

Information Processing in a Transparent Market: Evidence from a DeFi Protocol

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May 24, 2022

General Background

- Emerging crypto market/asset class
 - Total market cap **US \$3 trillion** (Nov 11, 2021); Daily volume US **\$100 billion**.
 - Blockchain as the underlying technology (e.g., Cong & He, 2019).
 - DeFi over US \$2 billion, staking, insurance, liquidity pool, lending, etc. (Harvey, Ramachandran, and Santoro, 2021).
- **Token Classification**
 - Utility tokens versus security tokens?
 - General payment tokens, platform tokens, ownership tokens, and cash-flow tokens (Cong and Xiao, 2020);
 - Factor pricing and segmentation in crypto-tokens (Cong, Karolyi, Tang, and Zhao
- **Token Pricing and Functionality**
 - Hybrid nature; Dynamic valuation framework (Cong, Li, & Wang, 2021, 2022; Cong, He & Tang, 2022).
 - Means of payment and other utilities such as lending (DeFi applications).



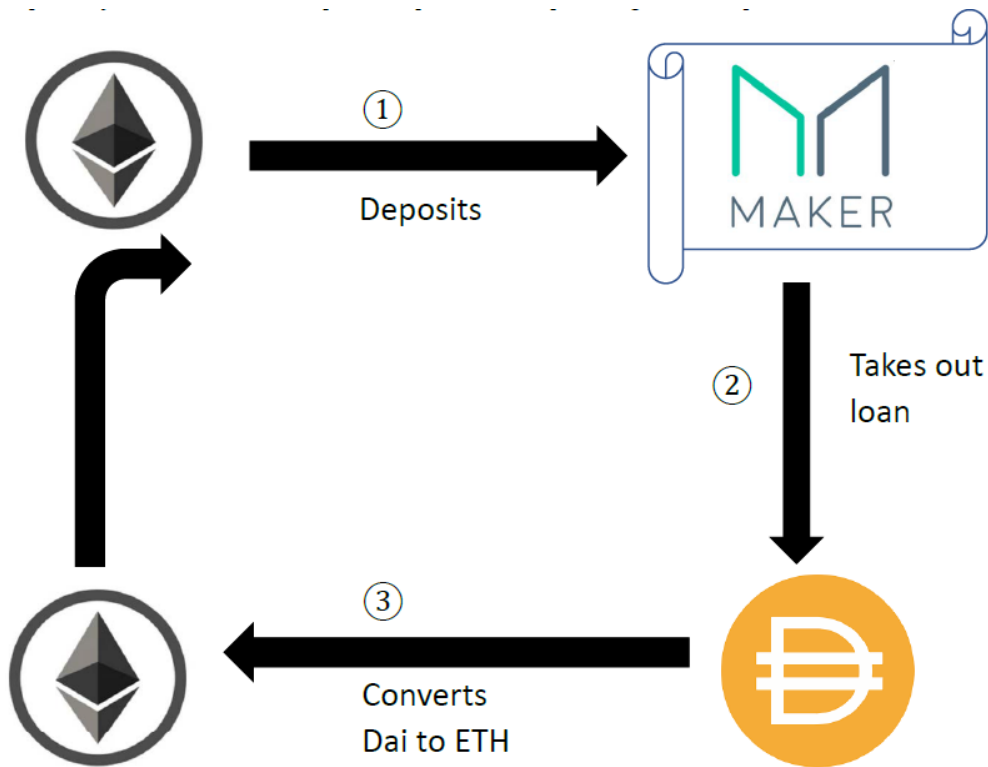
Research Questions from a Disclosure/Transparency Perspective

Do investors use free and public information? Evidence from a DeFi Setting.

Debate on disclosure and market transparency assumes that investors will use free and public information. Investors mimic hedge funds positions using their 13F forms (Sias 2004; Choi and Sias 2009; Shi 2017). DeFi (MakerDao) as a special setting with transaction/trading info publicly available in real time.

- **Separating Information Availability versus Processibility**
 - Information processing cost, Blankespoor et al. (2019 JAR)
 - Important distinction for policymaking: processing cost might sabotage transparency/disclosure effort.
 - **Relating this to rational inattention literature?**
- **MakerDAO, Dec 2017 to May 2020. Overcollateralized (1.5 times); leveraged (margin) trading supposedly by informed traders.**
 - Persistent performance dispersion.
 - Lack of mimicking; following depends on information processing cost.

1. MakerDAO and Stability (Fee) of DAI



• The Missing Picture

- Stability fee (0.5% at the start, 19.5% in May 2019).
- Governance by community members through
 - ✓ Maintaining DAI's dollar peg through fee changes and arbitrage activities.
 - ✓ Selfish value capture eating into the profit margins of arbitrageurs.
- Recent data (stablecoin crisis) on how stability and stability fees/loan interests affect the findings.

2. Return Definition, Loan Cycles, Characteristics, and Unit of Analysis

- Is return computed at cycle, daily, or payback? Cash flows at different time?

$$\text{Return} = \frac{\text{Ending collateral value} + \text{Ending cash balance} - \text{Cash used}}{\text{Cash used}}$$

where *ending collateral value* is the value of collateral in US dollars that is returned to the user's Ethereum address when the loan is paid back in full.

- Loans are indefinite, so duration may contain look-ahead bias.

$$\text{Return}_{i,t} = b_0 + b_1 \text{Return}_{i,t-1} + b'_2 \text{LoanCharacteristics}_{it} + b'_3 \text{controls}_{it} + \text{monthYearFE}_t + e_{it} \quad (2)$$

If a trader who earns higher past return in the previous loan cycle also earns higher return in their current loan cycle, then $b_1 > 0$.

- In Tables, t is referred to as “day t .” This makes the most sense to me.

3. Persistent Dispersion in Performance

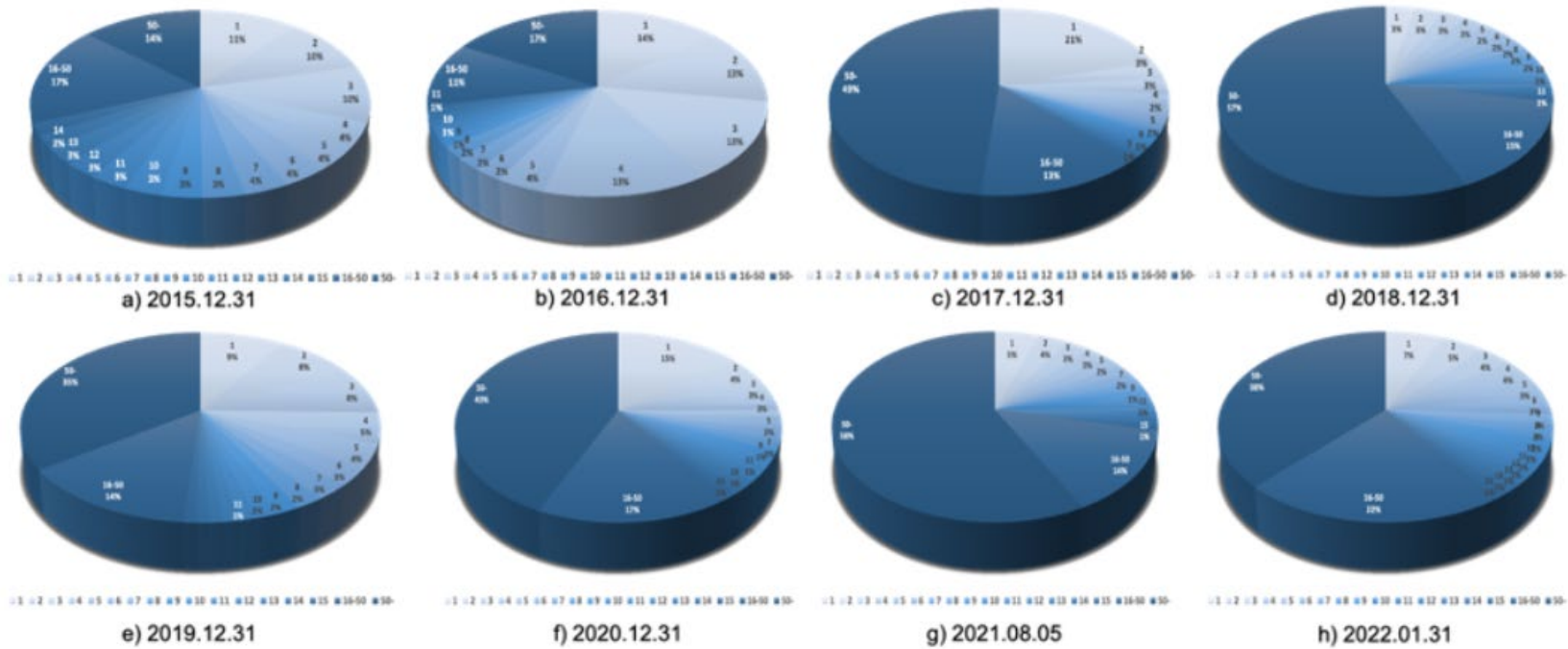
- One std increase in last loan return increases next loan return by 3.2%.
- Previous liquidation increases the probability of current liquidation by 23%.
- **Why is there dispersion in performance?**
 - How can strategies differ? Are they mostly timing strategies? In May 2020, Maker replaced the original version of its Dai stablecoin allowing multi-collateral Dai. Worth exploring.
 - Is it possible that this is not about superior trading strategies?

1. Agent heterogeneity:

- Budget. Is the strategy scalable? Even if so, gas fees are not scalable (more on this later).
- Distribution of ownership is very unequal; “Inclusion and Democratization Through Web3 and DeFi? Initial Evidence from the Ethereum Ecosystem” Cong, et al. (2022).
- Risk tolerance. Different risk tolerance.
- Different portfolio choices; unobserved off-chain investments and holdings.

2. Persistent blessings of luck (Cong and Xiao, 2021)? Persistent dispersion is not necessarily skill differential.

Distribution of Holdings in Ethereum (Cong et al., 2022)



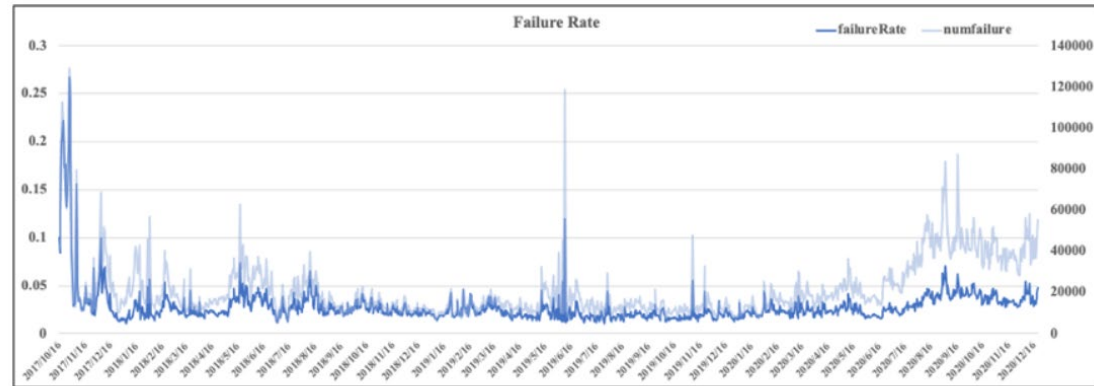
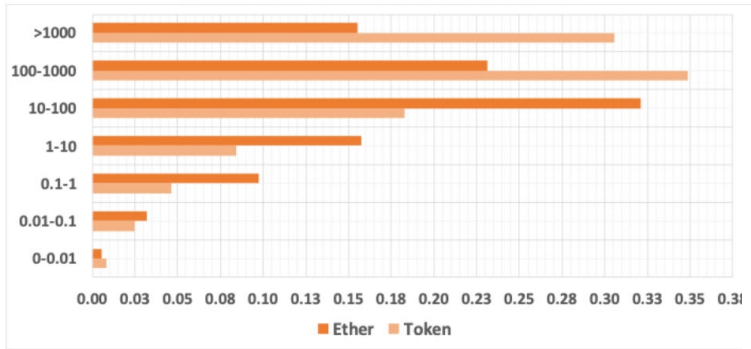
The Evolution of Ownership Concentration of Users

4. The Concept of “Following”

- “Following” measure: mimicking at least half of the borrow/repay activities (within 15min) in that loan cycle.
- Asymmetric findings: liquidation reduces followers, but returns do not affect following much.
 - Consistent with the notion that return dispersion does not indicate superior strategies.
- **How to rule out other channels of learning?**
 - Authors carefully ruling out stories of trading on correlated signals and coordinated trading. They did so by texting mutual following, excluding wallet interactions, compare returns of followers and non-followers.
 - Other media channels relating liquidation events to macro factors that affect ETH?
 - Robustness to the definition of following.
- **Herding and information cascades:**
 - If people herd, then it is no longer aggregating information, following begets following, worth a discussion.
 - Potential fix: can implementation thresholds/crowdaction help?

5. Information Processing Costs

- Information processing costs of historical data.
 - Launch of website: <https://mkr.tools>
- Information processing costs of real-time data: complexity transaction costs?
 - (1) number of transactions
 - (2) number of smart contracts
 - (3) duration, reflecting the time it takes to monitor others'
- **Fixed transaction costs and transaction failures on Ethereum platform: Cong et al. (2022)**



(a) Daily Failure Rate

- **A potential experiment: EIP-1559.**

6. Further (Minor) Comments

Repetition of Hypotheses

HYPOTHESIS 2: If acquisition and integration costs are a barrier to investors' ability to process historical data, then a reduction in these costs, for example by providing free, aggregated and easily digestible information on traders' past activity, would increase the likelihood that traders use other traders' past performance in their following decisions.

HYPOTHESIS 3: If data awareness, acquisition, and integration costs are a barrier to investors' ability to mimic other traders in real-time, then an increase in these costs would decrease the ability of investors to efficiently mimic others.

- **External validity and other DeFi protocols.**
- **ICO papers do not seem to be relevant, (e.g., Momtaz, 2019).**
- **Typos, e.g., Page 15 "Juley" should be "July."**