

# Decentralized Finance

Synthetic And Derivatives; Portfolio Management; Insurance;  
Information and Data Markets

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# Wallet Account Overview

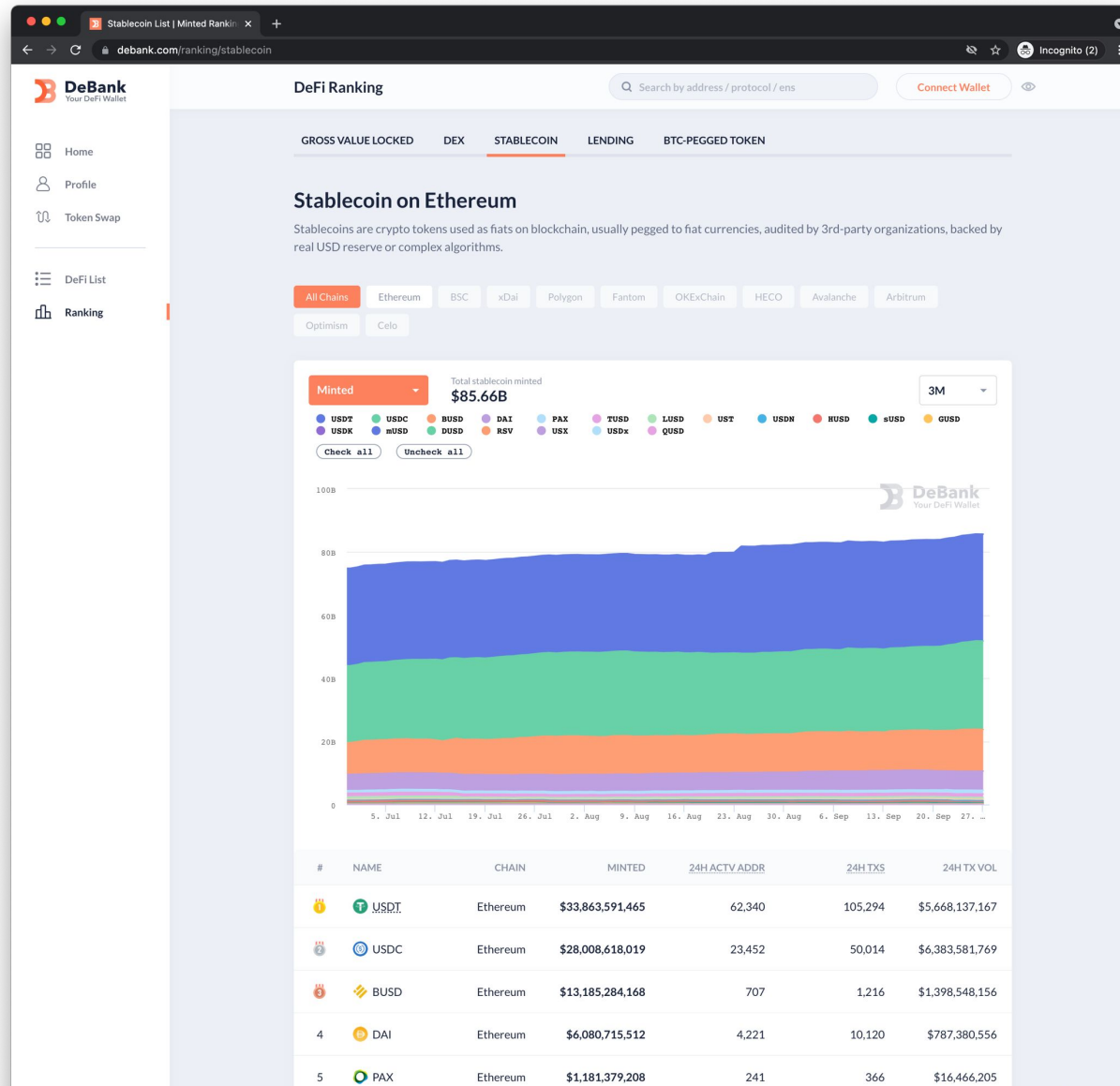
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# Economic Models

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- You're given a model
  - Represents (often simplifies) an economic process
  - Contains variables
  - Logical/Quantitative relationships between variables
- Example: **Inflation**
  - Measuring inflation requires a *behavior model*
  - Differentiate relative vs. inflation price change

# Stablecoins on Ethereum



# Stable?

**Inflation Calculator**

If in  (enter year)

I purchased an item for \$

then in  (enter year)

that same item would cost: **\$3.32**

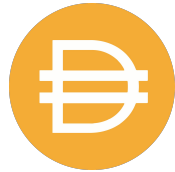
Cumulative rate of inflation: **232.0%**

**CALCULATE**

“Stablecoins” are not “stable”, but relatively more stable than other cryptocurrencies.

# How do Stablecoins work?

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MakerDAO



Synthetix



AMPL



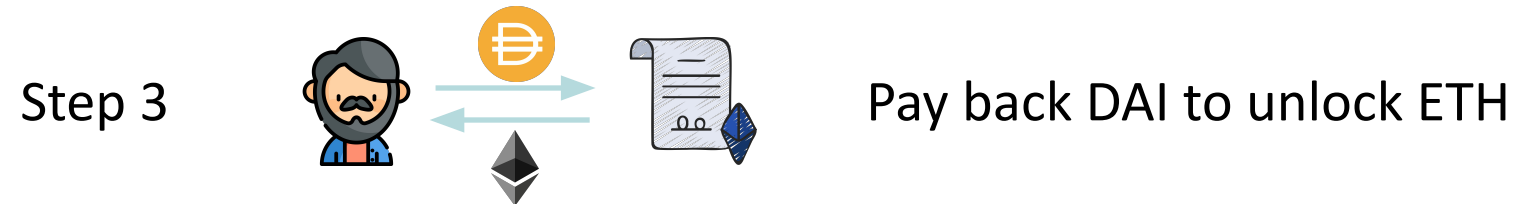
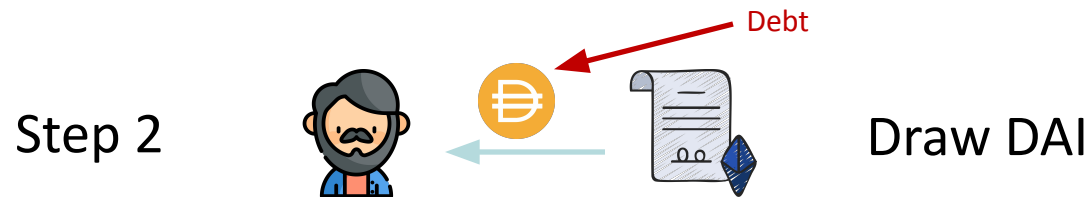
USDC



USDT

# MakerDAO

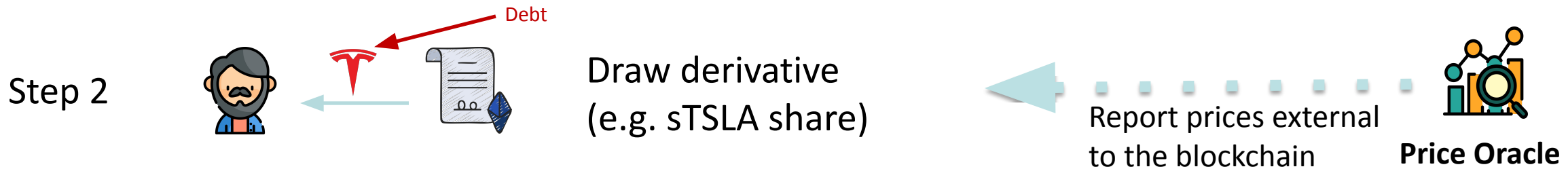
## Stablecoin





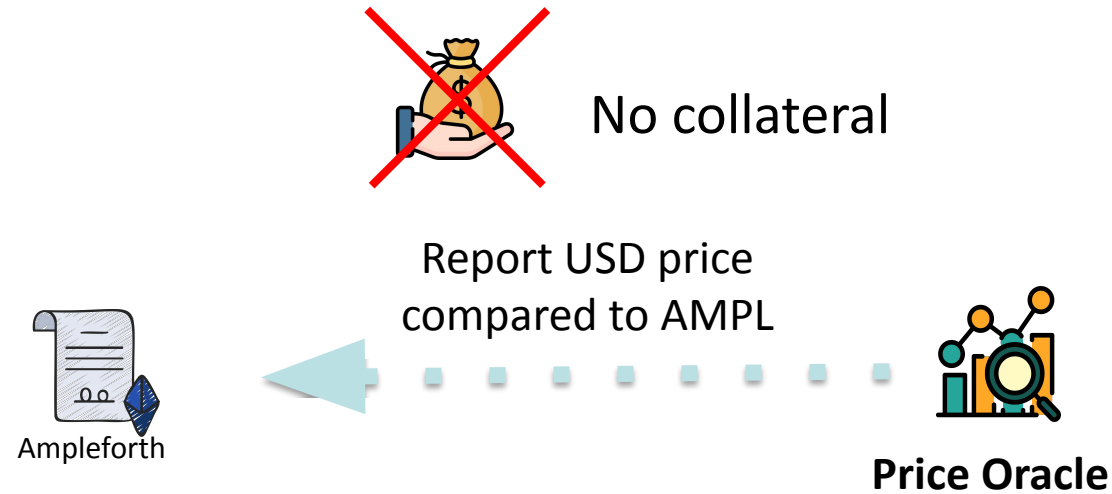
# Synthetix

## Mint a derivative asset





# Ampleforth (AMPL)

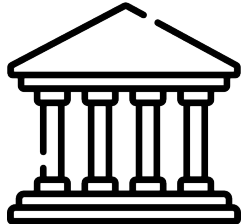


## ■ Three design states

- Expansion: if  $1 \text{ AMPL} > 1 \text{ USD}$ , add supply
- Contraction: if  $1 \text{ AMPL} < 1 \text{ USD}$ , remove supply
- Equilibrium: no action taken

Systemic implications!

# USDC and USDT



Company



Mint coins



USDC/USDT



Full or Fractional reserve



Add @ to blacklist

USDC/USDT



Destroy coins at @

USDT

USDT blacklisted over 400 accounts, +44M USDT destroyed.

# USDC and USDT

```
1  function transfer(address _to, uint _value) public
    whenNotPaused {
2      require(!isBlackListed[msg.sender]);
3      if (deprecated) {
4          return UpgradedStandardToken(upgradedAddress).
                transferByLegacy(msg.sender, _to, _value);
5      } else {
6          return super.transfer(_to, _value);
7      }
8  }
9  function addBlackList (address _evilUser) public
    onlyOwner {
10     isBlackListed[_evilUser] = true;
11     AddedBlackList(_evilUser);
12 }
13 function destroyBlackFunds (address _blackListedUser)
    public onlyOwner {
14     require(isBlackListed[_blackListedUser]);
15     uint dirtyFunds = balanceOf(_blackListedUser);
16     balances[_blackListedUser] = 0;
17     _totalSupply -= dirtyFunds;
18     DestroyedBlackFunds(_blackListedUser, dirtyFunds);
19 }
```

# DeFi Bank Run?

- CeFi Bank Run
  - Dangerous if fractional reserve
  - Most clients don't receive assets (or a minimum)
- DeFi Bank Run
  1. Event: USDT blacklists a pool, Stablecoin de-pegs
  2. Traders will exit pools
  3. Those who exit first receive the best prices
  4. Try to build blacklist detection bots

