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CC0007 Science and Technology for Humanity

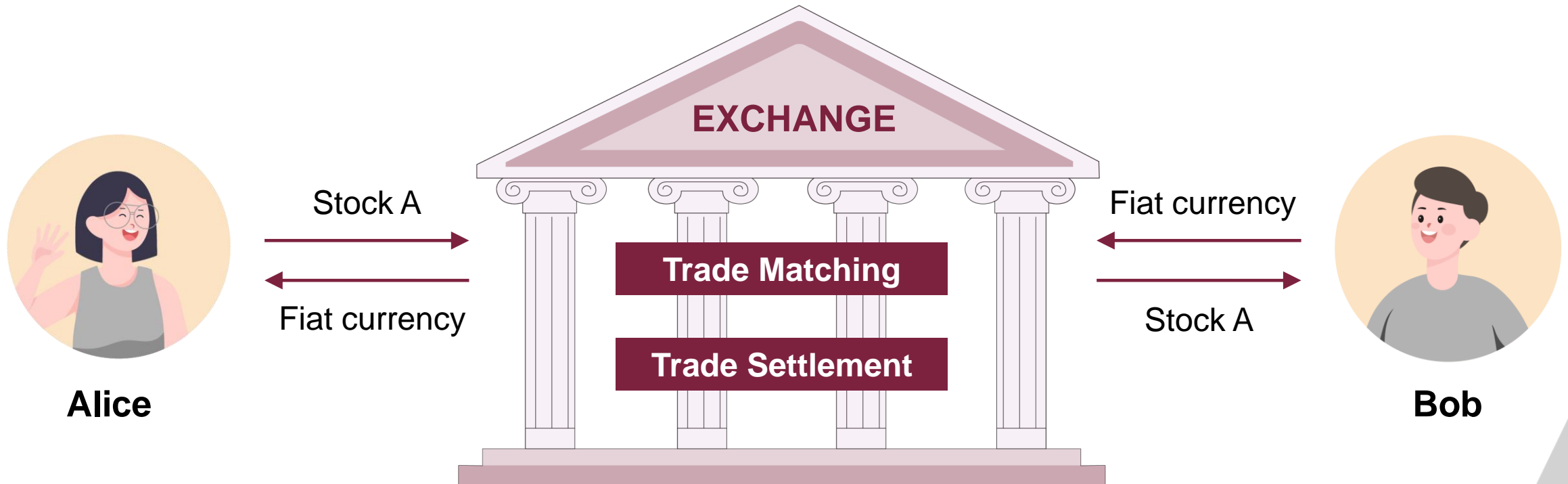
Decentralised Finance

Assoc Prof Deng Xin (Cindy), NTU

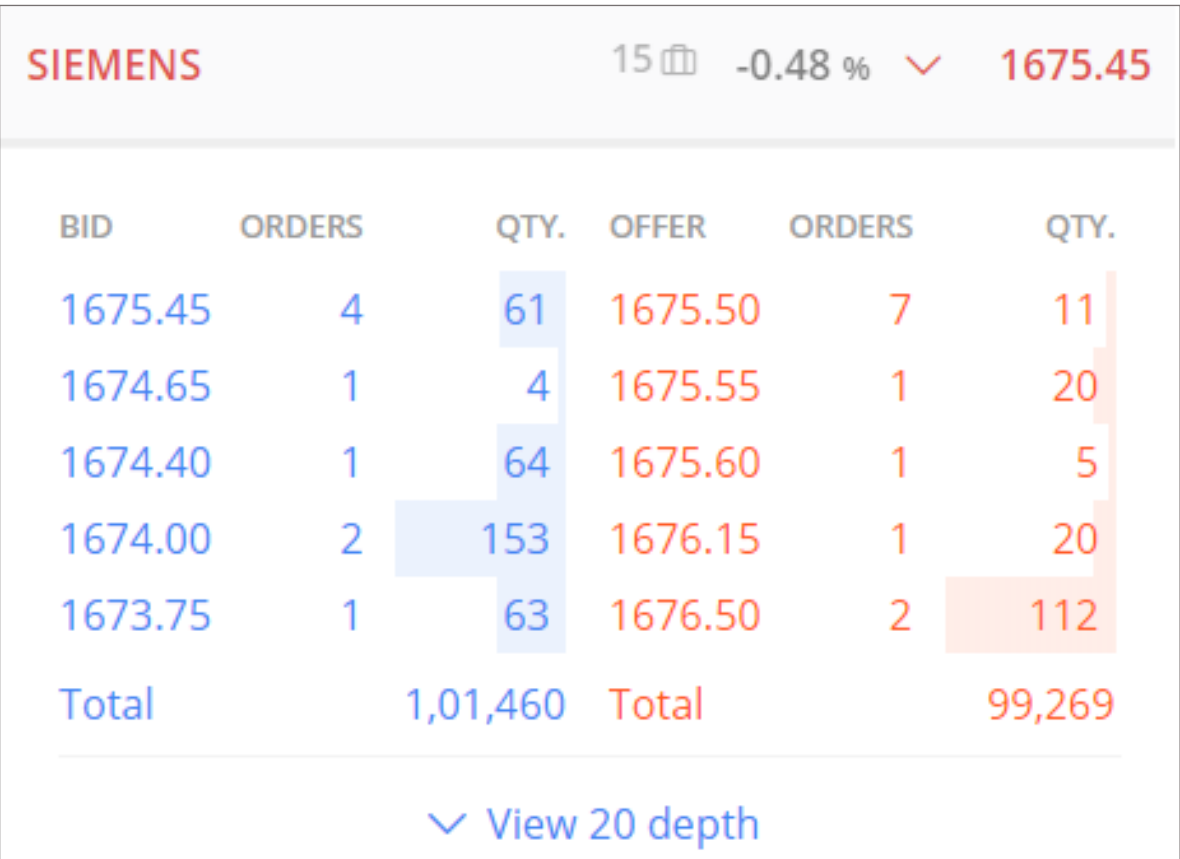


DeFi
Decentralised Finance

Financial Exchange



Trade Matching: Order Book



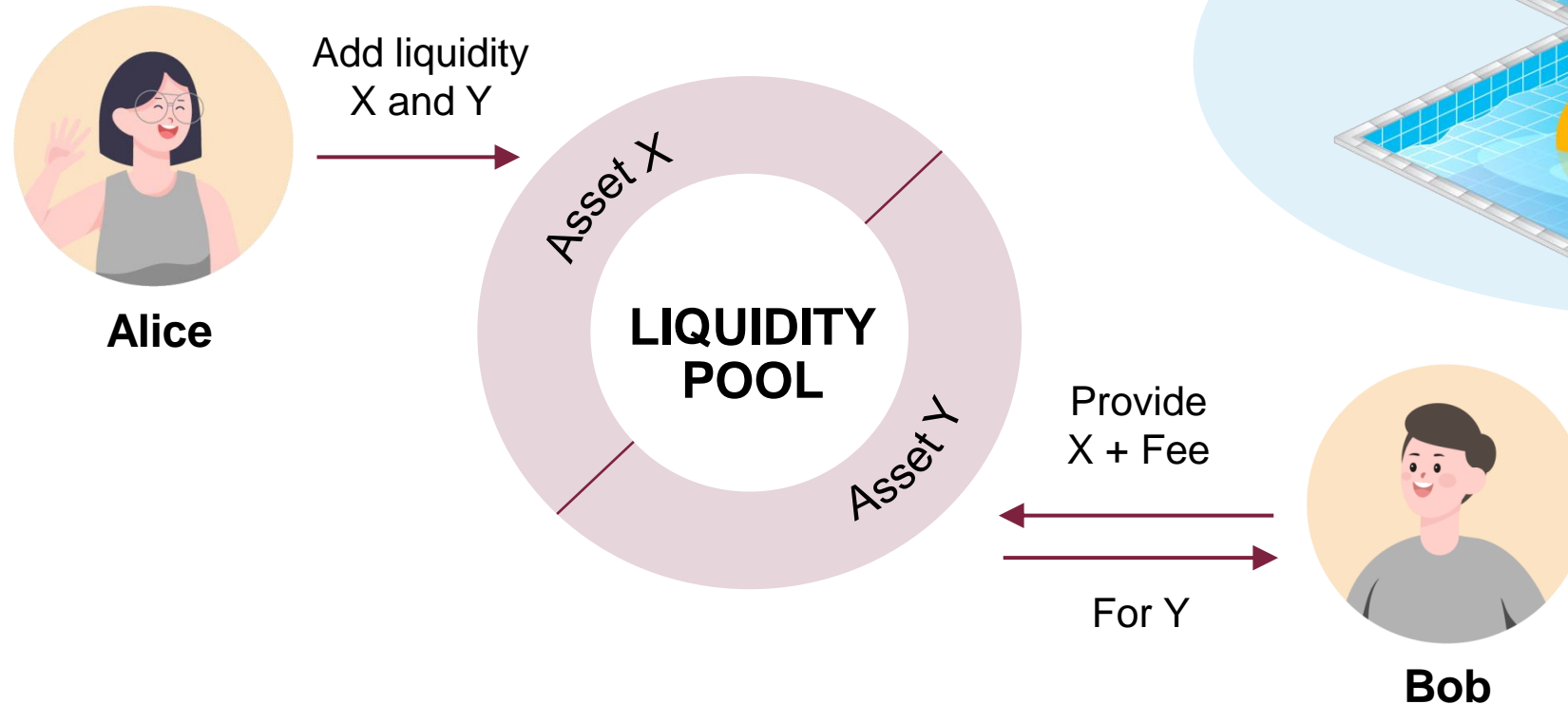
SIEMENS 15 -0.48 % 1675.45					
BID	ORDERS	QTY.	OFFER	ORDERS	QTY.
1675.45	4	61	1675.50	7	11
1674.65	1	4	1675.55	1	20
1674.40	1	64	1675.60	1	5
1674.00	2	153	1676.15	1	20
1673.75	1	63	1676.50	2	112
Total		1,01,460	Total		99,269
View 20 depth					

assets → money

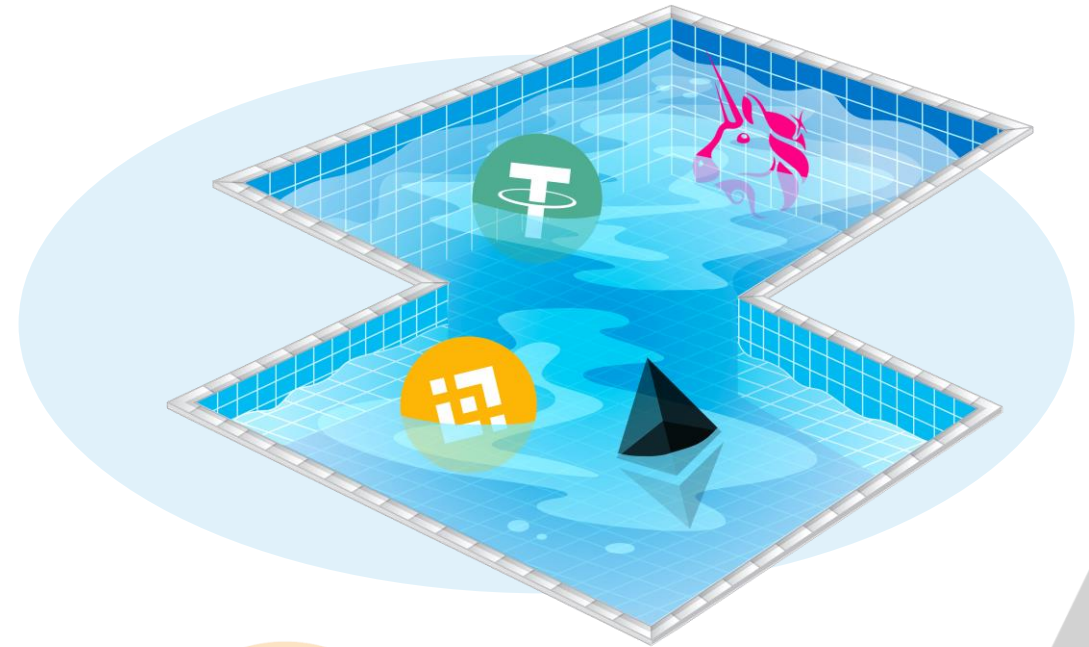
Liquidity



Liquidity Pool: Let Smart Contract Do Market Making



Liquidity pool

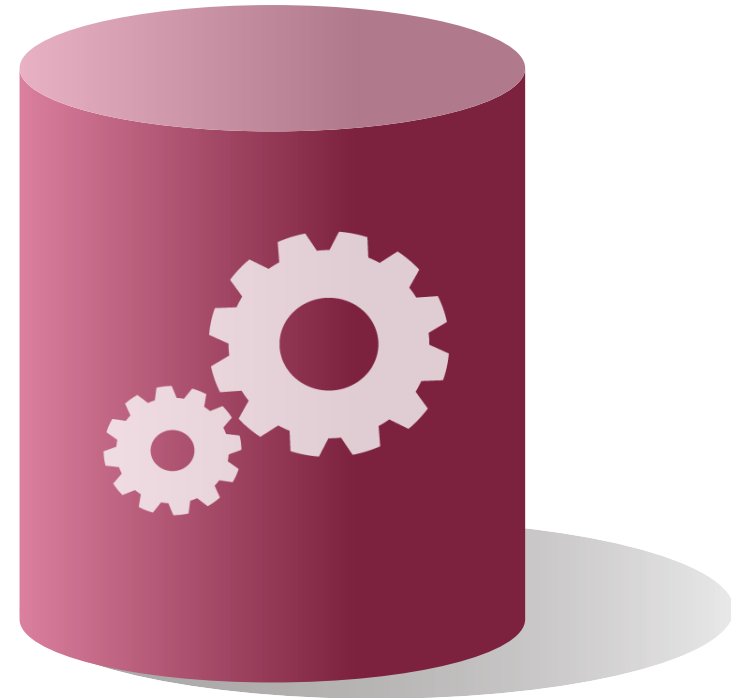


Automated Market Maker (AMM)

- Constant product AMM
- Purchase of asset Y **increases price** of Y and **decreases the price** of X

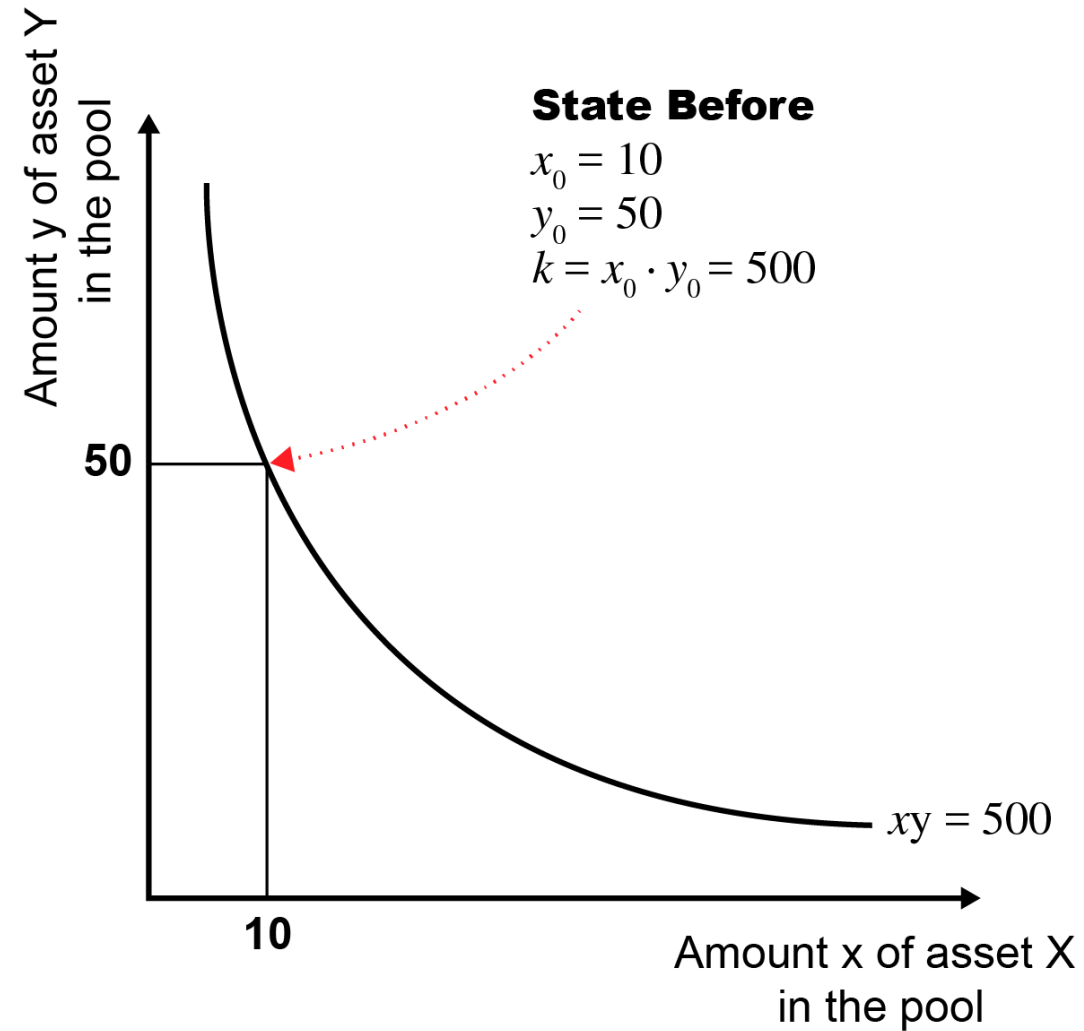
$$x \times y = k$$

Asset X quantity Asset Y quantity Constant

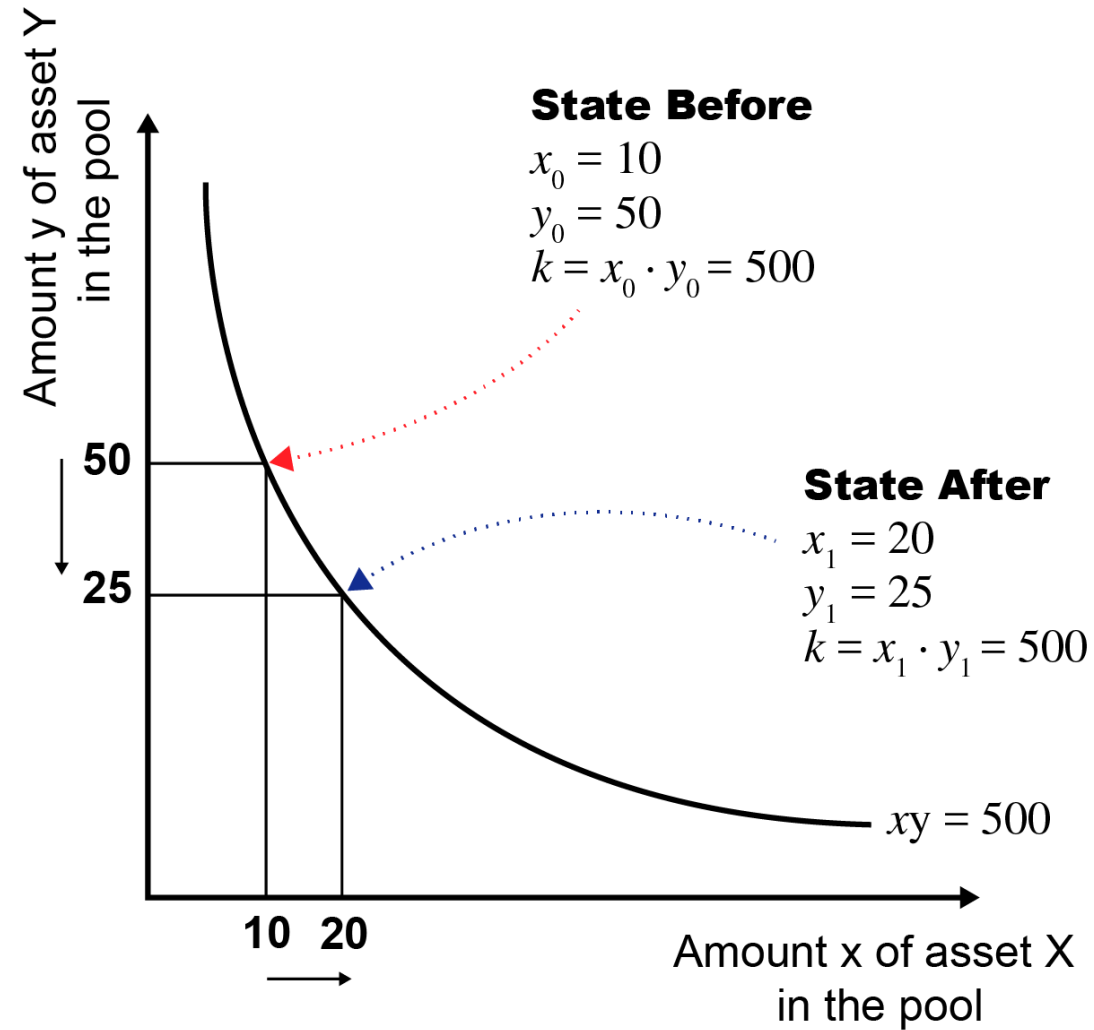


Automated Market Maker

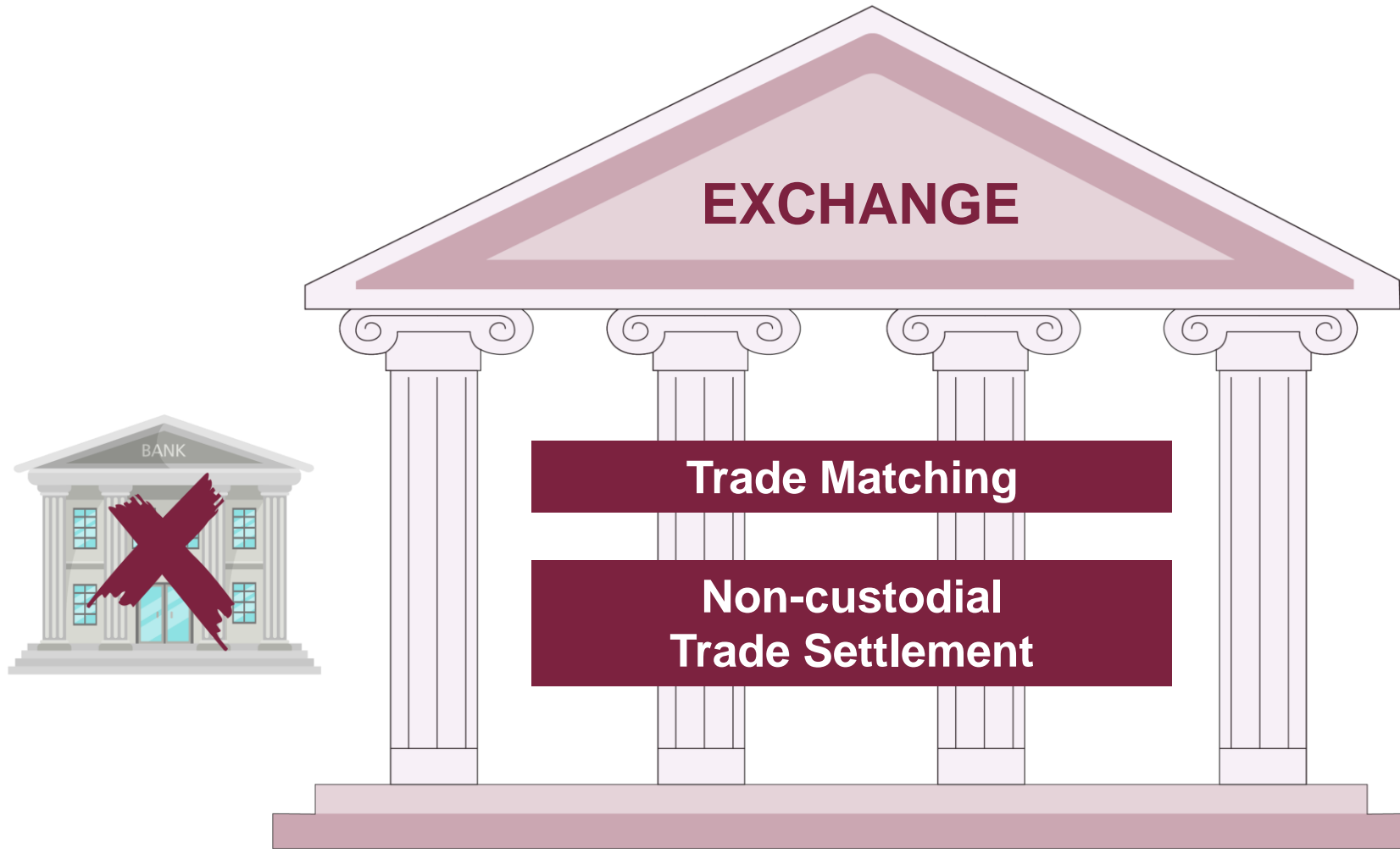
AMM Example



AMM Example

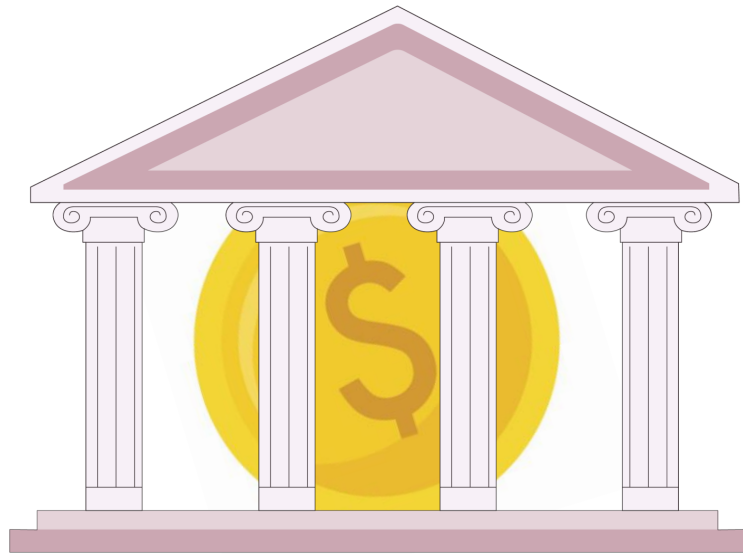


Trade Settlement



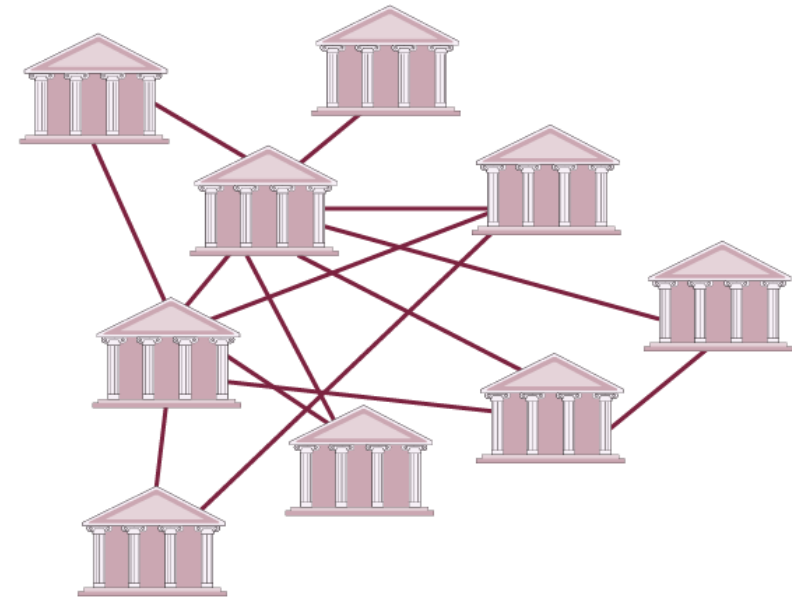
Centralised Exchange vs. Decentralised Exchange

Centralised exchange



VS

Decentralised exchange



A Failure of Centralised Brokerage/Exchange

Gamestop (NYSE: GME)

Robinhood 

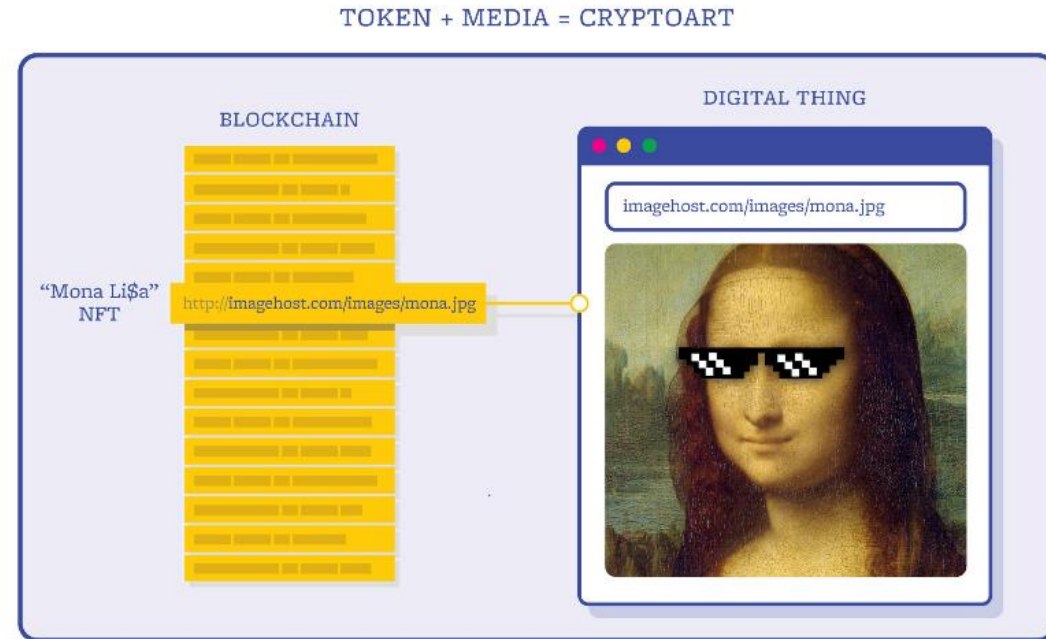
VS



UNISWAP

Other DeFi Protocols

- Decentralised lending protocol
- Non-fungible tokens (NFT)
- Synthetic assets



SYNTHETIX

Questions



Can Financial
Intermediaries
be Replaced by
Blockchain
Technology?



Blockchain

Risks Associated with Decentralised Finance

DeFi still early stage
can be hacked

DEFI



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