SWAPPING BETWEEN CURRENCIES

SOVRYN AMM

AUTOMATED MARKET MAKING

- Trade agains a pool instead of matching orders
- Price is determined by a mathematical formula
- x * y = k, where x and y are the token balances and k constant –> reserves always have the same value in the pool
- Pool tokens represent a share in the pool
- LPs need to provide both assets in equal value

AMM PROBLEMS

- High slippage with low liquidity
- Arbitraging required to keep the price around the expected price (from other trading venues) -> cost for the pool
- Impermanent loss
  - loss in contrast to just hodling the asset if the price rises
  - Canceled out if price returns to starting point

ORACLE BASED AMMS

- Price follows an external oracle
- less arbitraging opportunities, therefore less impermanent loss
- Allows for one-sided liquidity provision

SOVRYN'S AMM

- Fork of Bancor v2
- Different kinds of liquidity pools
    - V1: Traditional AMM (used for SOV)
    - V2: Oracle based AMM (used for all others)
- RBTC as second currency on each pool (though technically not required)
- Network contract which connects all of the pools, allowing to trade each asset with each other asset

PROVIDING LIQUIDITY

V1

- Provide 2 reserves in the correct ratio (50/50)
- Wrong ratio -> lower value reserve is used as base for calculation, excess returned to the user
- 1 pool token representing a share of both currencies

V2

- Provide a single asset
- 1 pool token per reserve

REMOVING LIQUIDITY

V1

- Burn the pool tokens to receive an equal value of both reserve currencies
- Impermanent loss turns into permanent loss

V2

- Burn the pool tokens to receive the originally staked balance + earned fees
- The pool balance might be insufficient for the payout
- Fee on withdrawing an undersupplied asset

SINGLE SIDED LIQUIDITY

- Smart contract keeps track of how much of each reserve it owes to its LPs
- Incentivizes the market to keep the balance by creating arbitraging opportunities
- If not taken frequently enough, staked and current balance diverge, leading to a loss
- System reacts with dynamic fees which are used to fill up the undersupplied reserve

CONVERSION FEES

- Conversion fee is paid on each swap for each involved pool
- Fee is added to the staked balance of the purchased reserve
- Each pool can have a different conversion fee
- Default 0.1%
- Dynamic fees are not added to any staked balance (used to move the current balance of an undersupplied asset closer to the staked balance)

FREQUENT SOURCE OF CONFUSION

- You do not get 1 pool token per supplied reserve token, but less, because the pool token grants you a share of the fees generated in the past as well.
- While the AMM price follows the oracle price, it is not the same, because of
  - Slippage (caused by low liquidity)
  - Market incentives for rebalancing the AMM pool (arb opportunity + dynamic fees)