FMM Summer School 2022

Crypto assets and financial stability

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Motivation
Increased criticism of the traditional financial system

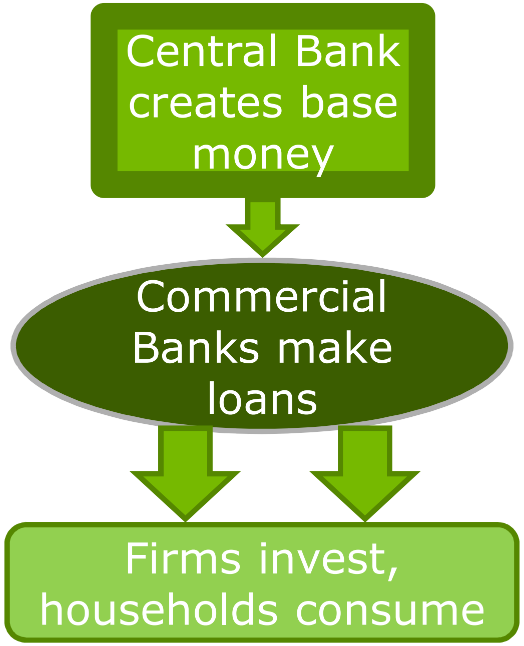
- Increased criticism against the traditional financial system since the financial crisis ("legitimacy crisis", Weber 2016)
- "**The root problem with conventional currency is all the trust that's required to make it work.** The central bank must be trusted not to debase the currency, but the history of fiat currencies is full of breaches of that trust. **Banks must be trusted** to hold our money and transfer it electronically, **but they lend it out in waves of credit bubbles with barely a fraction in reserve.** We have to trust them with our privacy, trust them not to let identity thieves drain our accounts." (Nakamoto 2009, Bitcoin-creator)

Motivation
Incorrect assumptions for crypto assets as a solution

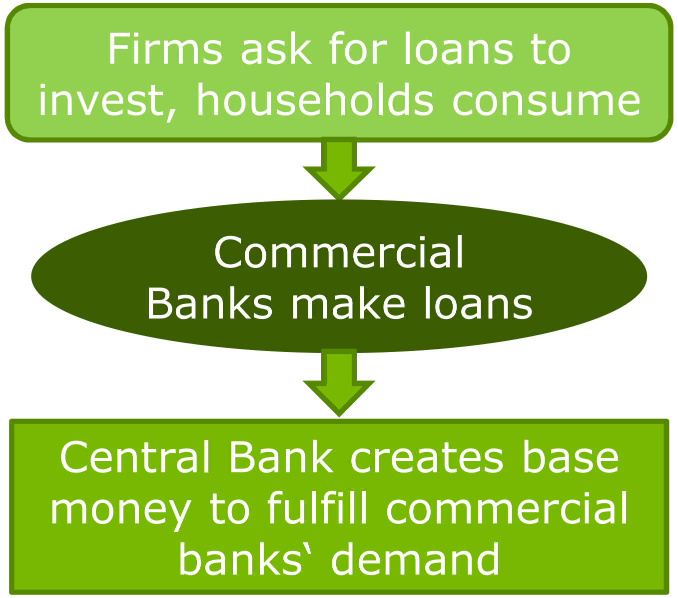
- (Neo-) classical dichotomy and money neutrality
- Stable underlying fundamentals/stable real growth
- Rational agents
- Exogenous money creation
- Financially induced instability (be it by imperfect information of financial authorities, suboptimal political incentives, …)

Motivation: Neoclassical vs. PK money creation

The old neoclassical view:
exogenous money supply



The modern PK view:
endogenous money supply



Motivation
Not money, the economy is instable (Keynesian View)

- Monetary Production Economy implies that money and finance are intrinsically linked with real economy
- Expectations in financial markets influence on investment and the real economy
- Reasonable rational (financial) investors have to deal with fundamental uncertainty, incomplete information, imperfect markets
- Inherent and endogenous instability of modern capitalism
- Monetary (and fiscal) policy are important tools for economic stabilization

Aim of the presentation
Crypto assets are not “better money“

Starting point: At the root of the problem is not money creation by commercial banks, but the inherent instability of the economy

- **Crypto assets are no substitute for money**, as they do not fulfill money functions – neither Bitcoins nor Stablecoins nor other cryptos
- **Increasing usage of crypto assets will probably increase financial and macroeconomic instability**
- **This holds even more for ideas of decentralized finance**, as DeFi lacks stabilizing institutions & does not guarantee elastic money supply

Not discussed here, but relevant other problems of crypto assets

- Trust issues (e.g. Nica et al. 2021)
  - Digital identity thefts, Hacks, Outright fraud, Illegal activities
  - Consequence: Legitimacy crisis cannot be solved by crypto assets (Weber 2016)
- Energy usage, especially for assets relying on proof of work
- Circumvention of regulation, capital controls, tax evasion

Outline

- Motivation
- **Money and money stabilizing institutions**
- Bitcoin and other crypto assets - overview
- Bitcoins are not money
- Stablecoins are neither money
- Crypto assets potentially increase financial instability
- Decentralized finance poses systemic risks
- Conclusions

Excursion:
What is money?

"Everyone can create money; the problem is to get it accepted"

Hyman P. Minsky (1986: 255)

"…money … is anything that is generally accepted as payment for goods or services or in the repayment of debt."

Frederic S. Mishkin (2016: 95)

Money
= Cash +
deposits
(=Fiat money +
credit money)

Excursion:
Functions of money (e.g. Mishkin 2016: 96ff)

1. **Means of Payment**—promotes economic efficiency by minimizing the time spent in exchanging goods and services
   i. Must be easily standardized
   ii. Must be widely accepted
   iii. Must be divisible
   iv. Must be easy to carry
   v. Must not deteriorate quickly
2. **Store of Value**—used to save purchasing power; most liquid of all assets but loses value during inflation
3. **Unit of Account**—used to measure value in the economy

Excursion:
Fiat & credit money need stabilizing institutions

Institutions for securing its value and thereby acceptance

- Central bank as lender-of-last-resort

  (Bagehot 1873, Goodhart 1987, Freixas et al. 2000)
- Banking regulation & supervision for shielding the banking system from misbehavior of single banks

  (Miskin 2016: 266-274)
- Deposit insurance against bank runs

  (MacDonald 1996, Cull et al. 2005)

➢ **Central bank & state try to stabilize & guaranty value of money**

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Bitcoin and other crypto assets: overview I

- **Payment Token**
  - Crypto currencies (Bitcoin, Ethereum, …)
  - Stablecoins (Tether, USD Coin, DAI, …)
  - Central bank digital currencies (CBDCs)
- **Security Token** (Bonds, Real Estate, Gold, Art, Wine, Cars,…)
- **Utility Token** (access authorization, patents, licenses, voting rights…)

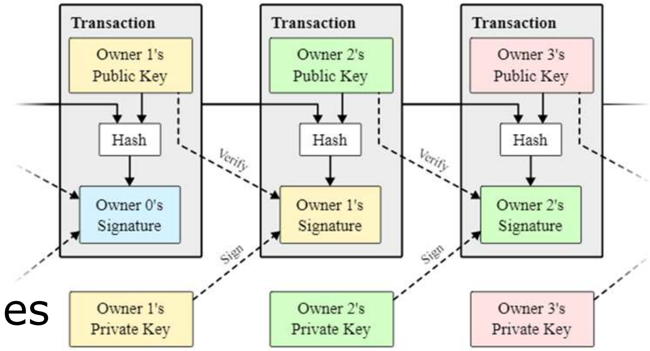
Token:
information of the asset is saved on a blockchain

Bitcoin and other crypto assets: overview II (Financial Stability Board*)

1. **Unbacked crypto assets**
   - Bitcoin, Ethereum, …
2. **Backed crypto assets**
   - Stablecoins like Tether, USD Coin, DAI…
3. **Decentralized Finance (DeFI)**
   - Financial services, other assets & liabilities, swaps, options, futures, with increasing complexity

*https://www.fsb.org/work-of-the-fsb/financial-innovation-and-structural-change/crypto-assets-and-global-stablecoins/

Bitcoin



- System of electronic transactions
- … running without intermediaries or third parties
- … based on digital identities
- Necessary: Digital „Wallet" and „Key"
- Individual digital „fingerprint" of each transaction („Hash function")
- … that is saved in a decentral way via *distributed ledger technology** on all computers
- … visible for all interested, cannot be manipulated

**decentralized organisation of entitlement to writing and reading*

Decentralized Finance (DeFi)

Pros:

- Transaction cannot be manipulated
- Open to everyone, no censorship
- No intermediaries, no 3rd party
- ➢ low transaction costs
- ➢ attractive for international transactions!
- High incentive for financial innovations

Cons:

- No security from hacking, fraud, loosing the key = loosing the wallet
- High financial education needed!
- Eases illegal actitivies, tax evasion, capital flight
- Challenge for traditional banking
- Challenge for financial stability
- „Financial Anarchy"? (Noah Smith 2021)

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Bitcoin is not money (Trotta Vianna 2020)
but rather a risky financial asset (Baur and Dimpfl 2021)

- **Means of payment** – not widely accepted, (not easily divisible)
- **Store of value** – purchasing power very volatile, not due to inflation, but due to high volatility against traditional fiat & credit money
- **Unit of account** - too volatile (Fig. next slide)

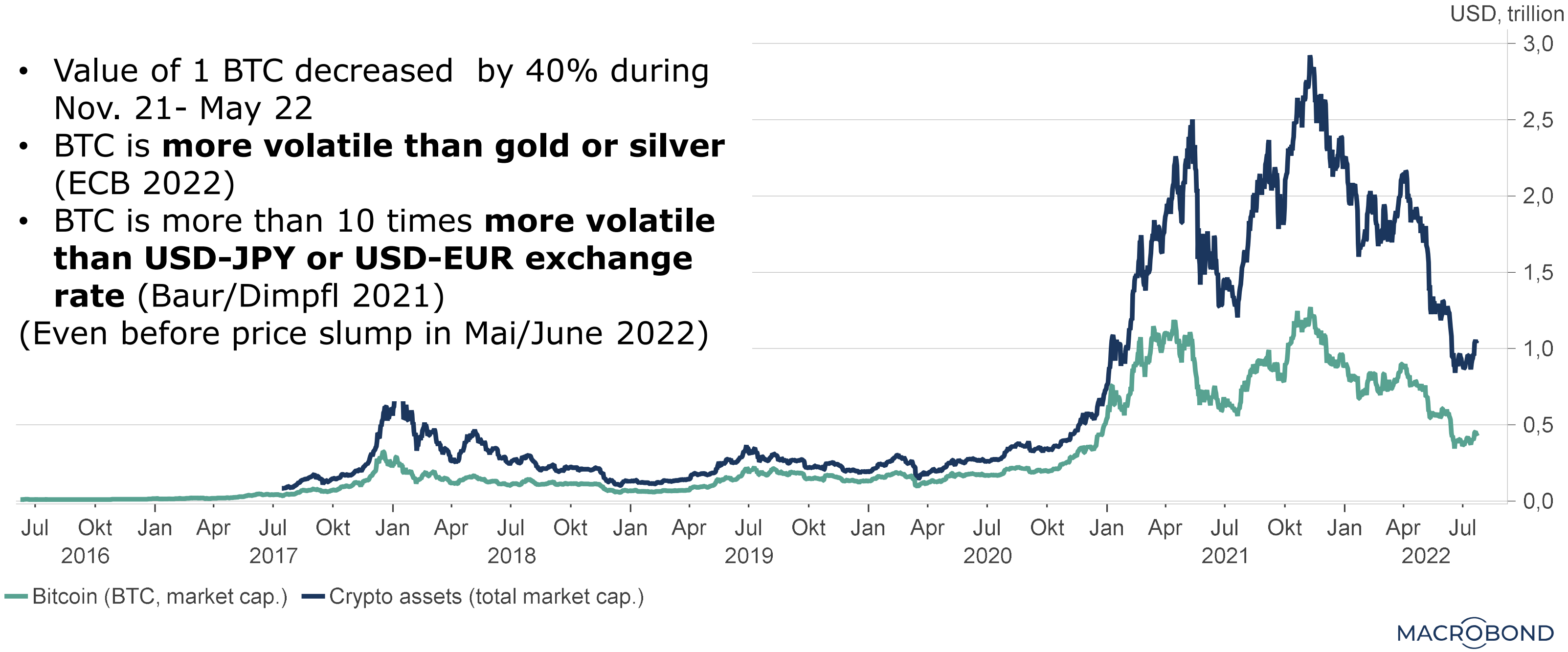
- Similar issue as with fiat money:
  - No intrinsic value, trust in value needed
  - But lacking stabilizing institutions

Volatility of Crypto assets

Total Market Capitalization & Bitcoin

- Value of 1 BTC decreased by 40% during Nov. 21- May 22
- BTC is **more volatile than gold or silver** (ECB 2022)
- BTC is more than 10 times **more volatile than USD-JPY or USD-EUR exchange rate** (Baur/Dimpfl 2021)

(Even before price slump in Mai/June 2022)



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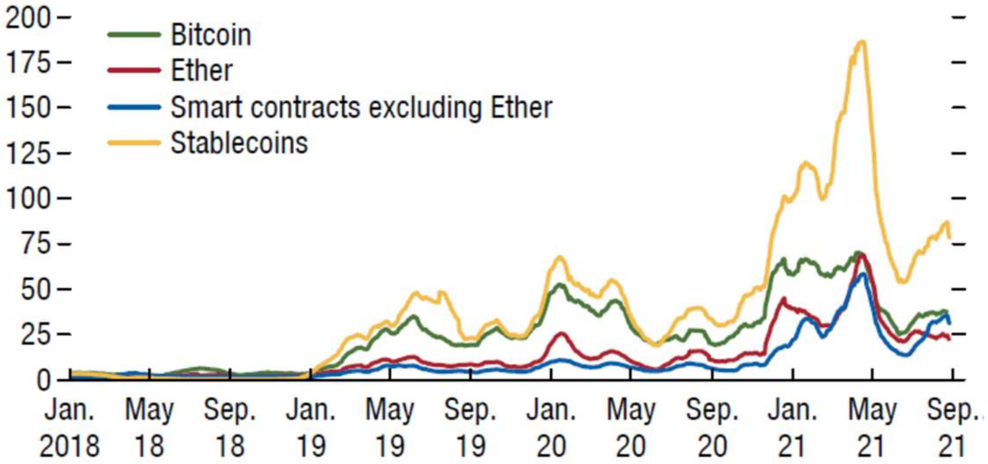
Stablecoins: closer to money and growing

Daily trading volumes on exchanges
billion USD, roling 30-day averages

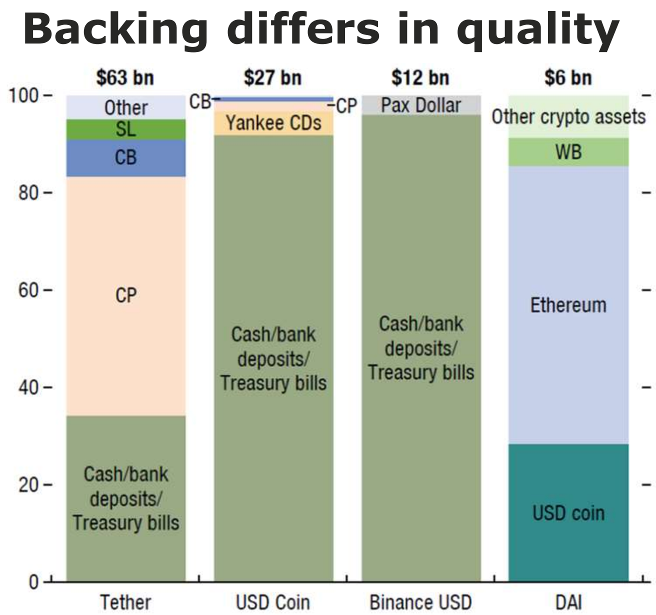


Stablecoins:

- Value often stabilized against Fiat-currencies (officially, mostly USD)
- Value often backed by other crypto assets, but also by fiat money assets

 Picture source: IMF (2021: 48).

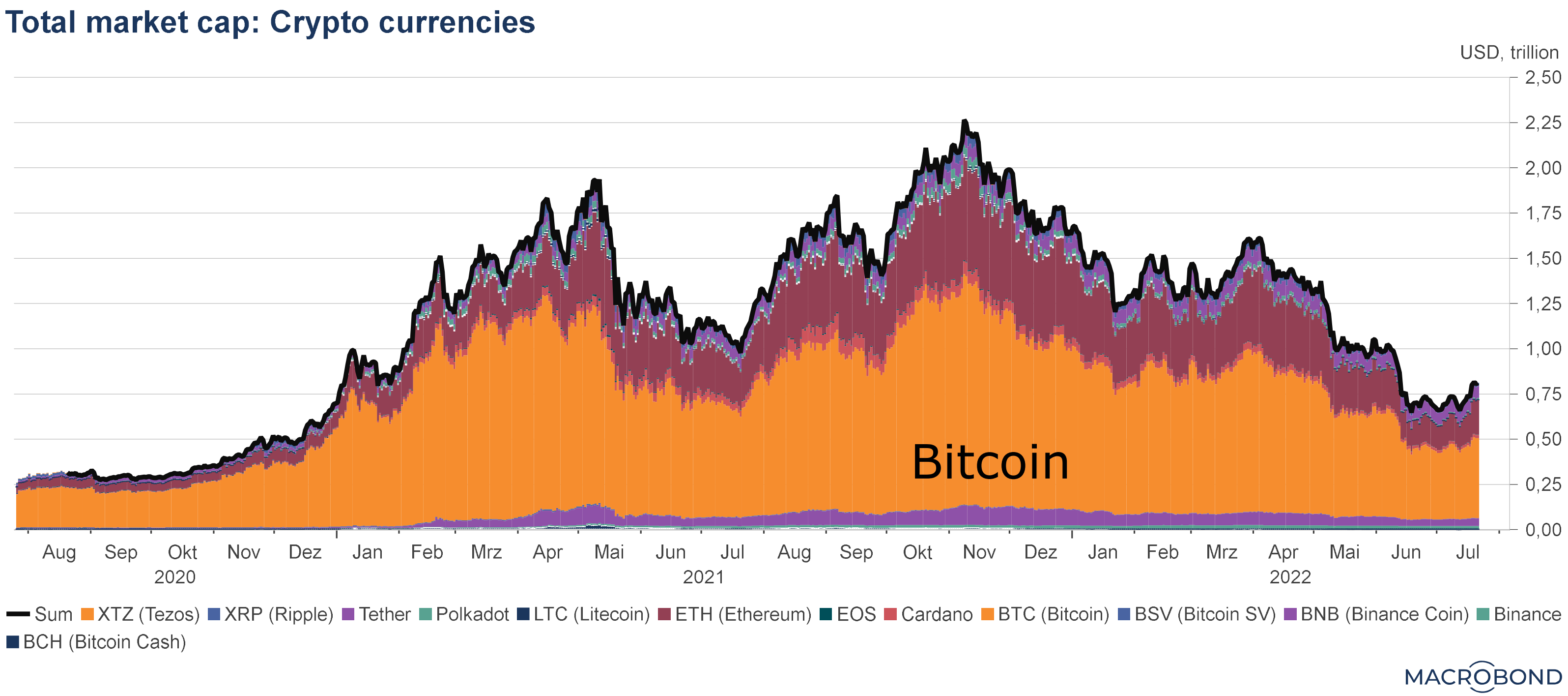
Stablecoins: … not risk-free!



Quality of assets?

- No legal right to access assets
- Low transparency (apart from audit report for USD Coin backing)
- Asset quality differs
- Tether: fined by CFTC for lying about currency backing in 2021; temporarily lost peg to USD in May 2022
- Terra fell to 1/10 in May 2022; Luna, its backing, disappeared
- CFTC = US Commodities Futures Trading Commission

Stablecoins: backed by correlated crypto assets?



Stablecoins are not money

"They [stablecoins] present the same kind of risks that we have known for centuries in connection with bank runs"

Janet Yellen in a House Financial Services Committee (e.g. Browne 2022)

- Backing needs to be 100% in highly liquid assets of the currency the crypto asset is pegged to
- Otherwise, stable coins invite self-fulfilling speculation in times of decreasing trust

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Crypto assets potentially increase financial instability

High price volatility poses threat to financial institutions

- Direct: assets or liabilities in crypto assets
- Indirect: households' or companies' repayment abilities depend on crypto assets value
- Plus: high interlinkages with other financial institutions

Commercial bank

Assets	Liabilities
Reserves at the central bank	Loans from central bank
Government Bonds	Deposits
Loans to firms and households	
Other assets e.g. crypto assets	other liabilities in crypto assets

Crypto assets potentially increase financial instability

- More and more financial services in crypto assets offered by traditional financial institutions as well as by decentral DeFI institutions
- Increasing correlation of crypto assets with traditional risky financial assets
- Increasing leverage (ECB 2022)
- Yet, hardly any regulation nor any stabilizing institutions
- New financial assets increase the risk of systemic failures, as risks may not be correctly assessed

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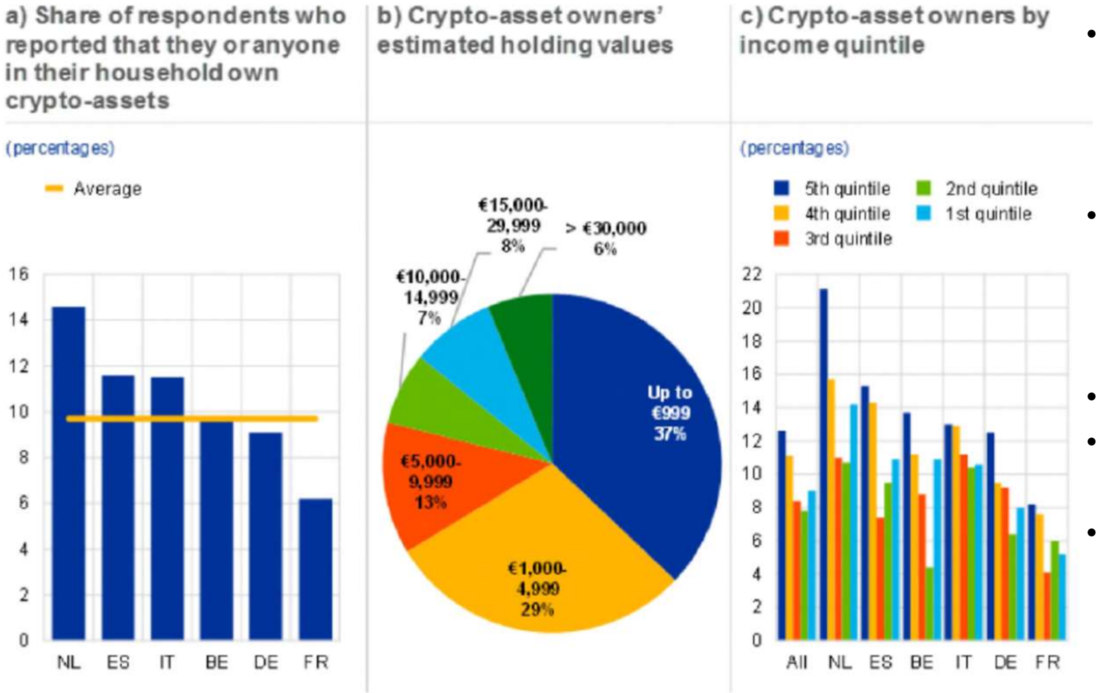
DeFi poses macroeconomic risks: liquidity provision & deflation

- Deflationary effect of Bitcoin:
  - limitation of Bitcoins to a maximum => increasing value of Bitcoins would decrease the price level of goods and services
- No elastic money supply:
  - individual emitting institutions of crypto assets follow individual profit maximizing; instead of an elastic macroeconomic liquidity supply
  - no lender-of-last resort function

DeFi poses macroeconomic risk:

- **Banks’ balance sheets**:
  - Lower asset values and/or lower equity = lower credit supply, higher risk awareness
- **Companies’ balance sheets:**
  - lower value of the companies’ shares = (lower Tobin’s Q) = lower/more costly access to credits = less investment
  - If profits depend on crypto assets’ values: lower profits/losses => less activity
- **Household wealth:** lower wealth = lower consumption

DeFi risks to macroeconomy: consumption



Source: ECB Consumer Expectation Survey (CES).

- Germany: Users are „young, male, well-educated and well-off" (Steinmetz et al. 2021)
- Yet, new surveys point to U-shaped curve regarding usage by income levels for Europe;
- Similar findings for US
- 70% of exchanges in Offshore centers
- Relevant share of users from Emerging Market Economies (IMF 2021: 50)

DeFi poses macroeconomic risk:

- Easier capital flight
- Easier tax evasion
- Decreasing the effectivity of monetary policy
- (Erosion of the banking sector)

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Conclusions

- The traditional financial system has its flaws: Regulation is mainly focusing on commercial banking system, less on other financial institutions, even though interlinkages are high.
- Yet, crypto assets are not a solution to avoid financial instability, and no substitute to traditional money.
- Increasing relevance of crypto assets without regulation of those assets will potentially increase financial instability.
- Decentralized finance creates new/additional systemic problems - by undermining the effect of monetary policy, the role of banks, ….

Conclusions

- Financial Stability less in danger as long as…
  - amount of users is limited, and types & complexity of products - but all this is increasing and will probably continue to increase
  - Wealth effects are restricted to few wealthy individuals (low effects on real economy and the financial system) – not the case according to surveys.
- The more price volatility affects financial institutions�' balance sheets, and the higher leveraged investment, the higher the risk of financial instability

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Study question

What are the pros and cons of El Salvador’s decision to accept Bitcoin as a legal tender?

Note: El Salvador is a fully dollarized economy. In order to make Bitcoin attractive to the population, everyone in the economy got access to a starting amount of Bitcoin, and Bitcoins generally have to be accepted as means of payment.

Thank you for your attention!

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