AlphBanX - White paper

The First Overcollateralized Stablecoin DeFi Protocol on Alephium
Leveraging Innovative Borrowing & Liquidation Auctioning System

Version: 0.8

Apr 8, 2024

TABLE OF CONTENTS

1. Introduction **3**
2. Protocol overview **5**
2.1. Stakeholders in the ecosystem 7
2.2. Tokens in the ecosystem 8
2.3. Native token utilities in the ecosystem 9
2.4. Protocol revenues 11
2.5. Protocol monetary policy 12
3. Borrowing, auctioning and staking in the protocol **16**
3.1. Loan I : the loan availability 18
3.2. Loan II : loan redemption (full repayment of the loan) 19
3.3. Loan III : auctioning liquidations 20
3.4. Loan IV : automated market makers liquidations 22
3.5. Staking 23
4. Protocol protection mechanisms **24**
4.1. Measures against collateral drop 24
4.2. Measures against de-pegging 28
4.3. Measures to enhance token price 33
5. Protocol research **34**

1. Introduction

DeFi is a fast-growing industry and yet still a droplet in the Crypto world.

Decentralized Finance (DeFi) is the emerging digital ecosystem that allows people to send, purchase and exchange cryptocurrencies assets without relying on an intermediary, stepping out of the traditional financial system that relies on banks, brokerages or exchanges.

The DeFi sector merely represented over $160 billion in 2021[1] while the entire crypto market is estimated was already in the trillions[2], suggesting a significant untapped potential yet to reach. By 2030, the DeFi market is expected to reach $231 billion[3]. New protocols would be necessary to answer this staggering challenge and find new solutions.

Stablecoin Popularity

A significant factor in this rapid expansion has been the introduction and implementation of stablecoins within DeFi platforms, bringing much-needed stability and liquidity to counterbalance the implied volatility of cryptocurrencies assets. The total market capitalization of stablecoins reached $138 billion in January 2023 with almost 1 million combined users.[4]

Learning takeaway from past experiences

Several events disrupt the DeFi industry in the last three years (2021 - 2024) including:

- Terra-Luna De-Peg event in May 2022, with the drop of almost 99% of one of the most popular stablecoin under extreme market conditions[5];
- There were major security breaches on DeFi protocols and economic exploits on stablecoin liquidity pools; [6]
- Crypto winter was particularly harsh for DeFi with a significant drop in collateral values and bad debt due to a high downward pricing pressure.[7]

[1] Source : CoinDesk
[2] Source : Coinmarketcap - April 8, 2024
[3] Source : Grandview Research
[4] Source : Coingecko - January 2023
[5] Source : Coindesk
[6] Source : Hacken
[7] Source : RiskDao tracker

Building sustainable tokenomics is paramount to protect protocols against risks such as:

1. Token Price volatility (especially downward pricing pressure)
2. Stablecoin De-peg
3. Significant drop in Collateral values.

AlphBanX, the new DeFi protocol on Alephium blockchain

AlphBanX is a DeFi protocol allowing users to secure a stablecoin loan against their collateral. This setup enables users to amplify their financial positions by leveraging their assets.

AlphBanX is a pioneering DeFi protocol on Alephium's blockchain, offering high scalability through advanced sharding technology and an environmentally friendly approach with its energy-efficient Proof of Less Work consensus. This DeFi solution benefits from Alephium's secure and efficient development tools, promising robust and user-friendly decentralized applications

AlphBanX aims to enhance the stablecoin market, making it more resilient, efficient, and user-friendly. These efforts mitigate risks in overcollateralized lending while maximizing its benefits.

2. Protocol overview

This section will introduce the following subsections for AlphBanX ecosystem :

1. The 5 Stakeholders operating in the AlphBanX ecosystem :
    i. The platform (DAO) will manages the whole ecosystem;
    ii. The borrowers secure a stablecoin loan against their collateral;
    iii. Stakers deposit tokens in exchange for rewards;
    iv. Earners deposit stablecoin in return for rewards
    v. Auctioneers attend auctions to acquire discounted collateral value of liquidated loans
    vi. Reserve protects against systemic risk .

2. The 3 types of tokens in the AlphBanX ecosystem:
    a. The stablecoin token is tied to USD (1:1) to ensure stability and provide liquidity;
    b. Collateral token is the counterpart of access to stablecoin liquidity;
    c. Reward token incentivizes the whole ecosystem.

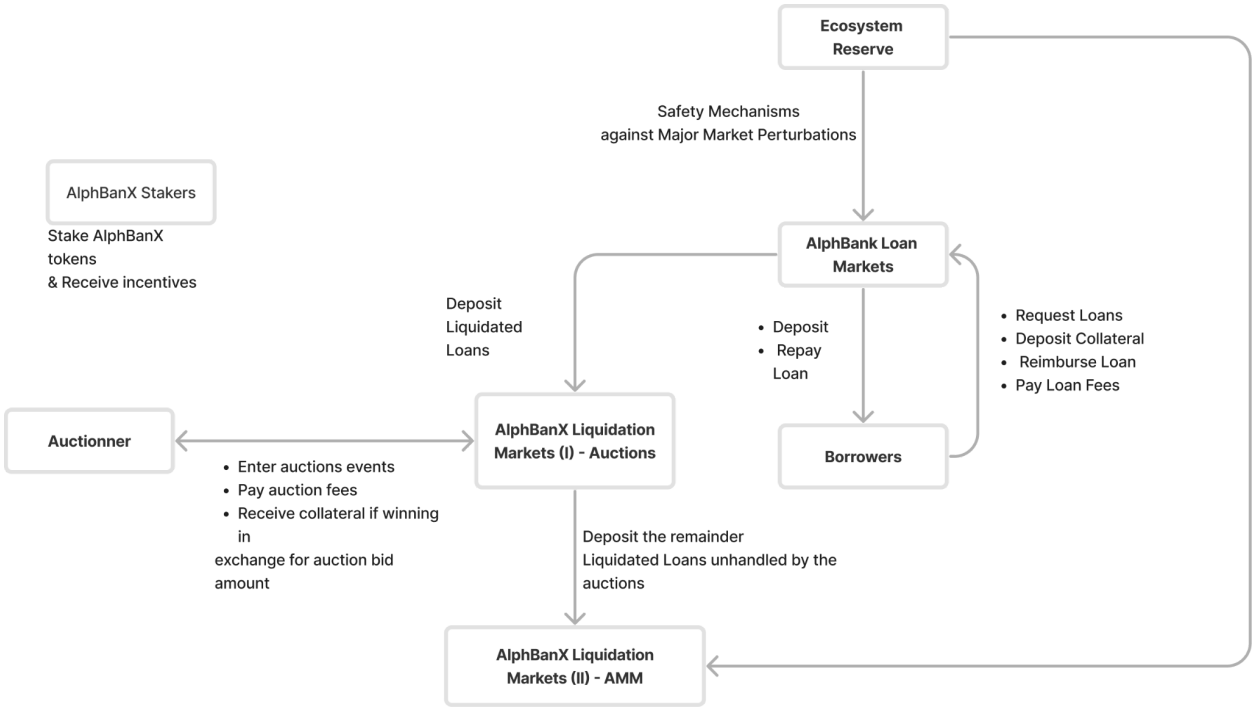
3. The token utilities in the ecosystem:
    a. Stablecoin utility is linked to its capacity to be pegged and used in the system;
    b. Collateral utility is based on the pre-existing token popularity and the implied volatility;
    c. Reward utility is based on the ability to efficiently incentivize the ecosystem;

4. The protocol fee structure to sustain and improve the ecosystem :
    a. Auctioning Fee : a percentage rate of the auction order amount;
    b. Borrowing Fee : a fixed fee of 6% applied to the user current loan balance and dynamic fee that adjusts to the supply and demand of the stablecoin
    c. Minting Fee : a one-time fee at the start of borrowing based on the borrowed amount
    d. Early Repayment Fee : a situational fee when the borrower repays the loan early;
    e. Stabilization Fee : a fee deducted from the Borrowing Fee (or Minting Fee) to fund a stabilization mechanism in the roadmap.

5. The monetary policy of the native AlphBanX token :
    a. A fix supply of 100 million AlphBanX tokens during the lifetime of the project;
    b. Split into 8 buckets to nurture AlphBanX development (Yield Farming, Seed Funding, Core Team, Reserve, Advisor, Ecosystem Development, Marketing and Liquidity);
    c. Build on an adjusted-inflation curve with a tied burning mechanism.

Figure 1.0: **Entire Mapping of AlphBanX Ecosystem**

Apr 6, 2024



2.1. Stakeholders in the ecosystem

AlphBanX Ecosystem is structured around the borrowing activity to make it efficient and safer for everyone.

As such, AlphBanX Ecosystem is comprised of 5 major stakeholders :

1. Platform : Users owning AlphBanX token will manage the ecosystem to ensure the safety and promote the ecosystem
2. Borrowers : Borrowers are individuals or companies looking to have liquidity through stablecoins in exchange for locking a superior amount of collateral and paying financing fees for this service;
3. Stakers : Stakers will deposit a portion of AlphBanX tokens to secure the protocol in exchange for rewards;
4. Earners: Users can deposit the stablecoin into the auctioning pool and receive yield while potentially buying undercollateralized assets with a discount.
5. Auctioneers: When the collateral value is not sufficient to cover the loan, liquidators can buy the collateral asset for a discounted price in the auction process;
6. Reserve : The reserve is the last-resort agent to prevent any systematic perturbation in the ecosystem. The reserve is expected to grow at the same speed as the ecosystem (if not more) to prevent any risk.

The table below summarizes the stakeholders roles and responsibilities with the main associated rewards and risks:

Table 1.0: **AlphBanX Ecosystem Stakeholder Overview**

Apr 6, 2024

Agent	Letter	Description	Rewards	Risks
Platform	P	Manages and safeguards the protocol	Liquidation proceeds	Operational errors Potential loss in AMM
Borrowers	B	Seek loans using collateral	Cheap funding costs	Liquidation Risk
Stakers	S	Lock tokens for rewards	Staking reward	Token devaluation
Earners	E	Deposit tokens for rewards	Yield	Protocol Risk
Auctioneer	A	Buy discounted collateral	Liquidations proceeds	Market volatility
Stablecoin Reserve	R	Backstop against systemic issues	Portion of borrowing fees Portion of early repayment fees	Insufficient reserve

2.2. Tokens in the ecosystem

Table 2.0 - **Roles of the tokens in the AlphBanX ecosystem**

Apr 6, 2024

Token type	Token	Token Description
Stablecoin	*AlphUSD*	AlphUSD is the stablecoin token that will be used as either a counterparty for ALPH token deposit or in the auctions.
Collateral	*ALPH*	ALPH token is an existing token known as the first operational sharded L1 blockchain scaling. ALPH token serves here as the first collateral token for the borrowing system built on Alephium.
Reward	*ABK*	AlphBanX token is the reward token that serves to incentivize the DeFI (borrowing, lending and auctions) in Alephium.

AlphBanX protocol will use the following to support the DeFi activity (lending, auctioning and staking):

1. Stablecoin tokens : Tokens whose value is tied to another currency, commodity or financial instruments. Those tokens will be minted to be borrowed as they are known to be relatively stable;
2. Collateral tokens : Tokens used to secure value during the loan transaction. Those tokens are locked from the borrower to ensure the borrower will repay the loan otherwise the collateral will be liquidated;
3. Reward tokens : Tokens used as incentives to promote the ecosystem and to reward the stakeholders appropriately.

Figure 2.0: **Primary Tokens on AlphBanX for initial stage**

Apr 6, 2024

For the initial phase, AlphBanX will use only (Alph, ABK, AlphUSD).
Additional tokens will be included gradually and planned under scrutiny in the roadmap (wETH, wBTC ...).
AlphBanX staked tokens (xABK) will be also added at a later stage to provide additional liquidity.

2.3. Native token utilities in the ecosystem

Alph, AlphBanX and AlphUSD tokens will be leveraged in the AlphBanX ecosystem starting with Alph.

- AlphUSD is the native stablecoin currency tied to USD :
  - used as liquidity during the borrowing process : in exchange for collateral, borrower will access liquidity through stablecoins (Borrowers can only pay their loans with the AlphUSD);
  - used as the unique repayment method for borrowing (partial or full repayment);
  - Used in the auctions, at the initial stage through user deposits to replenish the auctions in exchange of AlphBanX tokens;
  - used in the auctions, as the unique payment method for liquidated collateral (liquidity value will be a discounted value up of up to 10% of the collateral market value);
  - that will be used as a unit of account in the whole system.
  - Used to receive yield paid by borrowers and receive AlphBanX token as an incentive, to protect the overall ecosystem.

Additional utilities may be added to enhance the overall utility of the main token in the economy (if the stablecoin offers no utility, there is no virtual potential economy in the system) which is why it is paramount to reinforce and strengthen the use-cases around AlphUSD token.

- Alph is the foundational currency of the Alephium ecosystem which makes it essential at the protocol level for AlphBanX. Users in Alephium will now have the flexibility to borrow directly from AlphBanX. Alph token set a strong base with a significant track record in terms of price history and number of users over time.
    - Alephium stands out with its novel sharded blockchain that enhances scalability while conserving energy (saving up to 87% less compared to classic Proof of Work) through its novel approach "Proof of Less Work"[8];
    - Alephium current market Capitalization is at USD 230m, at USD 60m Total Value Locked[9] and a 2-year track record;[10]
    - Alephium has an existing community of users and developers and trading activity (X stats c. 35.5k; Telegram 7.8k, Discord 9.9k; Volume traded in 24h : $4M+ daily volume 60% CEX, 40% DEX.)[11].
- AlphBanX is the main token utility in the AlphBanX ecosystem offering rewards and incentives for staking and participating in the ecosystem:
    - Staking AlphBanX tokens will enable additional utility including improving the rewards based on the staking period;
    - If users deposit stablecoin in the auction, they will receive AlphBanX as a compensation.
    - If the collateral value is liquidated above the loan value, the AlphBanX holders will pocket the difference when the protocol is liquidator;
    - Part of the loan collateral will be directly converted into AlphBanX to be staked.

[8] Source : Official Website - April 6, 2024

[9] Source : DefiLlama - April 8, 2024

[10] Source : Coinmarketcap - April 6, 2024

[11] Source : Bitdegree - April 6, 2024

2.4. Protocol revenues

To ensure the ongoing operations and to improve the ecosystem, the following fee structure will be applied :

1. Auctioning Fee : a percentage rate of the auction order amount;
2. Borrowing Fee : a fixed fee of 6% and a dynamic fee that adjusts on the supply and demand of the stablecoin;
3. Minting Fee : a one-time fee at the start of borrowing based on the borrowed amount;
4. Early Repayment Fee : a situational fee, if the borrower repay (partially or entirely) before the 90-day lock-up period, claiming 50% of the AlphBanX collateral portion (5% of total collateral);
5. Stabilization Fee : a fee deducted from the Borrowing Fee (or Minting Fee) to fund a stabilization mechanism in the roadmap.

Table 3.0 - **Fee Structure in the AlphBanX protocol**

Apr 6, 2024

#	Fees	Notation	Value[12]	Description	Paid by
1	Auction Fee	F_1	0.5%	Auction Fees are calculated as a percentage of the total auction amount for each order, serving as a fee for the transaction.	Auctioneer
2	Borrowing Fee	F_2	6%	These fees are charged as a percentage of the principal amount borrowed. They represent the cost of borrowing money and are applied on a daily basis. Borrowing Fee will be dynamic but we use 6% as an average indication to help with examples.	Borrower
3	Minting Fee	F_3	1%	These are charges paid once at the beginning of the borrowing process. Those upfront fees are a percentage based on the total amount borrowed.	Borrower
4	Early repayment Fee	F_4	5%	Early repayment fees are paid when a loan is paid off before the lock-up period (90 days). Early repayment fees will be 50% of the AlphBanX collateral portion (10% of the total collateral) which is roughly 5% of the total collateral.	Borrower
5	Stabilization Fee	F_5	2%	In the roadmap, we have a stabilization mechanism. It will be financed through a Stabilization Fee to be deducted from the Borrowing Fee (or the Minting Fee).	Borrower

[12] Values can be adapted at a later stage.

The protocol fees will be split among the stakeholders based on the following breakdown :

Table 4.0 - **Percentages of Fees paid to stakeholders in the AlphBanX protocol**

Apr 6, 2024

#	Share of fees (%)	Platform	Borrowers	Stakers	Reserve	Auctioneer	Burn
1	Auction Fee	0%[13]	0%	0%	100%	0%	0%
2	Borrowing Fee	0%	0%	100% of 6%		Dynamic fee	0%
3	Minting Fee	0%	0%	0%	100%	0%	0%
4	Early repayment Fee	0%	0%	0%	50%	0%	50%
5	Stabilization Fee	0%	0%	0%	100%	0%	0%

2.5. Protocol monetary policy

AlphBanX tokenomics are carefully planned. A pie chart shows how the 100 million tokens are allocated. It aims to strengthen the protocol and its community. Here's the breakdown:

1. Yield Farming (29.5%): This is the top priority. It rewards AlphUSD token holders for providing liquidity, which is crucial for stability;
2. Core Team (15%): It rewards the team for their hard work and innovation;
3. Reserve (15%): These tokens act as a financial buffer to adapt to market changes;
4. Seed Funding (10%): This comprises early investors who helped start the project;
5. Advisor (10%): This pays strategic advisors for their guidance;
6. Ecosystem Development (10%): It supports partnerships and initiatives to grow the network;
7. Marketing (10%): It promotes AlphBanX to enhance its market position;
8. Liquidity (0.5%): Ensures quick token access for trades and transactions.

The pie chart shows the focus on purposeful token use. This strategy aims for balanced growth, rewards, and stability.

[13] If auctioneers are not enough the platform will use a decentralized exchange to participate in the auctions.

Chart 1.0: **Breakdown per Bucket of Total Supply (AlphBanX tokens)**

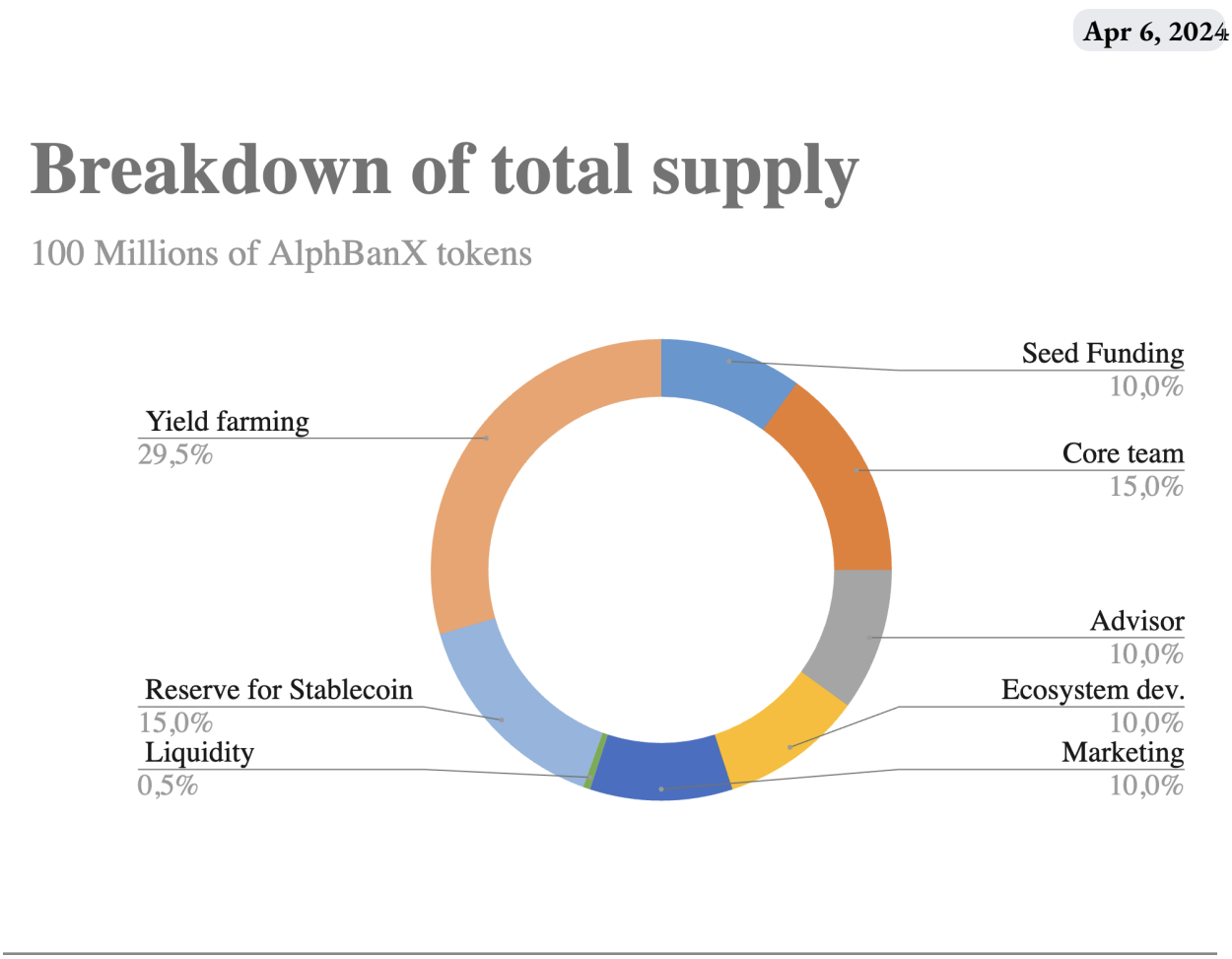


Chart 2.0: **AlphBanX - Cumulative Circulating Supply - 5 year after launch**

Apr 7, 2024

Cumulative Circulating Supply Schedule by Bucket

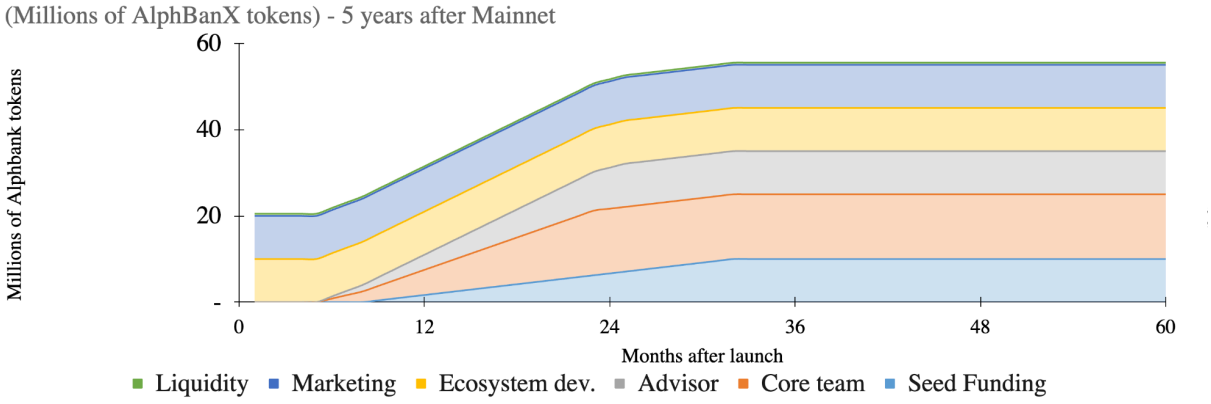


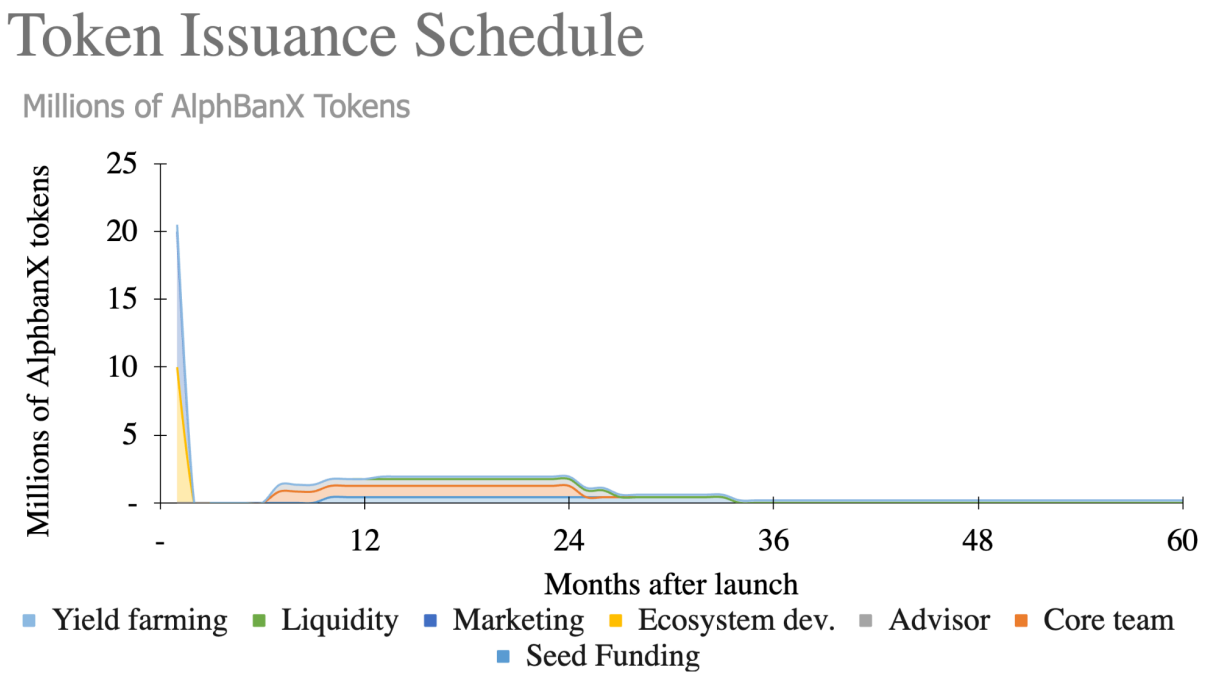
Table 5.0 - **Total Supply (AlphBanX tokens) - Breakdown and vesting schedules details**

Apr 5, 2024

Bucket	AlphB Tokens	TGE Release	Cliff (Months)	Vesting (Months)
Seed Funding	10,000,000	-	9	24
Core Team	15,000,000	-	6	20
Advisor	10,000,000	-	6	20
Ecosystem Development	10,000,000	100%	-	-
Marketing	10,000,000	100%	-	-
Liquidity	500,000	100%	-	-
Reserve for Stablecoin	15,000,000	100%	-	-
Yield Farming	29,500,000	0.03% daily	12	-
Total	**100,000,000**	-	-	-

Chart 3.0: **AlphBanX Token Issuance - 5 - year after Launch**

Apr 7, 2024

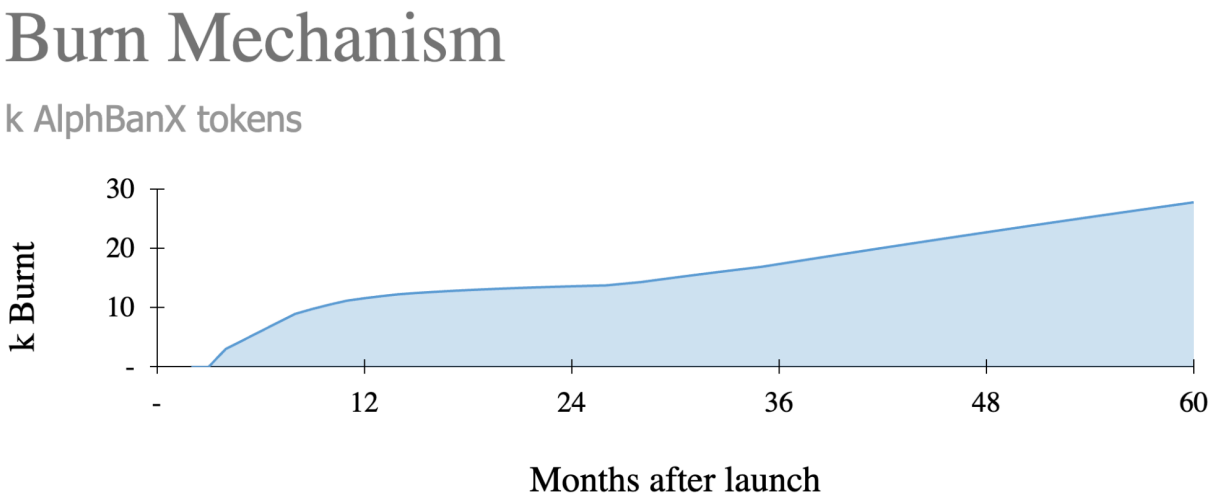


Burn Mechanism:

Borrowing collateral will be partially converted into AlphBanX tokens (10% of the total collateral). If any anticipated repayment happens before the end of the locked up period (before 90 days), a 5% fee will be deducted from the AlphbanX portion in which 50% will be burnt.

Chart 4.0: **AlphBanX Token Burn Forecast**

Apr 7, 2024



3. Borrowing, auctioning and staking in the protocol

Borrowing, Auctioning, Earning and Staking are the four main activities that occurred in AlphBanX protocol. Borrowing and Auctioning will be presented through the collateral management process. Staking will have a separate sub-section.

Borrowing is the activity starting from the request of a loan and ending with the loan repayment. In overcollateralized protocols, such a process is intertwined with the collateral management by the borrower during the loan life. The general process is :

- 3.1 - Loan I : the loan availability period: a Borrower will be able to mint AlphUSD up to 61% of the collateral value as Alph. The borrower is free to utilize the borrowed amount according to its needs. The cost of borrowing (borrowing fees) is covered by the value of the collateral value balance that will decrease over time. The loan is available as long as the borrower respects the previous condition.
- The end of loan process through :
    - 3.2 - Loan III : the Loan redemption (full repayment from the borrower of the borrowed amount sent back to recoup the associated amount of collateral value) or ;
    - The loan liquidation : the collateral value of the loan is not sufficient to cover the minimum collateral ratio in the protocol and therefore the loan is subject to the liquidation process.

- The liquidation process is the process in which the collateral value is not enough to cover the minimum collateral ratio but still superior to the borrowed value (the minimum collateral ratio acts as a financial buffer to dissuade the borrower from getting liquidated, a timing buffer for the protocol to sell the collateral value without losing value and a commercial buffer for the potential liquidators that will buy the collateral).
    - 3.3 - Loan IV : Auctioning Liquidations : The first liquidation process is the liquidation through auctioning. Auctions are the market for the liquidated collaterals to be brought to the auctioneers that have the best offer - those that submit the price with the least discount compared to the current collateral market value will be prioritized.
    - 3.4 - Loan V : A.M.M Liquidations : The secondary liquidation is the liquidations through Automated Market Makers. If the loans liquidated through auctions are not fully liquidated, they end-up in a Decentralized Exchange via the Automated Market Makers mechanism using stablecoins and collateral by the protocol.
- 3.5 - Staking : Staking is the act of locking tokens to secure the protocol and be compensated through protocol incentives for doing so. In AlphBanX protocol, the staking program will be based on :
    - Direct Staking : the User will directly locked AlphBanX tokens and should claim the rewards on a weekly basis. The rewards will be locked for a period of 365 days and be available after.
    - Indirect Staking : when there is a loan in the AlphBanX system, a corresponding collateral is locked. The corresponding collateral will be partially converted (10%) as AlphBanX tokens and be immediately staked. This will ensure a direct economic relationship between loan and staking activity.
    - Stakers that deposit AlphBanX token will have a locking period of 14 days when unlocking.
- 3.6 - Earning: Users can deposit the stablecoin into the auctioning pool and auction on undercollateralized assets - the dynamic fee for borrowing will pay yield to liquidity providers in the auction pools.

3.1. Loan I : the loan availability

Anyone within the AlphBanX protocol can mint any amount of AlphUSD stablecoins as long as the borrower has sufficient collateral. The minting ratio of AlphUSD with Alph is 61% which means that for 100 USD equivalent of Alph as a collateral, the borrower can mint up to 61 USD equivalent of AlphUSD.

1. Once the requested collateral is deposited, the borrower will gain access to the corresponding stablecoin amount.
2. The protocol should keep tabs of the request date to ensure the early fees repayment date policy.
3. The user can choose to mint more or to have an additional collateral ratio if the current loan-to-value ratio is superior to the target loan-to-value ratio.

Equation block 1.0: **Target Loan-to-value ratio compared to Current Loan-to-value ratio for the user**[14]

Apr 6, 2024

$$Minting\ Loan\ to\ Value\ Ratio\ (ALPH) = \ 61\%^{15}$$

$$Current\ Loan\ to\ Value\ Ratio\ = \frac{Current\ Loan\ Balance}{Current\ Collateral\ Balance}$$

$$\leftrightarrow Current\ Loan\ to\ Value\ Ratio\ = \frac{Loan\ Balance\ before\ request + Loan\ Request + Initial\ Loan\ Fees}{Collateral\ Balance\ before\ request + Additional\ Potential\ Collateral}$$

Borrowing fees paid on collateral

After getting the loan request granted, the borrowers will receive the corresponding amount of AlphUSD stablecoins in their wallet to use according to their needs. The borrower is still required to pay borrowing fees on the collateral value that was exchanged for performing the loan request. The borrowing fees will be deduced from the collateral balance.

[14] Deep Dived calculations will be done in the formula sheet (inc. Loan Balance calc., update on target TVL ...)
[15] Target Loan to Value Ratio will be a key parameter for the protocol that will be entered and potentially voted on. The 61% is the target loan to value ratio estimated for Alph token at this stage.

Collateral Management during the borrowing process

Subsequently to the loan request, the collateral value is partially converted : 90% will remain unchanged, and 10% will be converted into AlphBanX tokens. The staked AlphBanX token will add to their collateral (100%).

To maintain the loan in this system basically means to keep the current collateral ratio above the minimum tolerated collateral ratio at all times otherwise the borrower will keep the borrowed amount but will lose the collateral value (collateral value is naturally higher than the borrowed amount which makes it an unattractive option).

To avoid collateral drop, the user can :

1. Manually deposit any of the tokens (Alph, AlphBanX, AlphUSD) to enhance its current collateral ratio balance;
2. Automatically deposit any of the tokens(Alph, AlphBanX, AlphUSD) to enhance its current collateral ratio balance through the one-click collateralization feature that will mint AlphUSD in exchange for Alph tokens;
3. Partially repay the loan amount.
4. Enable the overcollateralization features that will automatically replenish the collateral ratio if it falls below the overcollateralization threshold. (the overcollateralization threshold is at 1.30 which gives enough breathing room to not be activated at any time and at the same time not too close from liquidation in case of massive drop in the collateral values.

Partial repayment

Partial repayment is possible before the lock-up period (90 days period starting at the initial request date). but based on the following section for early fee repayment, the user is not incentivized to do partial repayment before 90 days.

3.2. Loan II : loan redemption (full repayment of the loan)

Example 1: Alice wants to repay her loan before lock-up period and will pay early fee repayments

---

Apr 6, 2024

- *Alice borrows $6,100 against $10,000 collateral (61% LTV), split as $9,000 in Alph tokens and $1,000 in AlphBanX tokens.*
- *To repay early (before lock-up period), she deposits $6,100 in AlphUSD.*
- *A 50% penalty on the AlphBanX token collateral ($500) is applied. ($250 in De-peg / 250 subject to burning)*

- *Post-repayment, Alice gets back $9,000 in Alph tokens and $500 in AlphBanX tokens, totaling $9,500.*

For loans that surpass the lock-up period of 90 days, there will be no early repayment fees. In such cases, the collateral will be released upon the complete repayment of the borrowed amount.

Example 2: Alice wants to repay her loan after lock-up period and will not pay early fee repayments

---

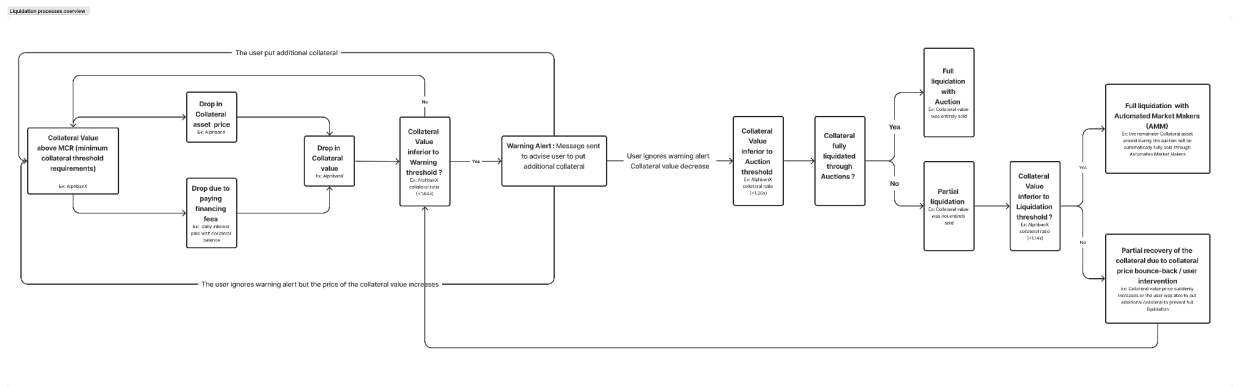
Apr 6, 2024

- *Alice borrows $6,100 with $10,000 collateral (61% LTV), divided into $9,000 Alph tokens and $1,000 AlphBanX tokens.*
- *After the lock-up period, she repays the $6,100 in AlphUSD without any early repayment fees.*
- *Alice then receives her entire collateral back: $9,000 in Alph tokens and $1,000 in AlphBanX tokens, totaling $10,000.*

3.3. Loan III : auctioning liquidations

Figure 3.0: **Liquidation process overview**[16]

Mar 31, 2024



Borrowing will enter the auction liquidation mode once the current collateral loan ratio has been inferior to the Auction collateral ratio threshold. The collateral will then be sent to the auctions and

[16] Figma

auctioneers will be alerted that a new auction is bound to happen. Auction liquidation will be a Dutch auction for the Collateral amount that will be sold for a discounted price.

a. The discounted price will be progressively discounted with a step-mechanism : starting from [2%] to [10%][17]. The auction will be increasingly profitable, at the same time, playing the waiting game can cost you the opportunity to be part of the auction[18].
b. Each auction will result in a number of bids proposals by auctioneers. The winning bidders will be granted to those that can buy the collateral with the most competitive discount compared to the rest of the market.
c. In case of the remaining portion of collateral unsold through auction, this amount will be directly sold through Automated Market Makers After reaching the last threshold.

Auction liquidation mode will be a Dutch auction for the Collateral amount that will be sold for a discounted price with a step-mechanism. The collateral amount will be divided into several tranches from 2% to 10% (parameters can be updated at a later stage).

Liquidators will be able to bet in any collateral tranche (just 1 or multiple) with the bid amount and the desired discount.

A smart contract will then gather all auction orders and will class them based on the desired discount.

An auctioneer bidder will be a winner if two conditions are met :

- He bought the collateral with the best discount price compared to the rest. The rest being the whole protocol if he is the first or the remainder of the protocol otherwise.
- If there is still collateral left to be bought.

Example 3: Alice buys during auction placing an order of $1,000 at 10% and win for the entirety of her order

---

Apr 6, 2024

- *Alice places an order of $1000 with AlphUSD tokens at 10% and pays auction fees.*
- *Alice wins the auction for the entirety of her order.*
- *Alice will receive the equivalent of $1000 worth of AlphUSD tokens expressed in ALPH tokens with a 10% discount !*

Example 4: Alice buys during auction placing an order of $1,000 at 10% and win for half of her order

---

[17] Those thresholds are built with the Sprint Research on Minimum Collateral Ratios and are the two extreme values separating Auction Liquidations Minimum Collateral Ratios and Liquidations Minimum Collateral Ratios. If there are 10% between both, there would be then 5 auctioning tranches of 2% (equal split between tranches for simplicity).
[18] The user will have the option to bet multiple times and on several auction tranches if desired.

Apr 6, 2024

- *Alice places an order of $1000 with AlphUSD tokens at 10% and pays auction fees.*
- *Alice wins the auction for half of her order.*
- *Alice will receive the equivalent of $500 worth of AlphUSD tokens expressed in ALPH tokens with a 10% discount !*

Example 5: Alice buys during auction placing an order of $1,000 at 10% and loses in auctions

---

Apr 6, 2024

- *Alice places an order of $1000 with AlphUSD tokens at 10% and pays auction fees.*
- *Alice loses the auction for the entirety of her order.*

3.4. Loan IV : automated market makers liquidations

The AlphBanX protocol employs an innovative mechanism to manage undercollateralized loans, merging automated smart contract bots with Automated Market Maker (AMM) liquidation processes. This integration leverages the liquidity pools of decentralized exchanges platforms like Ayin to ensure efficient liquidation while also creating opportunities for profit generation through smart contract bots.

Example 6: Protocol used the automated market makers liquidations with a Decentralized Exchange Platform

---

Apr 6, 2024

Borrowing and Liquidation:

- The bot borrows a specified amount of AlphUSD (e.g104 AlphUSD) from a Dex platform.
- It then sends these tokens to the AlphBanX liquidation contract.

Liquidation Contract Actions:

- The liquidation contract, upon receiving AlphUSD, liquidates it for a higher value in ALPH (e.g., 114 USD worth of ALPH).

Exchange and Repayment:

- The bot sends this ALPH to Uniswap, exchanging it back for AlphUSD (e.g., 114 AlphUSD).
- The bot then repays the initial loan (104 AlphUSD) to the DEX platform, with the surplus (e.g., 10 AlphUSD) appearing in the bot's wallet.

Resulting Status:

- Liquidation Bot: Generates profit (10 AlphUSD) seemingly from thin air.
- Protocol: Initially lent 100 AlphUSD, gains a surplus from the transaction (4 AlphUSD).
- Borrower: Initially received 100 AlphUSD but lost collateral valued at a higher rate (14 AlphUSD difference).

3.5. Staking

Staking is the economic activity to lock a token for a specific amount of time. In AlphbanX protocol, users can stake at any time AlphbanX tokens directly to receive staking rewards as additional AlphBanX tokens. Borrower will also receive staking rewards through a portion of the collateral that will be converted into AlphBanX and staked (indirectly).
The staking rewards should be claimed on a weekly basis through the interface and will be locked for 1 year.

$$Staking\ Yield\ =\ (\frac{Borrowing\ Rate * TVL\ of\ AlphUSD}{Market\ Cap\ of\ AlphBanX\ x\ Percentage\ of\ AlphBanX\ staked})\ *\ 100$$

Staking Yield (%)	**Scenario 1**	**Scenario 2**	**Scenario 3**	**Scenario 4**
Borrowing Rate	6%	6%	6%	6%
TVL of AlphUSD	1,000,000,000	500,000,000	1,000,000,000	1,000,000,000
Protocol Market Cap	200,000,000	200,000,000	50,000,0000	200,000,000
Percentage of Protocol Staked	50%	100%	100%	25%
Staking Yield (%)	**60%**	**15%**	**120%**	**120%**

4. Protocol protection mechanisms

The protocol protection mechanisms are built to face four potential challenges :

1. Systemic Collateral Drop : the systemic collateral drop is a significant and widespread decline in the value of the assets used as collateral in AlphBanX protocol.
2. Stablecoin de-peg for AlphUSD : the relationship between AlphUSD and USD (1:1) derailed for a significant amount of time.
3. Decreasing AlphBanX token price : the AlphBanX token mechanism should improve the price at long term and alleviate downward price pressure (in the sense of not being pro-cyclic).
4. Interest rate pricing mismatch : AlphBanX protocol is looking to optimize the interest rate to be competitive while being sustainable.

The following subsections will tackle those four identified risks offering mitigation measures to improve the stability and guarantee a strong level of protection.

4.1. Measures against collateral drop

Anti-liquidation bots

Anti-liquidation bots, offers users the ability to link their wallets and authorize to manage their funds. This feature is designed to safeguard users from liquidation events. Should a user's collateral ratio fall to a predefined threshold, such as 130%, the smart contract is triggered to automatically replenish the collateral, thus maintaining the collateral ratio and preventing liquidation. With widespread adoption of the anti-liquidation bots, the stability of the associated stablecoin is significantly enhanced. This is because the automated collateral maintenance reduces the risk of the stablecoin deviating from its peg, ensuring the ecosystem's overall stability.

Equation block 2.0: **Current Loan-to-value ratio compared to Anti-Liquidation LTV ratio for the user**

Apr 7, 2024

$$Anti - liquidation\ LTV\ (ALPH) = 130\%^{19}$$

$$Current\ Loan\ to\ Value\ Ratio = \frac{Current\ Loan\ Balance}{Current\ Collateral\ Balance}$$

$$\Rightarrow Anti - liquidation\ LTV \geq Current\ Loan\ to\ Value\ Ratio \text{ (feature is activated)}$$

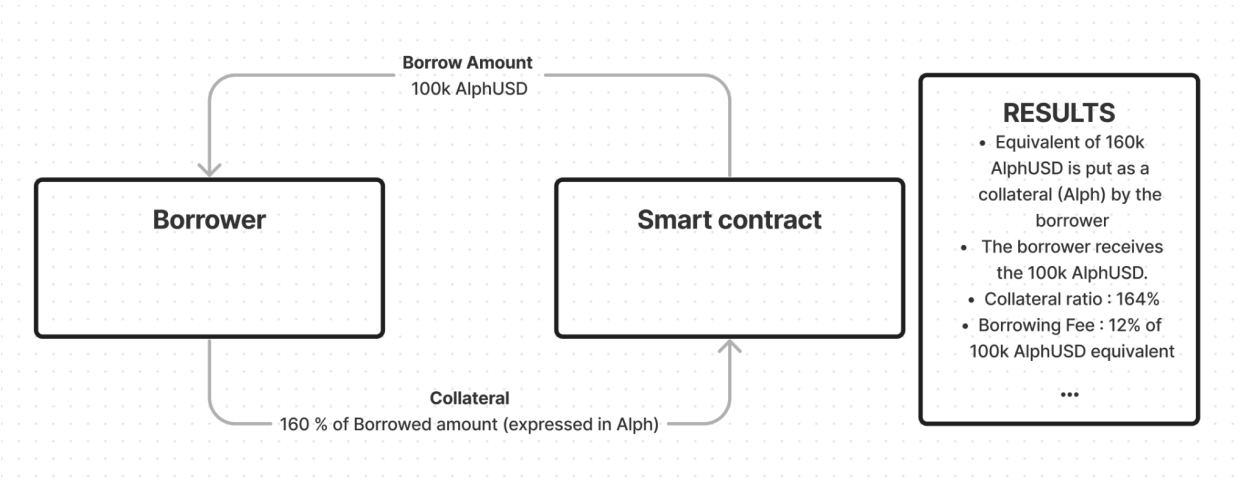
$$\Rightarrow Anti - liquidation\ LTV \geq Current\ Loan\ to\ Value\ Ratio \text{ (feature is deactivated)}$$

One-click overcollateralization

One additional innovative mechanism that we will put in place is a one-click overcollateralization mechanism. By opting into overcollateralization, a user can use the minted AlphUSD to have a higher collateralization ratio and a higher exposure to Alph. If the user does wish to do so, it will give them more exposure on Alph and a far safer collateralization ratio. The benefit for the protocol is to have a safer collateralization overall.

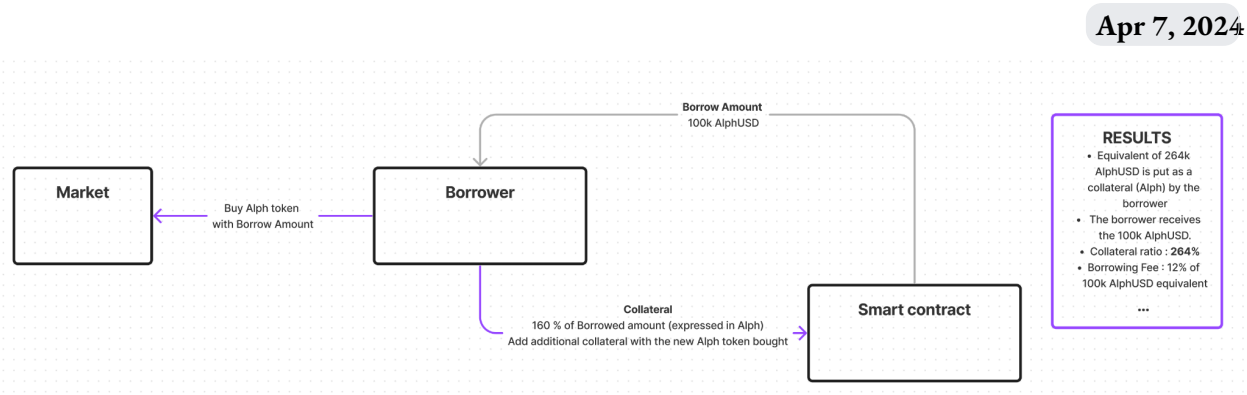
Figure 4.0: **Process without overcollateralization**

Apr 7, 2024



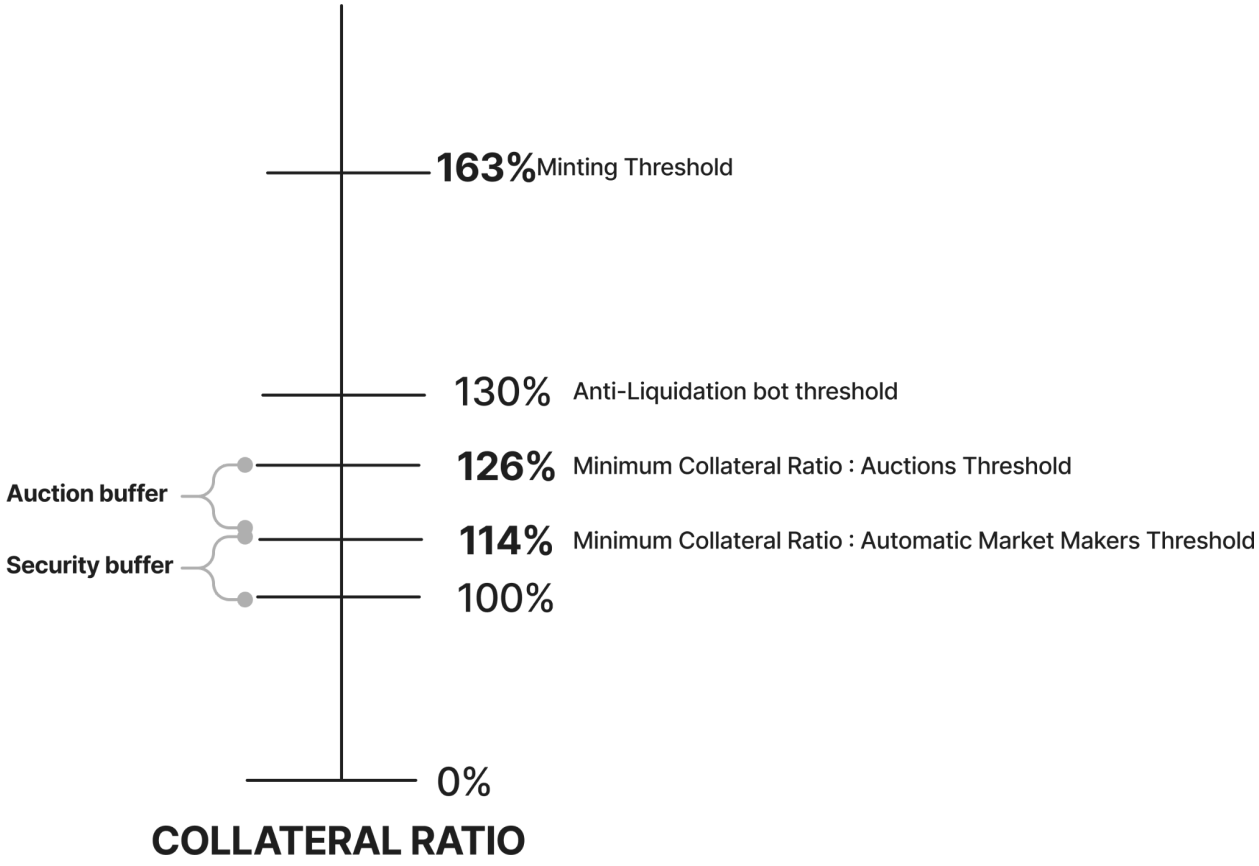
[19] Anti-liquidation threshold is set at 130% as a starting figure and will be refined at a later stage.

Figure 5.0: **Process with overcollateralization**



The outlined mechanism allows an individual to deposit collateral worth $164K in ALPH into a smart contract, enabling them to mint 100K AlphUSD. This minted AlphUSD can then be converted back to ALPH and redeposited into the collateral pool, effectively improving the collateral ratio. A higher collateral ratio reduces the risk of liquidation. For instance, according to this system, the ALPH price would have to drop approximately 62% before the individual's position is at risk of being liquidated.

Preventive measure set by the system



- The collateral ratio system in AlphBanX is designed against collateral drop based on the market data price history. The market data price is treated as the best approximation to assess the downward pricing pressure of a given asset. The collateral pricing is build through 3 thresholds to offer a calibrate answer based on the level of risk :
- Warning threshold : If the collateral ratio reaches the P99.99 threshold, the borrower gets a warning message to advise putting additional collateral to make up for the collateral price drop. The user will have the possibility to enable an automatic option to replenish automatically. Because it is a P99.99 (i.e. probability of 99.99%), statistically, only one day in 10000 days this level may not be enough)
- Auction threshold : If the collateral reaches the P99 threshold (statistically this level is only an issue one day within 100 days), the borrower enters into the Liquidation mode : the borrower will pay Liquidation Fees and a portion of the collateral will be offered with a discount price through auctions

to compensate for the lack of collateral. As the collateral value decreases, the auction proceeds with several steps to ensure a progressive liquidation.

- Liquidation threshold : If the collateral reaches the P95 threshold (statistically 5 days out of 100 days this ratio is not enough so we start getting into a more dangerous territory), the borrower collateral is fully liquidated.

As shown above, the difference between AlphBanX and similar tokens is that the ratios are sized by probability to get levels high enough without being too penalizing in terms of capital efficiency.[20] Because it is paramount that the stable coin does not lose its peg, we have in addition a mechanism of protection defined within this Whitepaper. But on a day-to-day basis, the liquidation by auction should be sufficient, statistically speaking.

Liquidations on auction

Borrowing will enter the auction liquidation mode once the current loan collateral has been inferior to the second minimum collateral threshold (II) known as Auction collateral threshold.

Auction liquidation mode will be a Dutch auction for the Collateral amount that will be sold for a discounted price. The auctions market need to be efficient to liquidate the collateral values quickly and efficiently :

- User-friendly interface will allow users to attend auctions and suggest bids on several tranches;
- Auctioneer will pay an auction fee set at 0.5% per bid amount to avoid spamming;
- Auction will be randomized in terms of timing to avoid bot presence in the auction;
- Discounted pricing mechanism enable auctioneer to compete between themselves;
- Initial measures will be taken to encourage a strong auctioneer presence.
- Protocol can attend liquidations on auctions as well.

Automated Market Makers

In the event of insufficient auction bids, AlphBanX triggers AMM liquidations, using decentralized exchanges like Uniswap for rapid swaps of undercollateralized assets (ALPH) for stablecoins (AlphUSD), and burns it. This repays debts swiftly, leveraging deep liquidity pools for market price efficiency, reducing exposure to market volatility.

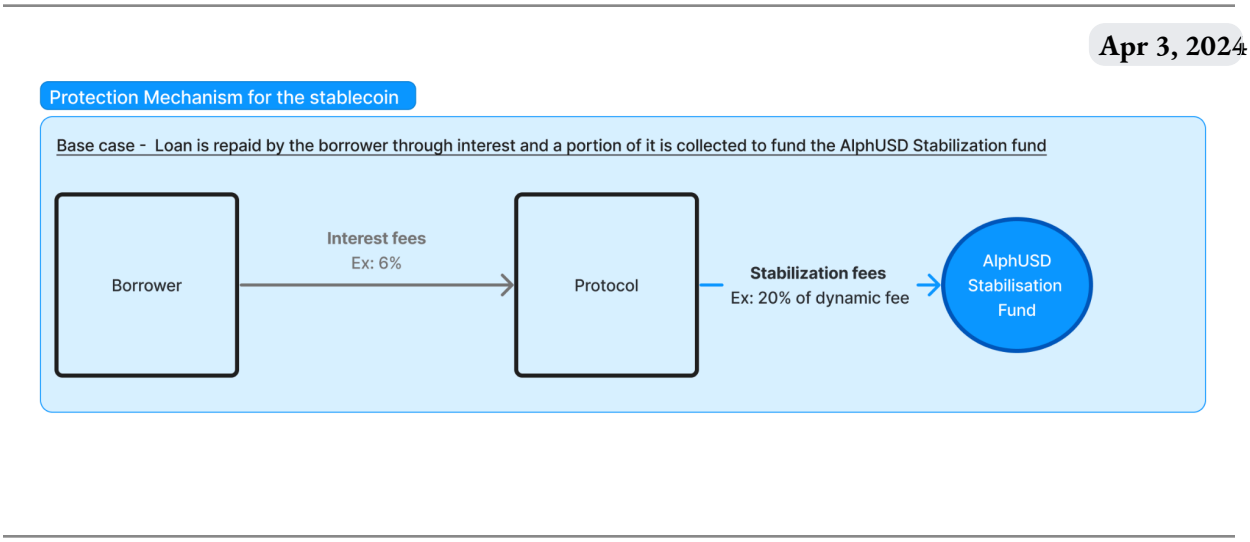
4.2. Measures against de-pegging

Short hedge position

[20] For more details, see the entire mechanism and calculation in our separate paper : Setting Minimum Collateral Ratios using market prices and probabilistic scenarios available at the end of this white paper in the Research section.

Our roadmap introduces a groundbreaking mechanism aimed at enhancing the stability of our stablecoin. This involves allocating a portion of the borrowing fees to a reserve pool stocked with an alternative asset, such as wETH. The strategy includes maintaining over-collateralized shorts on Alephium, with leverage.

Figure 6.0: **Protection Mechanism for the stablecoin**[21]



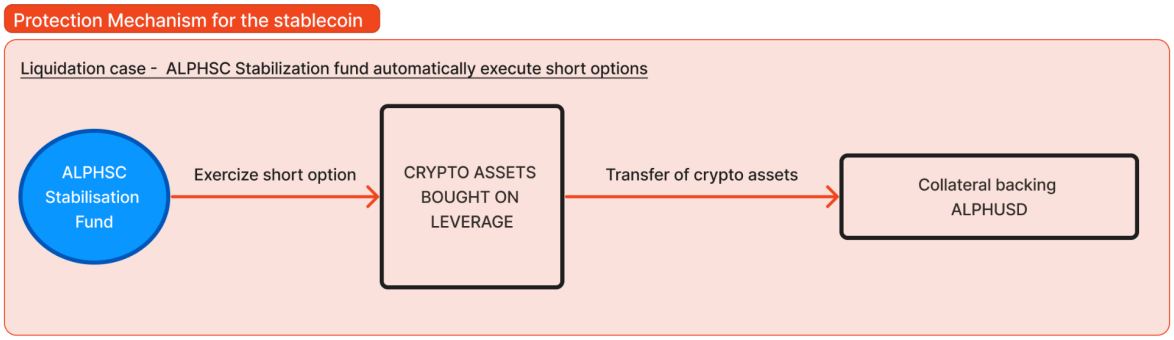
In this scenario, a borrower incurs an annual interest rate of 6% a year plus a dynamic fee. The protocol will deduct 20% of the dynamic fee. Should there be any failure in the liquidation process, the system automatically executes a short option. This involves buying crypto AlphUSD from the market and burning it, thereby supporting and increasing the price of AlphUSD. This mechanism is similar to the use of floor options in traditional financial markets, offering a safety net against market volatility and liquidation risks.

In case of black swan event in the cryptocurrency markets and inability to liquidate:

[21] https://www.figma.com/file/HR01kTjVzJHLn4BBK6Nbot/Untitled?type=whiteboard&node-id=8-44&t=frMwp1YorrFfODam-4

Figure 7.0: **Short option**

Apr 3, 2024



Dynamic Equilibrium Fee Adjustment Model (DEFA)

Our proposed solution, the Dynamic Equilibrium Fee Adjustment Model (DEFA), presents a robust strategy aimed at maintaining the stability of AlphUSD in correlation with its underlying asset. DEFA operates on a sophisticated algorithm designed to continually monitor the peg of the stablecoin to its reference asset, swiftly responding to deviations through dynamic adjustments in transaction fees. This real-time responsiveness ensures immediate and proportionate measures to counteract any potential depegging threats.

Central to DEFA is the principle of equilibrium between total supply and demand dynamics. Discrepancies in this equilibrium trigger adjustments in transaction fees to rectify the imbalance.

Core Components:

1. **Transactional Fee Dynamics:** Transaction fees are leveraged as a mechanism to restore equilibrium between supply and demand. These fees serve as both an interest cost for suppliers and an earning avenue for buyers, with adjustments being made to counteract any imbalances.

2. **Correlation Analysis:** DEFA meticulously analyzes the correlation between supply and demand, recognizing the negative correlation with supply and the positive correlation with demand. This insight is pivotal in determining the appropriate adjustments required for fee modulation.
3. **Sensitivity Parameters:** Sensitivity analysis is conducted to ascertain the magnitude of change in fees concerning shifts in supply and demand. This sensitivity parameter, denoted by seller elasticity (a) and buyer elasticity (b), guides the precision of fee adjustments.

Formula for Equilibrium Adjustment:

$$\frac{S - D}{bD + Sa}$$

The precise calculation of required fee adjustments is determined by the following formula:

Where:

- **S** represents the current level of supply.

- **D** represents the current level of demand.

- **a** denotes seller elasticity.

- **b** signifies buyer elasticity.

Presented below is a comprehensive table illustrating the requisite adjustments in transaction fees corresponding to varying levels of Buyer Elasticities and Total Demand, under the assumption of inelastic Supply.

Required Adjustment in Fees(%)

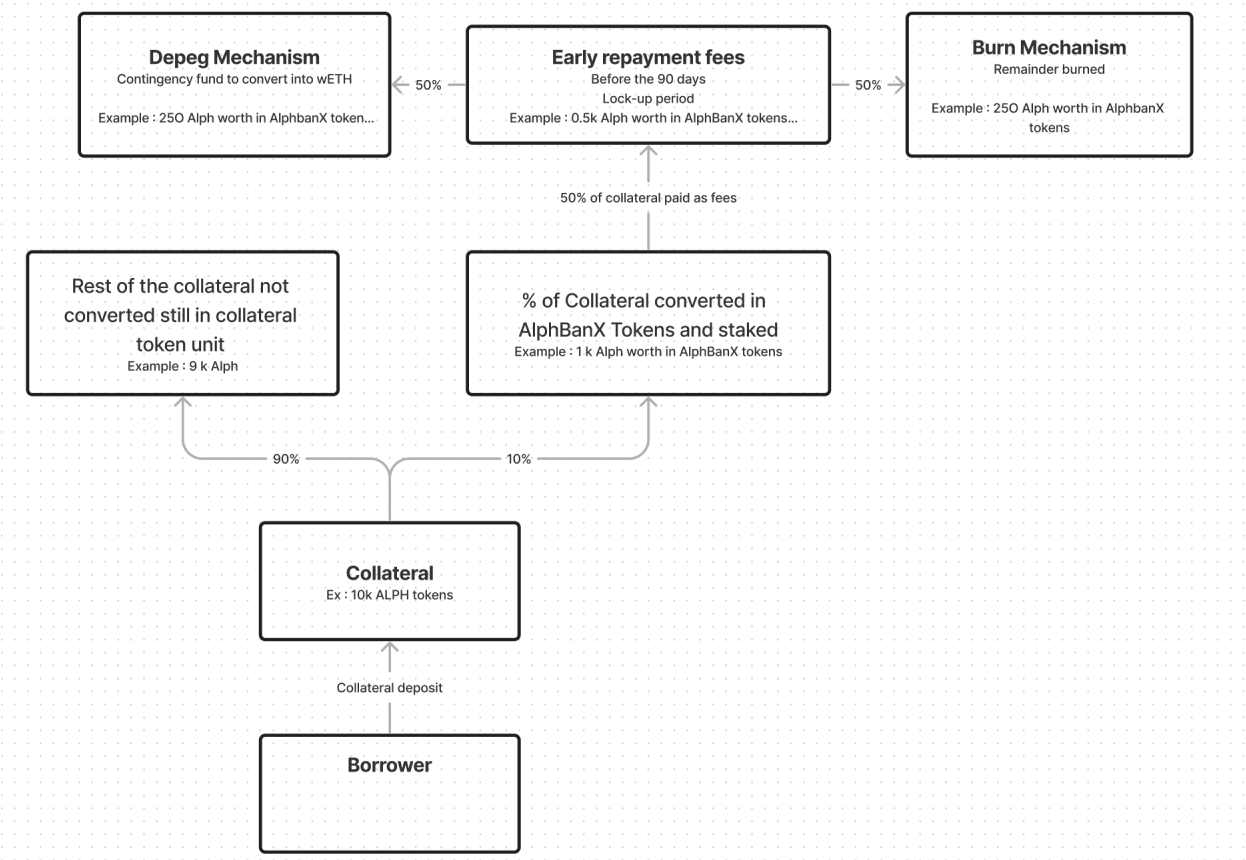
Total Demand (for 100,000)	Buyer Elasticity (with respect to change in yield)				
	0.80x	0.90x	1.00x	1.10x	1.20x
55,000	102.3%	90.9%	81.8%	74.4%	68.2%
60,000	83.3%	74.1%	66.7%	60.6%	55.6%
65,000	67.3%	59.8%	53.8%	49.0%	44.9%
70,000	53.6%	47.6%	42.9%	39.0%	35.7%
75,000	41.7%	37.0%	33.3%	30.3%	27.8%
80,000	31.3%	27.8%	25.0%	22.7%	20.8%
85,000	22.1%	19.6%	17.6%	16.0%	14.7%
90,000	13.9%	12.3%	11.1%	10.1%	9.3%
95,000	6.6%	5.8%	5.3%	4.8%	4.4%
100,000	0.0%	0.0%	0.0%	0.0%	0.0%

Lock-up period

When individuals borrow using their collateral, a 90-day lockup period is imposed. As part of this process, those using ALPH as collateral will have 10% of their collateral's value automatically converted into AlphBanX tokens, which are then staked. The specifics and advantages of this mechanism will be elaborated upon later in our documentation. However, should a borrower choose to repay their loan before the 90-day period concludes, a fee equivalent to half of their staked AlphBanX tokens, or 5% of the initial collateral's value, will be incurred. This fee is allocated as follows: 2.5% of the AlphBanX tokens are burned, effectively reducing the supply and potentially increasing the value of the remaining tokens. The remaining 2.5% will be converted into WETH and utilized as a contingency fund to address any potential depegging issues with the stablecoin.

Figure 8.0: **Lock-up de-peg mechanism**

Apr 7, 2024



4.3. Measures to enhance token price

Burn Mechanism

Borrowing collateral will be partially converted into AlphBanX tokens (10% of the total collateral). If any anticipated repayment happens before the end of the locked up period (before 90 days), a 5% fee will be deducted from the AlphbanX portion in which 50% will be burnt.

Staking

The combination of this high reward and the need for staking for a long time should also create a virtuous circle in which long term holders are incentivized which should also push the price up for this token because long term holding should dry the supply of tokens available to be bought.

Indirect staking will create additional utility as the borrower will have APR through 10% of the collateral loan.

Feedback Loop for Stabilization

The mechanism includes a strategic reinvestment of a portion of increased fees back into the ecosystem to further stabilize the stablecoin. Options for reinvestment include mechanisms such as buyback-and-burn programs or bolstering the collateral pool, thereby addressing the excess supply or supporting the asset's value directly. The minting fees will be paid to Reserve and then used to buy wETH, and put it into the collateral pool, to keep the peg up.

5. Protocol research

Thorough research is identified as a key component in the success of Alph Tokens in the ever-evolving world of digital assets. In-depth analysis and strategic foresight are essential, as demonstrated in the following fundamental research documents:

1. Tokenomics Modelling and Simulation: This document provides a deep dive into the economic design of Alph Tokens. It includes simulations and models that project potential market trajectories and impacts, offering valuable insights for investors and stakeholders. This analysis is instrumental in understanding the prospective dynamics of the token.
2. AlphBanX Formula Sheet: An essential tool for deciphering the financial intricacies of Alph Tokens. This document contains a detailed compilation of formulas and calculations that are central to the transactions, rewards, and other financial elements of the tokens. It is a critical resource for comprehending the technical aspects of the token operations.
3. Sprint Research: Setting Minimum Collateral Ratios using Market Prices and Probabilistic Scenarios: Comprising a detailed paper and a corresponding Google Sheet, this research explores innovative

approaches to establish minimum collateral ratios. It employs market price data and probabilistic scenarios to fortify the robustness and stability of the token's collateral system.

These documents serve as more than just resources; they represent a commitment to transparency and excellence in the Alph Tokens ecosystem. It is encouraged for the community and interested individuals to engage with these materials to gain a comprehensive understanding of the foundations and potential developments of Alph Tokens.

Documents

Apr 7, 2024

Tokenomics modeling and simulation

- AlphbanX Tokenomics