Beyond Single-Tokenomics: How Farcaster's Pluralistic Incentives Reshape Social Networking

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Abstract

This paper presents the first empirical analysis of how diverse token-based reward mechanisms impact platform dynamics and user behaviors. For this, we gather a unique, large-scale dataset from Farcaster. This blockchain-based, decentralized social network incorporates multiple incentive mechanisms spanning platform-native rewards, third-party token programs, and peer-to-peer tipping. Our dataset captures token transactions and social interactions from 574,829 wallet-linked users, representing 64.25% of the platform's user base. Our socioeconomic analyses reveal how different tokenomics design shape varying participation rates (7.6%–70%) and wealth concentration patterns (Gini 0.72–0.94), whereas inter-community tipping is 1.3–2x more frequent among non-following pairs, thereby mitigating echo chambers. Our causal analyses further uncover several critical trade-offs: (1) while most token rewards boost content creation, they often fail to enhance—sometimes undermining—content quality; (2) token rewards increase follower acquisition but show neutral or negative effects on outbound following, suggesting potential asymmetric network growth; (3) repeated algorithmic rewards demonstrate strong cumulative effects that may encourage strategic optimization. Our findings advance understanding of cryptocurrency integration in social platforms and highlight challenges in aligning economic incentives with authentic social value.

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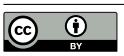

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CCS Concepts

• **Information systems** → **Social networks**; • **Human-centered computing** → **Empirical studies in collaborative and social computing**; • **Networks** → Network economics.

Keywords

Decentralized Social Networks, Blockchain Rewards, Token Incentives, User Behavior Analysis, Causal Inference

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1 Introduction

Decentralized Online Social Networks (DOSNs) emphasize user autonomy and data sovereignty [1, 12], yet most struggle to incentivize high-quality content and sustained engagement [17, 22]. Platforms integrating cryptocurrency-based token incentives [6, 13, 20] have suffered from reliance on a single platform-issued token, leading to price vulnerability [2], gaming [14], bot manipulation [5], and reward concentration [11].

Farcaster, a DOSN launched in 2023 [8], introduces two key innovations: *modular* wallet binding, allowing users to link any Ethereum-compatible addresses [16] to their accounts (Farcaster Identifiers (FIDs)) [7]; and a *pluralistic* token incentive ecosystem where any token or reward mechanism can coexist, with incentive design open to users, developers, and administrators via custom applications (*mini-apps*) [9].

This paper empirically examines how this pluralistic paradigm shapes platform dynamics, investigating: **RQ1:** How widespread and diverse is Farcaster's token economy? **RQ2:** What socioeconomic risks arise concerning participation disparities, reward inequity, and echo chambers? **RQ3:** What causal relationships exist between token incentives and social activities across token categories and mechanisms? To our knowledge, we are the first to empirically study Farcaster's pluralistic incentive ecosystem.

Our contributions are as follows:

- We reveal how eligibility criteria (*e.g.* nomination-based vs. behavioral scoring) and distribution structures significantly impact user inclusion (70% vs. 7.6% new participants) and income equality (Gini 0.72–0.94).
- We show that user-to-user tipping is predominantly unidirectional (<10% bidirectional), yet cross-community tips are 1.3–2x more frequent among non-following pairs, indicating tipping bridges community boundaries.
- We reveal that algorithmic rewards with volatile tokens increase content quantity but show limited or negative effects on content quality.
- We uncover that repeated algorithmic rewards correlate with asymmetric network growth and strategic engagement optimization, prioritizing immediate reactions over shareworthy content.

The full version of this paper is available at https://dl.acm.org/doi/10.1145/3771565.

2 Data and Methodology

Data Collection. We collect *off-chain data* by deploying Farcaster hub instances, obtaining a complete snapshot (April 27, 2025) of 894,678 valid FIDs, 159M following relationships, 165M casts (posts and replies), and 299M reactions (likes and re-posts). 574,829 FIDs (64.25%) have at least one Ethereum-compatible wallet bound (794,386 wallets total). For *on-chain data*, we retrieve all Base chain [4] token transfers involving FID-linked wallets via Alchemy APIs,[1] yielding 87.7M transactions across 5,878 distinct tokens.[2]

Prevalent Token Detection. From 440,274 tokens in user wallets, we apply a four-step filtering pipeline—inter-FID transfer activity, temporal entropy [15], sender count thresholds (99th percentile), and clustering coefficients [19]—identifying four social reward tokens (DEGEN [3], MOXIE [4], HIGHER [5], TN100X [6]) plus USDC as Farcaster's official reward stablecoin [7].

Mechanism Categorization. We classify incentive mechanisms into: *Inter-FID Tipping* (direct user-to-user transfers, all five tokens); *Third-party Algorithmic Rewards* (developer-designed rules, DEGEN and MOXIE); and *Official Algorithmic Rewards* (Farcaster-administered weekly USDC). These collectively reach 103,666 unique recipients (11.59% of FIDs).

[1]https://www.alchemy.com/
[2]These 5,878 tokens have been transferred between users' FID-linked wallets, representing 1.34% of all 440,274 tokens that have appeared in all user wallets but may not necessarily have been traded between users.
[3]https://www.degen.tips/
[4]https://www.moxie.xyz/
[5]https://www.aimhigher.net/greenpaper
[6]https://docs.ham.fun/docs/tokenomics/
[7]https://warpcast.notion.site/Warpcast-Rewards-15f6a6c0c10180339fcdee6c9a18c338

Causal Analysis. We employ Propensity Score Matching (PSM) with Difference-in-Differences (DID) (four-week pre/post windows) for binary treatment analysis [3], with covariate adjustment to isolate net effects from correlated behaviors. For continuous treatment, Ordinary Least Squares (OLS) regression quantifies how reward frequency affects behavioral changes. Data and code are available at https://zenodo.org/records/17317121.

3 Findings

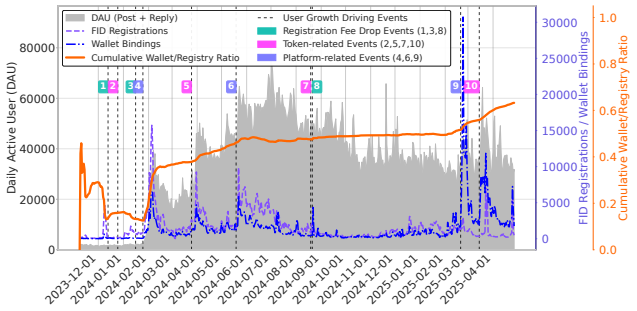
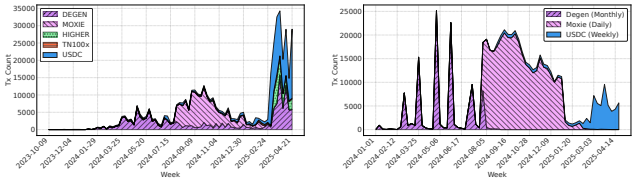


Figure 1: Token-related events drive Farcaster's user growth.

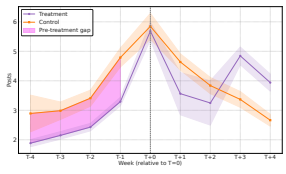
Token Economy Scale (RQ1). Figure 1 presents Farcaster's daily user activity, platform growth, and user involvement in tokenomics. Token-related events are the primary drivers of platform growth; registration fee reductions show negligible impact. Community-driven mechanisms achieve broader coverage (6.01%–6.43% of FIDs) than official rewards (3.15%), with tipping tracking organic DAU patterns while algorithmic rewards exhibit project-driven spikes.



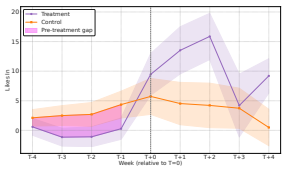
(a) Tipping frequencies for five prevalent tokens. **(b) Rewarding frequencies for algorithmic tokens.**

Figure 2: Stacked area charts of weekly aggregated transaction frequencies by token across mechanisms.

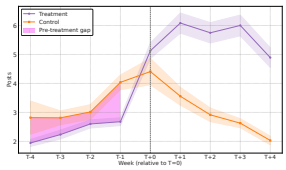
Socioeconomic Risks (RQ2). Figure 2a depicts the transaction frequencies of *Inter-FID Tipping* across five prevalent tokens, while Figure 2b shows the transaction frequencies for both third-party and official algorithmic reward mechanisms. DEGEN's nomination system achieves up to 70% new participant rates versus MOXIE's behavioral scoring at 7.6%. Income inequality persists (Gini: 0.72–0.94), though below Steemit's extreme (Gini ≈ 0.99) [11]. MOXIE's redistribution mechanism (followee-to-follower sharing) achieves the lowest Gini (0.72). Tips between non-following pairs cross community boundaries 1.3–2x more frequently than following pairs, suggesting tipping bridges communities rather than reinforcing echo chambers.



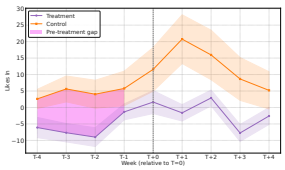
(a) DEGEN (tipping)'s positive impact on weekly posting.



(b) DEGEN (tipping)'s positive impact on inbound likes.



(c) DEGEN (reward)'s positive impact on weekly posting.



(d) USDC (reward)'s positive impact on inbound likes.

Figure 3: Difference-in-Differences (DID) visualizations.

Causal Effects (RQ3). Figure 3 illustrates representative DID visualizations. Third-party algorithmic rewards with volatile tokens most effectively increase content quantity (*e.g.* DEGEN: $p < 0.001$ on posting) but show limited or negative effects on quality (likes, re-posts). Only DEGEN tipping and USDC algorithmic rewards significantly increase received likes; no mechanism improves re-post gains. All token rewards show neutral or negative effects on outbound following while increasing follower acquisition, revealing *asymmetric network growth*. USDC official rewards increase like-based engagement but decrease sharing, suggesting a shift toward content optimized for immediate reaction over lasting value.

4 Discussion and Conclusion

We present the first large-scale empirical analysis of Farcaster's pluralistic token incentive ecosystem across 574,829 wallet-linked users and three mechanism categories. The coexistence of multiple tokens and mechanisms mitigates vulnerabilities of single-token systems—high entry barriers, extreme wealth concentration, echo chamber reinforcement—yet mere plurality without coordination is insufficient for sustainable content quality and network growth.

Three design implications emerge: (i) independent programs targeting overlapping metrics would benefit from a composable reputation layer aligning complementary goals; (ii) exploration-aware and quality-weighted payouts could counter asymmetric growth and superficial participation; (iii) robustness to gaming requires rotated scoring functions, anti-collusion safeguards, and redistribution mechanisms.

Limitations include engagement-based quality proxies [10, 21], the four-week DID window potentially missing longer-term effects [18], and Farcaster's crypto-centric user base limiting direct generalization—though directional insights on wealth concentration, cross-community flows, and the quantity–quality tension should persist in analogous systems. Our findings advance understanding of token-based incentive design and provide practical guidance for implementing sustainable reward mechanisms in decentralized social platforms.

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