Emperical Research in Crypto

Challenges & Opportunities

Brad Bachu
Uniswap Labs

Disclaimer: All views are my own.

Intent
- Initiate Trades
- Optimize Execution

Liquidity
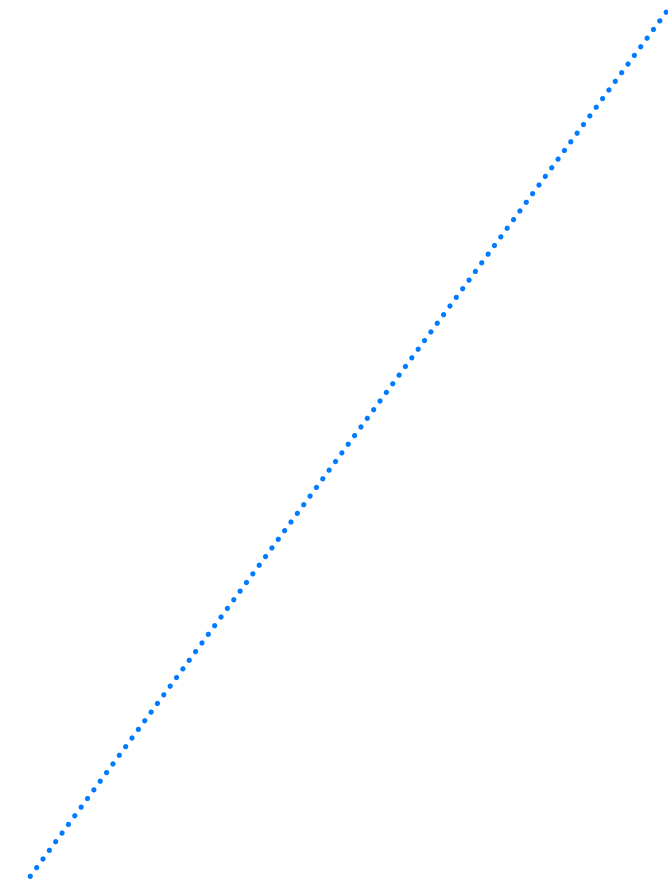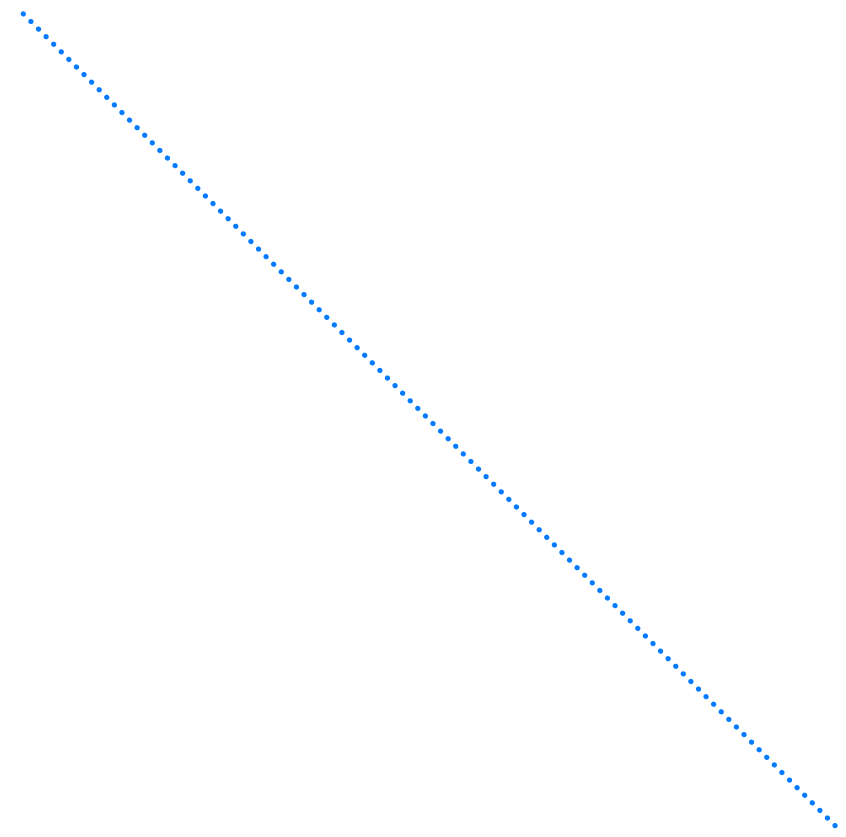- Provide Liquidity
- Earn Fees

Chain
- Host Transactions
- Settle Them

Intent ———————— Liquidity

Chain

Intents

What Traders Want - and What They Get

- Fast Execution
- Best Price
- No MEV
- Minimal Slippage
- Privacy (Sometimes)

- Default Slippage
- Slow or Partial Fills
- Exposure to Frontrunning
- 'Best' may not be on-chain
- Conflicting Incentives

Execution Quality is not a Single Number

It is the outcome of many design decisions –
in the mechanism, the chain & the interface

Comparing Mechanisms - Not Apples to Apples

- Dutch Auctions
- Batch Auctions
- RFQ
- Rebates

- Filler Competition
- Fill type (private/public)
- Trade Size
- Asset Type
- Number of Users
- Price Improvement
- Cream Skimming

Are Traders Choosing Well

- Do they understand & set slippage correctly?
- Are they choosing the right interfaces?
- Do they respond to the right signals (quote/execution)?

Liquidity

What is/drives LP Performance?

Markouts, Inventory Risk, Incentives

Are LPs rational? losing money?

Or is this an incomplete measurement?

Measurement Blind Spots in LP Analyses

- WETH - USDC bias

- No reference price for many tokens (hard to calculate markout)

- Contex aware (informed/uninformed, hook logic etc)

- Incentivized pools dilute signal

*We need better ways otherwise we are just measuring noise

LP Strategy – Are We Learning Anything?

If LPs are getting smarter

we should see capital move and strategies improve

- Is capital moving? Why?
- How do different AMM designs change LP outcomes?
- Is fragmentation hurting them through routing friction?

Liquidity Fragmentation - a Feature or Bug

World A
One big Pool

- Easy to route
- Poor Fit for some tokens
- Simpler LP strategy
- Easy to Measure

World B
1000s of Pools

- Super Fragmented
- More Specialization
- Harder to Route
- Harder to Benchmark
- * Possibly better execution

Can we quantify fragmentation & defragmentation?

Token Launcher & Secondary Market Dynamics

eg Pump.fun

- Are these Bubbles?

- Who is making and losing money? How much?

- User Behaviour

- How do these impact chain activity (Why Solana?)
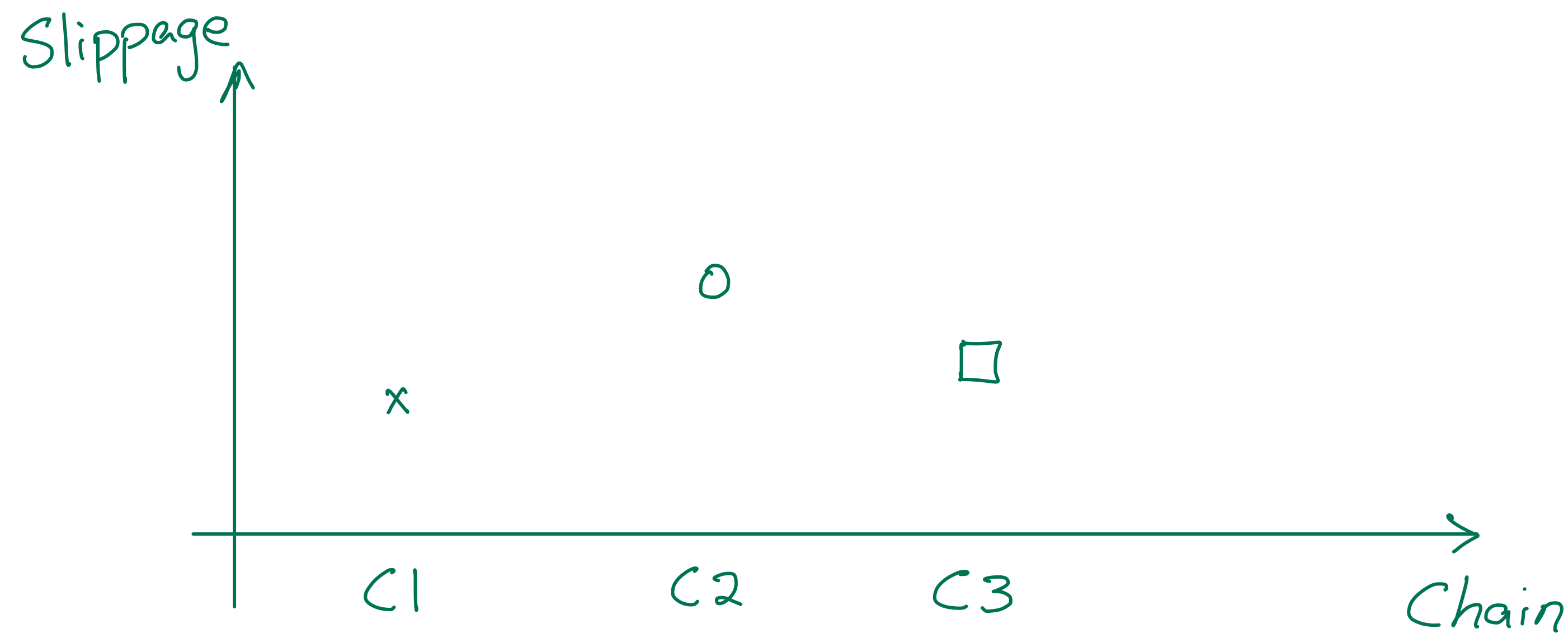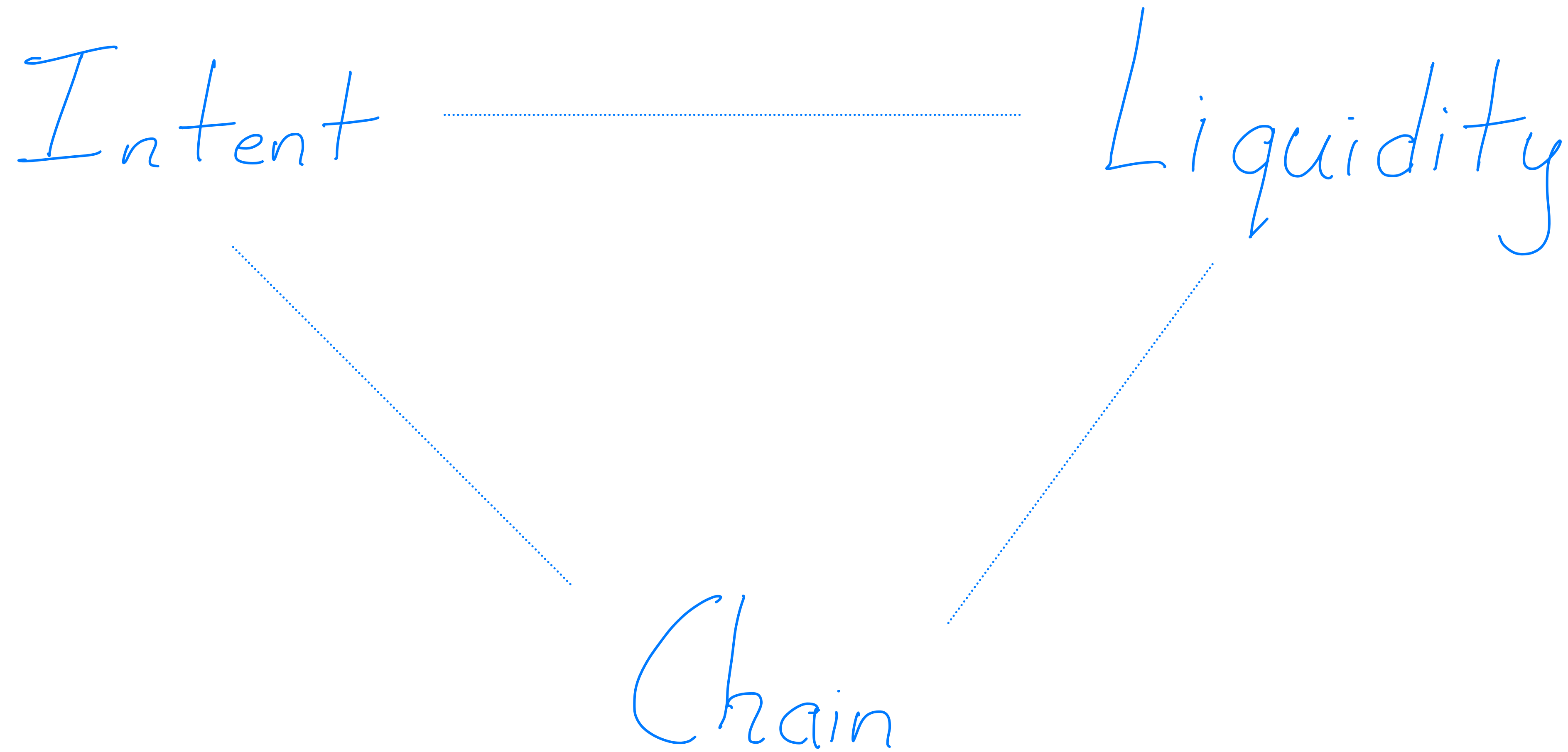
Chains

Chains Shape The Game

Auctions , Priority Ordering, FCFS

Chains dictate mechanisms : Revert Protection , OFA type

— Is faster better? And for who? Traders, LP, Solvers?

Slippage

x (at C1)

o (at C2)

□ (at C3)

C1   C2   C3   Chain

Intent .... Liquidity

Chain

Be Aware of Limitations

* Metrics describe but don't always say why.

* Measurements without models/theory are just bookeeping.

* Measurements don't always reflect fundamentals.

* Correlation ≠ Causation

* You can't use data to prove a hypothesis, only disprove.

Thank You