



# bridge.

bridge mutual **v1.0**

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A Technical Whitepaper



Bridge Mutual is a permissionless, decentralized, and DAO-managed discretionary risk coverage platform that provides coverage for stablecoins, centralized exchanges, smart contracts and other services. The platform allows users to purchase coverage for their funds, provide coverage in exchange for profits and yield, vote on policy claims and their payouts, and receive compensation for assessing claims fairly.

Bridge Mutual is a platform that allows any person to create “insurance” pools for any smart contract, exchange, or service at any time. Other users can then purchase a coverage policy to “insure” themselves against hacks, rugpools, or exploits that result in a permanent loss of funds. Stablecoins are also coverable, and coverage for stablecoins protect against any loss of value caused by an event that de-pegs the stablecoin from \$1. Bridge Mutual will consist of thousands of pools that represent coverage for every platform, exchange, and stablecoin asset in the industry.

## foreword

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Some aspects of our business model have been altered or delayed to speed up development time. Accordingly, there are features in v1.0 that will be improved or changed in v2.0 and beyond. As we release newer versions of the platform, we will update this technical whitepaper.

Any feature discussed in this whitepaper that will be released in v2.0 is clearly labeled (V2) throughout the paper.

v1.0. focuses on smart contract coverage and does not include stablecoin coverage or centralized exchange coverage.

# glossary

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**Active Coverage** - The cumulative value, expressed in USDT, of all the policies that have been bought by the Policy Holders against a particular coverage pool.

**Appeal** - The process of re-assessing a claim that has already been decided on. In the Appeal process, the claim is evaluated only by Trusted Voters with high reputation scores.

**bmiCover Staking Contract** - Smart contract pool that holds bmiCover and provides stakers with additional BMI rewards based on the Project X Coverage Pool utilization ratio.

**BMI Staking Contract** - Smart contract that allows users to stake BMI. Users who stake BMI receive stkBMI tokens which accumulate BMI staking rewards and are eligible for voting in the DAO.

**Capital Pool** - Smart contract that manages USDT deposited in all the Project Pools within the Ecosystem and the Reinsurance Pool. Generates yield via DeFi protocols.

**Claimant** - Policy Holder that has submitted a Claim.

**Claiming Value** - The amount of money that the claimant is asking for. This value should be supported by the evidence provided by the Claimant and cannot exceed the policy maximum.

**Coverage** - The right to submit a claim. If approved by the Voters, the claimant may receive compensation up to their policy maximum.

**Coverage Event** - Refers to any event covered by a policy that would make the policy holder eligible to make a claim and be reimbursed for a loss.

**Coverage Pool** - A pool of funds controlled by a smart contract that has been assigned to cover a specific project or platform.

**Coverage Provider** - A user that provides capital into a coverage pool.

**Coverage Provider Yield** - Yield that the Coverage Provider is earning in exchange for bearing the risk and providing liquidity to a given Project Pool. This accounts for 80% of the Premium.

**Open Active Claims** - Claims that are in the process of being voted on. Voters evaluate the evidence provided by Policy Holders and decide on the validity of the Claim.

**Policy Holder** - A user that purchases coverage from a coverage pool against the capital provided to the coverage pool.

**Premium** - The amount paid, or that is required to be paid, for a specific coverage policy.

**Project X** - Any project that has a coverage pool in the Bridge Mutual Protocol (X stands for name of the project).

**Project X Coverage Pool** - A coverage pool belonging to Project X (see definition above).

**Protocol** - Bridge Mutual's platform and ecosystem.

**Protocol Fees** - Fees, wherever implemented, that accrue in the Reinsurance Pool (typically a nominal amount).

**Reinsurance Pool** - Accumulates Protocol Fees and revenue from the Capital Pool in order to increase the capital efficiency of the protocol. In the next interactions of the Protocol, the Reinsurance Pool will supply funds to coverage pools in the ecosystem (earning yield and influencing the price of coverage).

**Reputation Score** - A user's level of reputation on Bridge Mutual which increases or decreases based on how accurately a user assesses claims. The Reputation Score starts at 1.0x and can go up to 3.0x.

**Reward Pool** - A smart contract that distributes rewards to relevant network participants for undertaking activities that are beneficial to the Protocol's ecosystem.

**Shield Mining** - A process in which projects can incentivise Coverage Providers with additional rewards in the form of native tokens of the Project X. Tokens are distributed to Coverage Providers of the Project X Coverage Pool as additional rewards.

**Trusted Voter** - The top 15% of active voters by Reputation Score.

**Utilization Ratio** - The amount of coverage funds that have been utilized by active policies against a coverage pool divided by the total amount of coverage funds available in that coverage pool. The higher the Utilization Ratio, the more expensive the Coverage. If there is 1,000 USDT of coverage funds available in a coverage pool, and 500 USDT worth of coverage is being reserved by active policies, then the Utilization Ratio for that coverage pool is 50%.

**Voters** - Users that stake BMI in order to vote on coverage claims.

**Voting power** - Equals the number of vBMI multiplied by the Reputation Score.

# token glossary

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**BMI token** - The native token of the ecosystem. If staked, the user receives stkBMI tokens.

**stkBMI token** - Issued as proof of deposit of BMI. stkBMI grows in value and allows users to accumulate rewards from the Protocol's reward pool. If staked, the user receives vBMI tokens.

**vBMI token** - Issued as proof of deposit of stkBMI. vBMI is used in the voting process and is required to vote on claims and DAO proposals.

**bmixCover token** - Issued as proof of deposit of USDT into any Project X coverage pool (for example: bmiSushiCover or bmiCompoundCover). bmixCover is a yield and risk bearing token that accumulates USDT passively whenever a Premium is paid by a new Policy Holder in exchange for Coverage.

Coverage Providers can stake their bmixCover tokens for a fixed period of time in exchange for additional rewards. When bmixCover is staked, the user receives a trade-able NFT bond. The purpose of this NFT is to give the user a way out of their position without removing USDT from the ecosystem; they can sell this NFT on the open market, and other users may purchase it in order to give themselves ownership over the staked bmixCover.

**BMI NFT Bond** - A non-fungible bond issued as a proof of ownership of bmixCover deposited in the Staking Contract. The bond is fully transferable and can be sold on any NFT marketplace

**ETH/BMI LP token** - A liquidity Pool token issued to the users in exchange for providing BMI liquidity on Uniswap. Users can stake these on the Bridge Mutual's Platform to earn further rewards.



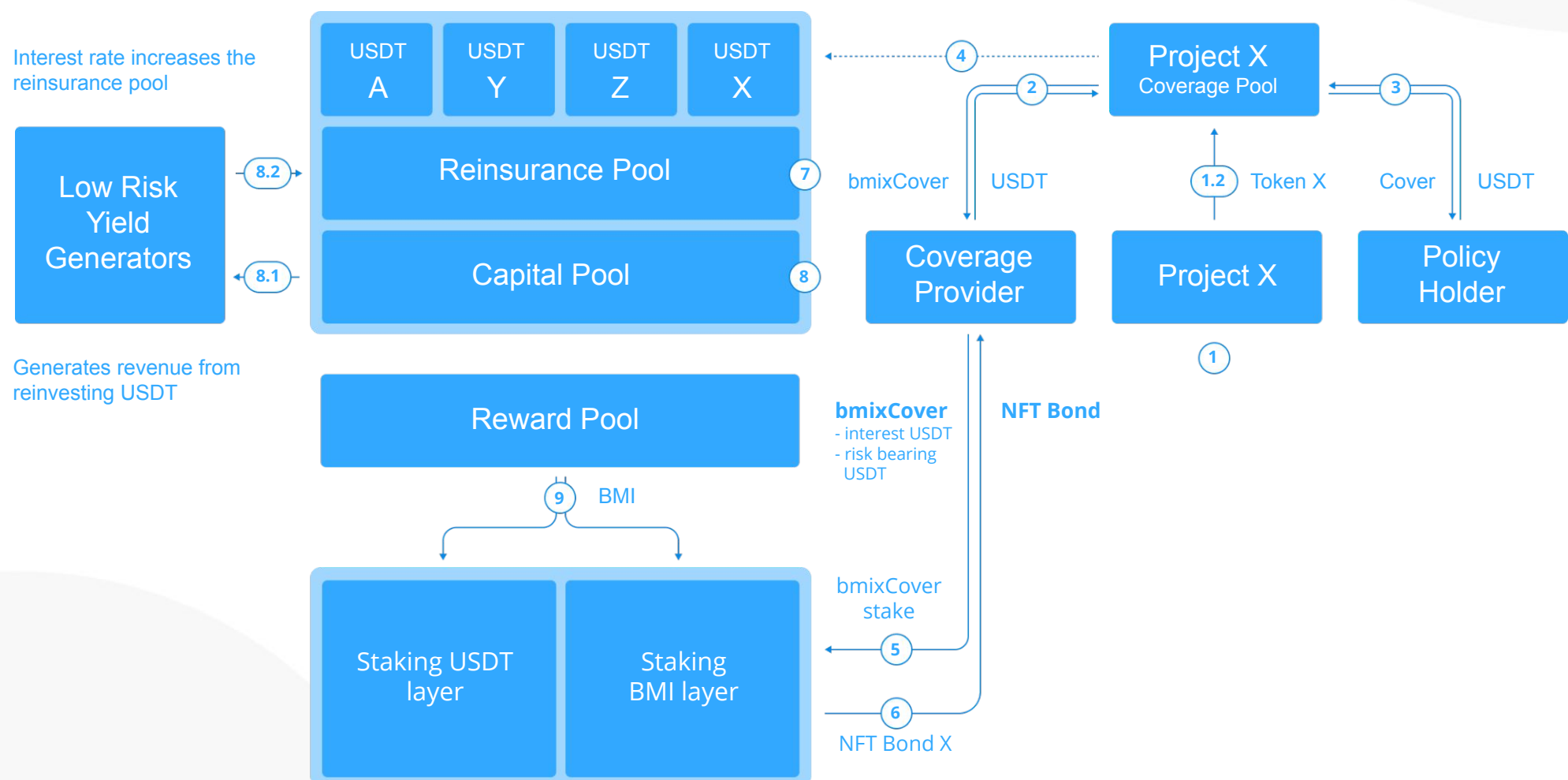
# summary of the platform

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1. The cost of Coverage (the Premium) changes based on the supply and demand of Coverage (the Utilization Ratio), which is driven by Policy Holders and Coverage Providers.
2. Anyone can create a new Project Pool on the Protocol simply by choosing the appropriate network (Ethereum, Binance Smart Chain, Polkadot, etc.), entering the corresponding contract ID for the Project X token, and depositing an initial amount of capital in USDT.
3. Projects which are confident in their security can incentivize Coverage Providers by providing X tokens as additional rewards that get distributed to Coverage Providers (this is known as Shield Mining). Shield Mining is a good way for projects to increase the amount of Coverage available in their Coverage Pool.
4. Anyone anywhere can purchase Coverage for their desired duration and amount. There is no KYC.
5. The Premium paid by Policy Holders of Project X is mostly given to Coverage Providers of Project X as yield (80%). A portion of the Premium goes to the Reinsurance Pool, and Voters.
6. A majority of the capital in the Coverage Pools is transferred to the Capital Pool. The Capital Pool then uses those funds to generate revenue via other DeFi services. This revenue is then deployed to the Reinsurance Pool to improve the capital efficiency of the Protocol in V1.
7. The Reinsurance Pool accumulates revenue from the Capital Pool as well as a small portion of the Premium for every policy purchased; these funds are then used to increase capital efficiency.
8. A small portion of the Premiums are added to the Reinsurance Pool, which is used to insure the project and provide more competitively priced Premiums.
9. If a Coverage Event occurs, Policy Holders may submit claims by providing relevant evidence that supports the conclusion that the Policy Holder suffered a permanent loss from the Coverage Event. The validity of the claim is decided by Voters (or Trusted Voters) through a voting system that utilizes blind voting and game theory.
10. Claims can be approved partially or in full, depending on the outcome of the vote.
11. Voters that vote in the majority are rewarded with tokens and an increase in their Reputation Score, which further increases one's Voting power. Those who vote in the minority will decrease their Reputation Score and, in extreme cases, can even lose some of their stake.
12. Policy Holders that have had their claim denied can Appeal and submit the claim again. Appeals can only be voted on by Trusted Voters.
13. A number of staking options with different and synergistic benefits are available. Users can earn yield as Coverage Providers or Liquidity Providers, as well as earn rewards for voting and staking, all at the same time.
14. Bridge Mutual will transition into a Decentralized Autonomous Organization (DAO) over time. DAOs are controlled entirely by token holders, and token holders may propose, vote on, and implement improvements and changes to the Protocol.

# 0. MODEL OVERVIEW

## map of business model



The cost of Coverage The various components of the model are numbered above and explained below.

1. Creation of a coverage pool for a project, this is known as the Project X Coverage Pool (any user on the platform can create any pool for any project because the system is permissionless).
  - 1.1. Initial capital (USDT) must be put into the Project X Coverage Pool by the user that is creating the pool.
  - 1.2. Project X can create additional incentive for Coverage Providers to provide coverage to their pool by depositing any number of Token X into its designated Shield Mining pool (V2), which gets distributed to Coverage Providers alongside the typical yield, increasing APY.

## 2. Coverage Provider

- 2.1. Responsible for gauging the risk of providing Coverage capital to the Project X Coverage Pool.
- 2.2. Is betting that the project is unlikely to suffer from a Coverage Event.
- 2.3. Receives profit share whenever a policy is purchased by a Policy Holder (see subsection 2(f)(iii) - (v))
- 2.4. Also receives Project X tokens if Project X is participating in Shield Mining (V2).
- 2.5. Loses funds proportionally along with other Coverage Providers if a successful claim is made against a Coverage Pool that they are providing Coverage to.
- 2.6. Coverage Provider is issued `bmixCover` (where x stands for the project name):
  - 2.6.1. `bmixCover` is proof that the user has deposited USDT into a Project X Coverage Pool.
  - 2.6.2. `bmixCover` is a yield bearing asset. When a policy is purchased, the value of `bmixCover` increases.
  - 2.6.3. `bmixCover` is also a risk bearing asset. If a claim against the covered Project X is successful, the value of `bmixCover` decreases.
  - 2.6.4. If a successful claim is made against Project X, it is possible for 1 `bmixCover` to be worth less than 1 USDT.

### Example:

- There is 10,000 USDT in Project X Coverage Pool.
  - 10,000 `bmixCover` has been issued to reflect the 10,000 USDT in the pool. Each `bmixCover` represents 1 USDT + any yield earned.
  - Later, a successful claim of 2,000 USDT is made against Project X Coverage Pool.
  - Now there is 8,000 USDT left in Project X Coverage Pool.
  - Every `bmixCover` now only represents 0.8 USDT + any yield earned.
- 2.6.5. The validity and payout of a claim is decided by Voters. (This process is explained in Part 4 of this paper under the Claiming Cover section.)

## 3. Policy Holder

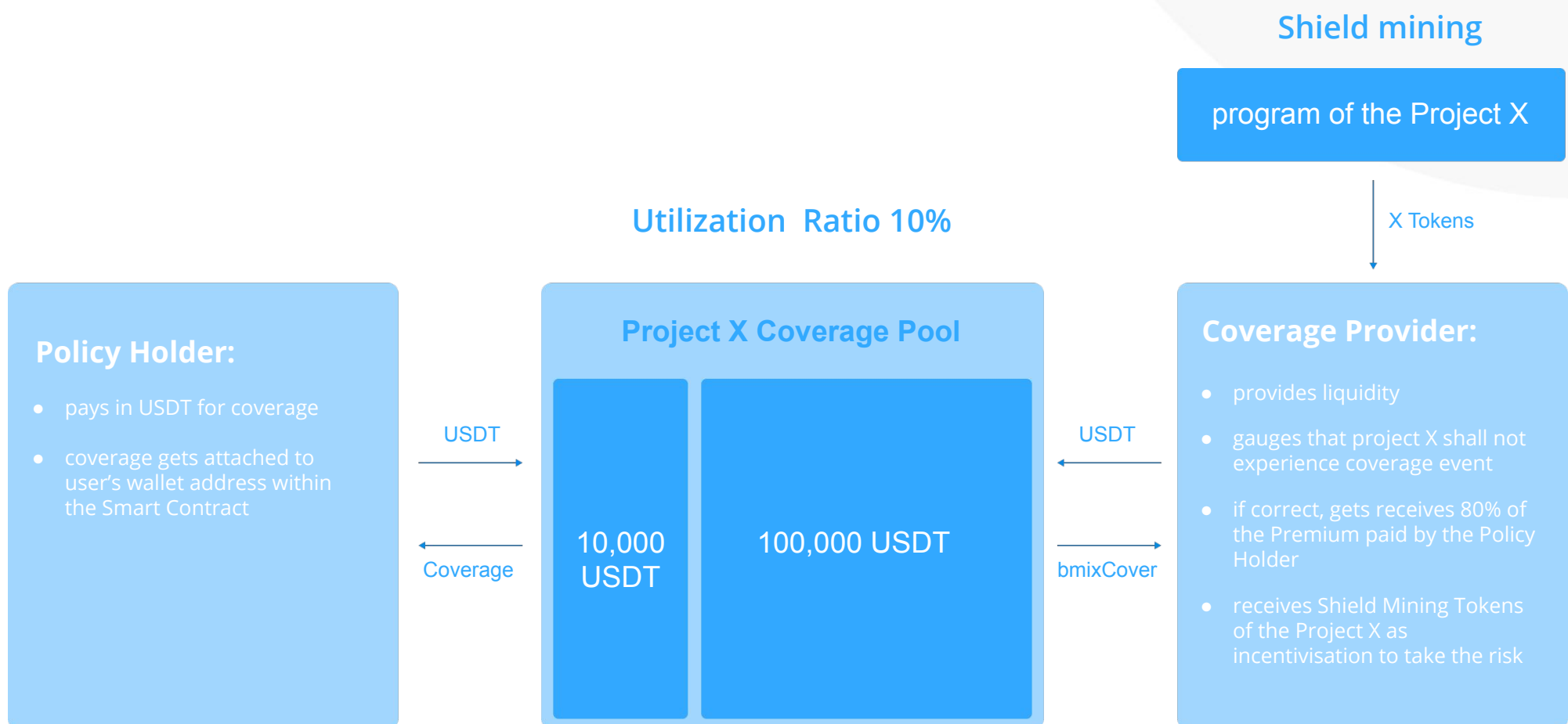
- 3.1. Pays a Premium for Coverage to protect against the happening of a Coverage Event that could affect Project X and cause them to lose funds. The cost of the Premium is determined by the Utilization Ratio of the Project X Coverage Pool.
- 3.2. Utilization Ratio is defined as the value of Active Coverage divided by the value of the USDT in the Project X Coverage Pool. If there is 10 USDT of Active Coverage, and 100 USDT in the Project X Coverage Pool, the Utilization Ratio is 10%
- 3.3. When a Coverage Event takes place (e.g. hack, exploit, rug pull), the Policy Holder must submit a claim to receive compensation (up to the policy maximum).
- 3.4. A claim can be made up to 7 days after the expiration of the policy, but the Coverage Event has to have happened during the policy period.



4. Project X Coverage Pool
  - 4.1. USDT deposited in the Project X Coverage Pool is deposited into the Capital Pool, where it is used to earn passive income for BMI stakers and the Protocol. This applies to all Coverage Pools.
  - 4.2. The total cost of the Coverage paid by the Policy Holder (the Premium), is distributed as follows:
    - 4.2.1. 80% to Coverage Providers as yield.
    - 4.2.2. 20% to the Reinsurance Pool. This is a Protocol Fee.
5. Coverage Providers can stake bmixCover in the bmiCover Staking Contract pool in order to receive additional BMI rewards. Rewards are distributed on a block-by-block basis.
6. Coverage Providers that stake bmixCover in bmiCover Staking Contract pools are issued with a BMI NFT Bond that represents the amount of USDT staked.
  - 6.1. A BMI NFT Bond is an interest bearing and risk bearing asset that represents your USDT deposited in a Coverage pool.
  - 6.2. BMI NFT Bonds are trade-able and can be sold on any NFT marketplace.
7. Reinsurance Pool
  - 7.1. Collects 20% of the Premium paid by the Policy Holders.
  - 7.2. Collects all revenue generated from the Capital Pool.
  - 7.3. Funds in the Reinsurance Pool are used to provide liquidity to the Project X Coverage Pool in order to increase capital efficiency and earn additional revenue for ecosystem optimization.(V2)
8. The Capital Pool aggregates USDT from the Project X Coverage Pool in order to generate additional revenue for the Protocol.
  - 8.1. Capital Pool sends USDT to yield generating platforms with low risk.(V2)
  - 8.2. The DAO determines how the revenue is spent.(V2+)
9. BMI from the Reward Pool is used to incentivize bmixCover staking and BMI staking for the first twenty-four months of the platform's existence, unless the DAO changes this schedule.
  - 9.1. The BMI can be staked in the staking protocol to earn more BMI.
  - 9.2. For BMI Staking, rewards are automatically compounded onto the principal. BMI cannot be unstaked immediately; users attempting to unstake must wait 8 days.
  - 9.3. As proof of the BMI being deposited, the user is issued with stkBMI.

# 1. PROVIDING COVERAGE

## map of Project X Coverage Pool



## network participants

### Policy Holder:

1. A user that pays a fee (the Premium) for a Coverage policy against Coverage Events that could potentially affect Project X.
2. A portion of the Premium, 20%, goes directly to the Reinsurance Pool. 80% goes to the Coverage Providers.
3. Policy Holders pay for Coverage using USDT (a stablecoin).
4. The price of Coverage is based on:
  - 4.1. Time of Cover - from 1 to 52 weeks
  - 4.2. Utilization Ratio of the Project X Coverage Pool.
    - 4.2.1. Amount of Active Coverage;
    - 4.2.2. Amount of Capital in the Coverage Pool;If the Active Coverage equals 100 USDT and the overall capital in the pool equals 1,000 USDT, then the Utilization Ratio is 10%.
  - 4.3. Participation of the Reinsurance Pool in the underlying project (V2).

## Coverage Provider:

1. Can be anyone, even the projects themselves.
2. Provides USDT on the risk taking side of the Project X Coverage Pool.
3. Jointly entitled to 80% of all Premiums paid for Coverage against the Project X Coverage Pools in exchange for providing capital to the Project X Coverage Pool. The individual yield rewarded to a Coverage Provider is proportionate to the amount of capital they provided to the Project X Coverage Pool.
4. Upon a successful claim, Claimant is rewarded with funds provided by the Coverage Providers, up to their policy maximum. Coverage Providers share in the loss proportionately to the amount they contributed to the Project X Coverage Pool.

## all about coverage and yields

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### Coverage Provider:

1. PY is clearly displayed for each pool on the platform. The APY consists of up to 3 different assets: Bridge Mutual tokens (BMI), USDT (stablecoin), and Project X's token (this is not always the case).
2. Yield is distributed to Coverage Providers on a daily basis.
3. The APY of a pool scales with its Utilization Ratio; for example:
  - 3.1. The Utilization Ratio of Project X Coverage Pool is 10%.
  - 3.2. The annual cost of the Premium is 10%.
  - 3.3. A random user wants to buy a \$1,000 coverage policy for 12 weeks.
  - 3.4. He has to pay  $100 \text{ USDT} * (12/52 \text{ weeks})$ , which is 23 USDT.
  - 3.5. 23 USDT will be distributed to the Coverage Providers of that pool over 12 weeks (minus any Protocol Fees).
  - 3.6. Assuming there is 1,000 USDT in the pool, the APY would be 10%.
4. Yield is realized on the day a user exchanges their bmixCover for USDT; for example:
  - 4.1. A random user deposits 100 USDT into a pool with 20% APY.
  - 4.2. He receives 100 bmixCover in exchange, which represents his deposit.
  - 4.3. After 12 weeks, he wants to withdraw his bmixCover, which is then worth 105 USDT (due to the 20% APY).
  - 4.4. He burns 100 bmixCover on the platform to receive 105 USDT in exchange.
5. The Coverage Provider Yield from the Premium paid in USDT is added to the pool every block (or epoch), increasing the balance of USDT in the Project X Coverage Pool.
6. The yield is compounded, which increases the depth of the Project X Coverage Pool.
7. USDT in Project X Coverage Pool is used by the Capital Pool to generate yield for the Protocol.(V2)

# depositing USDT

**#bmixCover** = Number of bmixCover user is getting for providing USDT  
**TSbmixCover** = total supply of bmixCover outstanding  
**USDTb** = USDT balance in the Project x Coverage Pool  
**#USDTd** = number of USDT deposited to the Project x Coverage Pool by the user

When a user deposits USDT into the Project X Coverage Pool, the Protocol mints bmixCover in exchange.  
If the Project X Coverage Pool is empty, then:

$$\text{\#bmixCover} = \text{\#USDTd}$$

If the Project X Coverage Pool is not empty, then:

$$\text{\#bmixCover} = \frac{\text{TSbmixCover} * \text{\#USDTd}}{\text{USDTb}}$$

The Coverage Provider Yield from the Premium paid in USDT is added to the pool every block (or epoch), increasing the balance of USDT in the Project X Coverage Pool (USDTb)

# coverage provider yields

Premiums are collected and 80% is distributed over the duration of the duration of the Coverage purchased.

For example, if Coverage is bought with a duration of 30 days, the Coverage Provider Yield will be distributed at a rate of 3.33% a day.

**USDTb<sub>n+1</sub>** = USDT balance in the Project X Coverage Pool at the end of the day  
**Pc<sub>x</sub>** = New premium cost paid to the Project X Coverage Pool by user x  
**Ppool** = Premium accumulated in the Coverage Provider Yield Reward Pool

$$\text{USDTb}_{n+1} = \text{USDTb}_n + 3.33\% * (\text{Ppool} + \sum_1^x \text{Pc}_x)$$

## Example:

There is 1,000 USD in the USDTb and 100 USD in the Ppool that distributes at 3.33% a day.

**USDTb** = 1,000 USD  
**Ppool** = 100 USD  
**Daily rewards** = 3.33 USD

Therefore:

$$\begin{aligned}\text{USDTb}_{n+1} &= 1,000 \text{ USD} + 3.33\text{USD} \\ \text{USDTb}_{n+1} &= 1,003.33 \text{ USD}\end{aligned}$$

And the current APY is

$$\begin{aligned}\text{APY} &= \frac{3.33 \text{ USD} * 365}{1,000 \text{ USD}} \\ \text{APY} &= 121\%\end{aligned}$$

The next day, a new user has come and bought a cover, he has paid 100 USD in  $\text{Pc}_n$

Now:

$$\begin{aligned}\text{USDTb} &= 1,003.33 \text{ USD} \\ \text{Ppool} &= 196.66 \text{ USD} \\ \text{Daily rewards} &= 6.54 \text{ USD}\end{aligned}$$

$$\begin{aligned}\text{USDTb}_{n+1} &= 1,003.33 \text{ USD} + 6.54 \text{ USD} \\ \text{USDTb}_{n+1} &= 1,009.87 \text{ USD}\end{aligned}$$

Current APY is:

$$\begin{aligned}\text{APY} &= \frac{6.54\text{USD} * 365}{1,003.33 \text{ USD}} \\ \text{APY} &= 237\%\end{aligned}$$

## withdrawing USDT from a staking pool

$\#\text{USDTw}$  = number of USDT withdrawn from the Project X Coverage Pool by the user  
 $\#\text{bmiUSDTxb}$  = Number of bmiCover user is burning to withdraw USDT

$$\#\text{USDTw} = \frac{\text{USDTb} * \#\text{bmiCoverb}}{\text{TSbmiCover}}$$



In order to ensure there is enough liquidity in a pool to pay all outstanding policies, Coverage Providers are forced to wait 8 days before they may withdraw their USDT after they make a withdrawal request.

- After a Coverage Provider has submitted a withdrawal request, their funds may still be used by the Protocol to pay out a successful claim against that pool.
- After 8 days have passed, the Coverage Provider has 48 hours to withdraw their funds. If they fail to do so, they must submit a second withdrawal request and wait an additional 8 days.

# buying coverage and pricing

- The Premium is determined by the duration of Coverage, the amount, and the current Utilization Ratio of the Project X Coverage Pool.
- The duration may be between a minimum of 1 week and a maximum of 52 weeks. This may be altered in later versions or may differ between different types of coverage products.
- Policy durations are measured by epochs, where one epoch is 1 week. All epochs are time stamped and start and end on specific days in the calendar year. The minimum duration a user may buy Coverage for is 1 epoch, and the maximum duration is 52 epochs.
  - In practice, a user can purchase a policy with an actual duration that is less than 1 full week if the purchase was made in the middle or at the end of an epoch. This means the maximum duration (52 weeks) is always equal to or less than 1 full year.
- The higher the Utilization Ratio, the higher the Premium.
- There is a minimum yearly cost of Premiums imposed on pools with extremely low Utilization Ratios; this minimum is 3% at launch but is subject to change at any time.
- A high Utilization Ratio reflects high demand for Coverage, which means that Project X is seen as risky, and is therefore more expensive.
- All the premium prices shown on the app are annualized.

**MC** = Minimum cost of Cover (Premium)(expressed in %)  
**Pc** = Percentage of costs (Protocol Fees) a user pays that is sent to the Reinsurance Pool (expressed in %)  
**TMCC** = Target maximum cost of Cover (Premium) when the asset is not considered risky (expressed in %)  
**URRp** = Utilization Ratio for pricing model when the asset is considered risky (expressed in %)  
**MCC** = Maximum Cost of Cover (Premium) when the utilization ratio equals 100% (expressed in %)  
**UR** = Utilization ratio (expressed in %)  
**%CoC** = % cost of Cover (Premium) in regards to the size of the Cover  
**%CoC final** = final, % cost of Cover (Premium) in regards to the size of the Cover  
**\$PoC** = \$ annualized price of Cover (Premium)

$$\text{Utilization ratio} = \frac{\text{USDT in the pool on the Policy Holder side} + \text{the size of the Cover}}{\text{USDT in the pool on the Coverage Providers side}}$$

$$\text{if } UR < URRp \Rightarrow \% \text{ CoC} = \frac{UR}{URRp} * TMCC$$

$$\text{if } UR > URRp \Rightarrow \% \text{ CoC} = TMCC + \frac{UR - URRp}{100\% - URRp} * (MCC - TMCC)$$

$$\% \text{CoC final} = \max\{\% \text{ CoI}, MC\}$$

$$\text{\$PoC} = \text{the size of the coverage} * \% \text{CoC final}$$

Funds paid to the Coverage Providers:

$$\text{Funds paid to the Coverage Providers as yield} = \text{\$PoC final} * (1 - Pc)$$

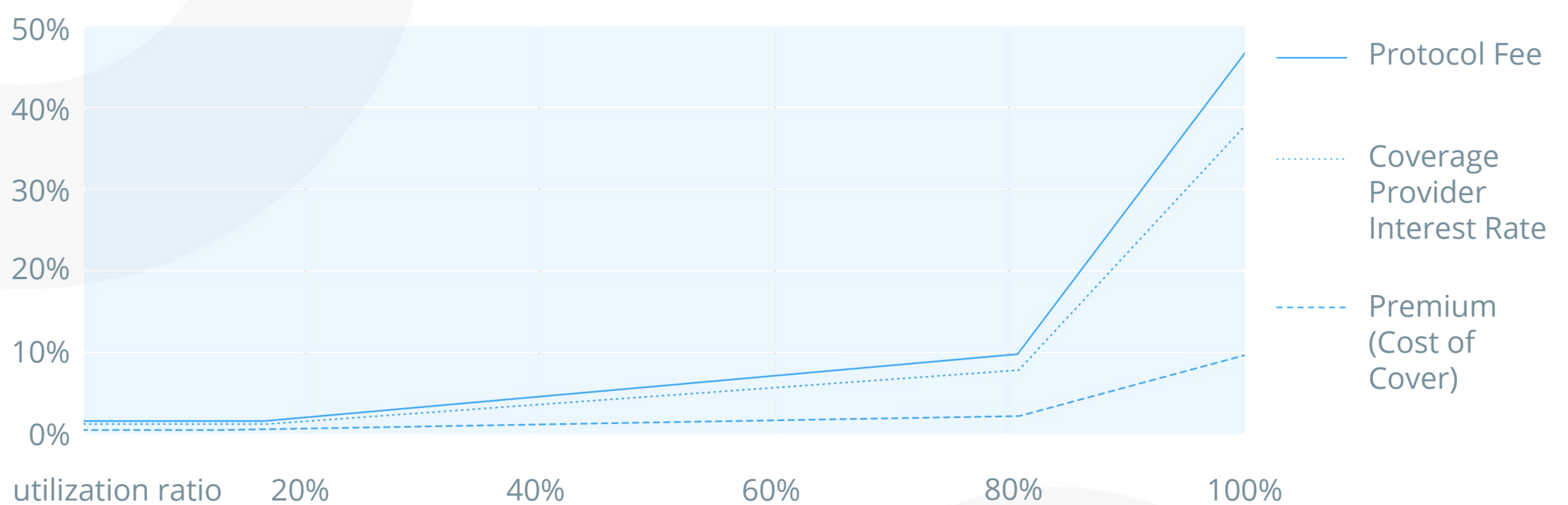
Protocol Fee:

$$\text{Funds added to the Reinsurance Pool as Protocol Fees} = \text{\$PoI final} * Pc$$

Variables at launch:

MC = 2%  
 Pc = 20%  
 TMCC = 10%  
 URRp = 80%  
 MCC = 50%

Premium, Coverage Provider Interest Rate, Protocol Fee vs Utilization Ratio



**Example 1:**

User wants to buy Coverage for Project X in the amount of 100,000 USD.  
There is 10,000,000 USD of available Coverage in the Coverage Pool already.  
5,000,000 USD of Coverage has already been bought by other users.

**Utilization ratio** =  $\frac{5,000,000 + 100,000}{10,000,000}$       **Utilization ratio = 51%**

if **UR < URRp**  $\Rightarrow$       **% CoC** =  $\frac{51\%}{80\%} * 10\%$

**% CoC = 5.10%**

**\$PoC = 100,000 USD \* 5.10%**

**\$PoC = 5,100 USD**

**Funds paid to the Coverage Providers as an yield= 5,100 USD - (5,100 \*20%)**

**Funds paid to the Coverage Providers as an yield = 4,080 USD**

**Funds added to the Reinsurance Pool as Protocol Fees = 5,100 \*20%**

**Funds added to the Reinsurance Pool as Protocol Fees = 1,020 USD**

**Example 2:**

User wants to buy Coverage for Project X in the amount of 4,000,000 USD.  
There is 10,000,000 USD of available Coverage in the Coverage Pool already.  
5,000,000 USD of Coverage has already been bought by other users.

**Utilization ratio** =  $\frac{5,000,000 + 4,000,000}{10,000,000}$       **Utilization ratio = 90%**

if **UR > URRp**  $\Rightarrow$       **% CoC** =  $30\% + \frac{90\% - 80\%}{100\% - 80\%} * (50\% - 10\%)$

**% CoC = 30%**

**\$PoC =4,000,000 USD \* 30%**

**\$PoC =1,200,000 USD**

**Funds paid to the Coverage Providers as an yield= 5,100 USD - (5,100 \*20%)**

**Funds paid to the Coverage Providers as an yield = 4,080 USD**

**Funds added to the Reinsurance Pool as Protocol Fees = 5,100 \*20%**

**Funds added to the Reinsurance Pool as Protocol Fees = 1,020 USD**

### Example3:

User wants to buy Coverage for Project X in the amount of 100,000 USD.  
There is 10,000,000 USD of available Coverage in the Coverage Pool already.  
500,000 USD of Coverage has already been bought by other users.

$$\text{Utilization ratio} = \frac{500,000 + 100,000}{10,000,000} \quad \text{Utilization ratio} = 6\%$$

$$\text{if } UR < URRp \Rightarrow \quad \% \text{ CoC} = \frac{6\%}{80\%} \quad *20\%$$

$$\% \text{ CoC} = 1.50\%$$

$$\% \text{CoC final} = \max\{\% \text{ CoI}, \text{MC}\}$$

$$\% \text{CoC final} = \text{MC} = 2\%$$

$$\text{\$PoC} = 100,000 \text{ USD} * 2\%$$

$$\text{\$PoC} = 2,000 \text{ USD}$$

$$\text{Funds paid to the Coverage Providers as an yield} = 2,000 \text{ USD} - (2,000 \text{ USD} * 20\%)$$

$$\text{Funds paid to the Coverage Providers as an yield} = 1,600 \text{ USD}$$

$$\text{Funds added to the Reinsurance Pool as Protocol Fees} = 2,000 \text{ USD} * 20\%$$

$$\text{Funds added to the Reinsurance Pool as Protocol Fees} = 400 \text{ USD}$$

## coverage pool & shield mining setup

- Anyone can set up a Coverage Pool easily on the app. Once the user has specified the network and smart contract address, they can create a new pool by depositing 1,000 USDT or more. All other users will be able to see the pool that has been created.
- The user (anyone) is also allowed to provide tokens for Shield Mining.(V2)
  - The user can deposit any amount of X tokens to the Shield Mining pool.
  - The user can customize the duration over which the tokens will be distributed to Coverage Providers (minimum 1 month).
  - Tokens will be distributed linearly and proportionately to Coverage Providers.
- Shield Mining tokens can be freely claimed anytime by Coverage Provider, there is no withdrawal delay.
- Shield Mining pools can be filled or refilled by anyone whenever.

## 2. DEFI LAYER & REINSURANCE POOL

### reinsurance pool

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The Reinsurance Pool consists of funds that are owned by the Protocol. These funds are used to increase the overall capital efficiency of the Protocol and to decrease the price of Coverage by padding the Utilization Ratio of pools. The Reinsurance Pool algorithms will be released in v2.0.

### effect of the utilization ratio

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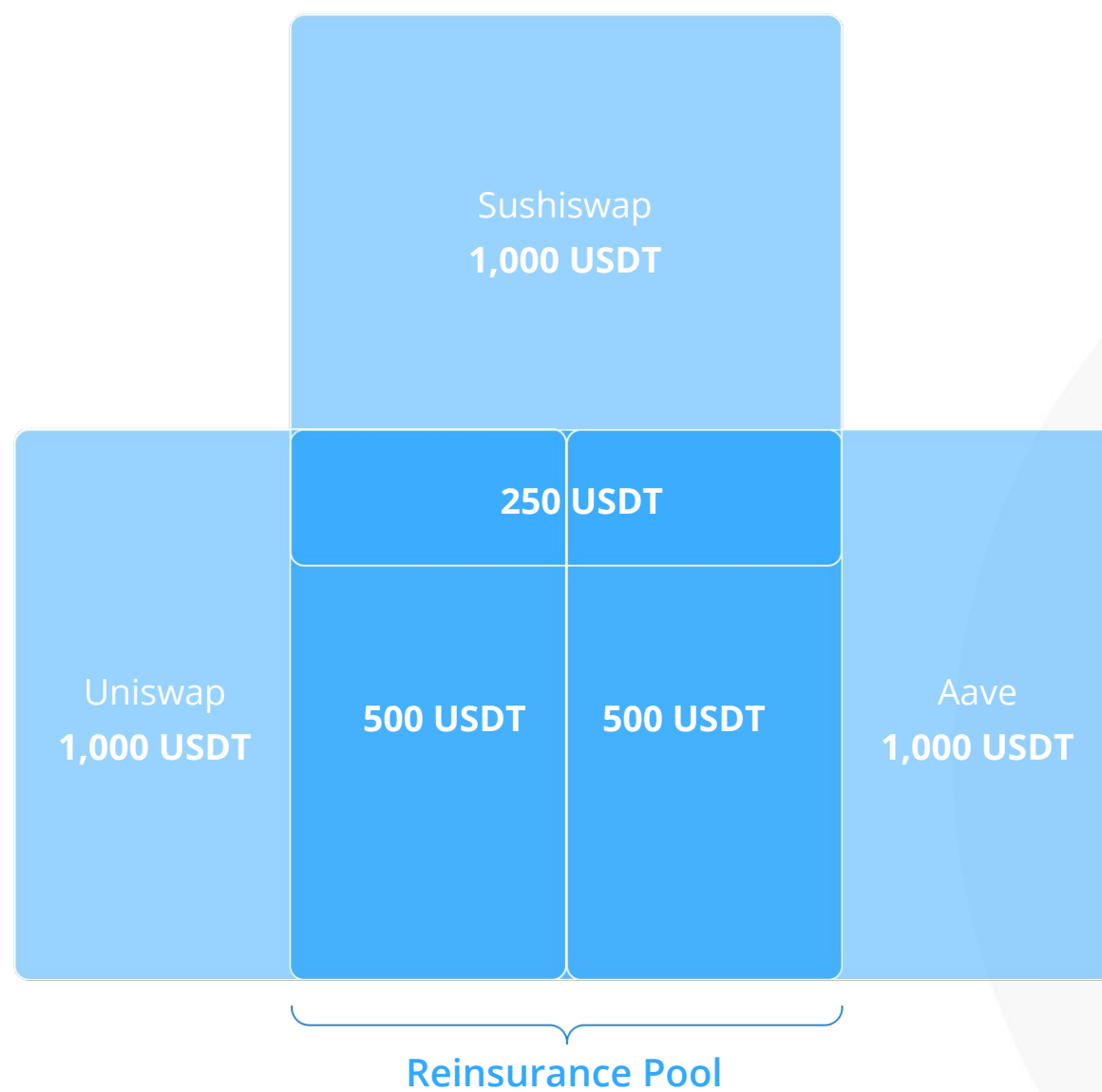
The Reinsurance Pool will participate in multiple Coverage Pools as a Coverage Provider. Reinsurance Pool funds can be used multiple times in many different Coverage Pools (essentially leveraging the USDT in the Reinsurance Pool), and therefore decreasing the Utilization Ratios and, consequently, decreasing the Premium price for the users.

Even though Reinsurance Pool funds are used multiple times, it does not earn extra yield (from the leveraged USDT). Essentially it de-risks the protocol while preserving the yield for Coverage Providers. The risk profile of a pool is determined by the DAO.

Below is an example of a potential risk profile:

1. Uniswap (low risk), AAVE (low risk) and Sushiswap (moderate risk).
2. Each pool has 1,000 USDT with 500 USDT of Active Coverage, the Utilization Ratio on each pool is therefore 50%.
3. There is 1,000 USDT in the Reinsurance Pool.
4. The Reinsurance Pool has provided USDT to the pools as follows:
  - 4.1. 500 USDT (400 actual USDT + 100 leveraged USDT) in Uniswap making the Uniswap Coverage Pool size 1,500 USDT.
  - 4.2. 500 USDT (400 actual USDT + 100 leveraged USDT) in AAVE making the AAVE Coverage Pool size 1,500 USDT.
  - 4.3. 250 USDT (200 actual USDT + 50 leveraged USDT) in Sushiswap making the Sushiswap Coverage Pool size 1,250 USDT.

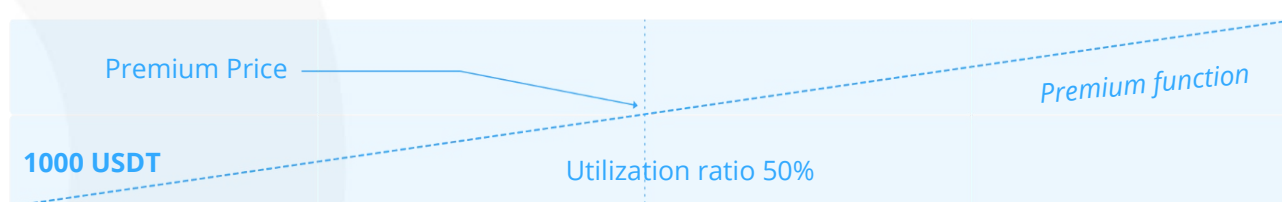




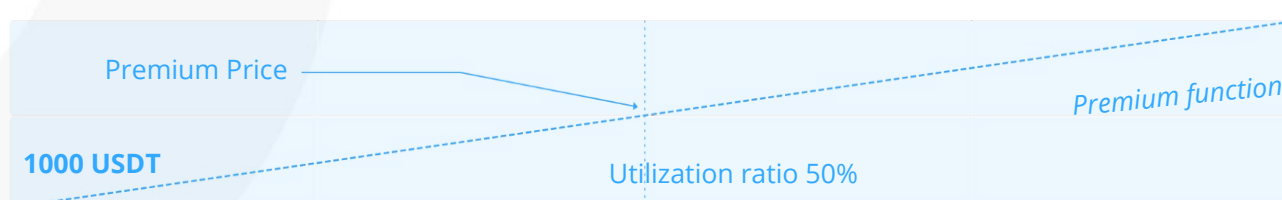
5. The Reinsurance Pool provides 1,250 USDT in Coverage Capital to AAVE (500 USDT), Uniswap (500 USDT) and Sushiswap (250 USDT).
6. Thanks to the above, Utilization Ratio has been decreased (which in turn decreases the Premium as well). The new Utilization ratios are:
  - 6.1. Uniswap 33%
  - 6.2. AAVE 33%
  - 6.3. Sushiswap 40%

#### Without the Reinsurance Pool:

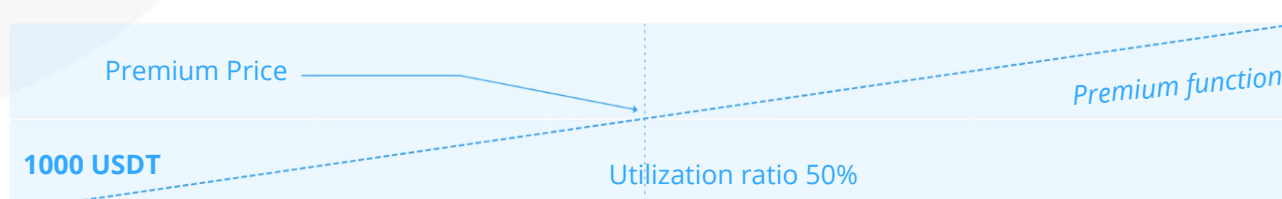
Sushiswap pool 1000 USDT Coverage Pool



Uniswap pool 1000 USDT Coverage Pool

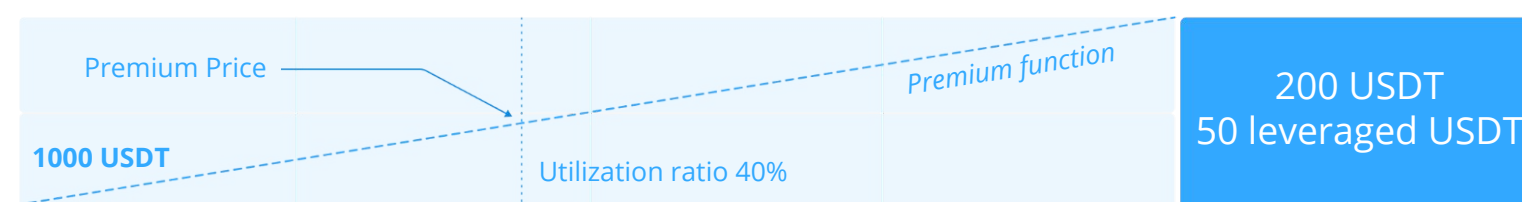


AAVE pool 1000 USDT Coverage Pool

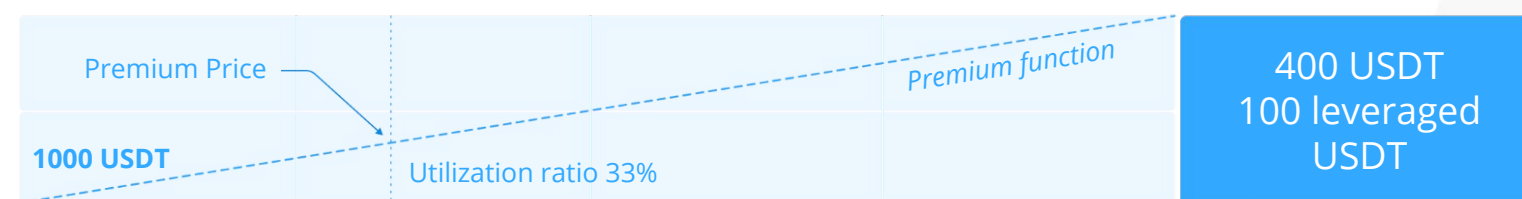


## With the Reinsurance Pool:

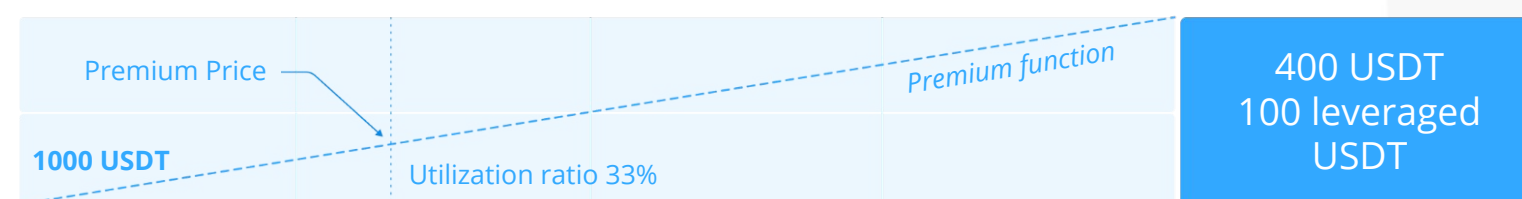
Sushiswap pool: 1200 USDT Coverage Pool plus 50 Leveraged USDT



Uniswap pool: 1400 USDT Coverage Pool plus 100 Leveraged USDT



AAVE pool: 1400 USDT Coverage Pool plus 100 Leveraged USDT



Reinsurance  
Pool 1,000 USDT

The above approach decreases the Utilization Ratio and the Premium.

## Example:

Without the Reinsurance Pool

- There is 1000 USDT in the pool.
- Someone bought 100 USDT Coverage on 20% Premium.
- Coverage Providers earn 20 USDT.
- The Coverage Providers' yield is 20%.

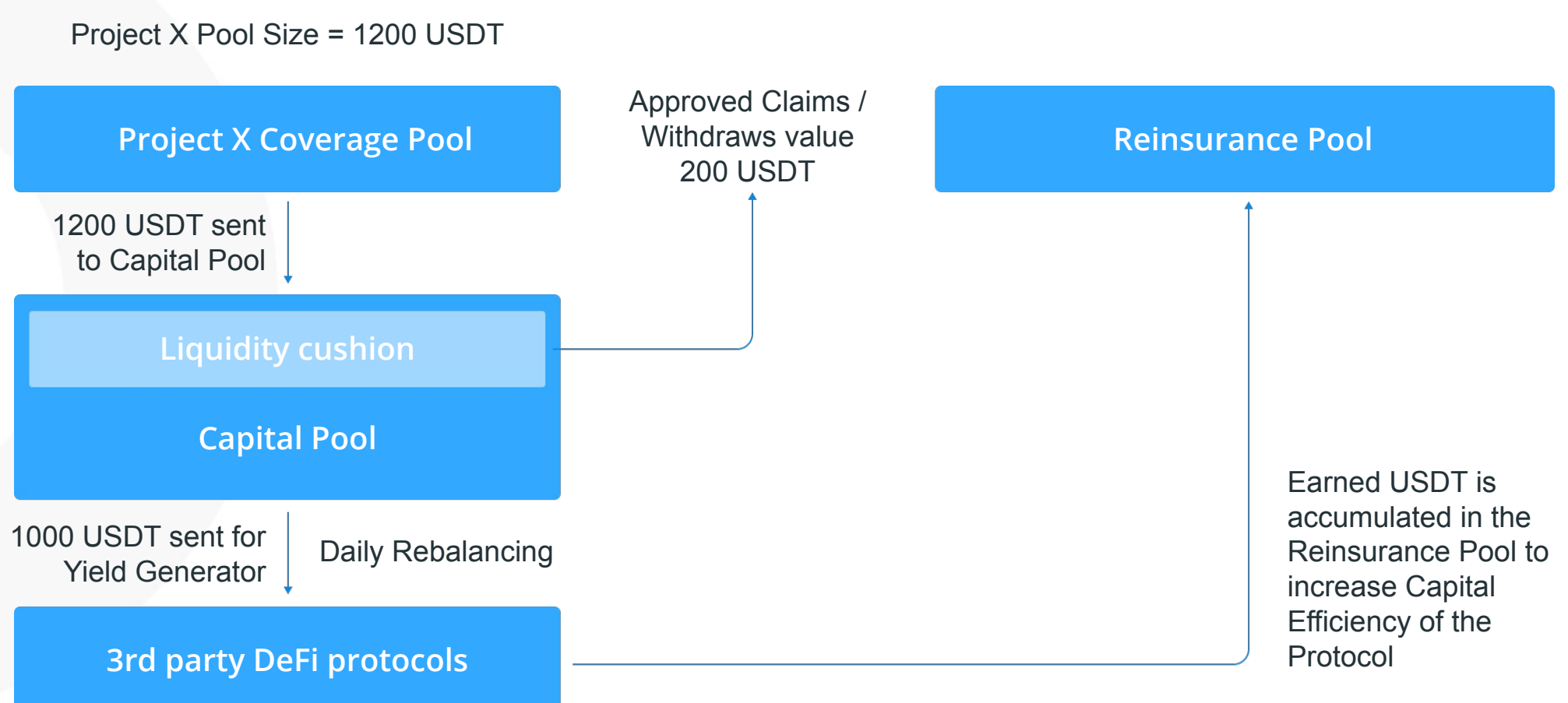
With the Reinsurance Pool

- There is 1500 USDT in the pool.
- 400 USDT and 100 leveraged USDT provided by the Reinsurance Pool.
- Someone buys 100 USDT of Coverage with a 20% Premium.
- 20 USDT is distributed between all the non-leveraged USDT in the pool.
- The Coverage Providers yield is still 14.29% ( $1000/1400 \times 20$ ) and the Reinsurance Pool yield is 5.71% ( $400/1400 \times 20$ ).
- There is 1500 USDT in the pool (1400 Real, and 100 leveraged), but the Yield is distributed only to the real USDT.

# the capital pool

In early versions, the Capital Pool will be focused on increasing the size of the Reinsurance Pool to increase the capital efficiency of the Protocol and decrease Premiums. The DAO is free to change the distribution of the yield generated (through 3rd party DeFi protocols).

1. USDT that is not required to be used in imminent payouts/withdrawals are used to generate income for the Capital Pool.
  - 1.1. User deposits USDT into the Project X Coverage Pool
  - 1.2. The USDT is transferred from Project X Coverage Pool to the Capital Pool
  - 1.3. The Capital Pool keeps a liquidity cushion (for imminent payouts and withdrawals) which is rebalanced on a daily basis.
  - 1.4. All funds from the Capital Pool, apart from the liquidity cushion, are distributed to multiple low risk yield generating Protocols.
  - 1.5. Minor rebalancing happens daily, while major rebalances are triggered when the allocations become significantly different from their target values.
2. In order to withdraw USDT from the Project X Coverage Pool, users must submit a withdrawal request which takes 8 days.
3. After the 8 day waiting period, the user has 48 hours to withdraw funds - otherwise he needs to submit another withdrawal request.
4. In the first iteration of the Protocol, revenue generated by the Capital Pool is added to the Reinsurance Pool, in later iterations the DAO may change this.



# 3. STAKING AND REWARD

## BMI staking

- Anyone can buy and stake BMI in the BMI Staking Contract.
- Rewards are distributed proportionally to the users staking based on the amount of BMI staked.
- BMI rewards are compounded automatically onto the principle.
- In order to withdraw BMI tokens from the BMI Staking Contract, the user must wait 8 days after they have submitted a withdrawal request.

When a user deposits BMI into the BMI Staking Contract, the user is issued with stkBMI tokens, which are assets that represent the user's position in the staking contract.

**#stkBMI** = Number of stkBMI user is getting for staking their BMI  
**TSstkBMI** = total supply of stkBMI outstanding  
**#BMlb** = BMI balance in the BMI Staking Contract  
**#BMId** = number of BMI deposited to the pool by the user

If the BMI Staking Contract is empty

**#stkBMI = #BMI**

If the BMI Staking Contract is not empty

$$\text{\#stkBMI} = \frac{\text{TSstkBMI} * \text{\#BMId}}{\text{\#BMlb}}$$

Rewards are calculated per block and "increase" the BMI balance in the staking pool (#BMlb) using a linear function.

A predetermined amount of BMI will be added every block to #BMlb.

**#BMlb = BMI deposited by the users + BMIperBlock \* current block**

# withdrawing BMI from the staking pool

**#BMIw** = number of BMI withdrawn from the BMI Staking Contract by the user

**#stkBMIb** = number of stkBMI user is getting burning to withdraw BMI

$$\#BMIw = \frac{BMIb * \#stkBMIb}{TSstkBMI}$$

## bmixCover staking

1. Every Coverage Provider gets bmixCover tokens (where x is the name of the Protocol).
2. bmixCover is a yield and risk bearing asset. It represents the right to USDT in the Project X Coverage Pool.
  - 2.1. This bmixCover value is proportionally adjusted based on the yield rate and the number of successful claims on a given Project X Coverage Pool.
3. Coverage Provider is able to stake whitelisted bmixCover in the bmiCover Staking Contract to get additional BMI rewards.
  - 3.1. A project pool is whitelisted by vote via the DAO.(V2+)
4. Only whitelisted projects can benefit from staking bmixCover in order to avoid economic exploits of the Protocol.
5. A majority of the rewards from the Reward Pool go to bmixCover stakers.
  - 5.1. Coverage Providers are issued with BMI NFT Bonds that represent their position in the coverage pool and give them the right to claim back an equal amount of bmixCover.
  - 5.2. The BMI NFT Bond gives however instant access to the BMI rewards from bmiCover Staking Contract.
  - 5.3. The BMI NFT Bond is a Non Fungible Token consisting of the following metadata:
    - 5.3.1. The amount of bmixCover that can be claimed.
    - 5.3.2. The premium that can be collected in the form of BMI rewards from the bmiCover Staking Contract (claiming can be done anytime).
    - 5.3.3. The NFT owner is eligible to withdraw bmixCover and BMI tokens anytime he wants or sell them on any NFT marketplace.

## BMI distributions from the Reward Pool

Lower Utilization Ratios also means lower reward multipliers for the Project X Cover Pool. Projects that have a higher Utilization Ratio are assumed to be riskier, and thus the platform incentivizes users to provide additional coverage to these pools by increasing the rewards.



# risk based reward multipliers

## Risk assessment:

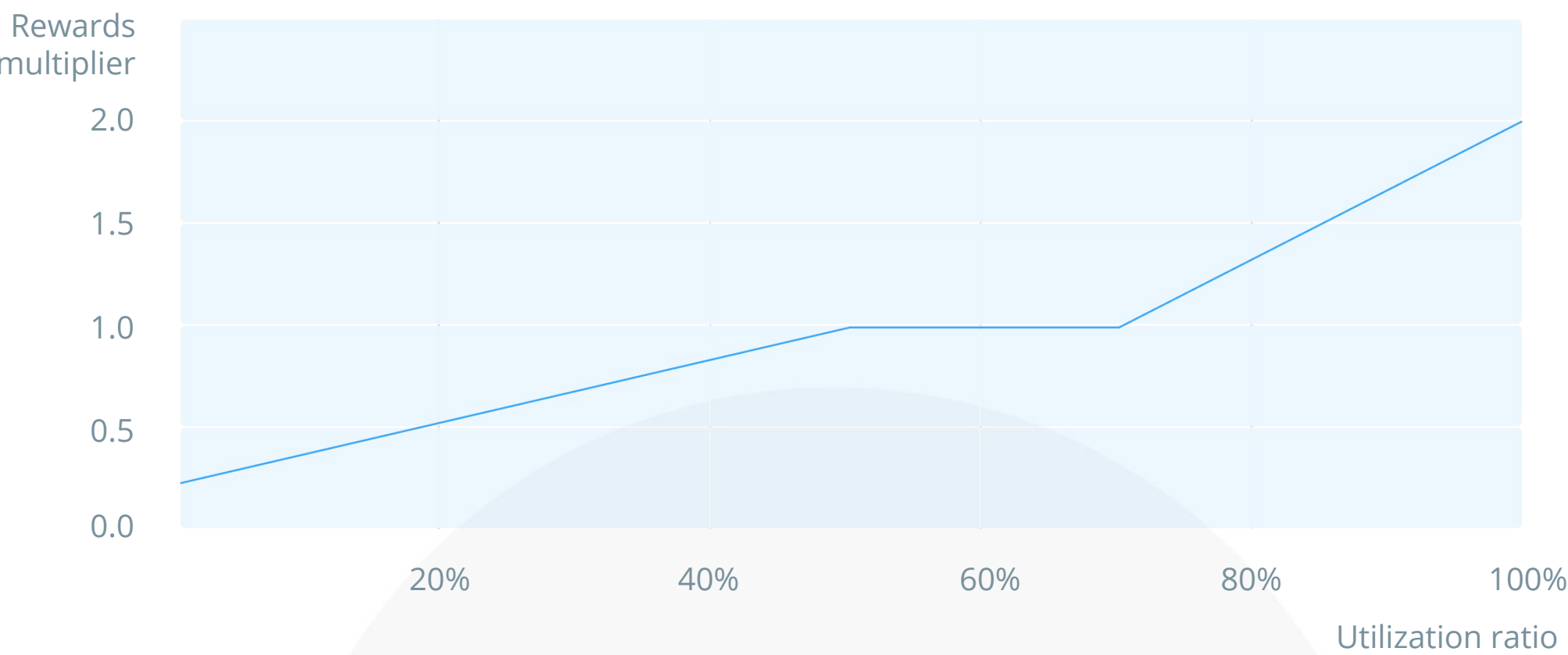
- MinRm** = Minimum reward multiplier (currently 0.15x)
- MaxRm** = Maximum reward multiplier (currently 2x)
- BaseRm** = Base reward multiplier (currently 1x)
- URRr** = Utilization ratio for reward model when the asset is considered risky (expressed in %)
- URRm** = Utilization ratio for reward model when the asset is considered moderate risk (expressed in %)
- UR** = Utilization ratio (expressed in %)
- RMx** = Reward Multiplier of the Project X Cover Pool

if  $UR < UURm \Rightarrow RMx = \frac{UR-1\%}{URRm} * (BaseRm - MinRm) + MinRm$

if  $UR > UURm \Rightarrow RMx = BaseRm$

if  $UR > UURm \Rightarrow RMx = BaseRm + \frac{(MaxRm-BaseRm)*(UR-URRr)}{100\% - URRr}$

## Risk based rewards multiplier vs utilization ratio



**CPIP<sub>x</sub>** = bmixCover in the Project X Cover Pool

**PPR** = Percent of the reward distribution that is attributed to Project X.

$$\%PPR = \frac{RM_x * CPIP_x}{\sum_1^n (RM_1 * CPIP_1 + RM_n * CPIP_n)}$$

Rewards for the project in the time = %PPR \* #R

**MinRm** = 0.15x

**MaxRm** = 2x

**BaseRm** = 1x

**URRr** = 70%

**URRm** = 50%

**UR** = Utilization ratio (expressed in %)

**RMx** = Reward Multiplier of the Project X Cover Pool

#### Example 1:

There is 10,000,000 USD in the Coverage Pool, and 5,000,000 USD of cover has already been purchased.

**Utilization ratio** = 5,100,000/10,000,000

**Utilization ratio** = 51%

if **UR** > **UURm** ⇒ **RMx** = BaseRm  
**RMx** = 1

#### Example 2:

There is 10,000,000 USD in the Coverage Pool, and 9,000,000 USD of cover has already been purchased.

**Utilization ratio** = 9,000,000/10,000,000

**Utilization ratio** = 90%

if **UR** > **UURm** ⇒ **RMx** = **BaseRm** +  $\frac{(\text{MaxRm}-\text{BaseRm}) * (\text{UR}-\text{URRr})}{100\% - \text{URRr}}$

$$RMx = 1 + \frac{(2-1) * (90\%-70\%)}{100\% - 70\%}$$

$$RMx = 1.66(6)$$

### Example 3:

There is 10,000,000 USD in the coverage pool, and 600,000 USD of cover has already been purchased/reserved.

**Utilization ratio** = 600,000/10,000,000

**Utilization ratio** = 6%

if  $UR < UURm \Rightarrow RMx = \frac{UR-1\%}{UURm} * (BaseRm - MinRm) + MinRm$

$RMx = \frac{6\%-1\%}{50\%} * (1 - 0.15) + 0.15$

**RMx** =  $RMx=0.171$

## restaking BMI rewards

BMI rewards are automatically compounded onto the principle in BMI Staking Contract, this means rewards are essentially re-staked for free.

## claiming BMI rewards

To claim 100% of the rewards available to a user, they must submit a withdrawal request and wait 8 days. After 8 days have passed, there is a 48 hour window wherein the user may claim all of their rewards. If the user fails to claim the rewards within this window, they must submit another withdrawal request.

Alternatively, users may claim 80% of their rewards immediately, but the other 20% will be redistributed to across all bmixCover stakers. This penalty is to decrease volatility in the bmixCover pools.

# 3. VOTING

## making a claim

---

- If a user wants to make a claim he needs to deposit 1% of the claim's value in BMI - this is to prevent frivolous claims from being spammed.
  - If the claim fails, this BMI is given to the Voters.
  - If the claim is valid, this BMI is refunded, and Voters are rewarded from the Reinsurance Pool.
- USDT is issued to the Claimant if a claim is determined to be valid.
- If a claim is denied, the Claimant may Appeal by depositing an additional 1% of the claim's value in BMI.

## the claiming process

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- The outcome of a Claim must be pulled from the smart contracts in order to be revealed.
- In order to avoid situations where the result of a Claim is never pulled by the Claimant themselves, we designed a model that allows anyone to pull and reveal the outcomes of Claims. The user that pulls and reveals the Claim receives an award.
  - The longer a Claim outcome goes unrevealed, the more rewards will be given to the person that reveals it.
- After a Claim has resolved, the Claimant has the exclusive ability to reveal the outcome of that Claim for 3 days. In exchange, he will receive 3% of the rewards.
- After 3 days, anyone may reveal the outcome of the Claim.
- Every day that goes by where the Claim remains unrevealed, the rewards increase by 1%, up to a maximum of 100%, all of which go to the person that revealed the outcome.

## 7 days to make a claim

---

- A potential Claimant has 7 days after the expiration of their policy to make a Claim on that policy.
- If the Claim is rejected, the Claimant has an additional 7 days from the date of the rejection to make an Appeal.
- While a Claim is actively being voted on, the Claimant cannot purchase additional Coverage against that same Project X Coverage Pool.
- In order for a claim to be valid Claim, the Coverage Event must have happened before the end of the last epoch. Otherwise, the Claim should be rejected.

# voting

---

- Only vBMI (staked stkBMI) owners are eligible to vote (to avoid biased USDT stakers).
- To obtain vBMI, the user must stake stkBMI.
- vBMI tokens are not tradable.
- Rewards are given to those who have voted in the majority.
- Rewards are distributed based on the number of vBMI held by the user and their Reputation Score.

## deciding the validity of a claim

---

- Every user staking stkBMI can see active Claims in the Claims Assessment tab of the app, and they can open the Claims to see the evidence uploaded by the Claimant.
- Votes are anonymous.
- Voters must open evidence in order to be given access to vote on a Claim.
- Voters may vote on multiple Claims before submitting all of them in a batch send, this is to save time and gas fees.
- If a Voter believes a Claim is invalid and should be denied, they should input “0” as the amount of USDT the Claimant should be compensated with. Submitting “0” is synonymous to voting “no”, meaning the claim is not valid.
- Voting any value greater than “0” is synonymous to voting “yes”, meaning the claim is valid. This value also represents the amount the Voter thinks that the Claimant should receive.

### Example:

An exchange was hacked and three Claims were submitted by various Policy Holders. For the sake of simplicity, all of them are claiming an equal amount of 1.000 USDT

After reviewing the evidence, one of the Voters concluded that:

- Claim 1 is valid, but only for 500 USDT, so the Voter inputs 500 USDT;
- Claim 2 is valid for 1.000 USDT, so the Voter inputs 1,000 USDT;
- Claim 3 is fraudulent and therefore invalid, so the Voter inputs 0 USDT.

The user presses the ‘Vote’ button, which submits all 3 votes in one transaction, saving on gas fees.

- When the voting is over, the final amount awarded to the Claimant is decided by the weighted average of the vBMI tokens and what they voted for.
- A Claim requires a 66% majority to be passed, otherwise the Claim is rejected.
- Voters in the majority gain reputation and split rewards.
- Voters in the minority lose reputation (if the minority is 10% or less, the minority also loses a portion of their stake as well).
- Voting power = vBMI staked x Reputation Score.
- If a Claim is denied, the Claimant may Appeal.
  - To Appeal the Claimant must deposit an additional 1% of the value of their claim.



# appeals and trusted voters

- Only “Trusted Voters” may vote on Appeals.
- Trusted Voters comprise 15% of the active Voters (they have voted at least once) on the system with the highest reputation.
- To become a Trusted Voter, you must:
  - Have a Reputation in the top 15th percentile
  - Have a Reputation above 2.0x
- In all other aspects, an appeal is handled in the same way as a normal Claim.
- Appeals cannot be appealed again, their results are final. The Claimant may make a fresh Claim, their policy does not disappear even if it gets rejected in the Appeals phase.

# reputation score system

Your reputation modifies your Voting power.

- Every user’s Reputation Score starts at a value of 1.0x
- Reputation can be as low as 0.1x and as high as 3.0x
- When a user votes in the majority, they gain Reputation.
- When a user votes in the minority, they lose Reputation.
- The smaller the minority, the more those in the minority lose Reputation, for example, if the vote was 2% “yes” to 98% “no”, the loss in Reputation will be severe.
- Voters in the majority always gain a linear amount of Reputation, regardless of how big or small the majority was.

# reputation score system

#vBMIvoting yes = number of vBMI used to vote yes  
#vBMIvoting no = number of vBMI used to vote no  
VY = ratio of users voting yes  
VN = ratio of users voting no  
%VMA = % of users voting in majority  
%VMI = % of users voting in minority

$$VY = \frac{\text{vBMI voting yes}}{\text{vBMI voting no} + \text{vBMI voting yes}}$$

$$VN = 1 - VY$$

Compare “no” votes and “yes” votes.

If Voter is voting “yes” in the majority then:

$$\begin{aligned}\%VMA &= VY \text{ IF } VY \geq 50\% \\ \%VMI &= VY \text{ IF } VY < 50\%\end{aligned}$$

If Voter is voting “no” in the majority then:

$$\begin{aligned}\%VMA &= VN \text{ IF } VN \geq 50\% \\ \%VMI &= VN \text{ IF } VN < 50\%\end{aligned}$$

## User reputation

$$\begin{aligned}\text{URx}_{n+1} &= \text{Voter x reputation score after voting n} \\ \text{URxn} &= \text{Voter x reputation score while voting n} \\ \%VMI &= \% \text{ of Voter voting in minority} \\ \%VMA &= \% \text{ of Voter voting in majority}\end{aligned}$$

If Voter was voting in Minority

$$\text{URx}_{n+1} = \text{URxn} - \frac{(1 - (\%VMI * 2))^2}{2}$$

Where  $\text{URx}_{n+1}$  cannot be lower than 0.1

If Voter was voting in Majority

$$\text{URx}_{n+1} = \text{URxn} + \frac{\%VMA}{20}$$

Where  $\text{URx}_{n+1}$  cannot be higher than 3

## For example:

- Voting outcome = 45% yes / 55% no
  - Majority voters:  $\text{URx}_{n+1} = \text{URxn} + 0.0275$
  - Minority voters:  $\text{URx}_{n+1} = \text{URx} - 0.005$
- Voting outcome = 30% yes / 70% no
  - Majority voters:  $\text{URx}_{n+1} = \text{URxn} + 0.035$
  - Minority voters:  $\text{URx}_{n+1} = \text{URx} - 0.08$
- Voting outcome = 1% yes / 99% no
  - Majority voters:  $\text{URx}_{n+1} = \text{URxn} + 0.0495$
  - Minority voters:  $\text{URx}_{n+1} = \text{URx} - 0.48$

# voting penalty

In order to vote, Voters need to use stkBMI tokens, and lock them into the voting contract, in exchange they will be granted with vBMI voting tokens.

When a Voter votes in the **extreme minority** they will lose a portion of their stake.

Extreme minority starts when the Voter has been voting in the 10%

**if %VMI < PT Apply penalty**

**PT** = Penalty Threshold expressed in %

**PT** = 11%

**Voting penalty = PT - %VMI**

## Example1

Voting outcome = 1% yes / 99% no

**Voting penalty = 11% - 1%**

**Voting penalty = 10%**

10% of the vBMI used in voting is confiscated and added to the Reinsurance Pool.

## Example 2

Voting outcome = 90 % yes / 10% no

**Voting penalty = 11% - 10%**

**Voting penalty = 1%**

1% of the vBMI used in voting is confiscated and added to the Reinsurance Pool.

## Example 3

PT = 21 %

Voting outcome = 85 % yes / 15% no

**Voting penalty = 21% - 15%**

**Voting penalty = 6%**

6% of the vBMI used in voting is confiscated and added to the Reinsurance Pool.

# size of the voting rewards

---

- To make a Claim, the Claimant must deposit 1% of the value of the Claim.
- The voting rewards distributed per Claim is equal to the BMI deposited by the Claimant (1% of the value of the claim) or Pc.

**Pc = Protocol Fees being sent to the Reinsurance Pool (expressed in %)**

- If the Claimant's Claim is successful, the 1% of BMI deposited is refunded back to the Claimant, and the Voters are given Pc as the reward. If the Claimant's Claim fails, the Voters are rewarded with the 1% of BMI deposited by the Claimant.

## Example

### 1. First phase

- 1.1. A Claim for 1,000,000 USD is submitted.
- 1.2. When Claimant paid for Cover, he paid a 4% Premium (40,000 USD) - the Pc is equal to 20% which is 8,000 USD.
- 1.3. User is obligated to deposit 10,000 USD in BMI to start the Claim (1% of the Claiming value)
- 1.4. If the user's Claim is valid, 10,000 USD in BMI will be refunded, and the rewards for voting will be 8,000 USDT (Pc).
- 1.5. If the user's Claim is rejected, the 10,000 USD in BMI is confiscated, and 8,000 USD (in BMI) is distributed to Voters as rewards, while 2,000 USD in BMI is distributed to stakers.

### 2. Appeal phase

- 2.1. The Claimant starts the second phase (the Appeal phase).
- 2.2. The Claimant must lock an additional 1% of the value of his Claim, which is 10,000 USD in BMI
- 2.3. The rest of the Appeal phase operates identically to the first phase.

# calculation of rewards to Voters

---

**#BMIVr** = Number of BMI voting rewards tokens to be distributed in the particular phase

**#BMIPc** = Number of BMI collected in the form of Pc when paying a premium

**#BMIllock** = Number of BMI locked by Voter to start the claim

**#BMIVr** =  $\min(\text{\#BMIPc}, \text{\#BMIllock})$

# calculation of payout for a successful claim

**FA** = Final amount provided to Claimant

**APTVx** = amount proposed by Voter x

**VRx** = Voter x Reputation Score

**vBMIx** = vBMI of the Voter x that have been used in voting

$$FA = \sum_1^n \left( \frac{URx * BMIx * APTVx}{\sum_1^n (UR_1 * vBMI_1 + UR_n * vBMI_n)} \right)$$

## reward distribution for Voters that voted in the majority

Rewards are distributed to the Voters that have voted in the majority. The distribution is based on the Voter's Reputation Score and the number of vBMI they used to vote..

**VRx** = Voter x Reputation Score

**vBMIx** = vBMI of the Voter x that have been used in voting

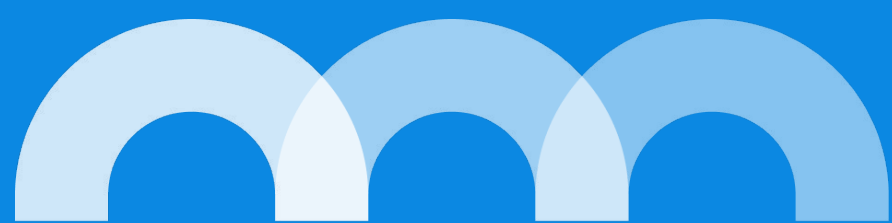
**%VPR** = % of Voter x participation in the voting rewards distribution

**#BMIvr** = Number of BMI voting rewards tokens to be distributed in the particular phase

**0xVx** = Number of BMI tokens to be distributed to the 0x address owner (Voter x)

$$\%UPR = \left( \frac{URx * vBMIx}{\sum_1^n (UR_1 * vBMI_1 + UR_n * vBMI_n)} \right)$$

$$0xUx = \#BMIvr * \%UPR$$



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