Folks Finance DeFi: Lending and Governance

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About Us

Founded late 2020 and launched on Mainnet in April 2022.

We are a team of 20 people primarily based in Milan.

$25,000,000 Lending

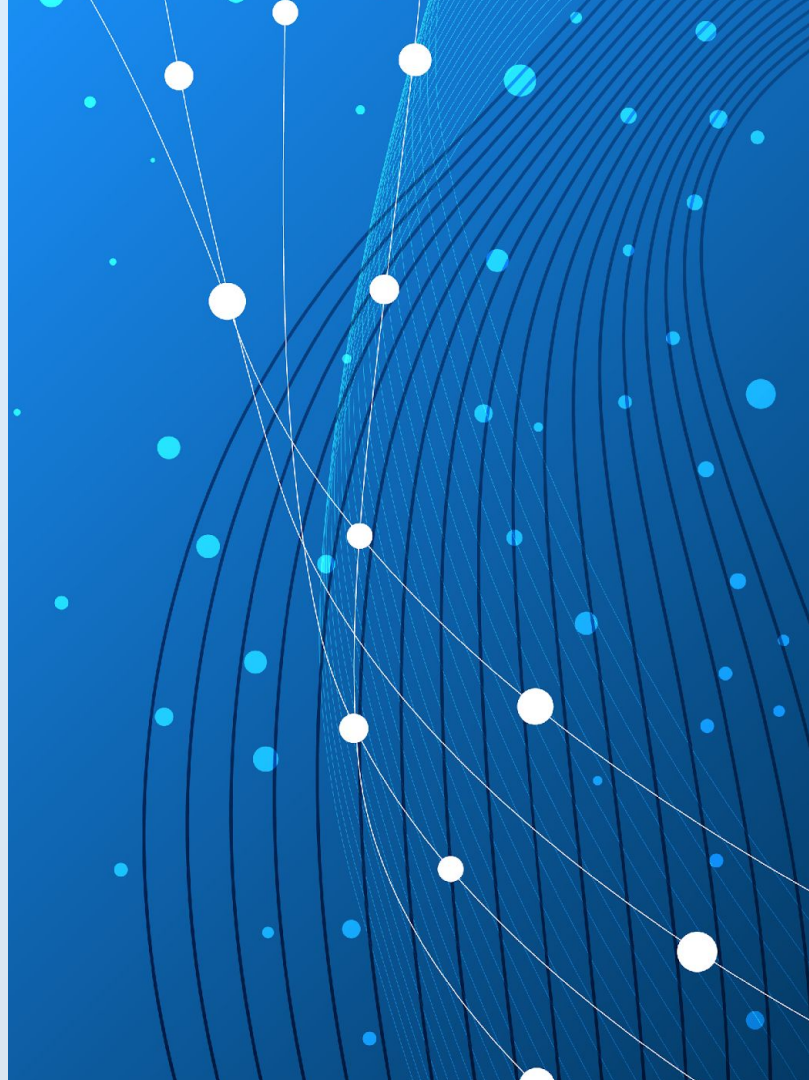$40,000,000 Liquid Governance

TOTAL VALUE LOCKED
$65,074,580

Agenda

- Lending
    - TradFi vs DeFi
    - Pools and Interest Rates
    - Over-collateralized Loans
    - Under-collateralized Loans
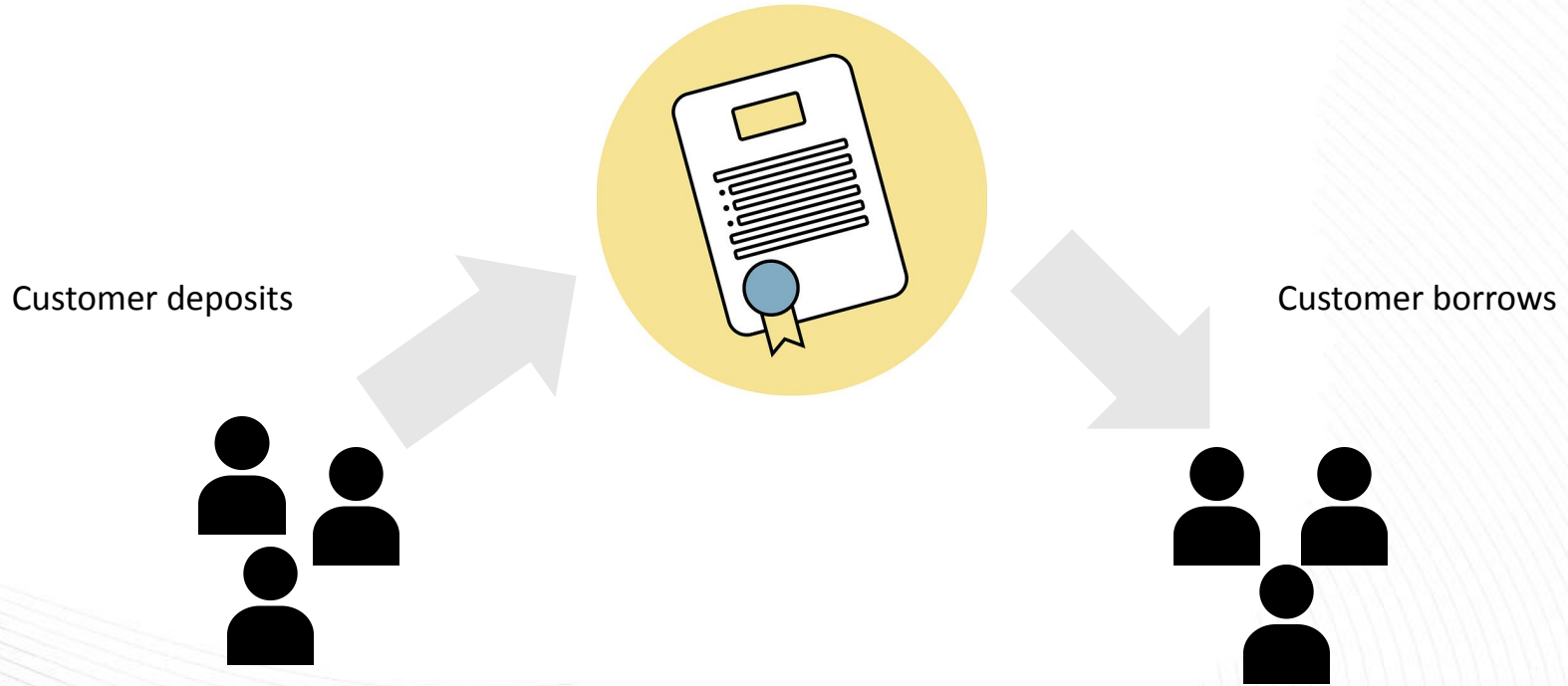- Algorand Governance
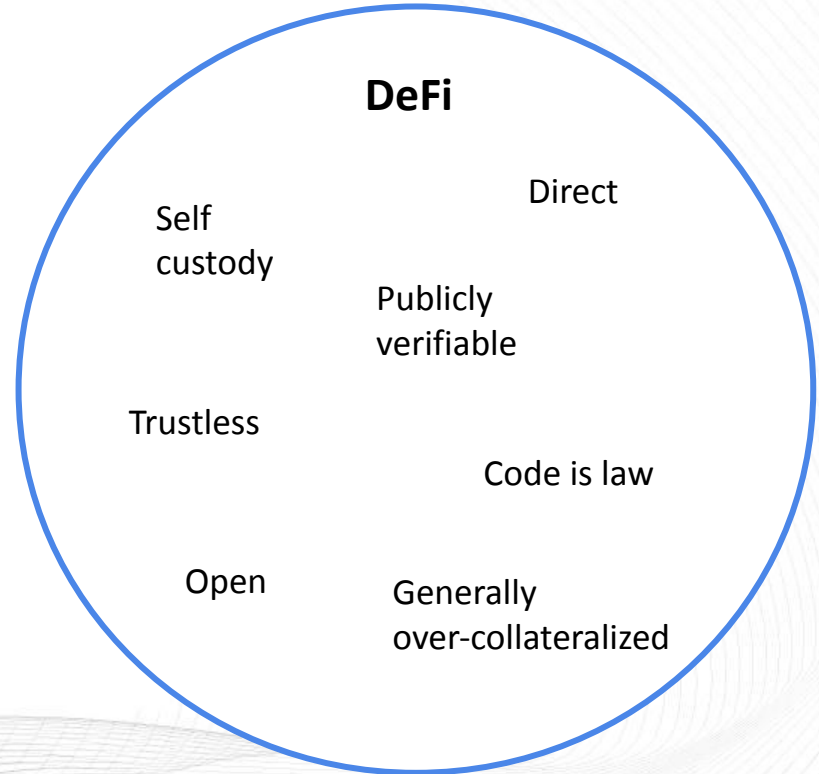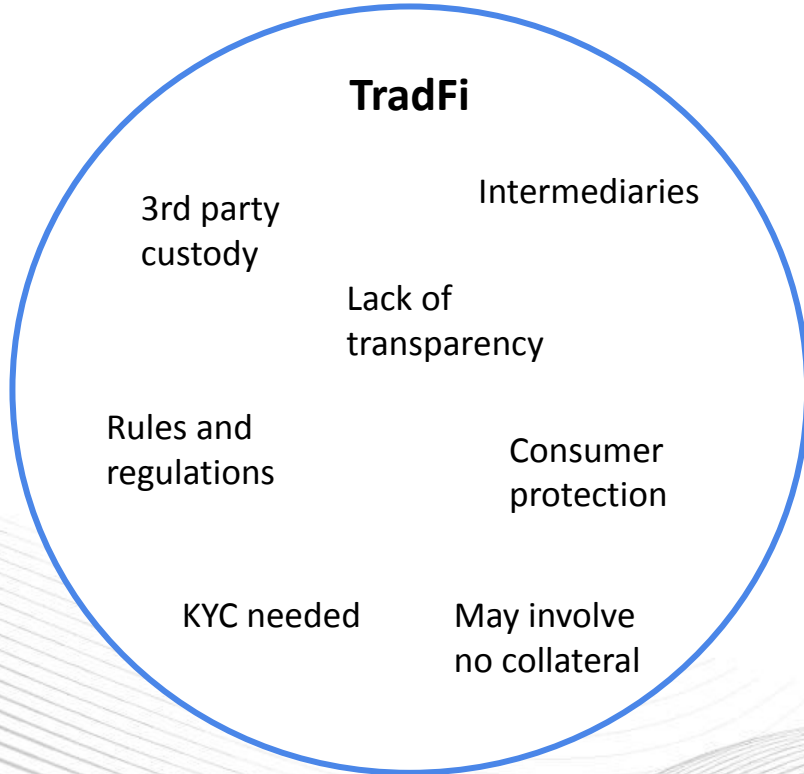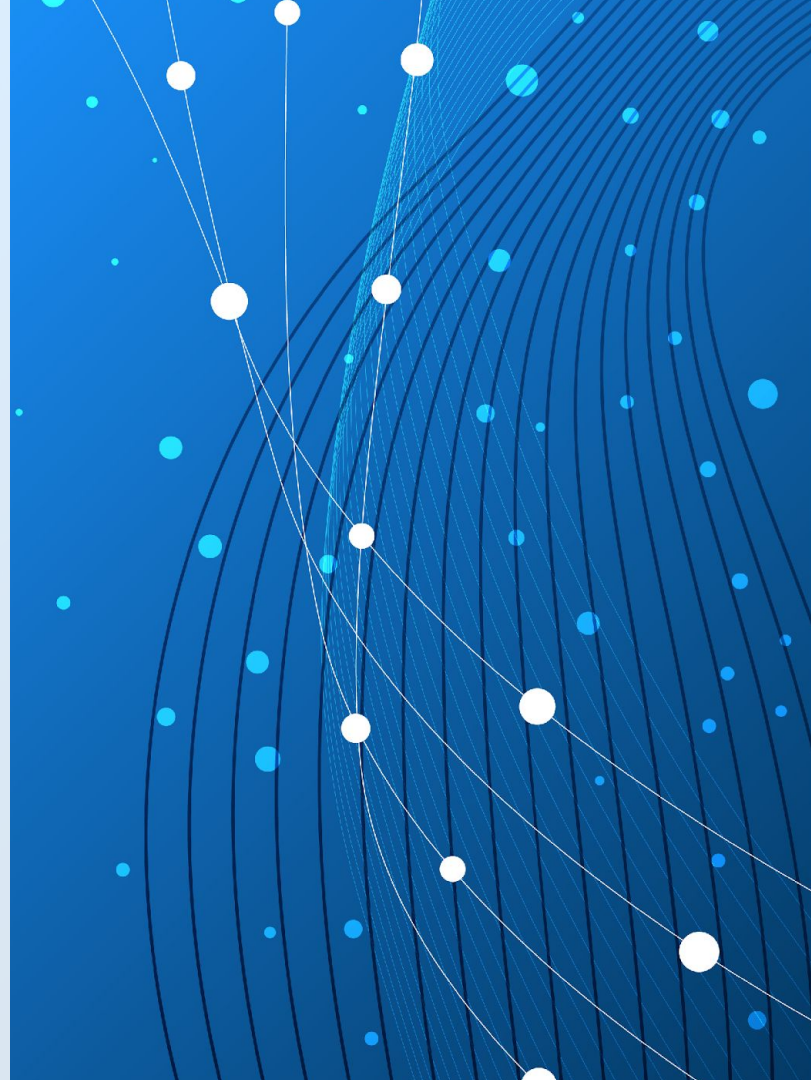- Demo of Folks Finance

Lending

Example - Bank

Customer deposits
Fractional reserves

Mortgages
Business loans
Government bonds
Credit cards

Example - Folks Finance

Customer deposits

Customer borrows

TradFi vs DeFi

TradFi

3rd party custody

Intermediaries

Lack of transparency

Rules and regulations

Consumer protection

KYC needed

May involve no collateral

DeFi

Self custody

Direct

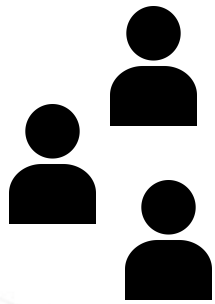Publicly verifiable

Trustless

Code is law

Open

Generally over-collateralized

Lending:
Pools and Interest Rates

Pools

Utilisation ratio = total borrows / total deposits = 0 / 1,000,000 = 0%

Pools

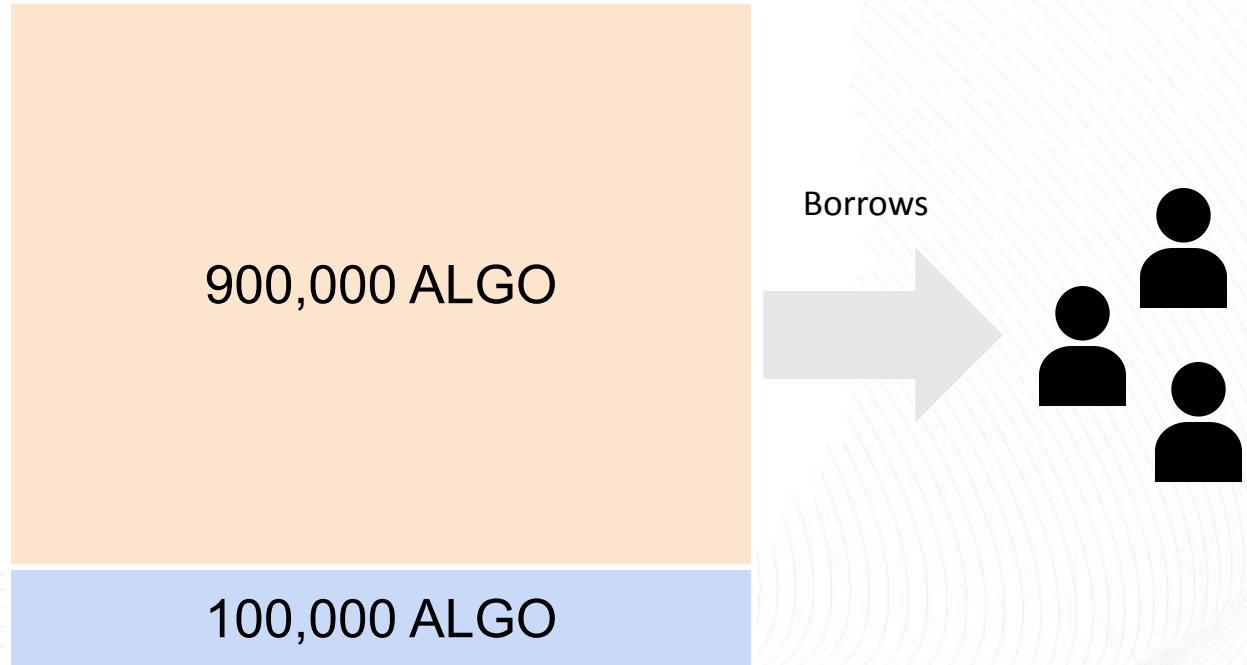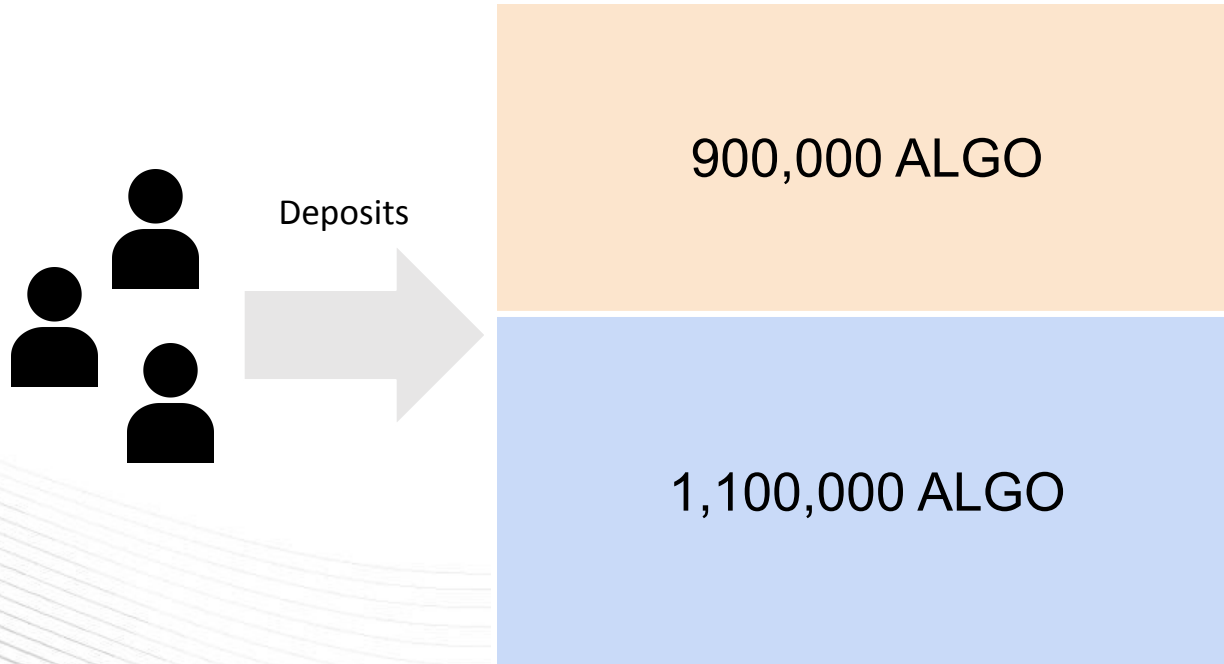**Utilisation ratio = total borrows / total deposits = 900,000 / 1,000,000 = 90%**

Borrows

900,000 ALGO

100,000 ALGO

Utilisation Ratio

Utilisation ratio = total borrows / total deposits = 900,000 / 2,000,000 = 45%

Linking Utilisation Ratio to Interest Rates

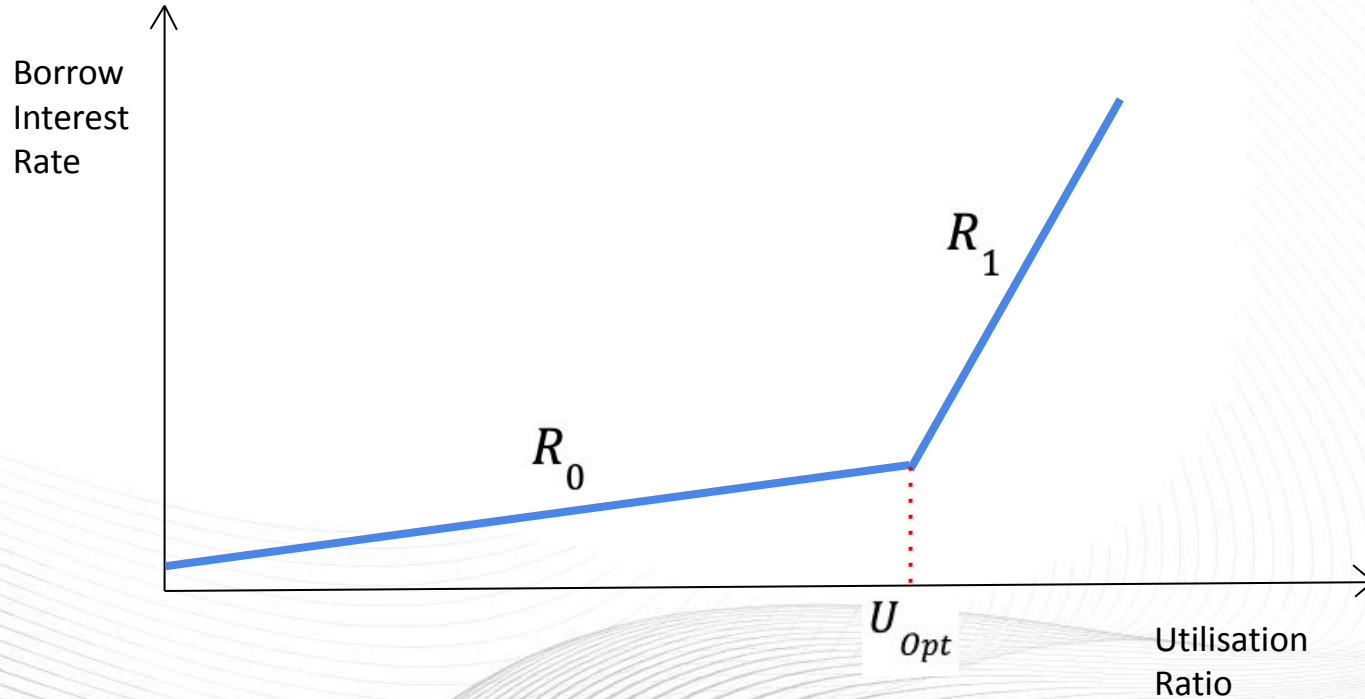**Utilisation ratio = total borrows / total deposits**

1,000,000 ALGO
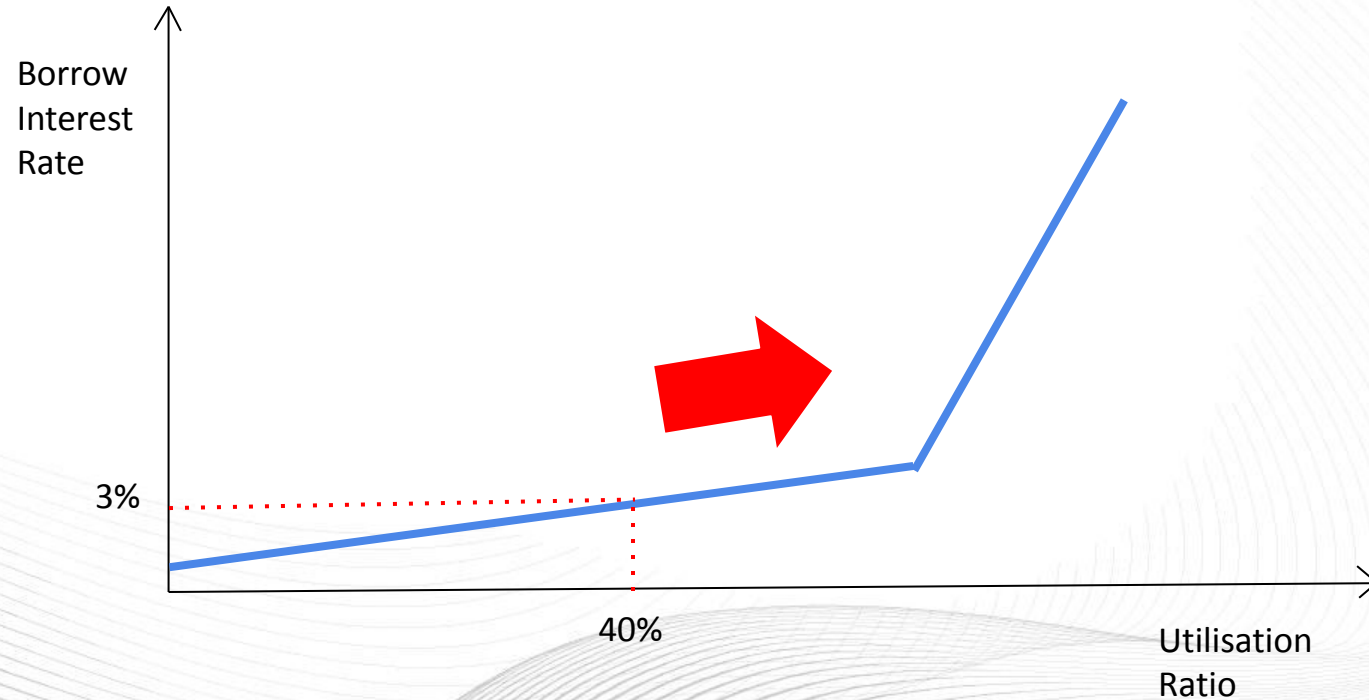
900,000 ALGO

100,000 ALGO

Interest Rate Model

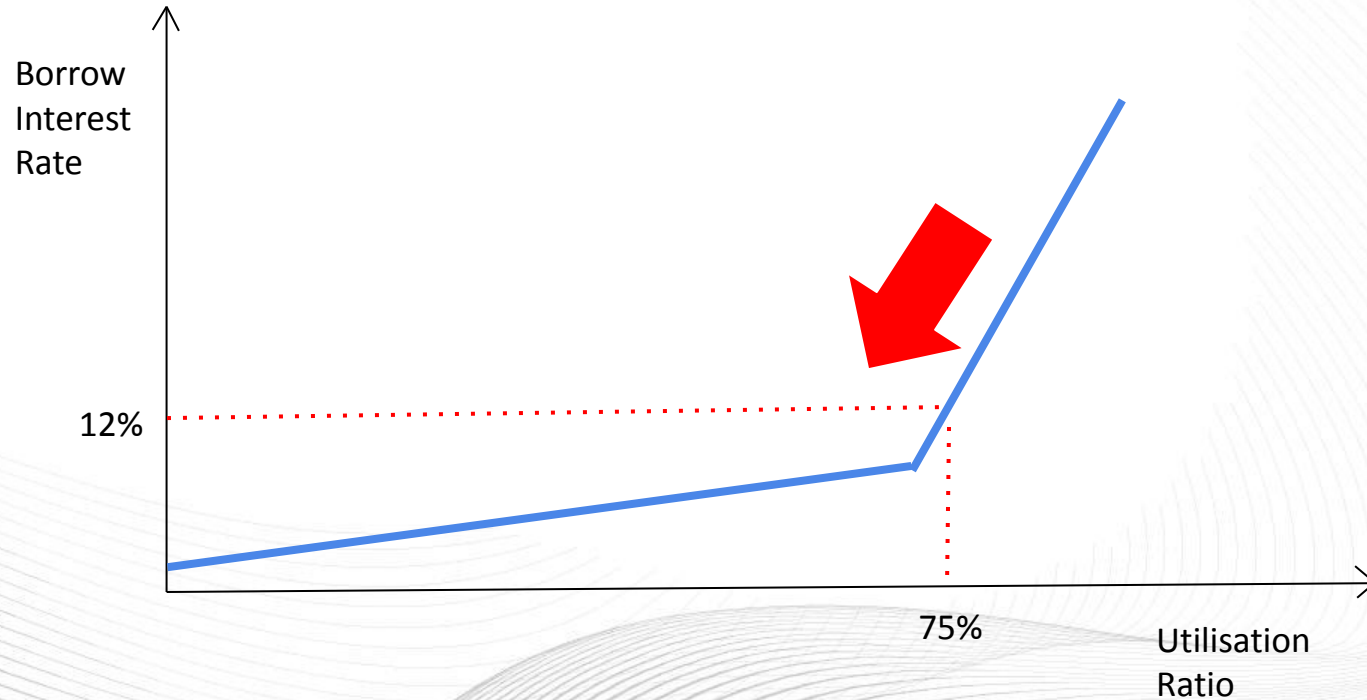$$i_{b_t} = R_0 + \frac{U_t}{U_{Opt}} \times R_1$$

Interest Rate Model

Low rates -> less deposits and more borrows -> higher utilisation ratio -> higher rates

Interest Rate Model

High rates -> more deposits and less borrows -> lower utilisation ratio -> lower rates

Deposit Rates

The deposit interest rate is determined by:
- The amount borrowed relative to the deposits
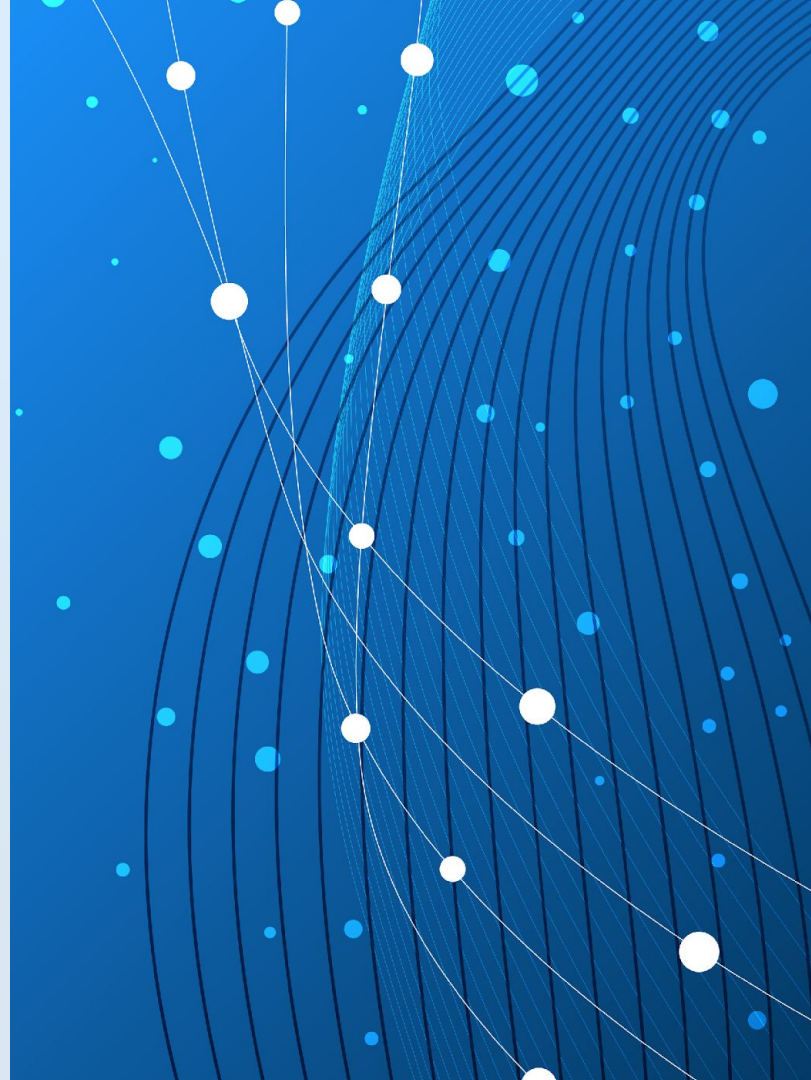- The borrow interest rate
- The percentage of interest retained by the service provider

$$i_{d_t} = U_t \times i_{b_t} \times (1 - RR)$$

If retention rate RR is zero, the borrow interest rate i_{bt} is 10% and the utilisation ratio U_t is 70%, the deposit interest rate i_{dt} will be:

$$i_{d_t} = 0.7 \times 0.1 \times (1 - 0)$$

$$= 0.07$$

Lending:
Over-collateralized

Loan to Value Ratio

LTV ratio = borrowed value / collateral value

Loan amount
£250,000

÷

Property's value
£300,000

=

LTV
0.83 x 100 = 83%

Bad Debt

LTV ratio = borrowed value / collateral value

0%   100% - bad debt

_% - danger zone

Collateral Factors

The maximum percentage value which can be borrowed for a given collateral

Historical BTC Price

Collateral Factors

The maximum percentage value which can be borrowed for a given collateral

Historical USDC Price

Collateral Factors

The maximum percentage value which can be borrowed for a given collateral

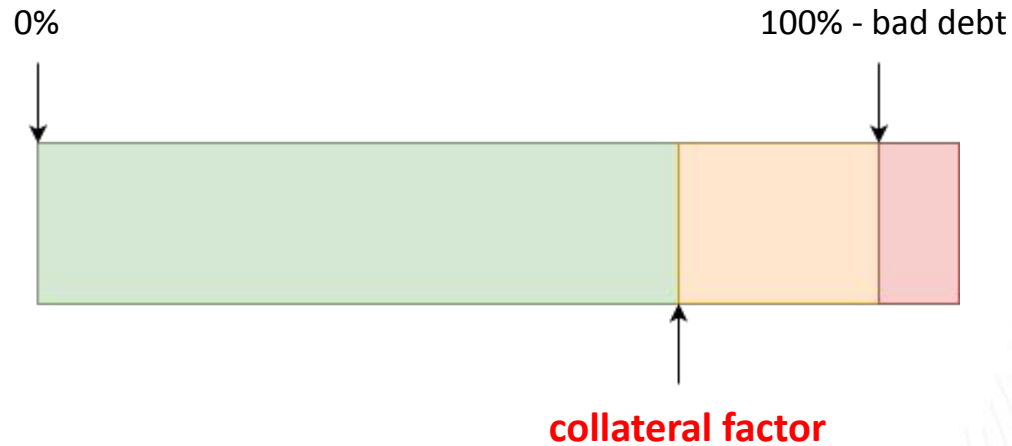Collaterals whose prices are historically volatile should have a lower collateral factor e.g BTC.

Collateral whose prices are historically stable should have a higher collateral factor e.g. USDC.

Collateral Factors

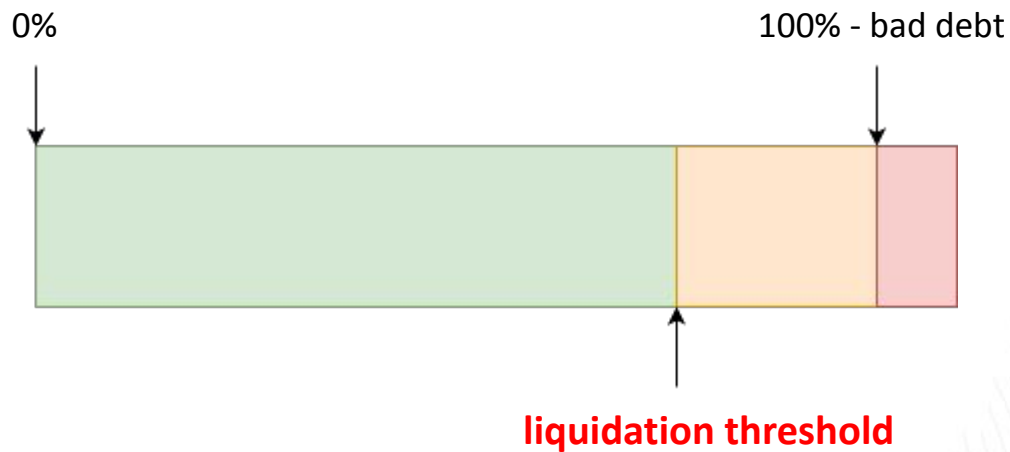**The maximum percentage value which can be borrowed for a given collateral**

0%   100% - bad debt

collateral factor

Liquidation Threshold

The weighted average of the collateral factors

Liquidation Threshold

The weighted average of the collateral factors

$$Liquidation\ threshold = \frac{\sum\limits_{k=ASSET}^{Collaterals} (b_k \times p_k \times c_k)}{\sum\limits_{k=ASSET}^{Collaterals} (b_k \times p_k)}$$

Where

b_k is the given collateral's balance

p_k is the given collateral's price

c_k is the given collateral's collateral factor

Liquidation Threshold

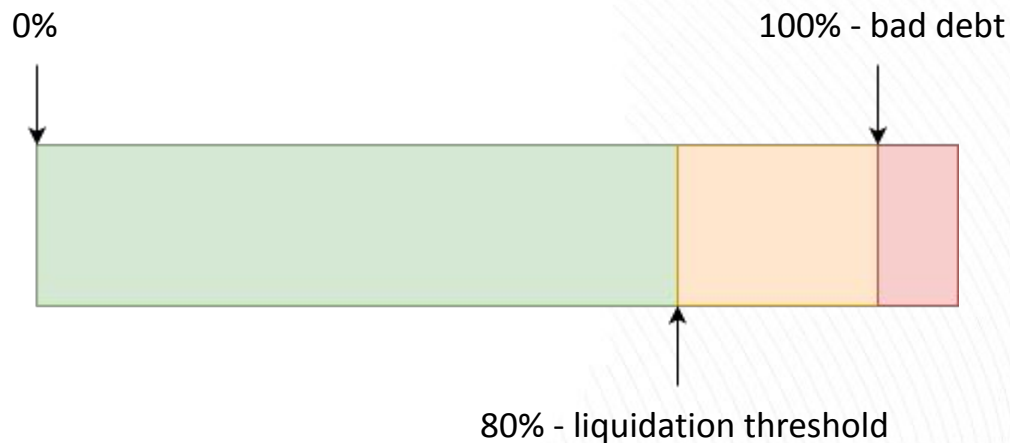**The weighted average of the collaterals factors**

Collateral:
$100 of USDC at collateral factor of 90%
$100 of BTC at collateral factor of 70%

Collateral value = 100 + 100 = 200

Max borrow = 100 * 0.9 + 100 * 0.7 = 160

Liquidation threshold = 160 / 200 = 80%
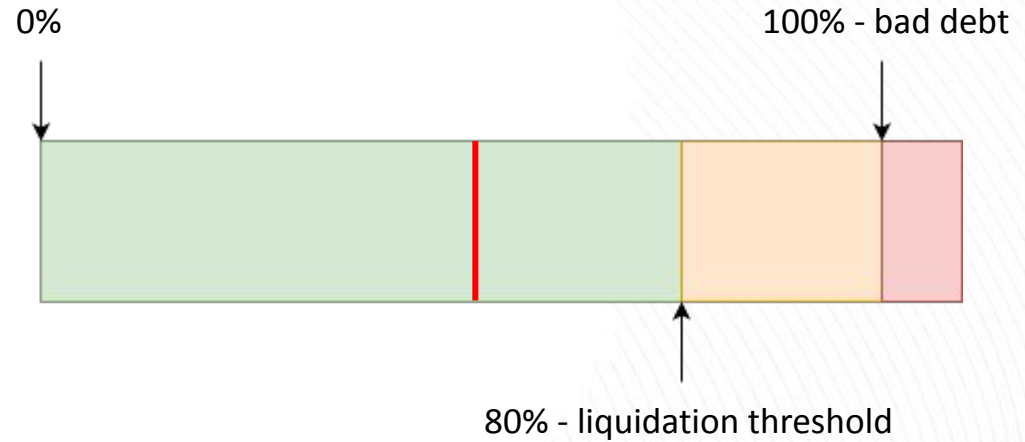

0%

100% - bad debt

80% - liquidation threshold

Liquidation Threshold

LTV ratio = borrowed value / collateral value

Borrow:
$100 of ALGO

Collateral:
$100 of USDC at collateral factor of 90%
$100 of BTC at collateral factor of 70%

LTV ratio = 100 / (100 + 100) = 50%

0%

100% - bad debt

80% - liquidation threshold

Liquidation Threshold
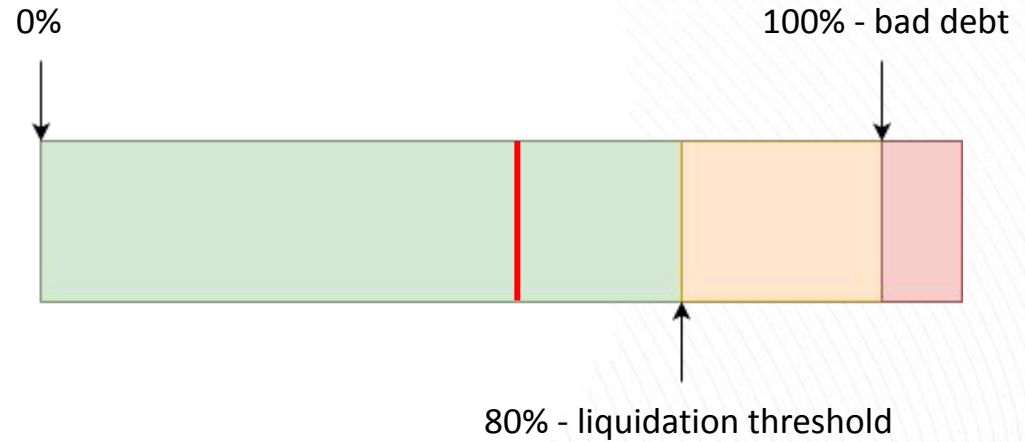
LTV ratio = borrowed value / collateral value

Borrow:
$100 of ALGO + $20 ALGO in interest

Collateral:
$100 of USDC at collateral factor of 90%
$100 of BTC at collateral factor of 70%

LTV ratio = 120 / (100 + 100) = 60%

0%

100% - bad debt

80% - liquidation threshold

Liquidation Threshold

LTV ratio = borrowed value / collateral value
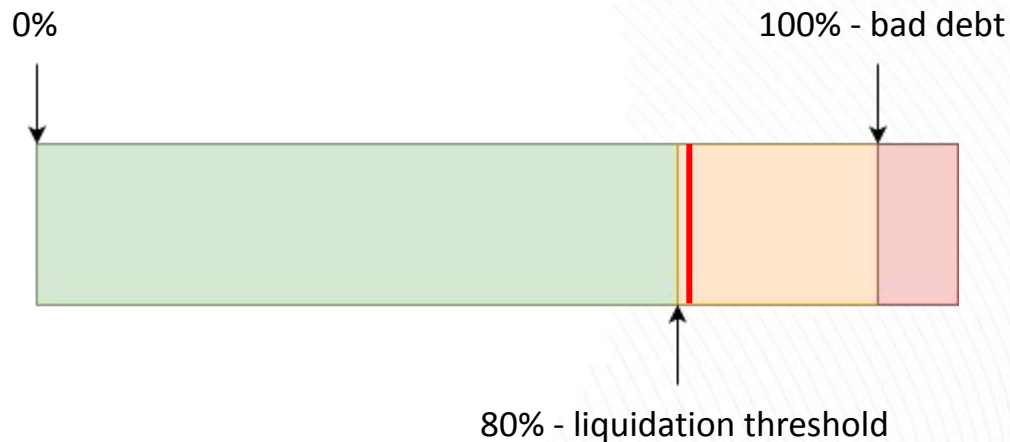
Price of ALGO increases by 35%.

Borrow:
$135 of ALGO + $27 ALGO in interest

Collateral:
$100 of USDC at collateral factor of 90%
$100 of BTC at collateral factor of 70%

LTV ratio = 162 / (100 + 100) = 81%

0%

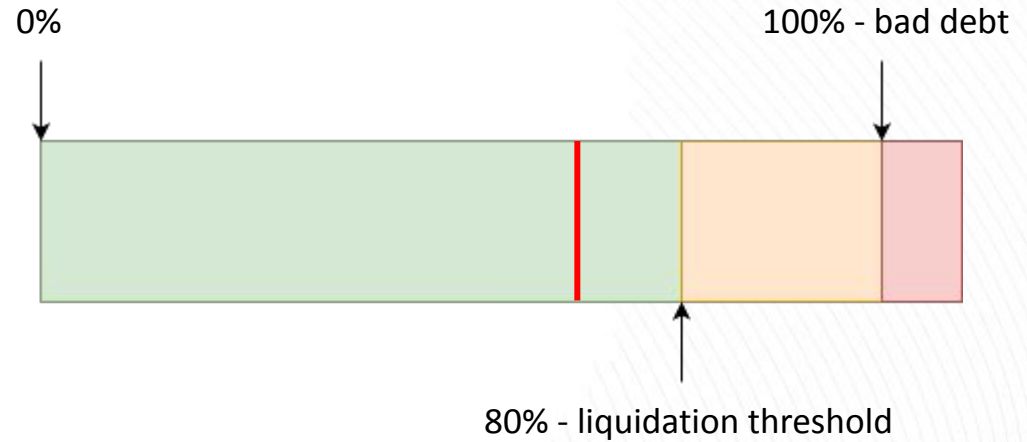100% - bad debt

80% - liquidation threshold

Liquidations

After liquidation threshold is met, anyone can purchase collateral at a discount
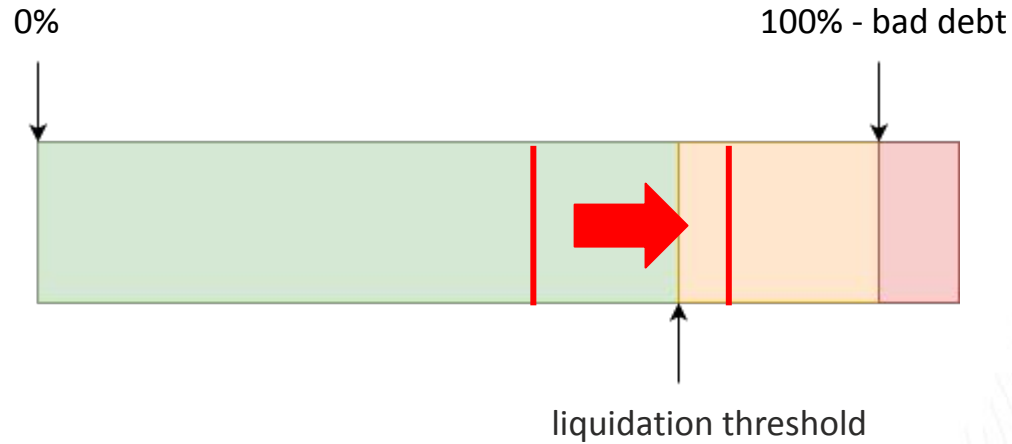
Repay $95 of ALGO for $100 of BTC

Borrow:
$100 of ALGO

Collateral:
$100 of USDC at collateral factor of 90%

LTV ratio = 67 / 100 + 100 = 67%

0%   100% - bad debt

80% - liquidation threshold

Borrow Factors

Limits the amount which can be borrowed by scaling the borrowed amount.

Efficiency Loans

When assets are price correlated, can offer higher collateral factors and lower borrow factors
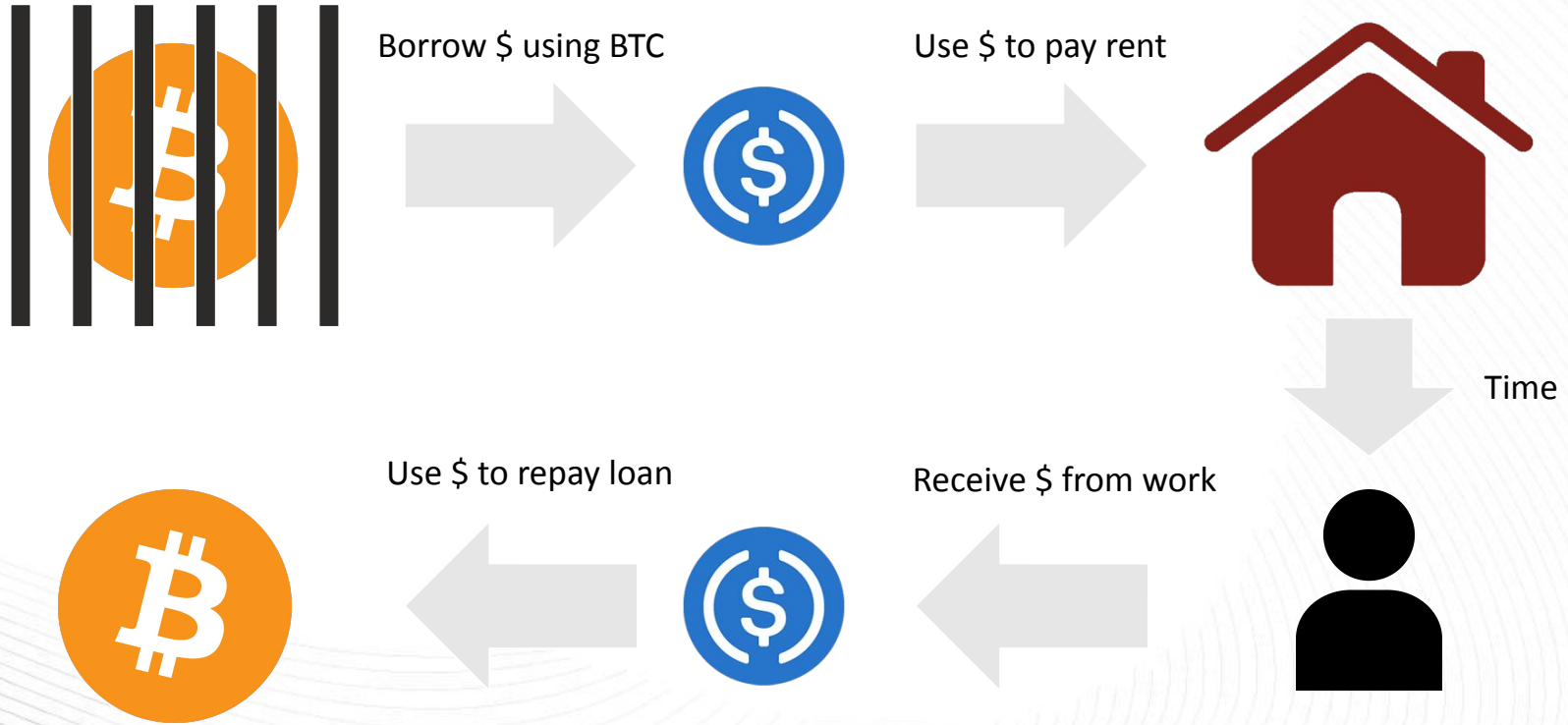
Historical BTC and ETH Price

Loans Use Cases

Why would you ever want an over-collateralized loan? You have the funds already so why not use that directly instead of taking a loan?
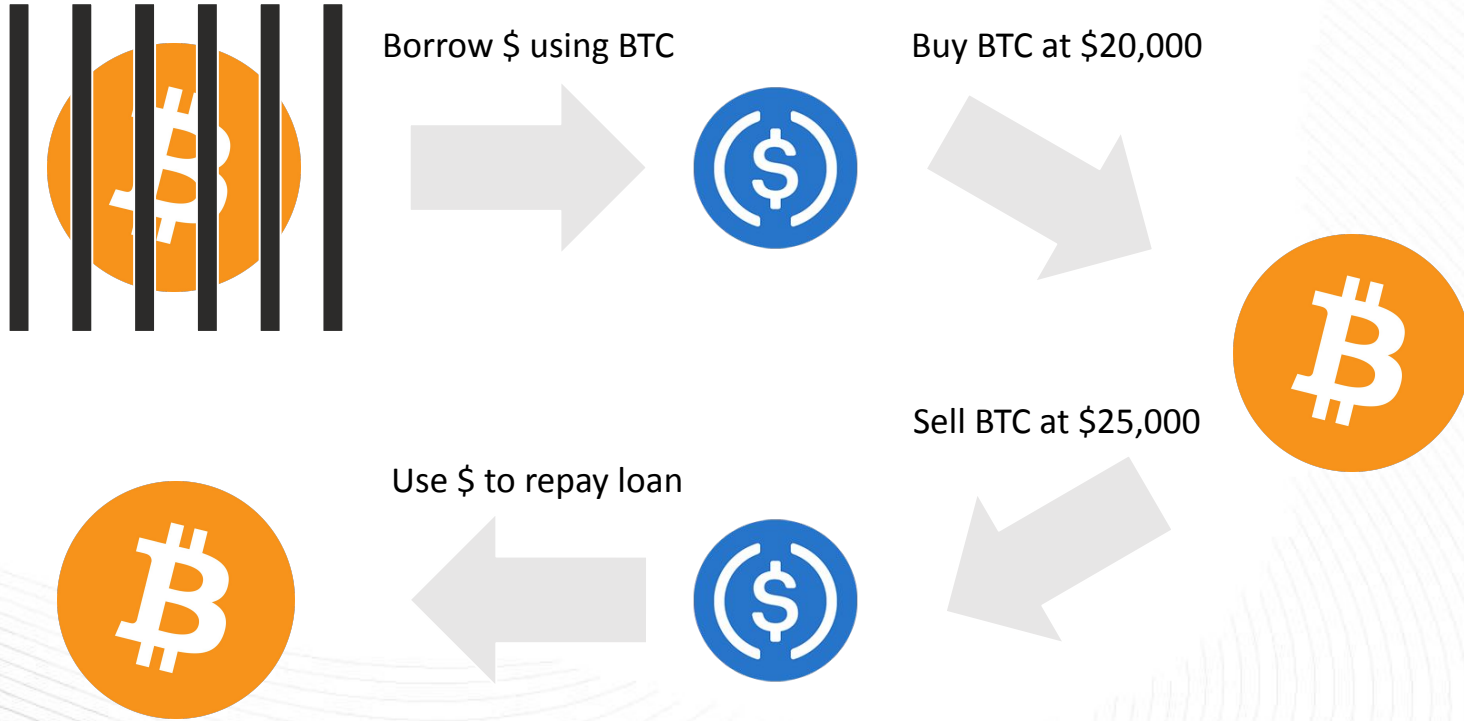
Some example use cases:

- Liquidity access
- Longs / Shorts
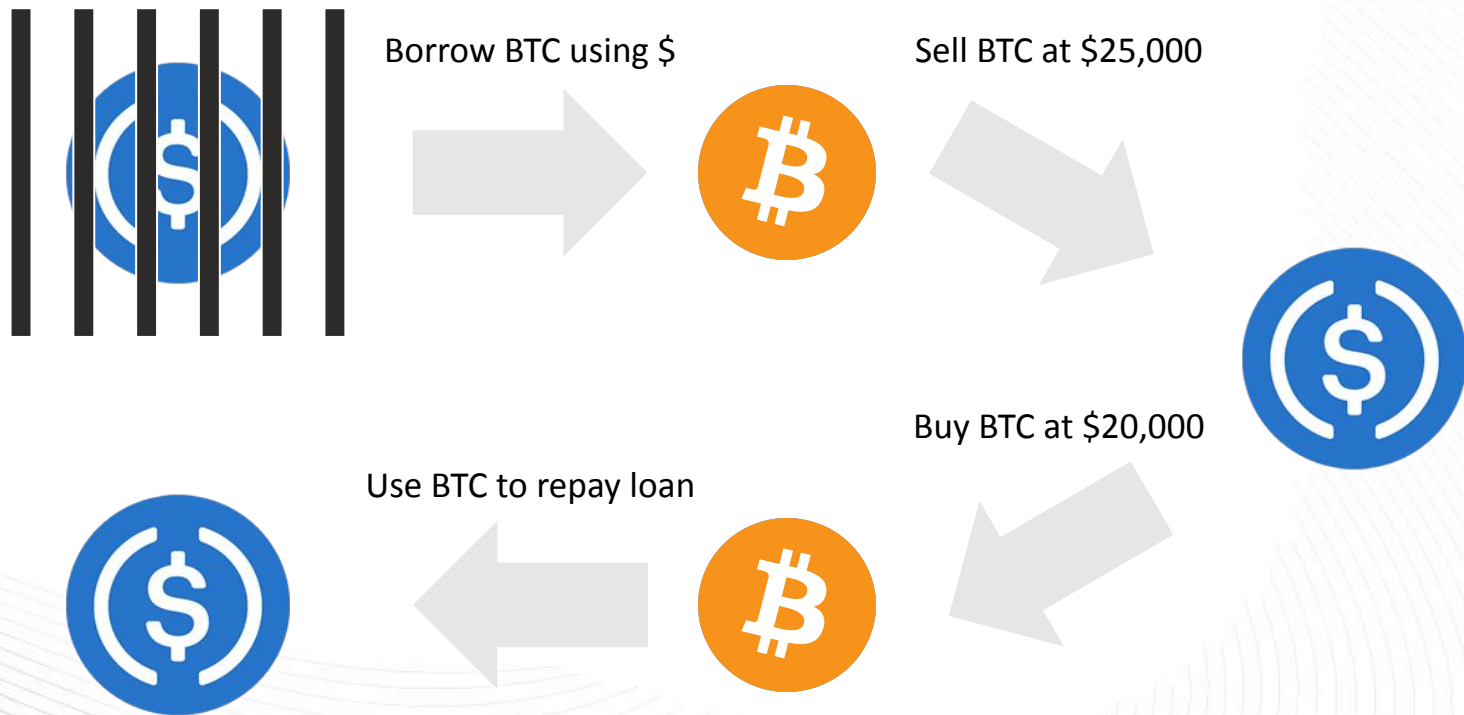- Yield Farming
- And More…

Use Case 1: Liquidity Access

Use Case 2a: Longs

Borrow $ using BTC

Buy BTC at $20,000

Sell BTC at $25,000

Use $ to repay loan

Use Case 2b: Shorts

Borrow BTC using $

Sell BTC at $25,000

Buy BTC at $20,000

Use BTC to repay loan

Use Case 3: Yield Farming

Problem: Alice has USDC and wants to earn APR - what is her best option?
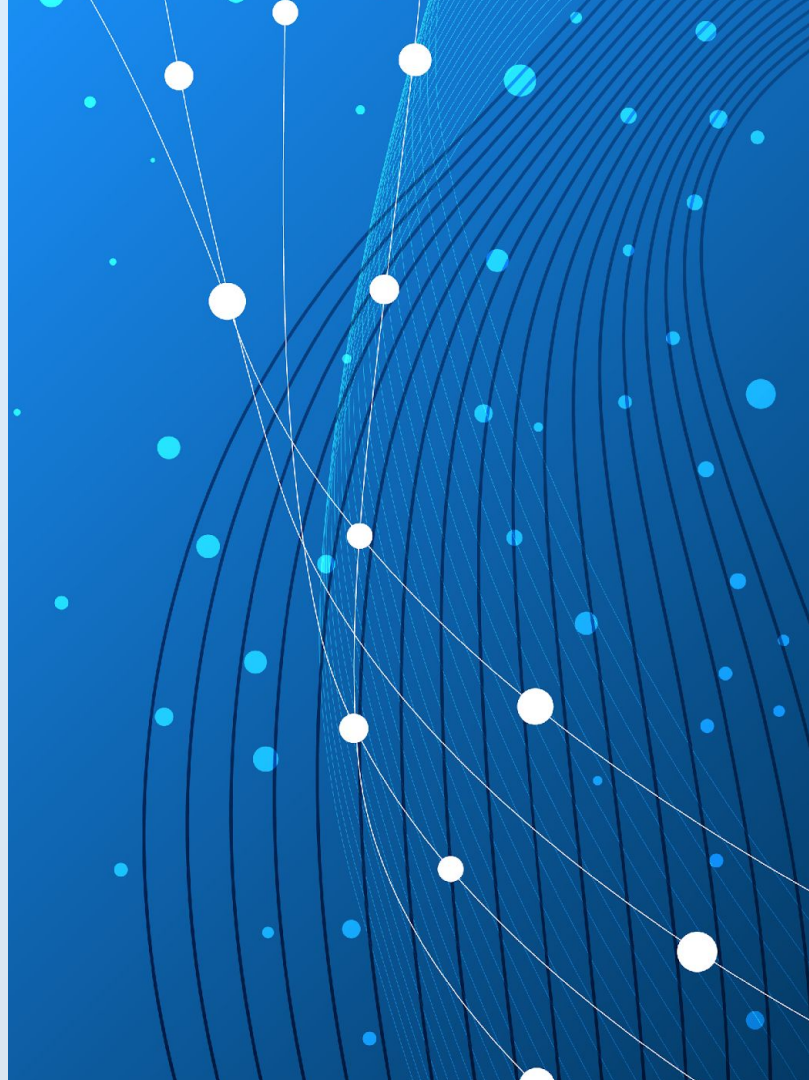

Platform A:
- Deposit ALGO at 1% APR
- Borrow ALGO at 2% APR
- Deposit USDC at 1% APR
- Borrow USDC at 2% APR

Platform B:
- Deposit ALGO at 5% APR
- Borrow ALGO at 8% APR
- Deposit USDC at 1% APR
- Borrow USDC at 2% APR

Lending:
Under-collateralized

Atomic Transfers

Atomic transfers - all succeed or all fail

Atomic Transfers

Atomic transfers - all succeed or all fail

Atomic Transfers

Atomic transfers - all succeed or all fail

Atomic Transfers

Atomic transfers - all succeed or all fail

Atomic Transfers

Atomic transfers - all succeed or all fail

Flash Loans

Atomic transfers - all succeed or all fail

Flash Loans Use Cases

Why would you ever want a flash loan? You have to repay the loan at the same time you borrowed so what's the point?

Some example use cases:

- Arbitrage Trading
- Collateral Swapping
- Margin Trading
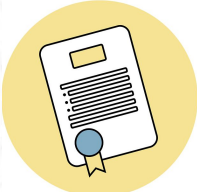- And More…

Use Case 1: Arbitrage Trading

0 ALGO, $0

100 ALGO

100 ALGO, $0

100 ALGO for $30

Exchange A
$0.30 ALGO

0 ALGO, $30

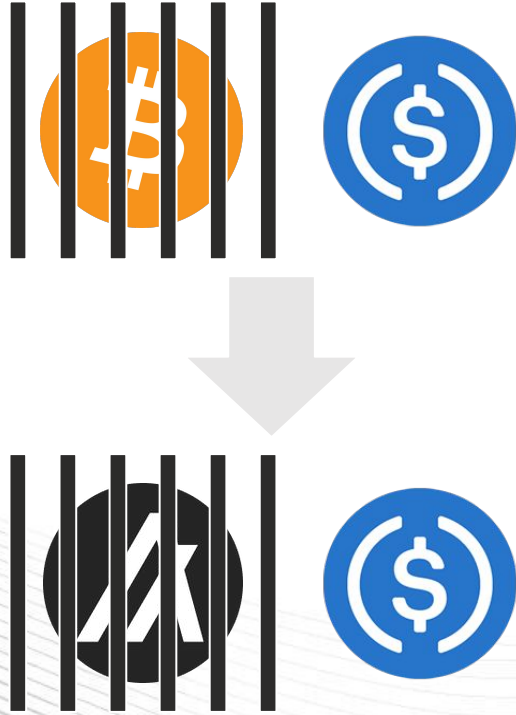**$30 for 120 ALGO**
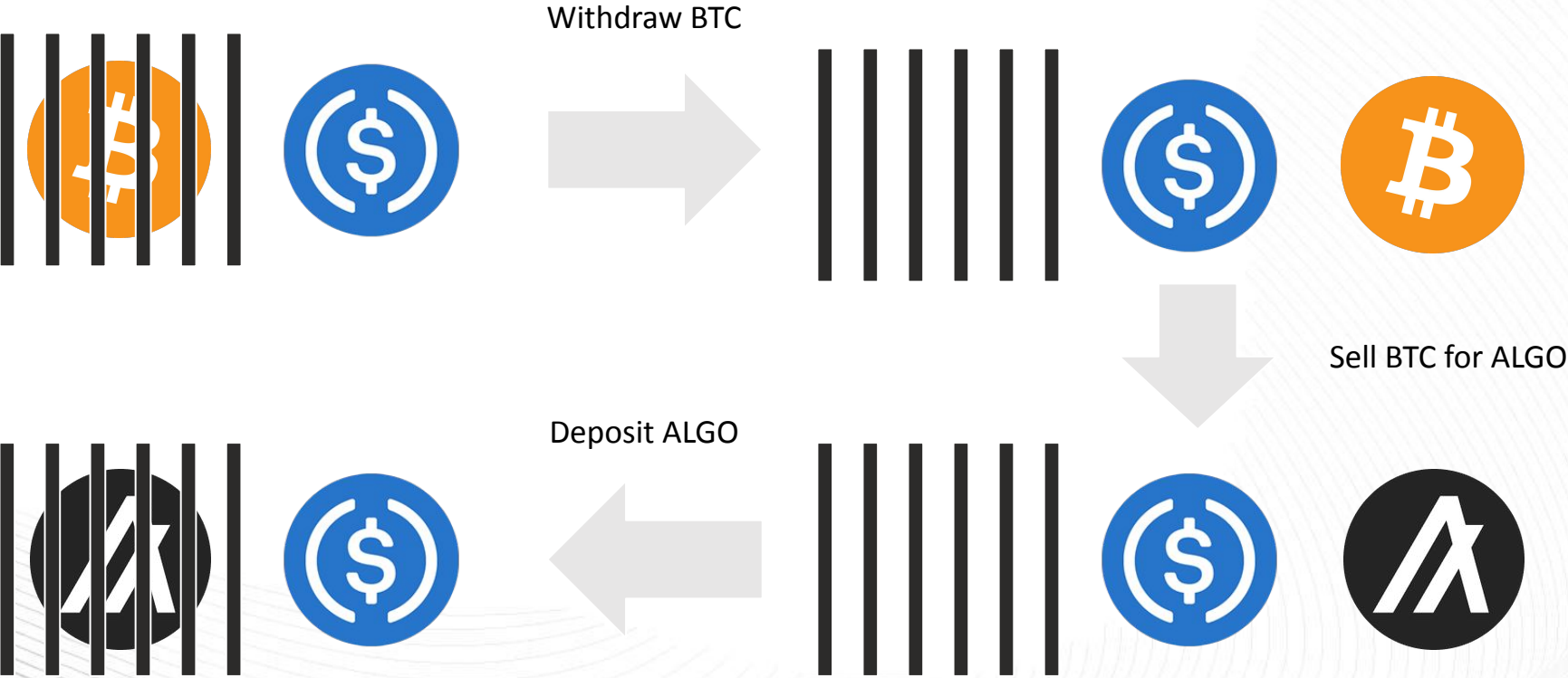
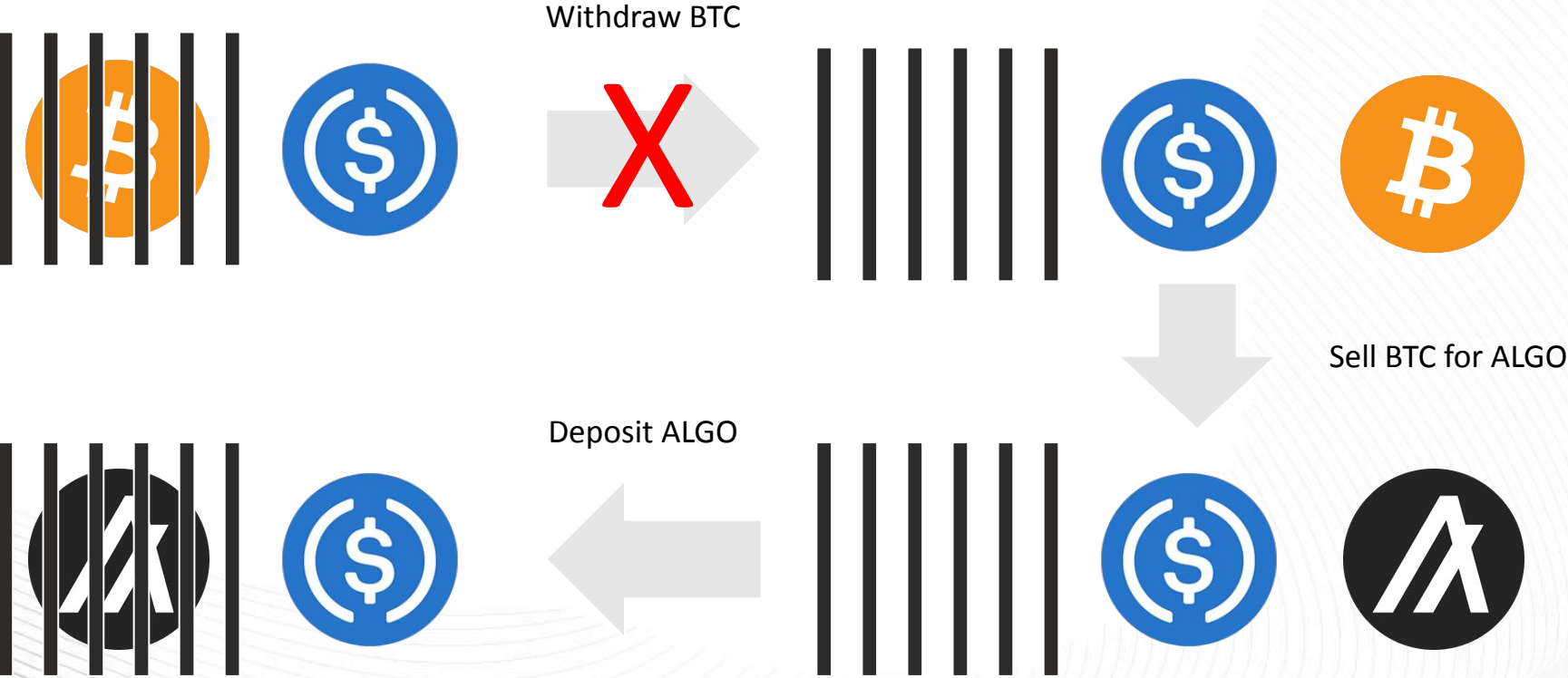Exchange B
$0.25 ALGO

120 ALGO, $0

101 ALGO

19 ALGO

Use Case 2: Collateral Swapping

Use Case 2: Collateral Swapping

Use Case 2: Collateral Swapping

Use Case 2: Collateral Swapping
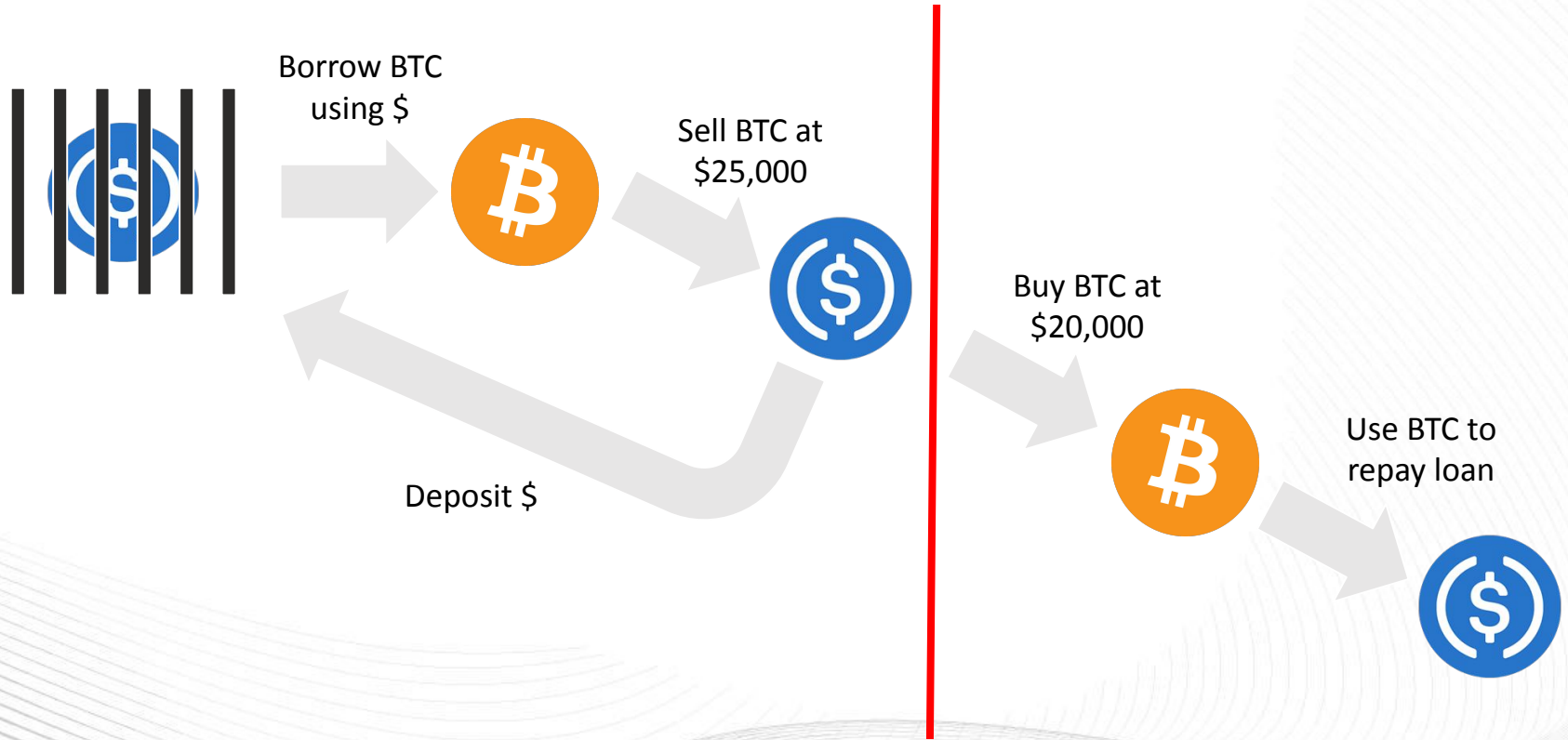

Borrow ALGO and Deposit

Withdraw BTC

Sell BTC for ALGO and Repay ALGO

Use Case 3: Margin Trading

Borrow BTC using $

Sell BTC at $25,000

Buy BTC at $20,000

Use BTC to repay loan

Use Case 3: Margin Trading

Borrow BTC using $

Sell BTC at $25,000

Deposit $

Buy BTC at $20,000

Use BTC to repay loan
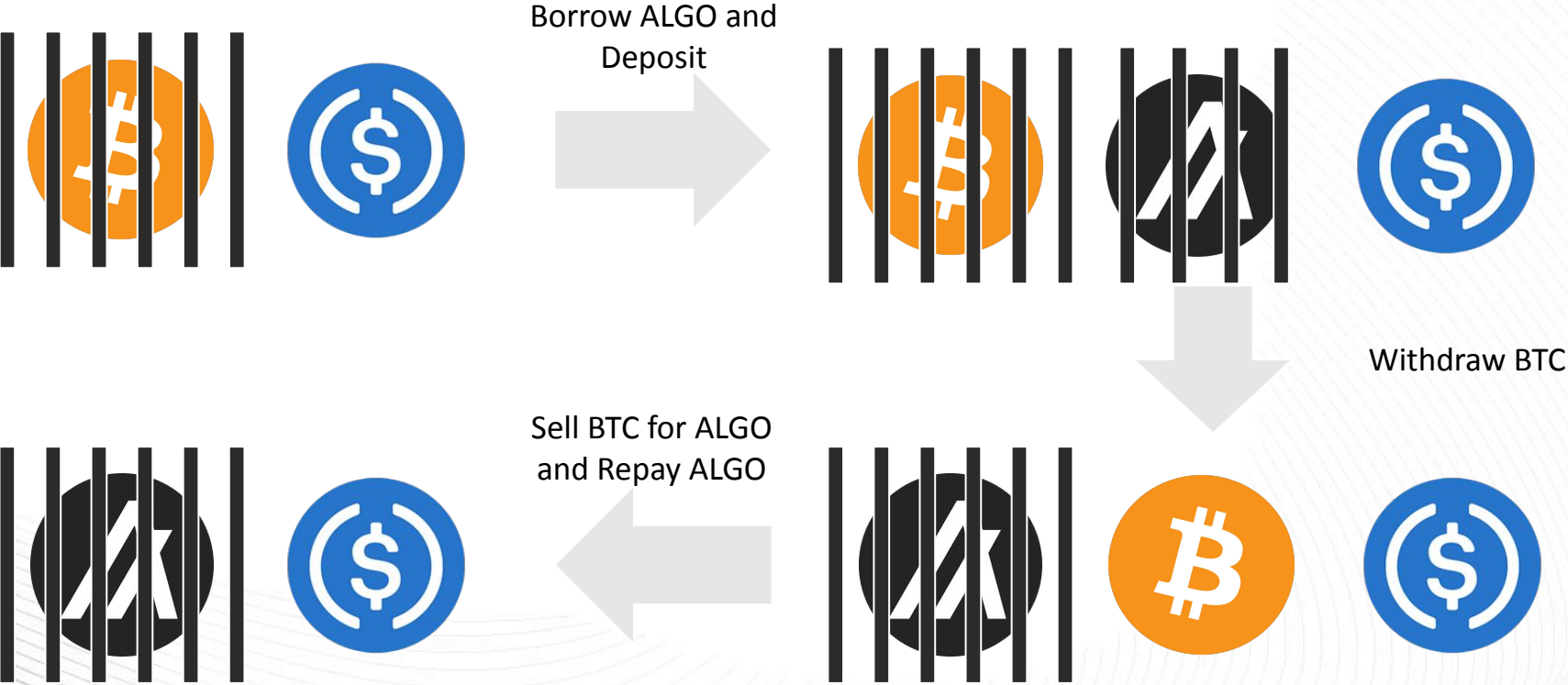
Use Case 3: Margin Trading

Take USDC collateral factor of 90% and $100 of USDC:

1. Deposit $100 of USDC

2. Borrow $90 of BTC

3. Sell $90 of BTC for $90 of USDC

4. Deposit $90 of USDC

5. Borrow $81 of BTC

6. Sell $81 of BTC for $81 of USDC

7. Deposit $81 of USDC

8. …

No. of loops	Deposited ($)	Leverage
0	100	1
1	190	1.9
2	271	2.7
3	343.9	3.4
4	409.5	4.1
5	468.6	4.7
Infinite	**1000**	**10**

Use Case 3: Margin Trading

$$D = 100 + 100 \times 0.9 + 100 \times 0.9 \times 0.9 + \dots$$
$$= d + d \times c + d \times c \times c + \dots$$
$$= d + d \times c + d \times c^2 + \dots$$
$$= d(1 + c + c^2 + \dots)$$
$$= d \sum_{k=0}^{n} c^k$$
$$= \frac{d}{1-c}$$

Where

D is the final deposit amount
d is the initial deposit amount
c is the collateral factor
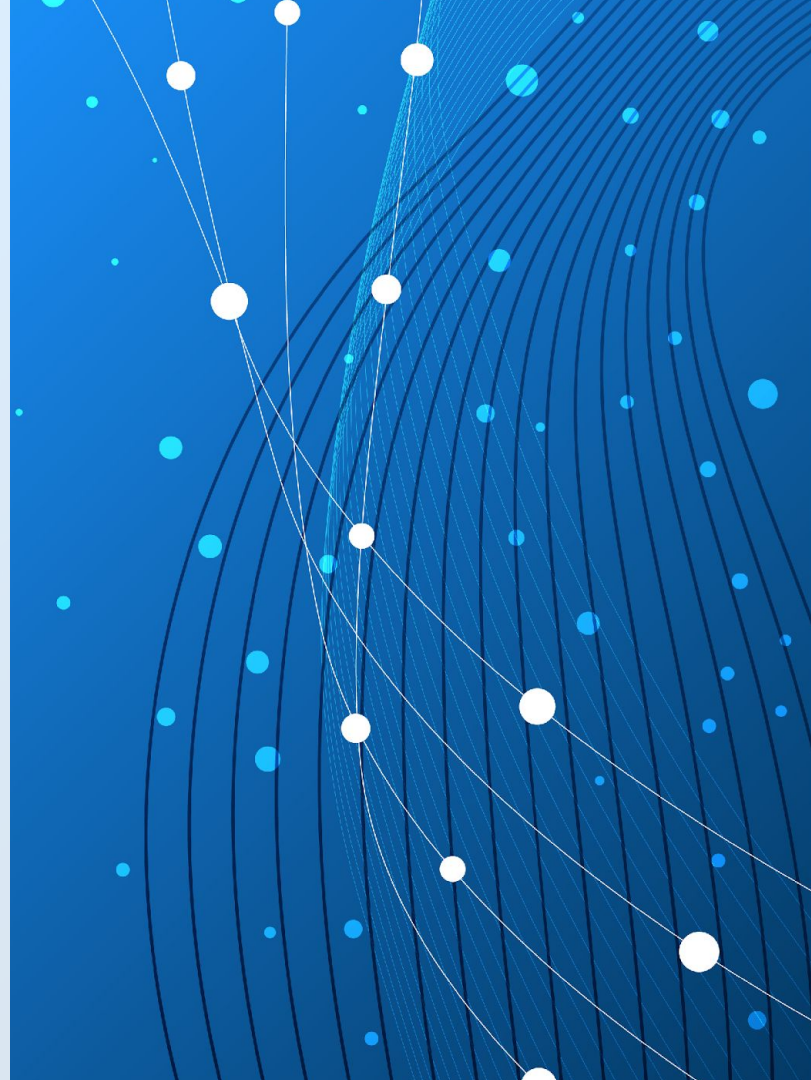
Use Case 3: Margin Trading

$$D = \frac{d}{1-c}$$

Where

D is the final deposit amount
d is the initial deposit amount
c is the collateral factor

Take USDC collateral factor of 90% and $100 of USDC:

1. Borrow $1000 of USDC with flash loan

2. Borrow $900 of BTC

3. Sell $900 of BTC for $900 of USDC

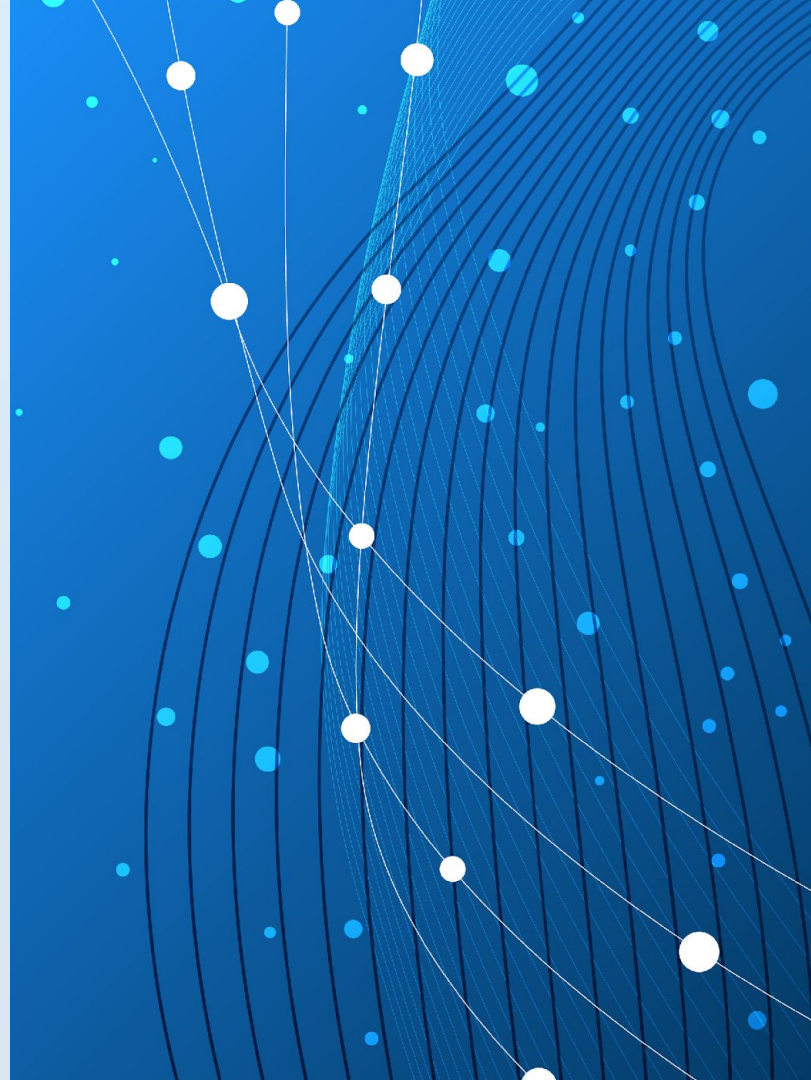4. Repay $1000 of USDC with the $900 borrowed and $100 initial balance

Quiz!

Algorand Governance

Governance

Algorand Governance

- Algorand Governance is a decentralized program that allows ALGO holders to vote on the future of the Algorand Blockchain.

- By committing ALGOs to governance for a period of three months, one can vote on measures proposed and earn rewards for doing so.

- Governance works in cycles. Each cycle lasts for three months and includes three phases:
  - Signup
  - Voting
  - Reward

Algorand Governance: Locked Liquidity

Your committed ALGO are effectively locked and unable to be used for other purposes!

Balance: 100 ALGO
Commit: 70 ALGO

Eligible

Send 20 ALGO

Balance: 80 ALGO
Commit: 70 ALGO

Eligible

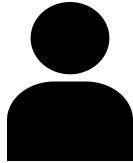Send 15 ALGO

Balance: 65 ALGO
Commit: 70 ALGO

Not Eligible

Algorand Liquid Governance

Liquid Governance solves problem of locked liquidity by introducing a new token called gALGO

Balance: 100 ALGO
Balance: 0 gALGO
Commit: 0 ALGO

Balance: 0 ALGO
Commit: 0 ALGO

70 ALGO for
70 gALGO

Balance: 30 ALGO
Balance: 70 gALGO
Commit: 0 ALGO

Balance: 70 ALGO
Commit: 70 ALGO

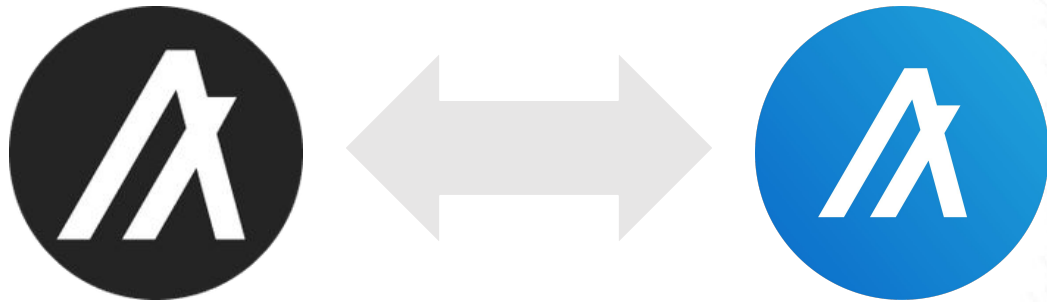# Algorand Liquid Governance Use Cases

We saw how Algorand Liquid Governance solves the issue of locked liquidity. However what can you do with the gALGO you receive?

Some example use cases:

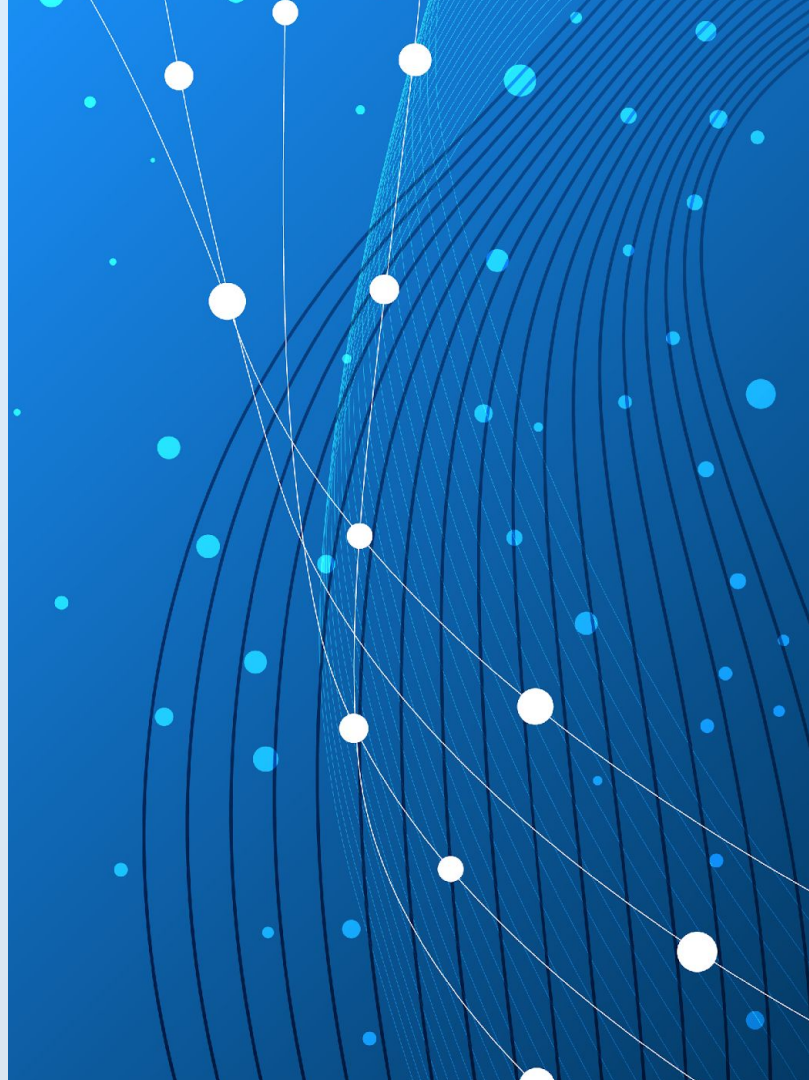- Lending
- Trading
- GameFi
- And More…

Use Case 1: Lending

Use Case 2: Trading

Use Case 3: GameFi

Demo

Summary

- Lending
  - TradFi vs DeFi
  - Pools and Interest Rates
  - Over-collateralized Loans
  - Under-collateralized Loans
- Algorand Governance
- Demo of Folks Finance

Thank you!