

Pachira Fund

Can Money Grow on Trees?

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OUTLINE

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2. What are we Solving?
3. Liquidity Trees
4. Simulation Results
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Introduction

OBJECTIVES

DEFINE OUR PROBLEM

- Stagnant Pool Problem
- Implicitly addressed by Uniswap v3

PRESENT OUR SOLUTION

- Liquidity Trees
- Simulation Results

OBJECTIVE REVISTED

- Can Money Grow on Trees?

What are we Solving?

STAGNANT POOL PROBLEM

LAY DEFINITION:

- How do we increase ΔV on liquidity over some time interval t ?

UNISWAP v3 HAS IMPLICITLY ADDRESSED THIS PROBLEM:

- Increasing the depth of order book (virtually)
- Makes large trades more efficient
- Hence increasing the *possibility* of more ΔV
- However, does nothing to induce more trading volume

UNISWAP V3

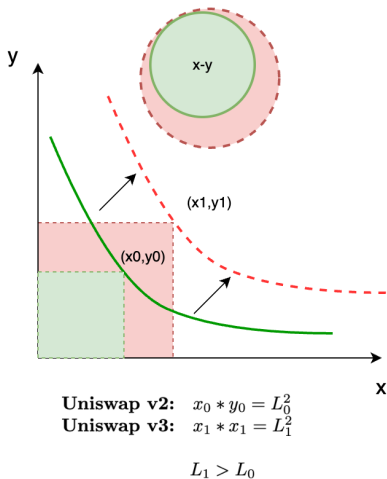
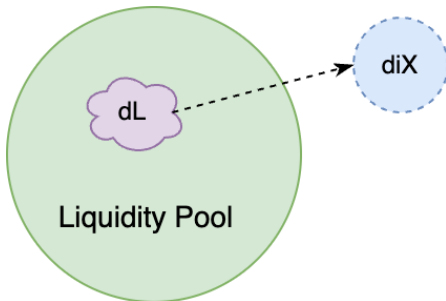


Figure 1: Graphical illustration on how depth is virtually increased using Uniswap v3

INDEXING PROBLEM: POSED

CPT INDEXING PROBLEM

- Given a position ΔL , what is the indexed value in only one of the two pairing assets (x,y)



INDEXING PROBLEM: SOLUTION

This system describes the mathematical operations that are effectively being done in the contract code when performing an *efficient* two-step withdrawal (ie, withdrawal both assets + swap one for the remaining) operation:

$$\Delta x = \frac{\Delta Lx}{L} \tag{1}$$

$$\Delta y = \frac{\Delta Ly}{L} \tag{2}$$

$$\Delta y_{(i)} = \Delta y + \frac{\gamma \Delta x (y - \Delta y)}{(x - \Delta x) + \gamma \Delta x} \tag{3}$$

LET'S INCLUDE A NEW DIMENSION ...

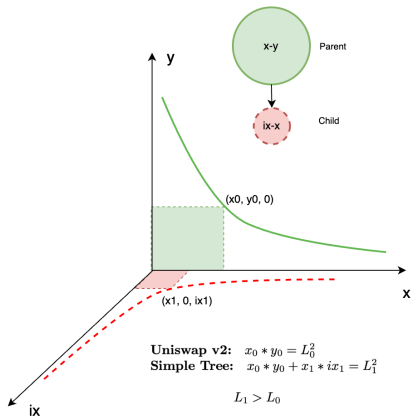


Figure 2: Simple Tree

NEW DIMENSION CONT'



HOW DOES THIS WORK?

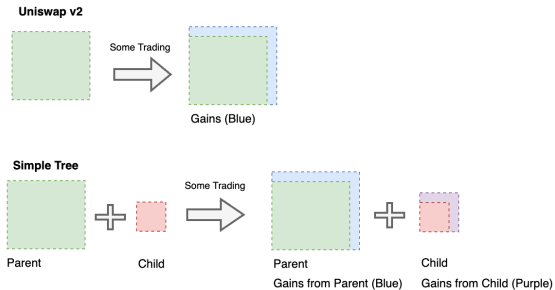


Figure 3: Boxes represent liquidity under CPT curve; creating a new market out of indexed liquidity indexed liquidity is a way to address the stagnant pool problem; in short we've leveraged some of the green, got red and made some extra purple

Liquidity Trees

FULL TREE

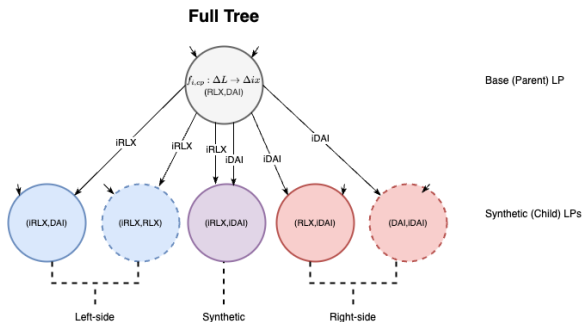


Figure 4: Full CPT liquidity tree represented as a computational tree structure comprised of left-sided, right-sided and synthetic pools

SUB TREES

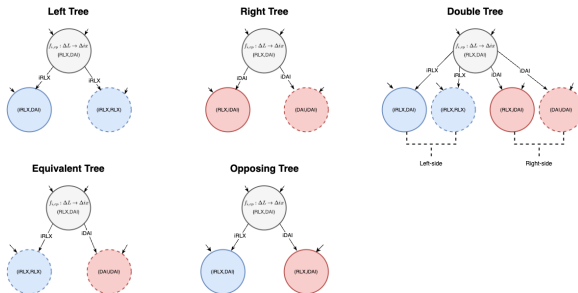


Figure 5: Sub-trees comprised of: (TOP LEFT) left tree; (TOP CENTER) right tree; (TOP RIGHT) double tree; (BOTTOM LEFT) equivalent tree; (BOTTOM CENTER) opposing Tree

Simulation Results

LEFT TREE

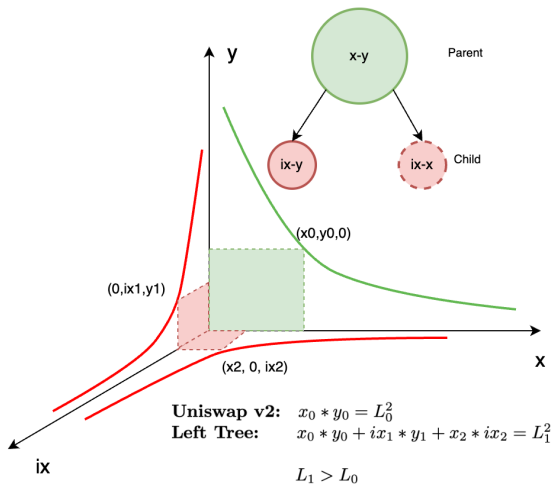
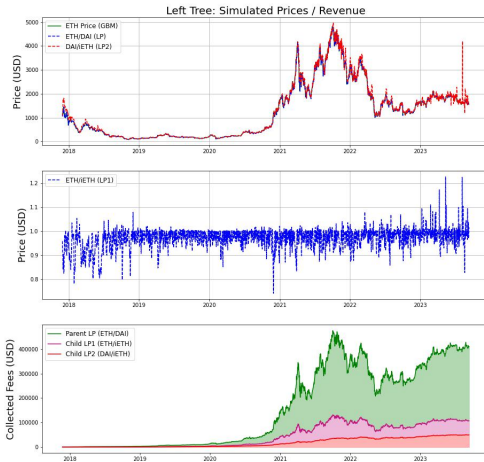


Figure 6: Left Tree

LEFT TREE: SIMULATED PRICE / REVENUE (1)



LEFT TREE: SIMULATED PRICE / REVENUE (2)

Metric	Totals		
Revenue (LP) / LP Liquidity	19.4%		
Revenue (LP+LP1+LP2) / LP Liquidity	26.3%		
Revenue Boost (Indexed Liquidity)	35.61%		
Percentage Indexed	7.51%		

	Sub-totals		
	LP (ETH-DAI)	LP1 (iETH-ETH)	LP2 (iETH-DAI)
Liquidity	\$1,559,145	\$71,961	\$162,118
Revenue	\$302,140	\$57,927	\$49,673
Revenue / Liquidity	19.4%	80.5%	30.64%

Table 1: Metrics harvested from Left-tree simulation using ETH & DAI (Jan 2018 to Oct 2023)

Revist our Objective

IN SUMMARY

STAGNANT POOL PROBLEM

- Shown how stagnant pool problem can be addressed

LIQUIDITY TREES: A NEW DeFi PRIMITIVE

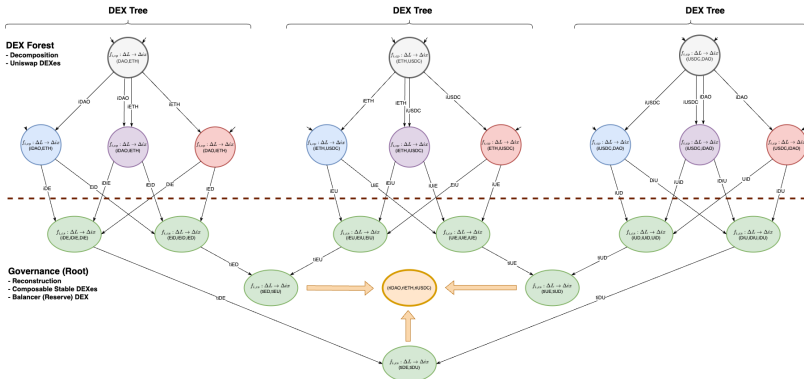
- New DeFi Primitive, which we call Liquidity Trees
- Utilizes fully collateralized liquidity, and can be represented as undirected graphs or algebraically in \mathbb{R}^n

PACHIRA TOKEN LAUNCH

- Combining the Liquidity Trees with a Governance system for Pachira Fund token launch

Thank you!

APPENDIX 1: PACHIRA TOKEN LAUNCH



APPENDIX 2: RESERVE SWAP PRICES

