

MtGoxCat

Experimental Liquidity Routing and Holder Reward Economics

Papa Wheelie

MtGoxCat Research

September 2026

Research Draft v0.4

Pre-Experimental Working Paper

No experimental results are reported in this version.

Abstract

MtGoxCat is a community-operated token on Robinhood Chain whose post-graduation market uses a Uniswap v4 pool with a zero-percent core liquidity-provider fee and a Pons v2 hook implementing separate transaction-level economics.

For the configuration studied in this paper, the modeled transaction cost consists of a 1% Pons base trading fee and a 2.5% creator tax, for a nominal combined rate of 3.5%. Under MtGoxCat's community takeover structure, creator-side revenue is redirected to a holder reward mechanism that automatically distributes rewards among eligible holders using periodic snapshots.

This paper separates three economic layers that should not be conflated: Uniswap liquidity-provider fees, Pons transaction-level fees, and downstream holder reward distribution.

The primary experiment asks whether strategically deployed secondary liquidity can cause additional economically meaningful transaction volume to route through the canonical MTGOX-CAT/USDG market.

Particular attention is given to whether a 3.5% nominal Pons-level transaction burden remains economically competitive when alternative thin markets impose materially higher execution costs.

Rather than asserting that the 2.5% creator-tax rate is mathematically optimal, this paper defines conditions under which its viability can be evaluated empirically through observed routing behavior.

A secondary experiment evaluates temporary countercyclical liquidity as an acquisition mechanism during periods of market imbalance.

All experiments are intended to be observable on-chain, reproducible, and evaluated using parameters established before deployment.

1 Introduction

Most token economic systems implicitly assume that increasing trading activity is desirable.

The more important question is how that activity is produced and whether it creates sustainable economic value.

MtGoxCat approaches this question experimentally.

The canonical market is the MTGOXCAT/USDG liquidity pool on Uniswap v4.

Rather than attempting to manufacture transaction activity directly, this research asks whether additional liquidity relationships can make MTGOXCAT a useful intermediate asset within a broader decentralized exchange routing graph.

Consider three assets:

- C : MTGOXCAT,
- U : USDG,
- S : a secondary or satellite asset.

The canonical market provides

$$C \leftrightarrow U. \tag{1}$$

An experimental liquidity market introduces

$$S \leftrightarrow C. \tag{2}$$

Together these markets create possible routes such as

$$S \rightarrow C \rightarrow U \tag{3}$$

and

$$U \rightarrow C \rightarrow S. \tag{4}$$

The central question is whether these additional edges result in measurable incremental use of the canonical MTGOXCAT/USDG market.

The answer is not assumed to be yes.

It is the subject of the experiment.

2 Protocol Architecture

MtGoxCat’s economic architecture contains several distinct layers.

These layers should be modeled separately.

2.1 Uniswap v4 Layer

After graduation, the canonical MTGOXCAT/USDG market operates through a Uniswap v4 pool.

The core pool is configured with

$$\boxed{f_{LP,C} = 0\%} \tag{5}$$

where $f_{LP,C}$ represents the Uniswap liquidity-provider swap fee.

The zero-percent pool fee is intentional.

Under the Pons v2 architecture, transaction fees are collected by the attached hook rather than by the core Uniswap pool.

The canonical market should therefore not be described as a “3.5% Uniswap pool.”

The Uniswap v4 LP fee is zero.

2.2 Pons v2 Hook Layer

The attached Pons Meme Hook implements transaction-level economics separately from the core Uniswap LP fee.

For purposes of this paper, define

$$f_B = \text{Pons base trading fee}, \quad (6)$$

$$f_C = \text{creator tax}. \quad (7)$$

For the configuration studied here,

$$f_B = 1\% \quad (8)$$

and

$$f_C = 2.5\%. \quad (9)$$

The nominal Pons-level transaction burden is therefore

$$f_P = f_B + f_C, \quad (10)$$

giving

$$\boxed{f_P = 3.5\%}. \quad (11)$$

This 3.5% value is distinct from the Uniswap LP fee.

2.3 Community Holder Distribution Layer

Pons defines the 2.5% component as a creator tax.

Under MtGoxCat's community takeover structure, creator-side revenue is redirected to the project's holder reward mechanism rather than retained as conventional creator income.

Accordingly, this paper distinguishes between

$$\text{creator tax} \quad (12)$$

as the protocol-level source of revenue and

$$\text{holder rewards} \quad (13)$$

as the project-level destination of that revenue.

Conceptually,

$$\boxed{\text{Trade} \rightarrow \text{Pons Hook} \rightarrow \text{Creator Revenue} \rightarrow \text{Holder Distribution}.} \quad (14)$$

The exact trigger or minimum threshold that causes accumulated creator revenue to be distributed is not assumed in this paper.

It should instead be measured empirically from observed distribution transactions.

3 Contract-Verifiable Fee Parameters

The Pons v2 architecture exposes fee parameters on-chain.

The relevant quantities include the base trading fee, creator tax, post-graduation hook fee policy, and pending creator-tax balances.

This allows experimental analysis to distinguish between documented protocol parameters and modeled assumptions.

For each experiment, fee parameters should be read directly from the contracts associated with the specific MTGOXCAT launch.

The experiment should record:

- the launch token address;
- the launch factory associated with the token;
- the Meme Hook associated with the graduated pool;
- the canonical pool identifier;
- the configured Uniswap pool fee;
- the base trading fee;
- the creator-tax rate;
- the post-graduation hook fee;
- pending base-fee balances;
- pending creator-tax balances.

This is important because Pons v2 launches retain the economic configuration under which they were created.

Protocol-wide defaults should therefore not be substituted for the configuration of the specific token being studied.

4 Holder Reward Design

The 2.5% creator-tax rate ultimately funds MtGoxCat’s holder reward mechanism.

The 2.5% rate should not be interpreted as a mathematically proven global optimum.

Instead, the rate can be evaluated using the economic intuition of diminishing marginal returns. Let

$$f = \text{transaction-level reward-generating rate} \tag{15}$$

and

$$V(f) = \text{fee-bearing transaction volume at rate } f. \tag{16}$$

Gross reward-generating revenue may be represented as

$$R(f) = fV(f). \tag{17}$$

If transaction volume were independent of transaction cost,

$$V(f) = V_0, \quad (18)$$

then

$$R(f) = fV_0. \quad (19)$$

Increasing f would always increase revenue linearly.

Real markets need not behave this way.

Traders, arbitrageurs, aggregators, solvers, and routing algorithms may compare execution alternatives.

As execution cost increases, economically motivated order flow may migrate toward cheaper alternatives.

Thus, over at least some portion of the fee domain,

$$\frac{dV}{df} < 0. \quad (20)$$

The marginal effect of increasing the reward-generating rate is

$$\frac{dR}{df} = V(f) + fV'(f). \quad (21)$$

An interior revenue-maximizing rate f^* would satisfy

$$V(f^*) + f^*V'(f^*) = 0. \quad (22)$$

Equivalently,

$$-\frac{f^*V'(f^*)}{V(f^*)} = 1. \quad (23)$$

This establishes an economic basis for diminishing marginal benefit from increasing transaction friction.

It does not establish that 2.5% is the optimal rate.

That question requires empirical evidence.

5 Eligible Supply and Epoch-Based Rewards

Holder rewards should not be modeled using total token supply as the reward denominator.

MtGoxCat holder distributions are allocated among wallets eligible at the relevant reward snapshot.

Let

$$S_T = \text{total MTGOXCAT supply} \quad (24)$$

and

$$S_{E,e} = \sum_{j \in E_e} B_{j,e}, \quad (25)$$

where E_e is the set of eligible wallets for epoch e and $B_{j,e}$ is wallet j 's eligible snapshot balance.

For eligible wallet i , its share of epoch rewards is

$$s_{i,e} = \frac{B_{i,e}}{S_{E,e}}. \quad (26)$$

This differs from nominal ownership of total supply:

$$o_i = \frac{B_i}{S_T}. \quad (27)$$

Tokens held in liquidity pools or other reward-ineligible locations may remain part of total token supply without participating in the reward denominator.

Consequently,

$$S_{E,e} < S_T \quad (28)$$

may hold.

5.1 Eligible Supply Ratio

Define the Eligible Supply Ratio as

$$ESR_e = \frac{S_{E,e}}{S_T}. \quad (29)$$

This measures the fraction of total token supply participating in a particular reward epoch.

5.2 Reward Concentration Factor

Define the Reward Concentration Factor as

$$RCF_e = \frac{S_T}{S_{E,e}} = \frac{1}{ESR_e}. \quad (30)$$

The relationship between nominal ownership and effective reward participation is therefore

$$s_{i,e} = o_i \times RCF_e. \quad (31)$$

For example, suppose

$$S_T = 1,000,000,000 \quad (32)$$

while only

$$S_{E,e} = 400,000,000 \quad (33)$$

tokens participate in the epoch.

Then

$$ESR_e = 40\% \quad (34)$$

and

$$RCF_e = 2.5. \quad (35)$$

A wallet holding 100,000,000 MTGOXCAT owns

$$o_i = 10\% \quad (36)$$

of total supply but represents

$$s_{i,e} = \frac{100,000,000}{400,000,000} = 25\% \quad (37)$$

of the eligible reward denominator.

Thus, if \$1,000 were distributed during the epoch, that wallet would receive

$$\$1,000 \times 25\% = \$250, \quad (38)$$

assuming the wallet remained eligible at the applicable snapshot.

5.3 Epoch Reward Calculation

Let

$$R_e = \text{total holder rewards distributed for epoch } e. \quad (39)$$

Wallet i receives

$$R_{i,e} = R_e \frac{B_{i,e}}{S_{E,e}}. \quad (40)$$

Equivalently, reward per eligible token is

$$r_e = \frac{R_e}{S_{E,e}}. \quad (41)$$

Therefore,

$$R_{i,e} = B_{i,e} r_e. \quad (42)$$

This makes the eligible supply denominator a material variable in holder economics.

6 Volume and Reward Interaction

Holder economics depend on both the size of the reward pool and the eligible supply participating in that reward pool.

Let reward generation depend on fee-bearing transaction volume:

$$R_e = R(V_e). \quad (43)$$

Then

$$R_{i,e} = B_{i,e} \left(\frac{R(V_e)}{S_{E,e}} \right). \quad (44)$$

This separates two economic effects:

1. transaction activity determines the size of the reward pool;
2. eligible supply determines how that reward pool is divided.

Experimental liquidity may affect one or both variables.
 If liquidity creates additional fee-bearing activity,

$$V_e \uparrow \tag{45}$$

may increase

$$R(V_e). \tag{46}$$

If tokens placed into liquidity become ineligible for the corresponding snapshot,

$$S_{E,e} \downarrow \tag{47}$$

may increase reward per remaining eligible token.

The latter effect does not create additional aggregate reward value by itself.

It redistributes the available reward pool across a smaller eligible denominator.

7 Liquidity and Reward Eligibility

Liquidity deployment may therefore carry a reward opportunity cost for the tokens supplied.

Suppose ΔL tokens move from eligible wallets into positions that do not participate in an epoch snapshot.

Holding all other balances constant,

$$S'_{E,e} = S_{E,e} - \Delta L. \tag{48}$$

For an eligible holder whose balance does not change,

$$\frac{B_i}{S_{E,e} - \Delta L} > \frac{B_i}{S_{E,e}}. \tag{49}$$

The remaining eligible supply receives a larger proportional share of the same reward pool.

The LP position, however, may forgo rewards that the underlying tokens would otherwise have received.

Experimental LP economics should therefore consider both:

$$\text{LP economics} \tag{50}$$

and

$$\text{foregone holder rewards.} \tag{51}$$

8 Total Route Friction

A router or arbitrageur evaluates combined execution economics rather than the displayed Uniswap LP fee alone.

For route r , define

$$C_r = F_{LP,r} + F_{P,r} + G_r + I_r, \quad (52)$$

where

$$\begin{aligned} F_{LP,r} &= \text{liquidity-provider fees,} \\ F_{P,r} &= \text{Pons/hook-level transaction costs,} \\ G_r &= \text{gas and execution costs,} \\ I_r &= \text{price impact and slippage.} \end{aligned}$$

For the canonical MTGOXCAT/USDG leg,

$$F_{LP,C} = 0 \quad (53)$$

while the nominal Pons-level burden is modeled as

$$F_{P,C} = 3.5\%. \quad (54)$$

Thus,

$$C_C = 0 + 3.5\% + G_C + I_C. \quad (55)$$

9 Arbitrageur and Router Decision Model

For a candidate route r , define

$$\Pi_r = D_r - F_r - G_r - I_r, \quad (56)$$

where

$$\begin{aligned} \Pi_r &= \text{net expected route advantage,} \\ D_r &= \text{gross cross-market discrepancy,} \\ F_r &= \text{aggregate transaction fees,} \\ G_r &= \text{gas and execution cost,} \\ I_r &= \text{price impact and execution loss.} \end{aligned}$$

An economically rational arbitrage opportunity exists when

$$\boxed{\Pi_r > 0}. \quad (57)$$

When multiple executable routes exist, the economically preferred route is approximately

$$r^* = \arg \max_r \Pi_r. \quad (58)$$

The experiment does not require arbitrageurs to have any preference for MTGOXCAT itself. It requires only that a route containing MTGOXCAT occasionally provides superior net execution.

10 Comparison With a 5% Liquidity Edge

Consider a thin competing liquidity market charging

$$f_D = 5\%. \quad (59)$$

Its simplified effective friction is

$$C_D = 5\% + G_D + I_D. \quad (60)$$

Now introduce a satellite pool connecting asset S with MTGOXCAT.
Let

$$f_S = \text{satellite-pool LP fee}. \quad (61)$$

A route through the satellite pool and canonical MTGOXCAT/USDG market has approximate friction

$$C_C = f_S + 3.5\% + G_C + I_C. \quad (62)$$

The MTGOXCAT route is economically preferable when

$$\boxed{f_S + 3.5\% + G_C + I_C < 5\% + G_D + I_D.} \quad (63)$$

10.1 Nominal Fee Headroom

Before differential gas and price impact are considered,

$$5.0\% - 3.5\% = 1.5\%. \quad (64)$$

Thus,

$$\boxed{\text{Nominal Headroom} = 150 \text{ bps.}} \quad (65)$$

This is not equivalent to a realized 150-basis-point execution advantage.

It represents the nominal fee budget available for the satellite edge and any additional execution cost.

10.2 Satellite Fee Break-Even

If gas and price impact are assumed equal for illustration,

$$G_C = G_D \quad (66)$$

and

$$I_C = I_D, \quad (67)$$

then

$$f_S + 3.5\% < 5\%. \quad (68)$$

Therefore,

$$\boxed{f_S < 1.5\%}. \quad (69)$$

Under these simplifying assumptions, 1.5% represents the nominal satellite-fee break-even point against a 5% competing liquidity edge.

Table 1: Illustrative nominal route comparison

Satellite Fee	Pons Cost	Combined	Headroom vs. 5%
0.25%	3.50%	3.75%	1.25%
0.50%	3.50%	4.00%	1.00%
1.00%	3.50%	4.50%	0.50%
1.50%	3.50%	5.00%	0.00%
2.00%	3.50%	5.50%	-0.50%

These values are illustrative and exclude differential price impact, gas, depth, and other route-specific costs.

11 Why Higher Fees Can Create Larger Dislocations

Higher transaction costs do not necessarily eliminate arbitrage.

Instead, they increase the magnitude of the discrepancy required before an arbitrage becomes economically executable.

In simplified form,

$$|\Delta P| > F + G + I. \quad (70)$$

A higher-friction market may therefore remain displaced from an external reference price for a larger interval before arbitrage becomes profitable.

Thin liquidity can magnify this effect because relatively small trades may produce substantial price impact.

This suggests the possibility of two different market regimes:

- lower-friction markets supporting more frequent, smaller arbitrage events;
- higher-friction markets requiring less frequent but larger dislocations before arbitrage becomes executable.

The MtGoxCat experiment tests whether such dislocations can make an alternative MTGOXCAT path economically competitive.

12 Fee Viability Hypothesis

The 2.5% creator-tax rate is not asserted to be mathematically optimal.

Instead, the experiment tests a narrower proposition.

Fee Viability Hypothesis

The 2.5% creator-tax rate is sufficiently low that, after combined protocol and execution costs, MTGOXCAT can remain part of economically preferred routing paths under observable market conditions while generating meaningful holder rewards.

Evidence supporting this hypothesis requires repeated observable instances in which

$$\Pi_C > \Pi_{\text{alternative}} \quad (71)$$

and economically motivated activity actually traverses the MTGOXCAT route. Such evidence would support economic viability under observed market conditions. It would not establish universal optimality.

13 Revealed Routing Preference

For each qualifying opportunity t , estimate

$$C_{D,t} = F_{D,t} + G_{D,t} + I_{D,t} \quad (72)$$

for the competing route and

$$C_{C,t} = F_{C,t} + G_{C,t} + I_{C,t} \quad (73)$$

for the MTGOXCAT route.

Define

$$A_t = C_{D,t} - C_{C,t}. \quad (74)$$

When

$$A_t > 0, \quad (75)$$

the Cat route is modeled as economically preferable.

Observed execution can then be compared with the predicted route.

13.1 Routing Prediction Accuracy

Let

$$N_P = \text{number of qualifying modeled opportunities} \quad (76)$$

and

$$N_M = \text{number where observed execution matches the prediction.} \quad (77)$$

Define

$$RPA = \frac{N_M}{N_P}. \quad (78)$$

Routing Prediction Accuracy measures consistency between modeled economic incentives and observed execution.

It does not prove the identity or internal decision process of the executing trader.

14 Routing Discoverability

Economic superiority does not guarantee execution.

A router, solver, searcher, or arbitrage system must first discover the available liquidity and be capable of interacting with the relevant hooked pool.

The experiment therefore distinguishes between

$$H_E : \text{the MTGOXCAT route is economically competitive} \quad (79)$$

and

$$H_D : \text{the MTGOXCAT route is discoverable and executable.} \quad (80)$$

For each tested routing system or venue, the experiment should record:

- whether the canonical pool is indexed;
- whether the hooked pool can be quoted;
- whether the route can be executed;
- whether the satellite pool appears in the same routing graph;
- whether any hook-specific integration is required.

Failure to observe routed volume should not automatically be interpreted as evidence that transaction costs are too high if route discoverability has not first been established.

15 Liquidity Graph Hypothesis

A decentralized market can be represented as a graph

$$G = (V, E), \quad (81)$$

where tokens are vertices and liquidity markets are edges.

The canonical MTGOXCAT market creates

$$e_0 = (C, U). \quad (82)$$

An experimental satellite pool creates

$$e_1 = (C, S). \quad (83)$$

The resulting graph permits

$$S \rightarrow C \rightarrow U \quad (84)$$

and

$$U \rightarrow C \rightarrow S. \quad (85)$$

The objective is not simply to increase nominal MTGOXCAT liquidity.

It is to increase the number of economically useful paths through the liquidity graph.

15.1 Conceptual Routing Model

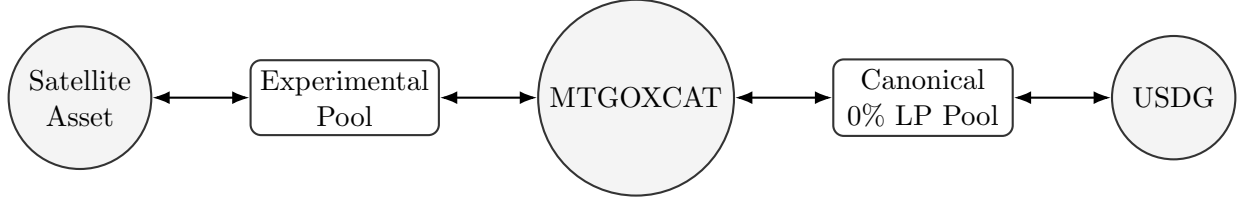


Figure 1: Experimental liquidity creates an additional market edge while the canonical zero-percent-LP-fee Uniswap v4 pool provides the MTGOXCAT/USDG settlement edge. Pons hook-level economics remain separate from the displayed core pool fee.

16 Primary Hypothesis

Hypothesis H_1 :

Strategically deployed secondary liquidity can produce measurable incremental volume through the canonical MTGOXCAT/USDG pool by creating economically competitive routing and arbitrage paths.

Formally,

$$H_1 : \Delta V_C > 0. \quad (86)$$

The null hypothesis is

$$H_0 : \Delta V_C \leq 0. \quad (87)$$

An increase in total MTGOXCAT volume alone is insufficient to reject H_0 .
Direct routing evidence is preferred.

17 Directly Attributable Volume

Let $\mathcal{R}$ represent transactions satisfying the predefined cross-market routing criteria.

Directly attributable routed volume is

$$V_R = \sum_{t \in \mathcal{R}} V_t. \quad (88)$$

The strongest observations are transactions demonstrably traversing both experimental liquidity and the canonical MTGOXCAT/USDG market.

18 Internal Pons Activity and Volume Attribution

Pons post-graduation fee accounting may accrue fees in either currency of the pool.

When fee balances are held in MTGOXCAT rather than USDG, the hook may perform an internal conversion against canonical liquidity before creator and protocol balances are settled.

These transactions are economically real but should not automatically be classified as independent external routing demand.

The experiment should therefore distinguish:

$$V_R = \text{external attributable routed volume}, \quad (89)$$

$$V_P = \text{Pons internal conversion volume}, \quad (90)$$

$$V_O = \text{other observed canonical volume}. \quad (91)$$

Reported experimental routing metrics should exclude V_P unless the metric explicitly concerns protocol-generated internal activity.

This prevents fee-sweep conversions from being incorrectly attributed to external arbitrageurs or routers.

19 Liquidity Amplification Ratio

Let

$$L_E = \text{capital allocated to experimental liquidity}. \quad (92)$$

Define

$$\boxed{LAR = \frac{V_R}{L_E}}. \quad (93)$$

For example, if

$$L_E = \$1,000 \quad (94)$$

and

$$V_R = \$8,400, \quad (95)$$

then

$$LAR = 8.4. \quad (96)$$

LAR is a liquidity-utilization metric.

It is not ROI, APR, yield, or investment return.

20 Holder Distribution Efficiency

Let

$$R_H = \text{verified holder rewards attributable to experimental activity}. \quad (97)$$

Define

$$\boxed{HDE = \frac{R_H}{L_E}}. \quad (98)$$

HDE measures verified holder distributions per dollar of experimental liquidity deployed.

A second useful measure is reward per million eligible tokens:

$$\boxed{RPM_e = 1,000,000 \frac{R_e}{S_{E,e}}.} \quad (99)$$

This allows holder reward performance to be compared across epochs even when eligible supply changes.

21 Liquidity Provider Economics

An experiment producing high volume while destroying more capital than it generates should not automatically be considered successful.

Let

$$\begin{aligned} F_{LP} &= \text{LP fees earned,} \\ V_T &= \text{terminal LP inventory value,} \\ L_E &= \text{initial experimental capital,} \\ C_G &= \text{gas and execution costs,} \\ R_F &= \text{foregone holder rewards, if applicable.} \end{aligned}$$

Simplified LP profit and loss is

$$\Pi_{LP} = F_{LP} + V_T - L_E - C_G. \quad (100)$$

Let

$$V_H = \text{terminal value of passively holding the initial assets.} \quad (101)$$

Performance relative to passive holding, including foregone holder rewards where measurable, is

$$\boxed{\Pi_{\text{relative}} = F_{LP} + V_T - V_H - C_G - R_F.} \quad (102)$$

This prevents transaction volume from obscuring losses caused by adverse selection, inventory changes, or reward ineligibility.

22 Concentrated Liquidity

Concentrated-liquidity AMMs allow capital to be allocated within selected price intervals rather than across the entire price domain.

For a position bounded by P_a and P_b , liquidity can be represented using square-root price relationships.

For token x ,

$$L_x = x \frac{\sqrt{P} \sqrt{P_b}}{\sqrt{P_b} - \sqrt{P}}, \quad (103)$$

while for token y ,

$$L_y = \frac{y}{\sqrt{P} - \sqrt{P_a}}. \quad (104)$$

Concentrated liquidity can therefore increase effective depth near a selected price without requiring equivalent full-range capital.

The objective is not necessarily to maximize total value locked.

It is to maximize economically useful liquidity.

23 Countercyclical Liquidity Experiment

A separate experiment concerns temporary liquidity deployment during periods of extreme market imbalance.

During substantial selling pressure, USDG liquidity may be placed within predefined lower price ranges.

The intended transformation is

$$USDG \rightarrow MTGOXCAT. \quad (105)$$

As sellers execute against the position, inventory becomes increasingly denominated in MTGOXCAT.

Once a predetermined conversion threshold is reached, the position may be withdrawn.

Conceptually,

$$USDG \xrightarrow{\text{market selling}} MTGOXCAT \xrightarrow{\text{withdrawal}} \text{long-term inventory}. \quad (106)$$

Withdrawal is a material part of the experimental design because leaving the position active during a subsequent reversal could convert the acquired MTGOXCAT back into USDG.

24 Experimental Pre-Registration

Each experiment should be documented before liquidity is deployed.

Table 2: Experiment #001 Pre-Registration

Parameter	Pre-Registered Value
Experiment ID	CAT-LAB-001
Network	Robinhood Chain
Canonical Pair	MTGOXCAT / USDG
Canonical Core LP Fee	0%
Pons Base Fee	Contract verified before experiment
Creator Tax	Contract verified before experiment
Experimental DEX	To be determined
Experimental Pair	To be determined
Experimental Pool Address	Recorded before deployment
Liquidity Wallet	Publicly disclosed
Capital Deployed	To be determined
Satellite LP Fee	To be determined
Competing Pool Fee	Measured before deployment
Initial Market Price	Recorded at deployment
Liquidity Range	Defined before deployment
Eligible Supply	Snapshot methodology documented
Starting Block	Recorded at deployment
Starting Timestamp	Recorded at deployment
Observation Period	Defined before deployment
Withdrawal Criteria	Defined before deployment
Success Criteria	Defined before deployment
Failure Criteria	Defined before deployment
Dashboard	Public on-chain analytics

25 Experimental Measurements

The public analytics dashboard should report:

- canonical MTGOXCAT/USDG volume;
- experimental pool volume;
- directly attributable external routed volume;
- Pons internal conversion volume;
- experimental capital deployed;
- Liquidity Amplification Ratio;
- eligible holder supply by epoch;

- Eligible Supply Ratio;
- Reward Concentration Factor;
- verified holder distributions;
- rewards per million eligible MTGOXCAT;
- Holder Distribution Efficiency;
- LP fees;
- LP mark-to-market P&L;
- foregone holder rewards attributable to LP inventory;
- LP performance versus passive holding;
- modeled direct-route execution cost;
- modeled MTGOXCAT-route execution cost;
- modeled Cat route advantage;
- predicted economically preferred route;
- observed route;
- Routing Prediction Accuracy;
- qualifying transaction count;
- unique interacting wallets;
- routing systems observed interacting with the pools.

26 Evidence Classification

Results should distinguish three categories.

Directly Attributable: On-chain transactions demonstrably interacting with experimental liquidity and the canonical pool.

Observed: Changes occurring during the experimental period for which direct causality cannot be established.

Estimated: Values derived from models, counterfactuals, assumptions, or statistical baselines.

27 Result Classification

Possible experimental outcomes include:

Supported

Meaningful directly attributable routing is observed, liquidity utilization exceeds the pre-registered threshold, and LP economics remain within predetermined acceptable limits.

Inconclusive

Qualifying routing occurs, but the magnitude is insufficient to distinguish the effect from ordinary market behavior or justify the capital deployed.

Not Supported

Experimental liquidity produces negligible qualifying volume, creates unacceptable economic losses, or otherwise fails predetermined success criteria.

Publishing unsuccessful experiments is part of the methodology.

28 Limitations

Several important limitations apply.

First, cryptocurrency markets are highly non-stationary.

Second, arbitrage and routing systems are heterogeneous. A theoretically superior path is not guaranteed to be discovered or selected.

Third, nominal fee comparisons alone do not determine execution quality. Liquidity depth, price impact, gas, latency, and routing infrastructure must also be considered.

Fourth, observing a route consistent with economic optimization does not prove that the actor executing it was an arbitrage bot.

Fifth, a 5% fee on one competing market does not imply that every alternative route bears the same cost.

Sixth, the exact timing or threshold of MtGoxCat holder distributions is not assumed where it has not been contractually or empirically established.

Seventh, eligibility for a holder epoch must be reconstructed from the actual snapshot/distribution methodology. Total supply must not be substituted for eligible supply.

Eighth, Pons-generated internal fee conversions must be distinguished from independently generated external routing activity.

Finally, the 2.5% creator tax remains meaningful transaction friction and may make MTGOXCAT uncompetitive whenever available discrepancies are insufficient to overcome total execution cost.

29 Reproducibility

Where practical, each experiment should publish:

- token and pool addresses;
- factory and hook addresses;
- liquidity wallet addresses;
- contract-read fee parameters;
- starting and ending blocks;
- relevant transaction hashes;
- SQL queries;
- definitions of qualifying routes;

- definitions of internal Pons transactions;
- capital allocation;
- liquidity ranges;
- fee tiers;
- withdrawal events;
- holder reward transactions;
- epoch snapshot methodology;
- eligible supply calculations;
- assumptions used in modeled execution costs.

30 Results

Reserved for Experimental Results

No experimental results were known or incorporated when the methodology in Research Draft v0.4 was specified.

This section is intentionally reserved so that subsequent observations can be reported without rewriting the original hypotheses, metrics, or success criteria after outcomes are known.

31 Conclusion

MtGoxCat presents an unusual market structure.

Its canonical Uniswap v4 pool carries a zero-percent core LP fee, while transaction-level economics are implemented through the Pons hook.

The 2.5% creator-tax component is subsequently redirected through the community holder reward mechanism.

These mechanisms should not be treated as a single undifferentiated “pool fee.”

Likewise, holder rewards should not be modeled as a simple percentage of total token supply.

The economically relevant denominator is the supply eligible for the applicable reward epoch.

The primary experimental question is whether the resulting transaction friction remains compatible with economically motivated routing.

The 2.5% creator-tax rate was selected using a diminishing-returns framework, but its economic viability remains subject to market evidence.

The relevant question is therefore not whether 2.5% can be declared optimal in the abstract.

The question is whether MTGOXCAT can continue to win economically motivated order flow while charging it.

If market participants repeatedly select MTGOXCAT routes when those routes provide superior modeled execution, the market provides evidence that the fee structure remains compatible with competitive routing.

Such evidence would not establish universal optimality.

It would establish something narrower and directly observable:

The 2.5% holder-reward mechanism survived market selection under the conditions observed.

That proposition can be tested.

Research Principle

Don't trust the cat. Verify the cat.

Economic Interest Disclosure

The author holds MTGOXCAT and may benefit economically from increased token activity, holder distributions, liquidity activity, or changes in token value.

This economic interest is one reason the methodology emphasizes pre-registration, public on-chain evidence, reproducible queries, and publication of unsuccessful as well as successful experiments.

Research Note

This document is a working research paper describing proposed experiments and analytical methods.

Unless explicitly identified as an observed result, numerical examples are illustrative and should not be interpreted as historical performance, expected returns, or predictions of future market behavior.

References

- [1] Pons. *Pons v2 Documentation: Protocol, Fees, Community Takeovers, Contracts, and Uniswap v4 Pools*. 2026. <https://docs.ponsfamily.com/v2>
- [2] Hayden Adams, Noah Zinsmeister, Moody Salem, River Keefer, and Dan Robinson. *Uniswap v3 Core*. 2021.
- [3] Atis Elsts. *Liquidity Math in Uniswap v3*. Technical note, 2021.
- [4] Steven Campbell, Philippe Bergault, Jason Milionis, and Marcel Nutz. *Optimal Fees for Liquidity Provision in Automated Market Makers*. 2025. arXiv:2508.08152.