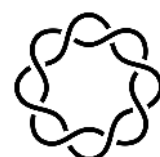




Perpetual Protocol

Private Markets - Part I





Introduction

The objective of this engagement was to design a framework for Private Markets (PrM) on Perpetual Protocol. For the context of this piece, we refer to Private Markets as perpetuals markets that can be deployed on the Perpetual Protocol in a permissionless way. These markets would coexist and complement the current markets deployed on Perpetual Protocol (which we'll refer to as Public Markets).

The process of designing the Private Markets framework, however, required us to first take a step back and review the high level architecture of the whole system. Thus, this post will be divided into two parts:

1. In the first one, we'll go through our proposal for the high level architecture of the system and how the Public Markets would work under this new architecture. We see this first part as a prerequisite for understanding the rationale behind the Private Markets framework.
2. In the second part, which will be published at a later date, we'll explore the Private Markets architecture.

We're very excited to share this with the Perpetual community and look forward to your feedback.

High Level Architecture

The Public Markets architecture would be comprised of 4 main elements:

- PERP DAO: The main DAO of the protocol, responsible for overall protocol governance and Public Markets creation. Users who stake into the DAO are entitled to protocol fees and governance participation and, in exchange, they act as the second tranche in case of protocol deficits (we will explore this dynamic further in the next sections). DAO participation is tokenized in the form of sPERP.
- Treasury: A DAO-managed fund dedicated to the long-term sustainability of the project.
- Global Insurance Fund: The first backstop of all the Public Markets. Upon any shortfall event, the funds in the Insurance Fund are the first to be used to make users whole.
- Public Markets: Markets approved and launched by the PERP DAO that are backed by the whole Public Markets architecture.



The following figure summarizes the above architecture.

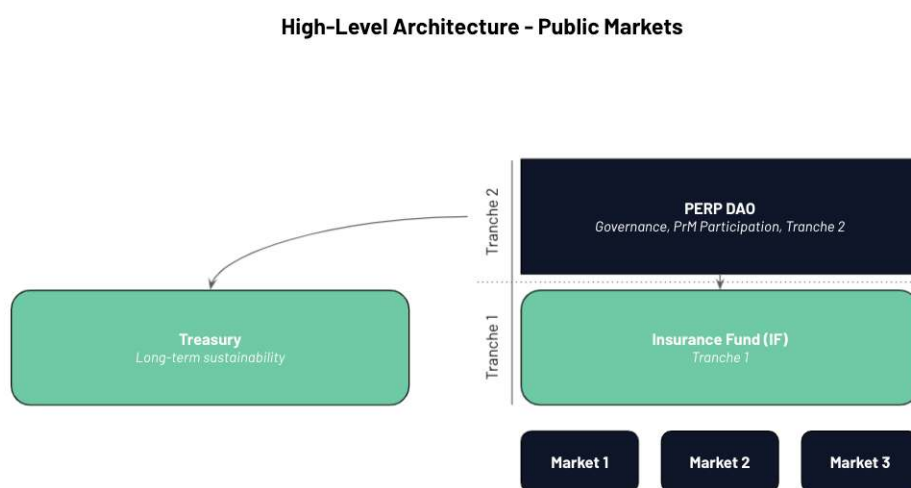


Figure 1. PERP High Level Architecture.

Governance

PERP holders who stake into the PERP DAO receive sPERP back, which represents their share of the DAO and entitles them to governance rights and fees generated by the protocol, while at the same time serving as second tranche in case of a protocol deficit. Being the second tranche in case of a deficit means that sPERP holders will only be slashed whenever a deficit wipes out the Global Insurance Fund. In that case, we propose that sPERP holders be slashed up to a maximum of 30% of their holdings. If there's a deficit event that wipes out the IF and 30% of the assets in the PERP DAO, the DAO can decide either to mint PERP, issue IOUs to be paid in the future or use Treasury funds to cover the deficit.

As part of the new architecture, governance will need to decide on a number of important parameters for the system to work as intended. The following is the list of parameters and some of our recommendations (see Figure 2):

- **Cooldown Period:** There should be a cooldown period that stakers in the DAO need to wait before being able to withdraw funds from the DAO. This cooldown period is necessary to avoid the case where stakers withdraw their funds from the DAO immediately after a deficit takes place, potentially leaving the system at risk. For the system to be robust, funds staked into the DAO need to be a credible source of insurance in case of deficit events. We propose a cooldown period of 1 week.



- **Insurance Fund Target:** Ideally, the IF should be able to cover all deficit events by itself, without the system needing to use DAO funds. For this to be the case, the IF needs to have an appropriate size based on the risk the protocol is taking. As such, we propose that the majority of the fees flow to the IF until this level is met. From that point onwards, fees would flow to DAO stakers. We'll explore this in more detail below.
- **Treasury Target:** For the protocol to be self-sustainable in the long run, the DAO should control a Treasury to be able to allocate resources to operational expenses, a Grants Program, etc. In a similar way to the IF Target, we believe that a portion of the fees generated by the protocol should be allocated to the Treasury until it gets to a reasonable size and, from that point onwards, fees would start flowing to DAO stakers.
- **Fees Distribution:** The fee distribution between the IF, the Treasury and the DAO. As was explained before, this distribution would depend on the state of the IF and the Treasury. Below we propose a fee distribution model in more detail.
- **Treasury and IF Asset Composition:** What assets should the Treasury and IF hold.
- **Treasury and IF Asset Strategy:** How those assets should be used.

Insurance Fund Target

The IF Target is one of the most important parameters of the system, as it determines to a certain extent how secure and robust the platform is to unexpected shocks. We propose setting the IF Target dynamically based on the risk the protocol is taking. In the case of a perpetuals platform, that risk is determined by the open interest in the perpetuals offered by the protocol. The higher the open interest, the higher the risk the protocol is undertaking and thus, the larger the IF should be. As such, we propose the following methodology for determining an appropriate IF size, given the protocol risk:

- First, we define the Insurance Ratio, which is the ratio between the IF and the open interest. In a sense, this ratio determines the current riskiness of the protocol. The lower the ratio, the higher the risk for protocol users, all else being equal.

$$\text{Insurance Ratio} = \frac{\text{Insurance Fund (USDC)}}{\text{Open Interest (USDC)}}$$

- Setting an appropriate Target Insurance Ratio for the protocol. This should be done by the PERP DAO.
- Adjusting the flow of fees (to the IF or the DAO) based on where the Insurance Ratio is. If the Insurance Ratio is below the Target, fees should flow to the IF. Otherwise, fees should flow to stakers as that would indicate that the IF is large enough given the current open interest.



The following figure summarizes this methodology and offers some additional color on it:

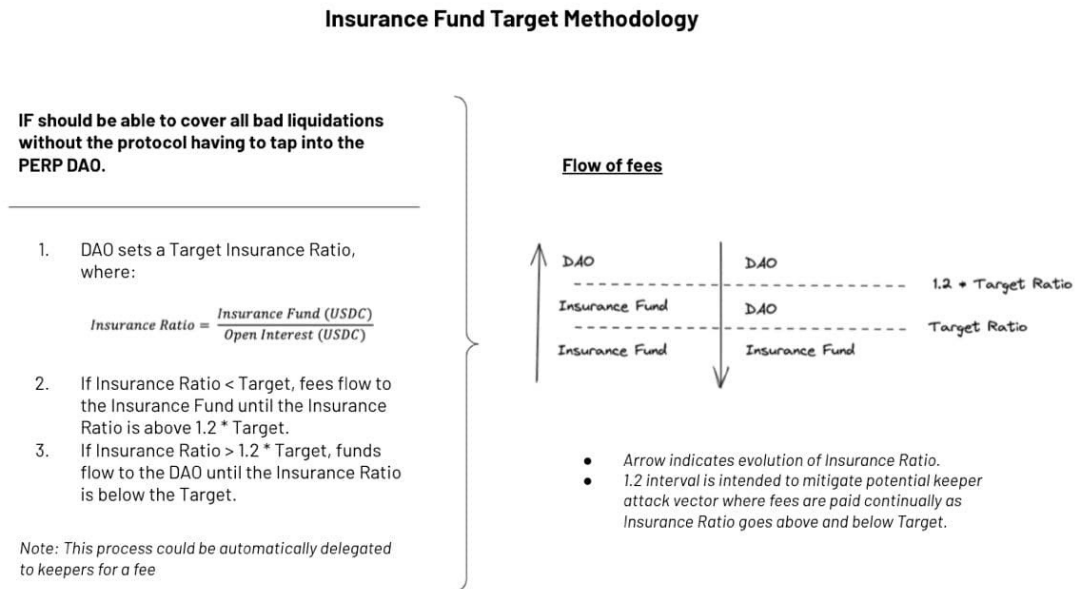


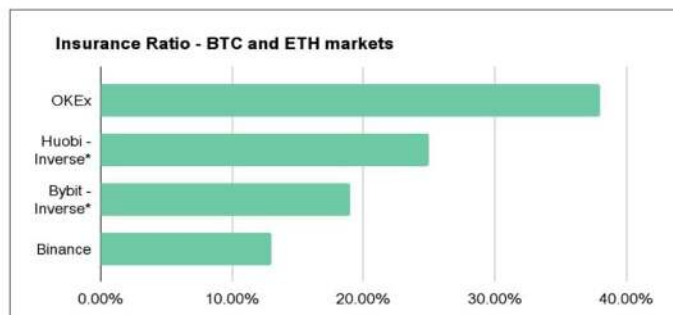
Figure 2. Target Insurance Ratio Methodology.

Having this methodology in place, we offer an initial consideration for setting the Target Insurance Ratio based on a benchmarking exercise that includes some of the leading derivatives exchanges (specifically focusing on their BTC and ETH markets). What we observe from this exercise is that insurance fund ratios vary considerably between the analysed exchanges, from ~13% to ~37% (see Figure 3). It's worth noting that these exchanges have been operating for longer than Perpetual and have been able to amass significant insurance funds over time.

We expect this exercise serves as a starting point for the community to set the Target Ratio. Given that Perpetual v2 will be built on a completely new architecture, we suggest establishing a conservative Target Ratio initially. As the model matures and enough empirical evidence is gathered, the Target Ratio could be adjusted downwards when needed.



Insurance Ratios of Leading Derivatives Exchanges



* Inverse indicates perpetuals markets that are settled and margined in the base asset itself (BTC and ETH). For Huobi and Bybit, Insurance Ratio is calculated exclusively for their inverse markets. For [Binance](#) and [OKEx](#), Insurance Ratio calculation includes USDT margined markets as well.

Figure 3. Insurance Ratio Benchmark. Data as of August 23, 2021.

Fees Flow

The last piece we'll discuss about the Public Markets functionality is the fees flow. Given that on Perpetual v2 liquidity providers (LPs) will do the heavy lifting within each market, we suggest the majority of the fees flow to them. Specifically, we suggest that $\frac{5}{6}$ of fees generated flow to LPs and the remaining $\frac{1}{6}$ flow to the protocol.

With regards to protocol fees, they should be divided between the IF, the Treasury and PERP DAO stakers. As was described previously, whenever the Insurance Fund is below the target, the majority of the fees should flow to the IF. In a similar sense, whenever the Treasury is below target a portion of the fees should flow there. On the other hand, whenever the IF or the Treasury hit their target, fees should be redirected to the DAO. We propose the distribution of protocol fees to be as follows:

- 80% to the IF until it hits its target, deposited in USDC. After it hits its target, fees are redirected to PERP DAO stakers.
- 10% to the Treasury until it hits its target, deposited in USDC. After it hits its target, fees are redirected to PERP DAO stakers. Given that the Treasury is already well funded for the foreseeable future, no fees will be initially flowing to the Treasury.
- At least 10% to the PERP DAO, deposited in PERP. Ultimately, the share of fees that effectively flow directly to PERP DAO stakers will depend on the state of the IF and the Treasury. Initially, 20% of fees will be flowing to PERP DAO stakers, as the share of fees directed to the Treasury will be set at 0%.

Notice that the above distribution will be adjustable by governance at any point if considered necessary.



The next figure summarizes the mechanism presented above.

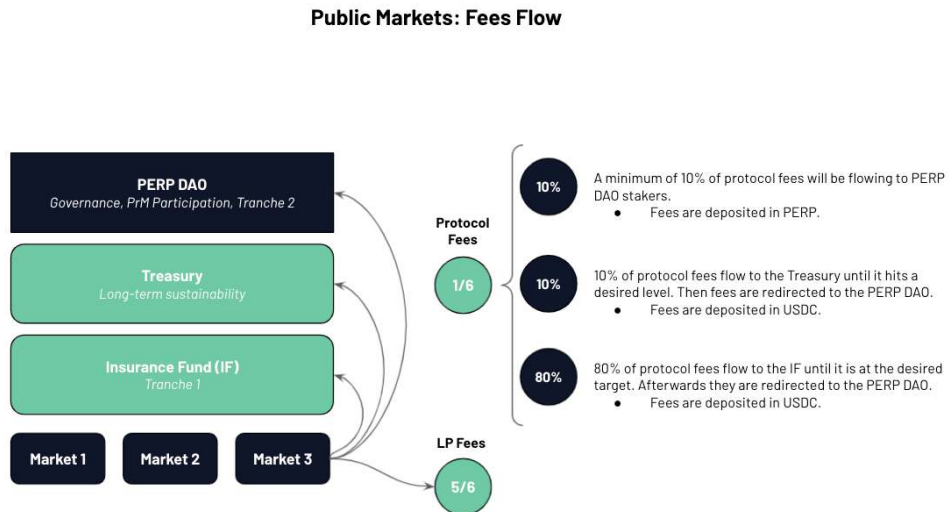


Figure 4. Public Markets Fees Flow.

Conclusion

Throughout this post we outlined what we believe to be a robust architecture that will allow Perpetual Protocol to safely grow going forward. Additionally, this architecture will serve as the foundation for the Private Markets framework that will be explored in the upcoming Part II of this post.

We look forward to your feedback regarding this post.



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