonds in the open market (this is where the name was historically derived from) or, in what is now mostly the preferred solution, enter into secured lending transaction with a commercial bank.
- In other words, the central bank gives the money as a deposit for a defined period and synchronously takes an eligible asset as collateral.

# If the central bank wants to make expansionary policy that it will

- Soften reserve requirements.
- Reduce the discount rate/base rate
- Buy government bonds by giving money to the commercial banks.

# If the central bank wants to make restrictive policy that it will

- Tighten reserve requirements.
- Increase the discount rate/base rate
- Sell government bonds by taking money from the commercial banks.

# Something about the demand for money

- The effectiveness of monetary policy depends on – other things being equal – changes in demand for money.
- The demand for money is not quantity of money that is necessary for providing absolute happiness...
- The demand for money is the quantity of money that people plan to hold. This quantity depends mainly on:
  - The price level
  - The interest rate
  - Real GDP
  - Financial innovations

# The price level as a factor of the demand for money

- A rise in the price level increases the **nominal** quantity of money demanded but doesn't change the **real** quantity of money that people plan to hold.
- **Nominal money** is the amount of money measured in rubles/dollars/euros.
- The quantity of nominal money demanded is proportional to the price level — a 10 percent rise in the price level increases the quantity of nominal money demanded by 10 percent.

# The interest rate as a factor of the demand for money

The interest rate is the opportunity cost of holding wealth in the form of money rather than an interest-bearing asset.

In other words, when people hold money, they lose interest income.

A rise in the interest rate decreases the quantity of money that people plan to hold.



# The real GDP as a factor of the demand for money

- The idea is that people receive wages and salaries 1-2 times per month, but make expenditure almost every day.
- Money holding allows to fill the “gap” in time between incomes and expenditures.
- An increase in real GDP increases the volume of expenditure, which increases the quantity of real money that people plan to hold.

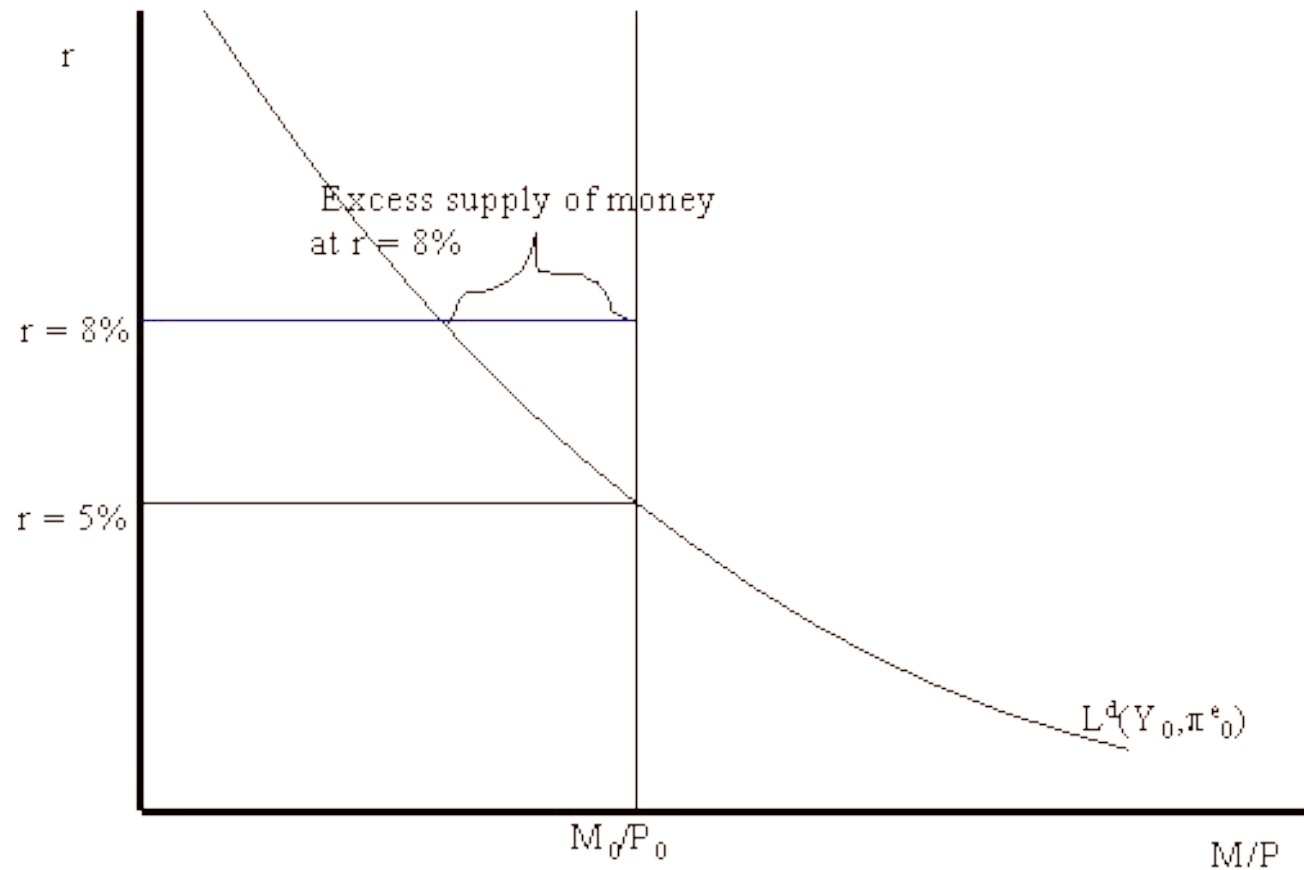
# Financial innovations as a factor of the demand for money

- Financial innovation that lowers the cost of switching between money and interest-bearing assets decreases the quantity of money that people plan to hold.
- For example, an expansion of financial markets or an emergence of new types of debit/credit cards will decrease the demand for money.

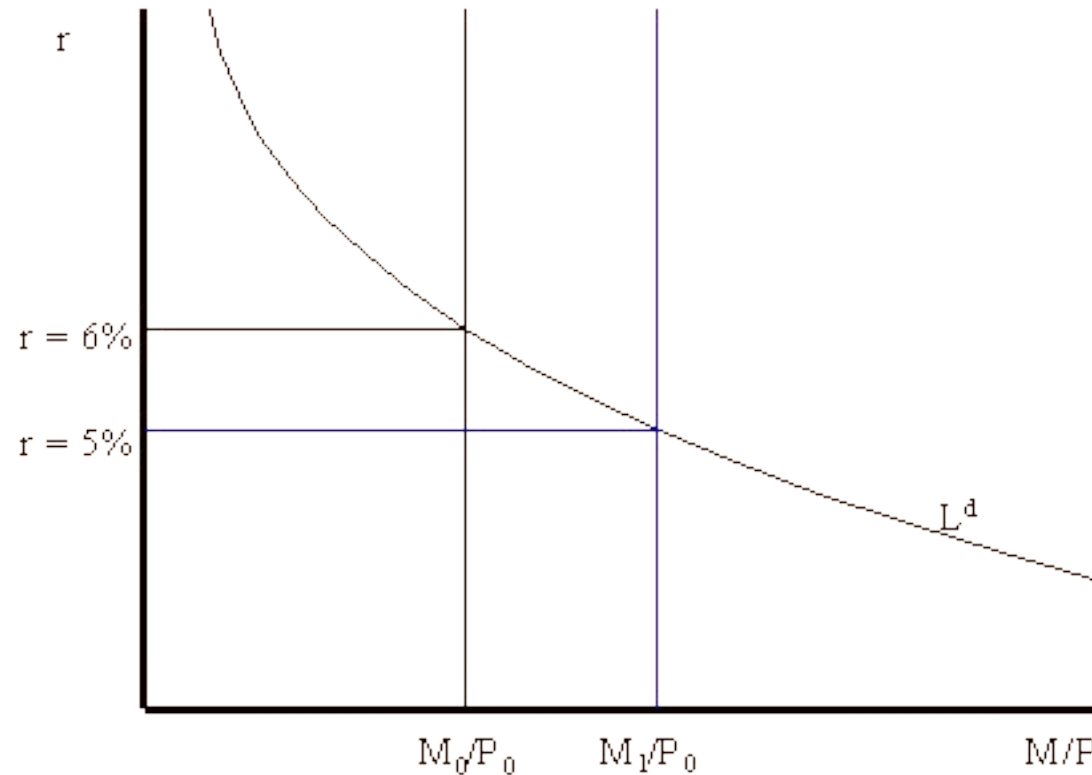
# The money supply and the demand for money together

- Economists usually prefer to construct macroeconomic models in which:
- The money supply does not depend on the interest rate – because the central bank is able to control the quantity of money in the economy – or the money supply positively depends on the interest rate because the commercial banks will increase loans (and create money) as the interest rates rises.
- The demand for money negatively depends on the interest rate – because the interest rate is the opportunity cost of money holding.

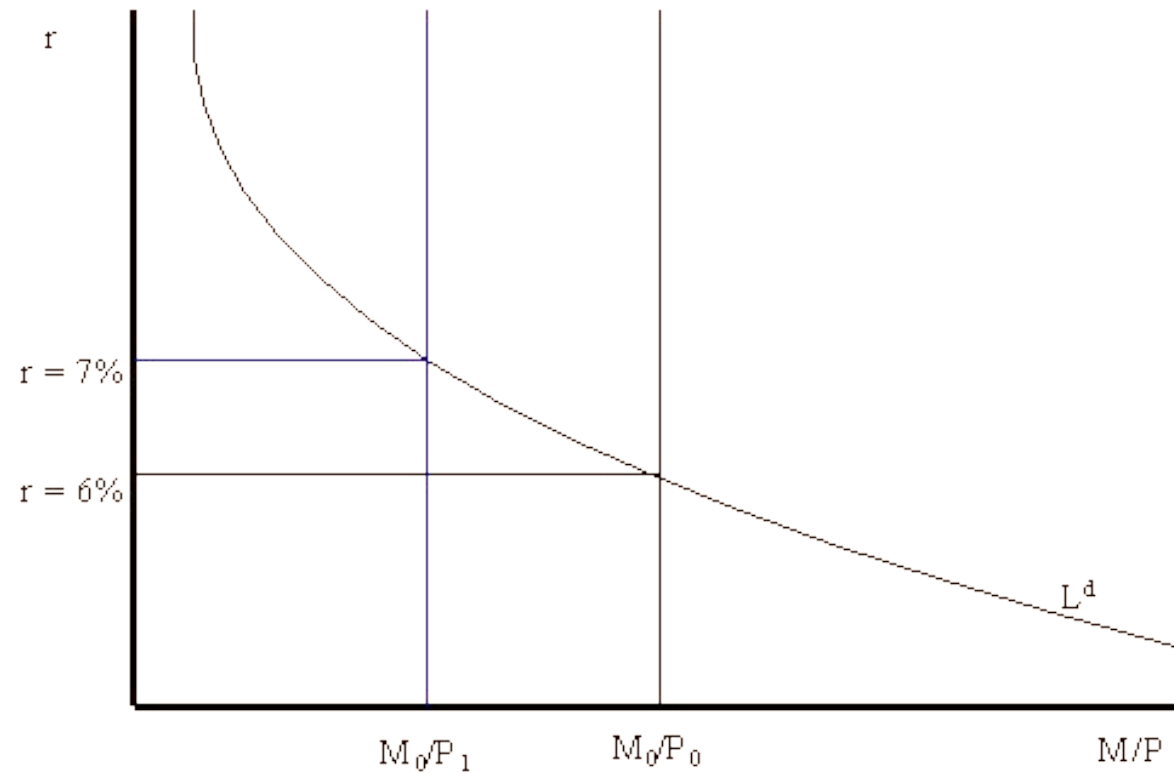
# The money market equilibrium



# The consequences of an increase in the nominal money supply



# The consequences of an increase in the price level



# The consequences of an increase in current national income

