DeFi Stablecoins | **Stablecoins: Making Crypto Boring (On Purpose)** | **Standalone**

Pillar: Trade-offs | *Complete before class*

What You Should Already Know

DeFi – Financial services on public blockchains without traditional intermediaries | **Collateral** – An asset pledged as security for a loan | **Over-collateralization** – Depositing more value than you borrow as a safety buffer | **Health factor** – Ratio of collateral value to debt; below 1.0 triggers liquidation

Key Terms Preview **Peg** (The target price a stablecoin tries to maintain, usually $1.00) | **Fiat-backed** (Reserves held in bank accounts, e.g. USDT, USDC) | **Crypto-backed** (Excess crypto locked as collateral, e.g. DAI) | **Algorithmic** (Code manages supply to maintain peg, e.g. failed UST) | **Stablecoin trilemma** (Pick 2 of 3: decentralization, efficiency, stability) | **Collateral ratio** (How much backing per dollar of stablecoin) | **Delta-neutral** (Hedging strategy that cancels out price exposure)

The Problem

You want to hold crypto without the stomach-churning volatility. You want $1 to stay $1. Three inventors propose solutions: one keeps cash in a bank, one locks up extra crypto, and one writes an algorithm. Which approach is safest?
Can you create a digital dollar that is truly stable, truly decentralized, AND truly capital-efficient?
The stablecoin market is $311B (April 2026). Getting stability right is not academic – it is the foundation of all DeFi activity.

Warm-Up

Why does a Swiss franc stay roughly stable against the euro while Bitcoin can swing 10% in a day? What keeps fiat currencies stable?
Your answer: _____

Discovery Questions

Q1. Why would anyone want a "boring" crypto that does not go up? When is stability more valuable than growth?

Hint: Try paying rent with a token whose price changes 10% daily.

Your answer: _____

Q2. Three methods to keep a digital coin at $1.00: (a) keep $1 in a bank, (b) lock $1.50 of crypto, (c) use an algorithm. Rank them by safety.

Hint: What backs each? What happens if the backing fails?

Your answer: _____

Q3. USDC dropped to $0.87 when Silicon Valley Bank collapsed (Mar 2023). Why would a crypto coin be affected by a bank failure?

Hint: Where does USDC keep its reserves?

Your answer: _____

Q4. The stablecoin trilemma says you can only have 2 of 3: decentralization, capital efficiency, stability. For each stablecoin type, which 2 does it pick?

Hint: Draw a triangle and place each type.

Your answer: _____

Cryptoeconomics Challenge

The total stablecoin market is $311B. USDT ($184B) has never been fully audited. If 10% of USDT turned out to be unbacked, the $18.4B hole could trigger a run. Design a mechanism that would prevent this.

After-Class Reflection

After the lecture, place USDT, USDC, DAI, and USDe on the stablecoin trilemma triangle. Which trade-off would YOU accept for your own savings?

Solutions

Complete answers to all discovery questions.

Warm-Up Answer

Central banks actively manage fiat currency stability through monetary policy (interest rates, money supply), foreign exchange reserves, and market interventions. The Swiss National Bank, for example, can buy/sell foreign currency to influence the franc. Bitcoin has no central bank, no monetary policy, and no interventions – its price is purely market-driven.

Answers

Q1: Stability is essential for: (1) payments – merchants cannot accept a currency that changes 10% before they can convert it; (2) lending – interest rate calculations require a stable unit of account; (3) savings – you cannot plan for retirement with a token that might halve overnight; (4) DeFi protocols – liquidity pools and lending markets need a stable reference asset. Growth is exciting, but stability is functional.

Q2: Safest to riskiest: (a) fiat-backed is safest – real dollars in a regulated bank, redeemable 1:1 (risk: bank failure, as SVB showed). (b) Crypto-backed is next – over-collateralization provides a buffer, but crypto volatility can overwhelm it in extreme crashes. (c) Algorithmic is riskiest – no real backing, only code managing supply. UST's $45B collapse (May 2022) proved algorithms alone cannot guarantee stability under stress.

Q3: USDC keeps its reserves ($3.3B at the time) in traditional banks, including Silicon Valley Bank. When SVB collapsed on March 10, 2023, those reserves were temporarily inaccessible. Holders panicked: if Circle cannot access the backing, USDC might not be redeemable at $1. The price dropped to $0.87 until the US government guaranteed SVB deposits the following Monday. A "crypto" coin backed by bank deposits inherits banking risk.

Q4: USDT/USDC (fiat-backed): capital efficiency + stability, sacrifice decentralization (trust a company). DAI (crypto-backed): decentralization + stability, sacrifice capital efficiency (150% collateral ratio). UST (algorithmic, failed): attempted decentralization + capital efficiency, sacrificed stability (no real backing). USDe (delta-neutral): capital efficiency + stability, sacrifices decentralization (relies on centralized exchanges for futures).

Cryptoeconomics Answer

Possible mechanisms: (1) Real-time proof of reserves – on-chain attestation updated every block, not quarterly snapshots. (2) Mandatory insurance pool – a percentage of USDT transaction fees fund a reserve that covers shortfalls. (3) Circuit breakers – if redemptions exceed a threshold (e.g., 5% of supply per day), redemptions pause for 24 hours while reserves are verified. (4) Diversified custody – reserves split across multiple regulated banks to avoid single-point-of-failure (the SVB lesson). The challenge: each mechanism adds cost or centralization.