The *[Potential]* Benefits & Risks of Decentralized Finance

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Dean's Speaker Series
UCF College of Business

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The Financial System

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But, **necessitates the presence of centralized entities** (banks, exchanges, etc.)

- Have the power to dictate terms and arbitrate disputes.
- Economies of scale and scope lead to concentration and oligopolies
- Allows centralized entities to extract rents (fees, spreads, etc.).

Decentralized Finance (DeFi)

A financial architecture that aims to **eliminate unnecessary centralization** with the help of permissionless/open blockchain-based (and other technology) solutions.

- *Competitive:* validators/miners must compete to settle transactions.
- *Contestable:* transaction data no longer held by intermediaries.
- *Composable:* complex services can be built from basic ones.
- *Non-custodial:* users have custody of assets.
- *Decentralized governance:* by developers, validators, token holders, and users.

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A natural progression of innovation led by technology in the finance industry!

Starting point:

- Nakamoto (2009) showed that value can be transmitted **without intermediaries and government-backed currency** on a Blockchain.
- Ethereum introduced programmability (smart contracts) on blockchain in 2014.

Decentralized Finance (DeFi)

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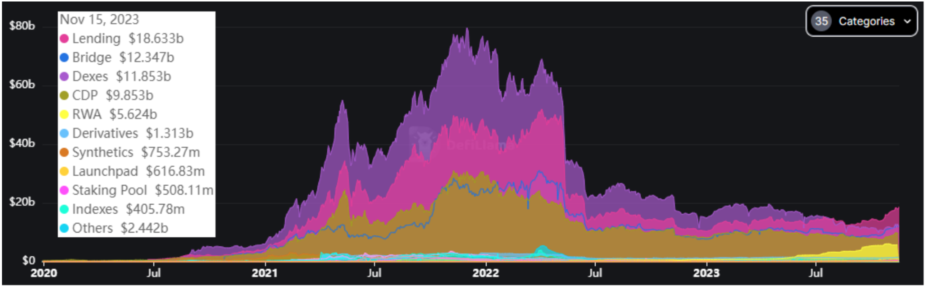
Home   savings_lock_contract.sol 1

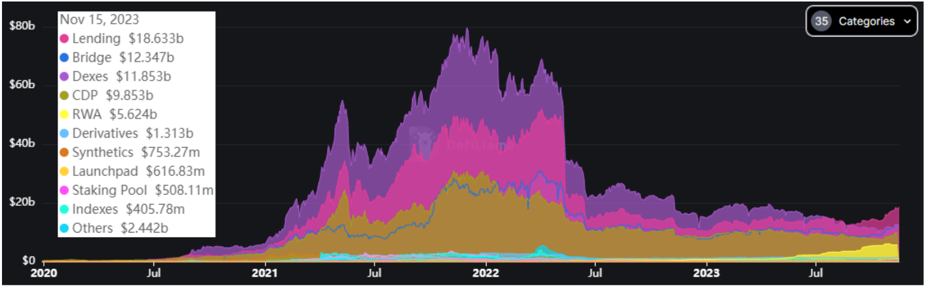
```solidity
//SPDX-License-Identifier: AFL-3.0 (Academic Free License v3.0) https://opensource.org/licenses/afl-3.0
//Code source: @YourCodingTeacher

//solidity version specifier
pragma solidity 0.8.1;

//This contract locks in Ether for 1 year to help the owner with a savings habit

contract etherLock {
    address payable owner;
    uint startTime;
    //Set the start time to when the contract is created and save the creator's address
    constructor() {
        owner = payable(msg.sender);
        startTime = block.timestamp;
    }
    //function to recieve ether
    receive() external payable {}

    function withdraw() public {
        //check if 1 year has passed (1 year has 31536000 seconds)
        require((block.timestamp - startTime) > 31536000, "1 year has not yet passed");
        //send ether
        owner.transfer(address(this).balance);
    }

    function getBalance() external view returns (uint){
        return address(this).balance;
    }
}
```

DeFi vs. Traditional Finance in Numbers



Source: DeFiLama, Nov 15, 2023

DeFi vs. Traditional Finance in Numbers



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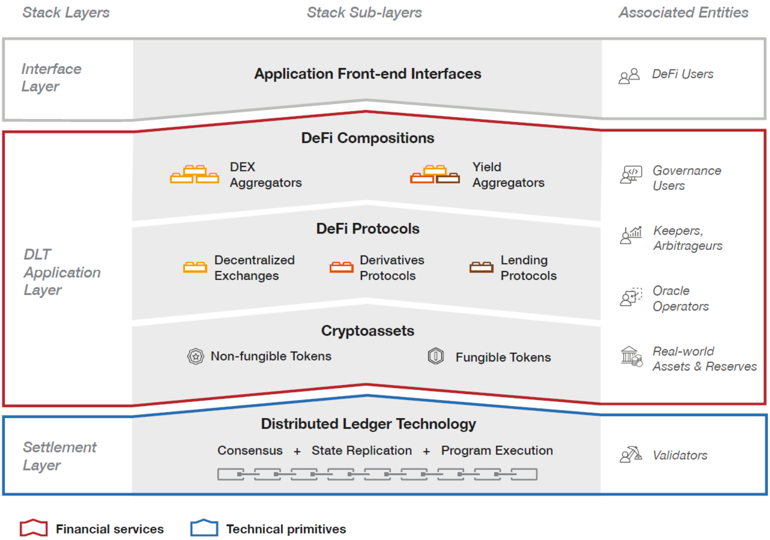
Compared to Traditional Finance:

- Total loans: $12,218.4 billion in November 2023 (St. Louis Fed)
- Total Equity: $ 42.4 trillion in October 2023

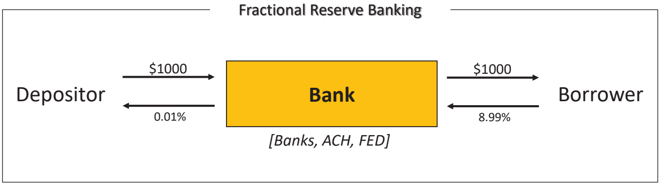
Decentralized Finance Architecture



Source: Bank of International Settlements, Auer et al. (2023)

Traditional Lending

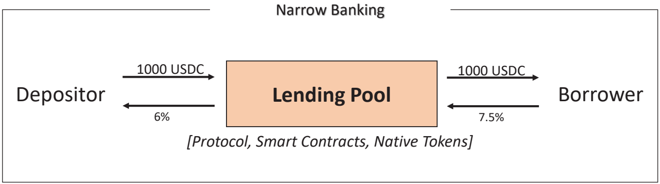
January 1st



Products: Secured & Unsecured loans
Regulators: FDIC, OCC, Fed, etc.
Regulations: KYC, AML, etc.
Service Providers: Credit Bureau, Appraisers, etc.
Rates: Macro factors, Fed rates, Supply & Demand
Note: Private information is collected

Decentralized Lending

January 1st



Products: Secured loans
Regulators: Self-governance via tokens.
Regulations:
Service Providers: Oracles
Rates: Supply & Demand in the pool
Note: No information is collected

Decentralized Lending: Process

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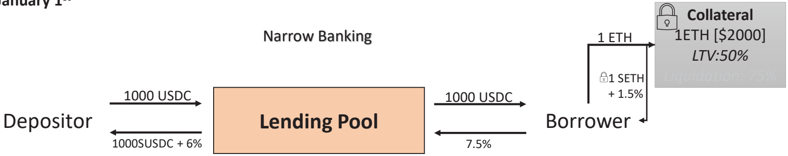

[Protocol, Smart Contracts, Native Tokens]

Secured and overcollateralized loans only
No set loan maturity period
Just need to ensure you don't hit liquidation threshold (or health factor)

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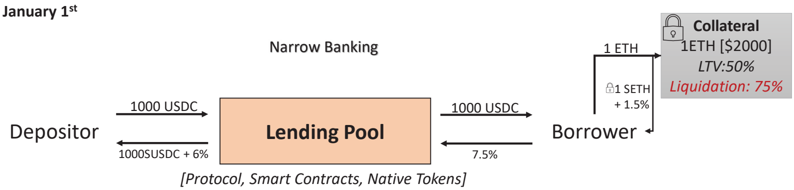

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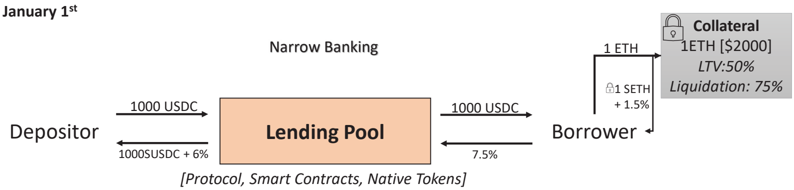

January 2nd **1 ETH = below $1,333.33 (i.e., Loan/Collateral at 75%)**

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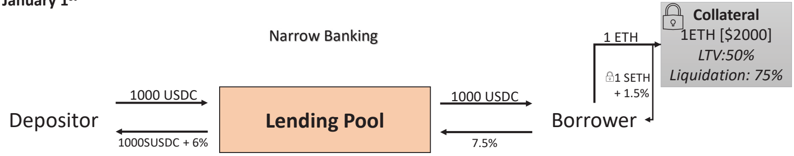

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Borrower's options:

1. Add more collateral
2. Repay [part of] loan

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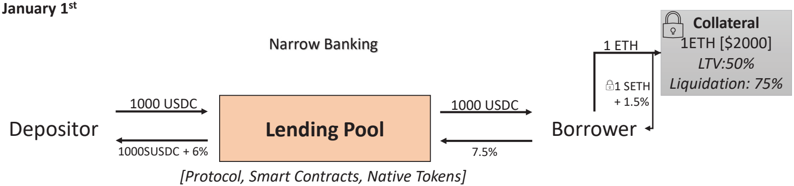

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If not:

Liquidation bots pay up to 50%

1. For 500 USDC they get 0.5ETH
2. Plus, a liquidation bonus

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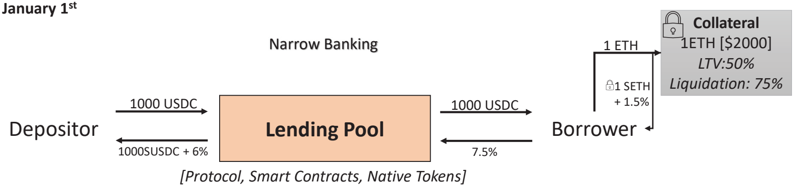

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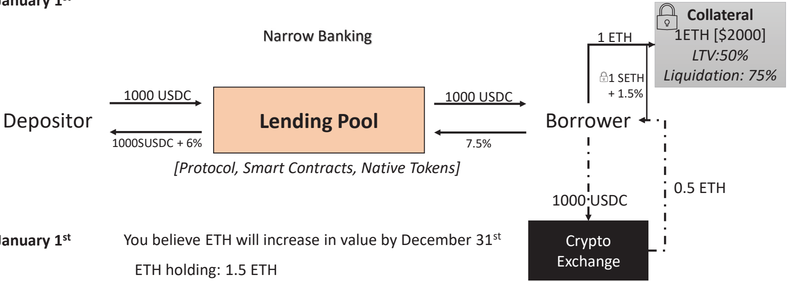

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ETH holding: 1.5 ETH
Loans: 1000 USDC

Decentralized Lending: Process

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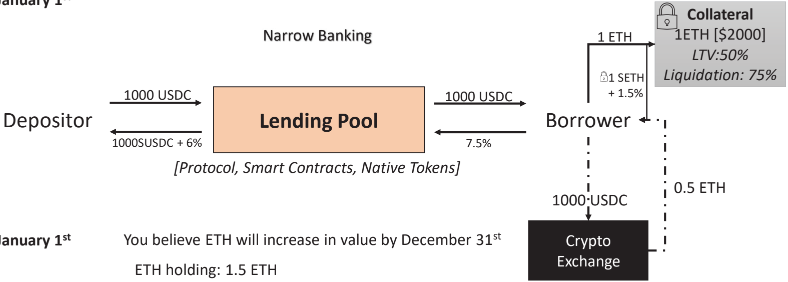

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ETH holding: 1.5 ETH
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December 31st

1 ETH = $3,000
ETH Holding Value (1.5): $4,500
Loan + Interest repayment: 1,075
ETH Interest earned: $45
Additional profit: $500

Potential Benefits of DeFi

- Privacy focused architecture.
- Faster transfer of value through automation and disintermediation.
- Lower cost of issuance and monitoring of financial products/services.
- Easier to contest disputes (No legal action necessary to get data).
- Quicker audits.
- Reduced power of big institutions.
- Financial inclusion [not yet!].

Clear & Present Risks

- Composability can lead to extremely opaque and complex products.
- Technology risk – bugs and loopholes in code.
  - 47% of attacks are due to bugs in code logic and input validation (Halborn (2022)).
- Need for a high level of technical expertise to audit code.
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- Extremely expensive to write complete contracts.
- No ex-post legal protections for consumers.
  - $70M Curve financial attack (Aug 2023).
- Congestion leads to high transaction costs.
  - Layer 2 solutions are partially addressing this issue.

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- Shocks in DeFi can propagate to traditional financial markets because of the increased cryptocurrency adoption by institutional investors.

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- Decentralization in name only!
  - Mining/validation is highly concentrated.
  - Large fractions of governance tokens are held by developers
  - Top 9 addresses control more than 46% of ETH governance power.
  - Top 5 addresses hold more than 35% of ETH supply.

Regulatory environment

- Uniform Electronic Transactions Act and Electronic Signatures Recording Act *provide grounds for enforcement* of smart contracts.
- A smart contract that satisfies common law and State requirements for a contract can qualify to become legally enforceable.
- Arizona, California, Iowa, Illinois, Tennesse, etc. have passed laws that make smart contracts and blockchain records as *admissible evidence* (NCSL (2022)).

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- The larger issue is regulating DeFi service providers:
  - Pseudonymous and jurisdiction-free nature.
  - No designated person(s) responsible for consumer protection or compliance.
  - U.S. Treasury and IRS have proposed designating Exchanges, Payment processors, etc. as crypto brokers (IRS 88 FR 59576).

Path Forward in the Medium-term

We need a *fast, cost-efficient, inclusive, fairly transparent, and auditable system*.

The current form of DeFi is **not** the solution [neither is the traditional system]

- More likely to end up in a *permissioned* version of the blockchain world.
- Need *tokenization* of real-world assets (e.g., Centrifuge).
- Credit scoring and reputation building (adopt and improve FICO).
- Unique per person identity: "proof of personhood" (e.g., WorldID).

- Regulatory consideration:
  - Recentralize compliance (not governance) responsibility.
  - Guidance on smart contract standards and random code checks.

Thank You!