Advanced Monetary Economics

Tutorial 1

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Questions of first lecture

1. What is money?

2. Why has money value?

3. What determines the value of money?

1 Is Bitcoin money?

- A definition of money: "Money is anything that is *generally* accepted in payments for goods or services or in the repayment of debts." (Mishkin, The economics of money, credit, and banking)

- Another definition of money: M1
  - currency (coins and paper money)
  - overnight and similar deposits

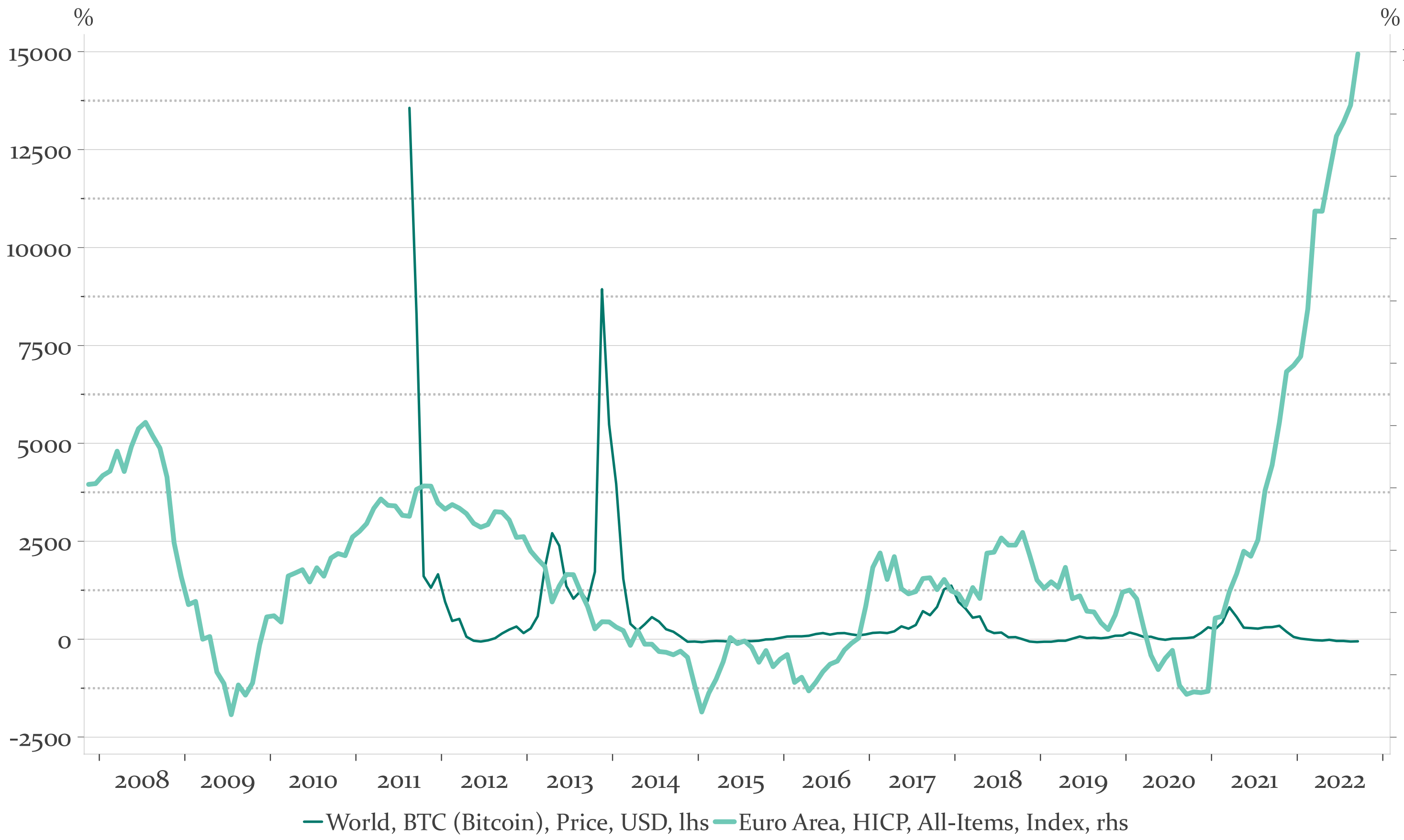
- One further monetary aggregate:

$$\begin{aligned} M2 &= M1 \\ &+ \text{ deposits (up to 2 year maturity)} \\ &+ \text{ deposits redeemable in 3 months} \end{aligned}$$

- Wealth includes houses, cars, stocks, bonds or land, among others $\longrightarrow$ also Bitcoin. But money is usually defined more narrowly than wealth.

- Do Bitcoin prices predict and affect the economy?

- Evolution of Bitcoin prices (thin line, left scale, annual % change) and consumer price index in the euro area (thick line, right scale, annual % change):



Is Bitcoin a medium of exchange?

- For some people yes. With Bitcoin, we are better off than in a barter economy because we do not need a double coincidence of wants.

- So Bitcoin promotes economic efficiency:
  - lowers transaction costs
  - allows specialization and division of labour

Is Bitcoin a unit of account?

- Bitcoin measures the value of some (usually very specific) goods and services, but certainly not all.

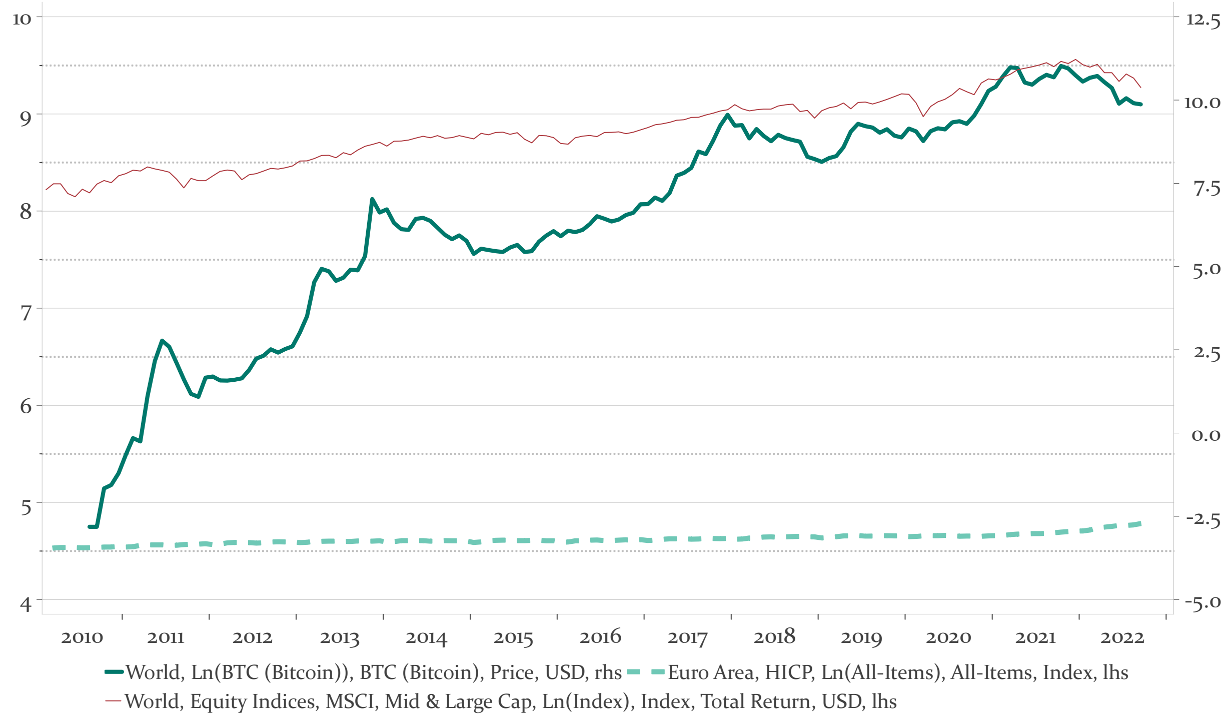
- It is less general than Euro, Pound, US-Dollar.

- But if everyone was to quote prices in Bitcoin, it would also promote efficiency.

Is Bitcoin a store of value?

- It allows you to transfer wealth to the next period. But this is extremely risky. In particular for longer horizons.

- Evolution of Bitcoin price, world stock prices and euro area consumer price level (base year 2015 = 100)



- **Summary:** Bitcoin is not *generally* accepted in payments for goods or services or in the repayment of debts. It is partially used as a medium of exchange and as a unit of account. It can also serve as a store of value, but a very risky one.

2 What can go wrong with assignats?

- The assignats in France after the revolution of 1789

Assignat from the 1792 issue: 400 livres

- Assignats are not valuable *per se*. They are just prices of paper. They are not commodity money such as gold or silver.

- An elementary question: how do you convince people to give up goods and services for something of no inherent value?

- One answer: promise that it can be exchanged for goods and services in the future.

- The value of money depends on how good the promise is.

- How to convince people that assignats can be exchanged for goods and services in the future?

- Assignats were backed by the name (and wealth) of the originator: the French government, which was the owner of the "central bank".

- Problem: they become worthless if the government declares bankruptcy.

- So the government needed bank equity. It lacked the capacity to found a bank as the Bank of England. So it confiscated ecclesiastical possessions.

- Problem: difficult to liquidize to repay creditors. But in principle the assignats were backed by the future income from selling the possessions

- Balance sheet of the "central bank"

Assets	***Liabilities***
Confiscated possessions	Bank equity Paper money -- Assignats

- What went wrong: The central bank printed a lot of paper money.

- When the money circulated in the economy, prices were rising rapidly.

- Once the holders became aware that prices were rising because everyone had a lot of assignats, they became sceptical about the value of the bank's equity, that is, the value of the confiscated possessions. This was very difficult to estimate because they were highly illiquid and only small markets for those existed.

- So the holders all ran to the central bank and asked to change the paper back for something valuable.

- The government faced two problems.

  1. It could not liquidize the possessions as quickly as needed.

  2. It had issued more assignats than the value of the possessions.

$\longrightarrow$ So the central bank had a liquidity and a solvency problem and declared bankruptcy.

3 Risks of unconventional monetary policy

- How to convince people that money can be exchanged for goods and services in the future?

  1. use something valuable, but this is potentially inconvenient to use.
  2. money is debt of the central bank. But this requires trust in the solvency of the issuer.

- Modern central bank balance sheet

Assets	***Liabilities***
Loans to Banks	Currency in circulation
Government securities	Reserves hold at the CB
Gold (only a little)	

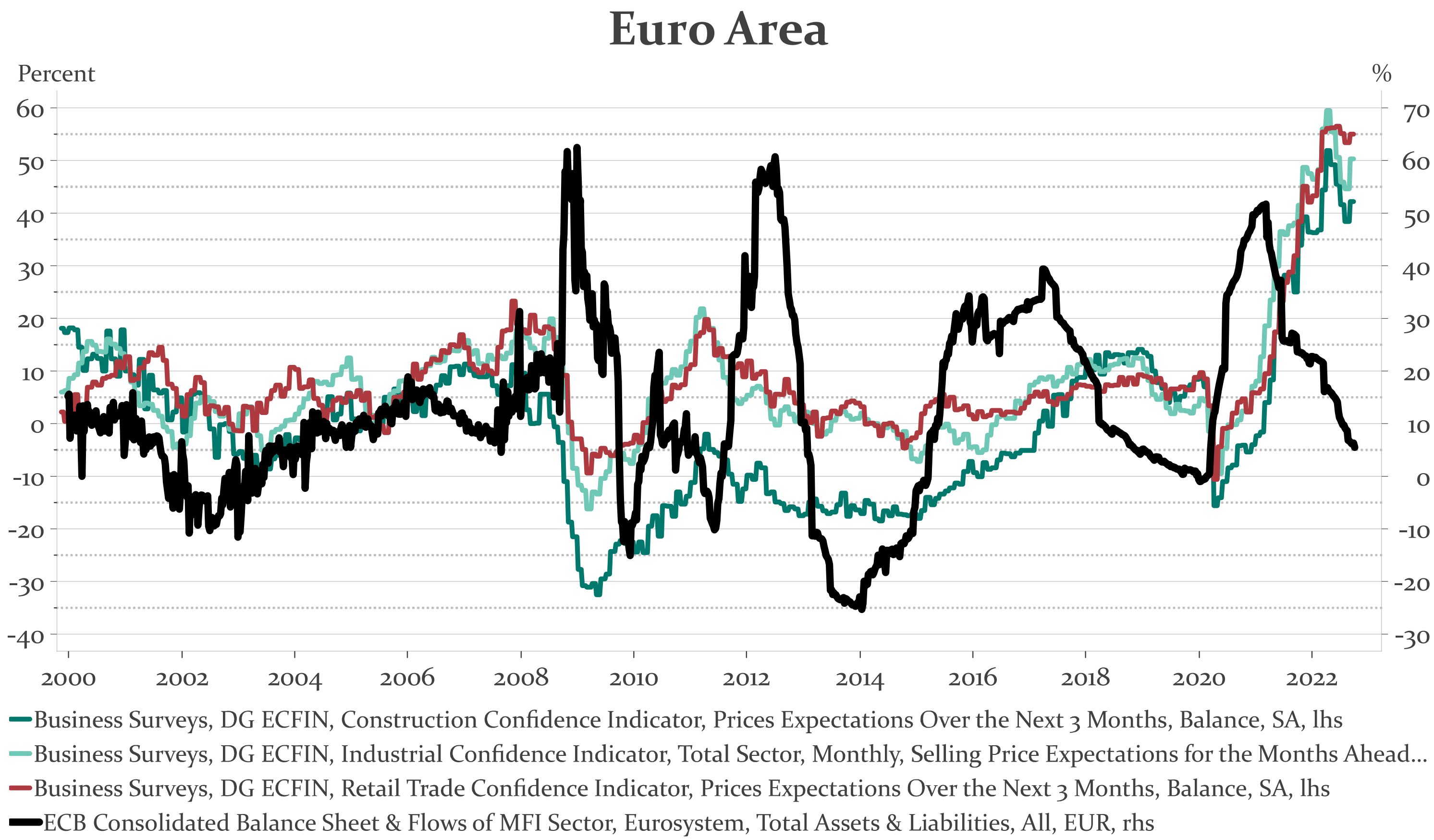
- The central bank has to safeguard the value of money.

- Money can be measured by a price index. If the price of the basket increases because the central bank issues too much money, the value of money decreases.

- Classic approach: money supply is set by the central bank. Money demand of agents depends on the planned transactions. If money supply increases because the central bank exchanges money for government debt securities, but money demand is not, prices in the economy could increase.

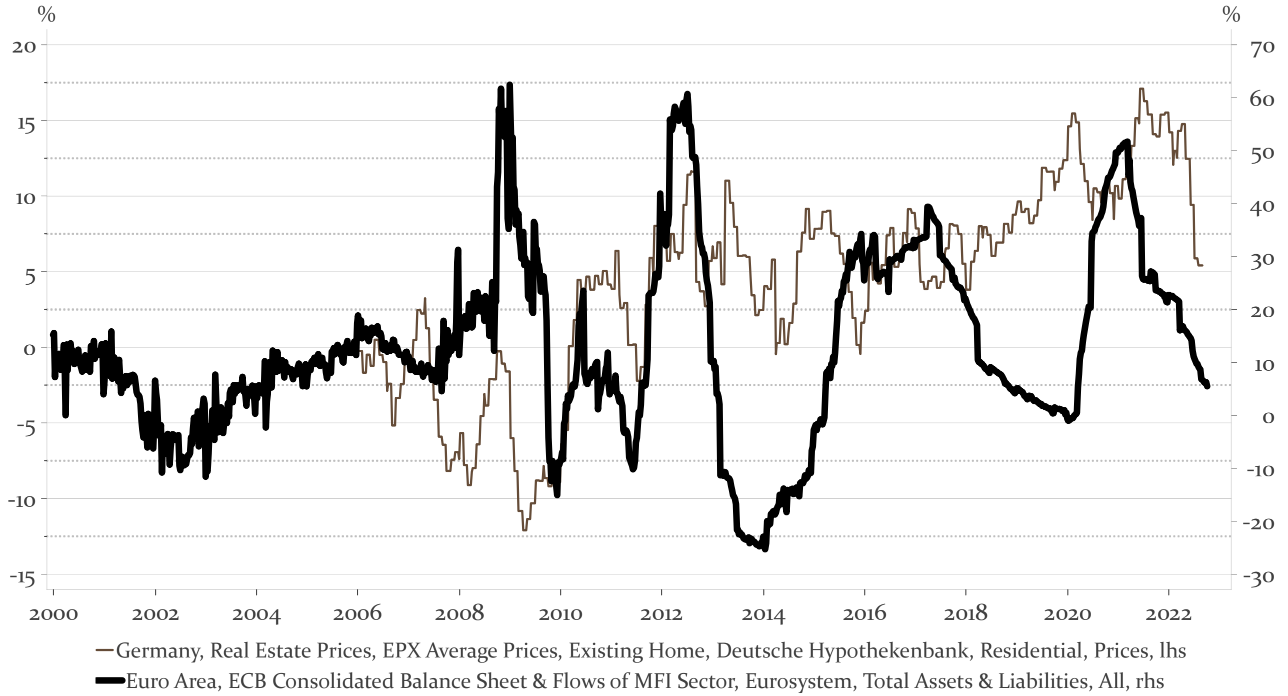
- We still know little about the price effects of expansionary unconventional monetary policy. One potential risk is that it fuels future inflation.

- This could be seen when looking at price expectations in the euro area, for example.



- There could also be asset price inflation. If yields on sovereign bonds are low, investors might search for other assets, such as real estate.

- Evolution of ECB balance sheet (total assets, annual % change, right scale) and house prices in Germany (annual % change, left scale)



- How good the promise of the central bank is also depends on the balance sheet of the central bank.

- On the asset side of central banks is not gold, but government bonds.

- Large amount of government debt might undermine the independence and credibility of the central bank.

  1. The ECB might not want to raise interest rates because then the value of its assets would lose value.

  2. Governments could go bankrupt.

- Opponents of quantitative easing (QE) fear that a central bank would reduce its independence and loses credibility. This would imply that the inflation target has been abandoned.

- Especially in Germany, there is widespread fear of inflation because of the hyperinflation in 1923. The Bundesbank regards measures such as QE as critical because the inflation rate should be controlled under all circumstances. The Bundesbank attaches particular importance to independence and credibility of the ECB.

- Evolution of sovereign credit risk in the euro area: