Why does a bank loan cost 6–8% interest and take two weeks to approve?

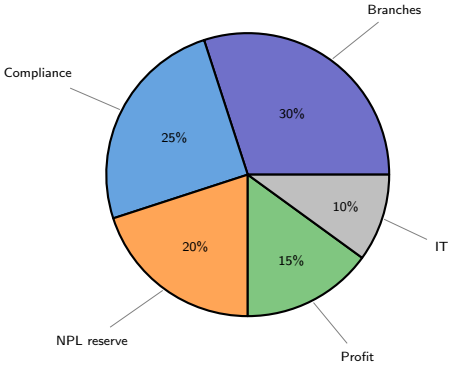
The traditional lending process:

- Application with income proof and credit history
- Credit scoring and manual underwriting (5–15 business days)
- Loan agreement, legal review, disbursement
- Ongoing monitoring and collection

Where your interest payment goes:

- **Branch network:** physical offices, staff, ATMs
- **Compliance:** KYC, AML checks, regulatory reporting
- **Non-performing loan (NPL) provisions:** reserves for defaults
- **Profit margin:** shareholder returns
- **Net interest margin:** difference between deposit and loan rates

Key insight: Most of the cost is operational overhead, not the actual risk of lending.



Typical bank cost breakdown (stylized teaching example). Over half the cost is operations, not credit risk.

Banks are expensive because they bundle lending with branch networks, compliance departments, and loss reserves — DeFi strips these away.

Imagine getting a $10,000 loan in 12 seconds — no paperwork, no credit check

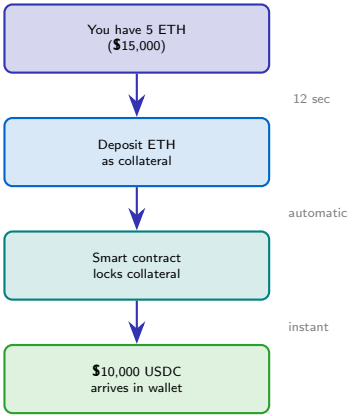
The scenario:
You own $15,000 in ETH (ETH is the native token of the Ethereum blockchain, used as collateral and to pay transaction fees). You need $10,000 cash for an emergency. You do not want to sell your ETH because you believe the price will rise.

At a bank:

- Apply for a secured loan against your crypto (few banks accept this)
- Wait 5–15 business days for approval
- Pay 6–8% annual interest plus origination fees

With DeFi lending:

- Connect your wallet to a lending protocol
- Deposit your ETH as collateral
- Borrow USDC instantly (USDC is a **stablecoin** — a cryptocurrency pegged to the US dollar, issued by Circle) — no identity check, no waiting
- Pay 2–4% annual interest (variable)
- Repay any time to unlock your ETH



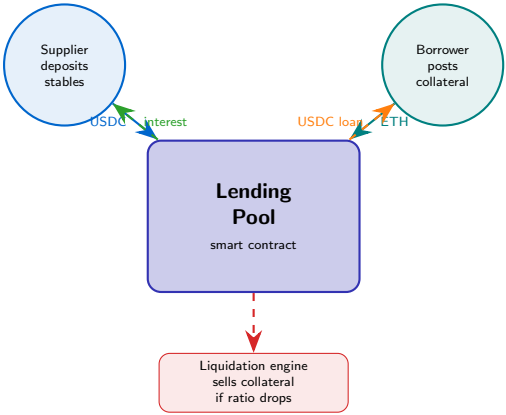
Speed: Transaction confirms in one block (~12 seconds on Ethereum).

DeFi replaces weeks of paperwork with a single blockchain transaction — but you need crypto collateral worth more than your loan.

How does DeFi lending work without credit officers, branches, or identity checks?

Definition: DeFi Lending

A system where smart contracts automatically match suppliers (depositors earning interest) with borrowers (who post crypto collateral), with interest rates set algorithmically based on pool utilisation.



Three core mechanisms:

1. **Overcollateralisation:** Borrow less than you deposit (typically 50–75% of collateral value)
2. **Algorithmic interest rates:** Rates rise as pool utilisation increases, attracting more deposits
3. **Automatic liquidation:** If collateral value drops below threshold, the protocol sells it to repay the loan

Why no credit check?
The collateral *is* the credit. If you default, the protocol keeps your collateral. No trust in the borrower is needed.

Key insight: DeFi replaces trust in people with trust in collateral and code.

Suppliers earn interest, borrowers get liquidity, and the smart contract enforces rules automatically — no bank needed.

How did Aave become a $10B+ lending protocol with 0.1% fees?

Aave at a glance (early 2026; Source: DeFi Llama):

- Founded 2017 by Stani Kulechov (Finland)
- Total Value Locked (TVL): $20B+ (defillama.com/protocol/aave)
- Deployed on Ethereum, Polygon, Arbitrum, Optimism, Avalanche
- Supports 100+ assets as collateral
- Governed by AAVE token holders

Fee comparison:

- **Traditional bank:** 2–5% origination fee + 6–8% APR
- **Aave:** 0.1% flash loan fee, or variable borrow APR (typically 2–5%)
- **Savings:** No origination fee, no branch overhead

Innovation — flash loans:
Borrow any amount, use it, and repay within a single transaction block. If repayment fails, the entire transaction reverts. Fee: 0.09%.

Key insight: Aave processes more lending volume per employee than any bank in history.

Feature	Bank	Aave
Approval time	5–15 days	12 seconds
Credit check	Required	None
Origination fee	2–5%	0–0.1%
Borrow APR	6–8%	2–5%
Collateral type	Property	Crypto
Deposit insurance	Yes	No
24/7 access	No	Yes
Min. loan size	$1,000+	$1
Employees	Thousands	<100

Flash loans — unique to DeFi — allow instant, uncollateralised borrowing for arbitrage and liquidation. No equivalent exists in traditional finance.

Aave demonstrates that smart contracts can replicate core bank lending functions at a fraction of the cost — but without deposit insurance.

Worked example: deposit ETH, borrow USDC, and track your liquidation price

Setup:

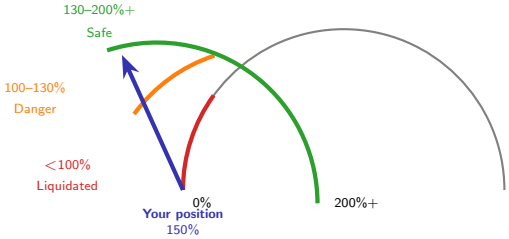
- You deposit **10 ETH** at \$3,000/ETH = **\$30,000 collateral**
- Protocol requires 150% collateralisation ratio
- Maximum borrow = \$30,000 / 1.5 = **\$20,000 USDC**

Your position:

- Collateral: \$30,000 (10 ETH)
- Debt: \$20,000 USDC
- Health factor: 30,000 / 20,000 = **1.50**
- Liquidation threshold: health factor < 1.0

Liquidation price calculation:

- Liquidation when: 10 ETH $\times$ price $\times$ 0.825 = \$20,000
- (0.825 = liquidation threshold for ETH on Aave)
- ETH price at liquidation = \$20,000 / (10 $\times$ 0.825) = **\$2,424**
- If ETH drops from \$3,000 to \$2,424 (a 19% drop), you get liquidated



ETH price	Health factor
\$3,000	1.50 (safe)
\$2,800	1.40
\$2,600	1.30 (caution)
\$2,424	1.00 (liquidation)

Warning: Borrowing the maximum is dangerous. A 20% price drop triggers liquidation plus a penalty (typically 5–10%).

Collateral ratio = collateral value / debt. Below 100% the protocol sells your collateral automatically — you lose your ETH plus a penalty.

What happens when DeFi lending goes wrong — and it has, spectacularly

March 2020 — Black Thursday:

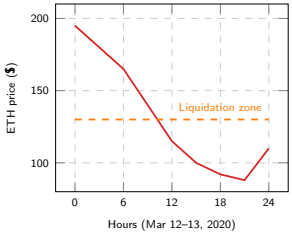
- ETH crashed 43% in 24 hours
- MakerDAO liquidation auctions failed due to network congestion
- Some vaults liquidated at $0 bids — borrowers lost everything
- $8.3 million in undercollateralised debt created

March 2023 — Euler Finance hack:

- $197 million stolen via flash loan exploit
- Attacker manipulated donation function in smart contract
- Funds later returned after on-chain negotiation

Systemic risks:

- **Oracle manipulation:** price feeds can be exploited
- **Smart contract bugs:** code is law, but code has bugs
- **Liquidation cascades:** mass selling drives prices lower
- **No deposit insurance:** if the protocol fails, you lose everything
- **Regulatory uncertainty:** no legal recourse in most jurisdictions



Failure	Root cause
Black Thursday	Network congestion broke auctions
Euler hack	Flash loan + code bug
Oracle attack	Manipulated price feed

DeFi removes human intermediaries but introduces smart contract risk, oracle risk, and liquidation cascades — failure modes that do not exist in traditional banking.

Where is DeFi lending today — $30B+ in deposits across multiple chains?

Market size (early 2026; Source: DeFi Llama):

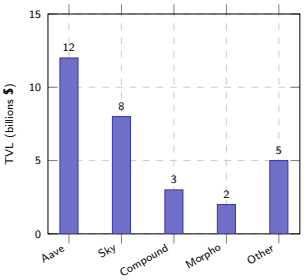
- Total DeFi lending TVL: $40B+ (defillama.com/lending)
- Aave: ∼$20B TVL, deployed on 7+ chains
- Compound: ∼$2–3B TVL, Ethereum-focused
- Sky (formerly MakerDAO): ∼$5–7B TVL, DAI stablecoin issuer
- Morpho, Spark, Venus: growing alternatives

Institutional DeFi:

- **Aave Arc:** permissioned pool with KYC for institutions
- **Compound Treasury:** fixed 4% yield for corporates
- **Centrifuge:** real-world asset lending on-chain

Multi-chain expansion:

- Layer 2 rollups (Arbitrum, Optimism) reduce gas costs 10–50x
- Cross-chain lending emerging but risky (bridge exploits)



Trend: Aave dominates, but new protocols compete on specialisation (fixed rates, real-world assets, undercollateralised lending).

TVL fluctuates with crypto prices; source: DeFi Llama (defillama.com/lending).

Key insight: DeFi lending is moving from crypto-native speculation toward real-world assets and institutional capital.

DeFi lending has grown from zero to $30B+ in five years — faster adoption than online banking, but still 0.02% of global bank lending.

Who wins and who loses when lending moves from banks to smart contracts?

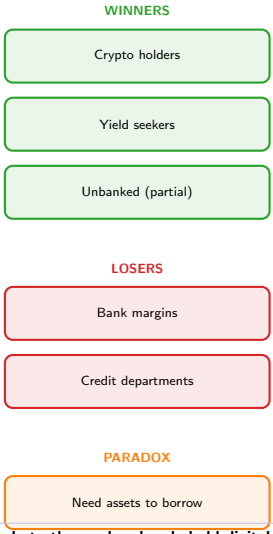
Winners:

- **Crypto holders:** borrow against assets without selling (tax event avoidance)
- **Yield seekers:** earn 2–8% on stablecoins vs 0–1% in bank savings
- **Unbanked populations:** access lending with no identity requirements
- **Developers:** build financial products without banking licences

Losers:

- **Bank lending margins:** DeFi compresses net interest margins
- **Credit departments:** overcollateralisation makes credit analysis irrelevant
- **Compliance industry:** permissionless protocols bypass KYC/AML

The nuance:
DeFi lending *only works for those who already have crypto assets.* You cannot get a DeFi mortgage to buy a house. Overcollateralisation means DeFi serves the already-wealthy, not the credit-constrained.



DeFi lending is cheaper and faster than banks — but it requires crypto collateral, making it accessible only to those who already hold digital assets.

So what? One sentence to remember about DeFi lending

DeFi lending replaces credit officers with collateral ratios — cheaper and faster, but only for those who already have crypto assets.

What it solves

Speed (seconds vs weeks)
Cost (0.1% vs 2–5%)
Access (24/7, global)
Transparency (on-chain)

What it does not solve

Credit for the asset-poor
Deposit insurance
Legal recourse
Regulatory clarity

What comes next

Undercollateralised DeFi
Real-world asset lending
Institutional adoption
Regulatory frameworks

DeFi lending is a genuine innovation in financial plumbing — but it complements rather than replaces traditional banking for most use cases.

Your turn: Is DeFi lending more or less inclusive than traditional banking?

Discussion Question

DeFi lending requires no credit check, no identity, no bank account. Anyone with a wallet and crypto collateral can borrow.

But: You need to already own crypto worth more than your loan.

Debate: *If DeFi does not require a credit check, is it more or less inclusive than traditional banking? Who benefits and who is excluded?*

Further Reading

- Aave Documentation: `docs.aave.com`
- Gudgeon et al. (2020), "DeFi Protocols for Loanable Funds"
- Schär (2021), "Decentralized Finance: On Blockchain- and Smart Contract-Based Financial Markets," *Federal Reserve Bank of St. Louis Review*

Reflection

DeFi lending eliminates gatekeepers but creates new barriers. True financial inclusion requires more than removing the credit check.

Consider: who actually uses DeFi lending today — the unbanked, or crypto-wealthy traders seeking leverage and tax efficiency?