

“Inclusion and Democratization Through Web3 and DeFi?

Initial Evidence from the Ethereum Ecosystem”

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Outline

- 1 The Promise of DeFi
- 2 Overview of Results
- 3 Comments
- 4 Summary

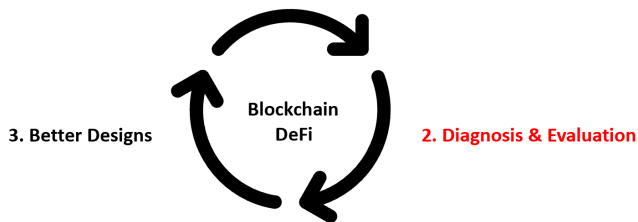
DeFi Potential

- What problems is decentralized finance (DeFi) solving?
- Widely believed that DeFi has potential to
 - Improve the transparency of the financial system
 - **Reduce intermediation costs**
 - **Improve accessibility and financial inclusion**
 - Reduce social costs and negative externalities imposed by traditional centralized institutions
- Question: are DeFi and its underlying blockchain technologies realizing this potential?
 - **This paper.**

Diagnosis DeFi Inefficiencies

- The Potential of DeFi can only be realized through an iterative, long-term process:
 - diagnoses the inefficiencies in the current design (**This paper**)
 - finds out the underlying sources (e.g. information leakage, fee mechanisms)
 - further improves the ecosystem (e.g. better design of consensus protocols)

1. Potential Ideas & prototypes



Overview

- This paper:
 - Documents empirical regularities of the current system:
 - 1 centralization in mining power and wealth
 - 2 transition of Ethereum blockchain from a payment system to infrastructure for DeFi and other Dapps
 - 3 high intermediation costs for small users
 - Examines the welfare impact of policies:
 - 1 EIP-1559 Fee Mechanism: reduce centralization
 - 2 Airdrop: improve financial inclusion

Wealth and Mining Centralization

- Centralization is an important concern
 - On Sept. 15, Ethereum transitioned to proof-of-stake (PoS)
 - **This paper:** Ethereum ownership is highly concentrated
 - Concentration of ownership and validation power will like stay under PoS
 - Expected rewards and probability of being selected to append the next block are proportional to stakes
 - **Barrier for small stakers:**
 - Required minimum of 32 ETH to stake solo, otherwise stake through staking pools or centralized intermediaries (which is costly)
 - Would PoS increase concentration? Will small ETH owners become even smaller, and large owners even larger?

From Payment System to DeFi Infrastructure

- **The paper finds that** transactions on Ethereum shifted from P2P payments to Dapps.
- **Off-chain activity:** a large portion of transactions are still processed off-chain through centralized intermediaries:
 - Most transactions still go through centralized exchanges.
 - The address and wallet associated with centralized exchanges have large wealth and have many transactions.
 - A significant portion of miners' rewards is earned through Flashbots, an off-chain platform for MEV auctions. (**Capponi, Jia, Wang, 2021**)
 - How many transactions are settled off-chains? Which users use off-chain transactions more? What does it mean for financial inclusion?
- Terminology: Layer-2 tokens vs ERC20 tokens?

High Transaction Costs for Small Users

- Gas fees only depend on the complexity of the transaction.
 - Borrowing 2,000 ETH and 0.002 ETH take a similar amount of gas.
 - **This paper:** Using Dapps or blockchains can be too expensive for smaller users, which hinders financial inclusion.
- **Question:** How to reduce the cost for small users?
 - Scalability is the key: Layer 2? Sharding?
- **Minor suggestion:** this paper measures relative cost using $\frac{\text{gas cost}}{\text{value}}$. Is the value of a DeFi transaction always observable?
 - E.g., what is the value of a flashloan? Is it really zero? What about personal benefits?
 - In table 2, the mean cost ratio of tokens is $5.29 * 10^{29}$. Is the value of some transactions being underestimated?

Summary

- Very timely and interesting paper, first of its kind
- Quantify concentration and inefficiencies in Ethereum blockchain.
- Few minor comments:
 - Define the value of a DeFi transaction
 - Distribution of ownership in EOA addresses. How about Ethers in contract accounts and exchange accounts?
 - Double check table 4, columns (3) and (4), as the regression results are identical.
 - Some graphs should be better explained (e.g. Figure 6)

Thank You!