In-Class Activity: Trust Tax Walkthrough, SOLUTIONS

Digital Finance, BSc Course — Prof. Dr. Joerg Osterrieder

Day 5B companion (Why DeFi Needs Blockchain) | 20 min | Pairs

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Scenario. You own $800K of ETH. You need **$500K in cash within 4 hours** to close a business deal. You do not want to sell the ETH (tax consequences, conviction). Walk both options. The framework: every line is a **trust-tax** cost (verification or enforcement) that one architecture pays and the other does not.

Your task. Fill BOTH columns. Be specific about who verifies what at each step. Then answer the 3 reflection prompts below the table.

Field	Option A: TradFi (Bank Line of Credit)	Option B: DeFi (Aave on Ethereum)
Steps to open		
Time to first dollar		
Who verifies you		
Who verifies the collateral		
Setup fees + first-year cost		
Trust assumptions you must accept		
Failure mode if something breaks		

Reflection prompts (2 min each).

(R1) Which row contributes the largest single trust-tax line on the TradFi side, and what specifically is the bank charging for?

(R2) Aave can move $500K in roughly 13 minutes without your name, your tax ID, or a phone call. What blockchain-specific property makes that safe enough for the protocol to release funds?

(R3) Name one realistic event that breaks Option B but does NOT break Option A. (Hint: oracle, contract bug, gas spike, governance attack.)

Background hooks from the lecture: Airbnb monetises a 17% trust tax for short-term housing; flash loans on Aave settle in 13 seconds because atomic execution makes the loan safe; Lehman 2008 shows what counterparty opacity costs when nobody trusts anyone. All three are the same Coase (1937) problem.

Answer Key

Option A, TradFi bank line of credit. *Steps:* application form, KYC, financial statements, asset appraisal, credit committee, signed loan agreement, custody arrangement for collateral. *Time:* 2 to 6 weeks for a new relationship, optimistically 3 to 5 business days for an existing private-banking client. The 4-hour deadline is a no. *Verifies you:* relationship manager, compliance officer, credit underwriter. *Verifies collateral:* the bank does not custody ETH natively; either you sell first or the bank engages a regulated crypto custodian (Fidelity Digital Assets, Anchorage). Add a week. *Cost:* arrangement fee 0.5 to 1.5% on the line; SOFR + 250 to 400 bps spread; legal fees $10K to $50K. *Trust assumptions:* the bank stays solvent, your covenants do not trip on an unrelated market move, the custodian does not fail (Celsius, Genesis), the loan agreement is enforceable in your jurisdiction. *Failure mode:* bank calls the loan early on a covenant; you scramble for liquidity; cross-default cascades.

Option B, Aave on Ethereum. *Steps:* connect wallet, deposit ETH to Aave v3, set borrow to USDC, sign two transactions, off-ramp USDC to fiat via Circle or Coinbase if cash is required. *Time:* approximately 13 minutes wallet-connection to USDC-in-wallet; another 1 to 24 hours for the fiat off-ramp depending on rails. *Verifies you:* nobody. The protocol verifies the collateral, not you. *Verifies collateral:* the smart contract checks that $800K of ETH is locked at the live oracle price (Chainlink feed) and applies the 80% LTV cap. *Cost:*

gas (about $20 to $200 depending on network load); Aave borrow APY (about 5 to 9% on USDC in 2024); no arrangement fee, no legal. *Trust assumptions:* Aave contract not hacked, Chainlink oracle not manipulated, Ethereum L1 not halted, your wallet seed phrase not compromised, USDC peg holds while you off-ramp. *Failure mode:* ETH price drops below $625K ($500K / 80%) and liquidation bots sell your ETH automatically at a 5% bonus to themselves; or oracle spike triggers a phantom liquidation; or contract exploit drains the pool.

R1. The dominant TradFi trust-tax line is the *spread plus arrangement fee* (typically SOFR + 250 to 400 bps + a 0.5 to 1.5% upfront fee). The bank is charging for KYC overhead, credit-committee labour, covenant monitoring, legal enforceability, and reserve capital tied up against the loan. Roughly speaking, it is the bank's price of trusting YOU.

R2. Overcollateralisation + atomic on-chain settlement. Aave does not need to trust you because (i) the protocol holds 125% of the loan value as ETH collateral before the USDC is released, and (ii) liquidation bots can be triggered by anyone, atomically, the moment the position falls below the threshold. Identity is irrelevant because the collateral is the enforcement mechanism.

R3. Several valid answers. *(a) Chainlink oracle flash spike* reports a wrong ETH price for one block and liquidates a healthy position. *(b) Aave contract exploit* drains the lending pool (this happened to Compound and Euler historically). *(c) Gas-fee spike* during a market crash makes it impossible to top up collateral in time. *(d) Governance attack* on Aave votes through a malicious upgrade. None of these break the TradFi line. Conversely, the bank route has its own failure modes (cross-default, covenant calls) which Option B avoids, so neither architecture is risk-free, only different.