Course IV:

DeFi Risks and Opportunities

2. Governance, DNS, Oracle Risk, DEX and Custodial Risks

(iv) DEX Risk

Risks: DEX risk

What is DEX risk?

- The DEX landscape on Ethereum consists of two dominant types, Automated Market Makers (AMMs) and order-book exchanges.
- Both types of DEXs vary in architecture and have differing risk profiles.

Risks: DEX risk

AMM DEX

- AMMs, however, are the most popular DEX to date, because they allow users to trustlessly and securely exchange assets, while removing traditional counterparty risk.
- By storing exchange liquidity in a trustless smart contract, AMMs give users instant access to quotes on an exchange pair.

Risks: DEX risk

CFMM DEX

- Uniswap is the best-known example of an AMM, also known as a Constant-Function Market Maker (CFMM).
- Uniswap relies on the product of two assets to determine an exchange price.
- The amount of liquidity in the pool determines the slippage when assets are exchanged during a transaction.

Risks: DEX risk

CFMM DEX

- CFMMs such as Uniswap optimize for user experience and convenience, but sacrifice absolute returns. CFMM liquidity providers (LPs) earn yield by depositing assets into a pool, because the pool takes a fee for every trade (LPs benefit from high trading volume).
- This allows the pool to attract liquidity, but exposes LPs to smart contract risk and impermanent loss.

Risks: DEX risk

CFMM DEX

- Impermanent loss occurs when two assets in a pool have uncorrelated returns and high volatilities.
- These properties allow arbitrageurs to profit from the asset volatilities and price differences, reducing the temporary returns for LPs and exposing them to risk if an asset moves sharply in price.
- Some AMMs, such as Cap, are able to reduce impermanent loss by using an oracle to determine exchange prices and dynamically adjusting a pricing curve to prevent arbitrageurs from exploiting LPs, but impermanent loss remains a large problem with most AMMs used today.

Risks: DEX risk

On-chain order-book DEX

- On-chain order-book DEXs have a different but prevalent set of risks.
- These exchanges suffer from the scalability issues inherited from the underlying blockchain they run atop of, and are often vulnerable to front running by sophisticated arbitrage bots.
- Order-book DEXs also often have large spreads due to the presence of low-sophistication market makers.
- Order-book DEXs are often forced to rely on a single market maker for each asset pair.

Risks: DEX risk

Off-chain order-book DEX

- Several decentralized exchanges use an entirely off-chain order book, retaining the benefits of a noncustodial DEX, while circumventing the market making and scaling problems posed by on-chain order-book DEXs.
- These exchanges function by settling all position entries and exits on chain, while maintaining a limit-order book entirely off chain.
- This allows the DEX to avoid the scaling and UX issues faced by on-chain order-book DEXs, but also presents a separate set of problems around regulatory compliance.