STFX

XP System Proposal

Author: @_brizal

1. Introduction

STFX is gamifying asset management, and is looking to implement an XP system. The XP system will influence lots of different features on the platform, but namely the XP system will be the maximum vault capacity.

The goals of the system are simple:

1. Reward good performance
2. Disincentivise poor performance
3. Incentivise regular usage of the platform
4. Provide utility to STFX Stakers
5. Simple, elegant design which is easy to understand for users of the protocol
6. Initially earn xp quickly

Included in this proposal are simulations in order to understand how the XP system might behave as the assets under management and the number of vaults created increases.

2. Metrics

The main metrics of STV manager usage are:

1. Number of vaults deployed (N)
2. PnL of vaults (P)
3. Funds raised (F)

An XP formula should incentivize these metrics, but also include earnable achievements (A) and staked $STFX (S).

We'll use the symbols for these in the rest of the proposal.

3. Proposed Formula

$$XP = 50 * \sqrt{N * min(F, 100000)} + A + 0.2P + \$STFX$$

4. Formula Detailed

In this section, we'll dive into the growth of these metrics over time

Number of Vaults (N)

This represents the number of vaults a user has deployed. This metric's growth rate is limited due to the fact that a user can only have a limited number of vaults concurrently. In the current system, the most they can ever have active is 3 (at high levels).

By incentivising this metric, we promote the "grinding" aspect of STFX.

Funds Raised (F)

This represents the number raised for successfully deployed STV's. This metric's growth rate can be quite high, especially for outliers, as the amount of funds raised between 2 vaults can be higher than double. This is because the number of funds a user may raise is equal to the XP they already had.

To handle this, the proposed formula limited the growth of this number by enforcing a limit of 100,000.

By incentivising this metric, we incentivize quality whilst also promoting "grinding" on STFX.

PnL (P)

This represents the total PnL of the user. By looking at historic data, both the mean and the standard deviation of this metric are close to 0 (as an ROI%, on a scale of -100 to 100). This tells us that over time, the PnL of deployed STV's sum to be close to 0.

We are limiting the impact of the PnL on the system by multiplying by 0.2, because during simulation, the impact of certain outliers can be extreme and by chaining a few

vaults with these outliers together, the vault manager can get very high XP extremely quickly.

By promoting the PnL, we incentivize quality and success.

Achievements (A)

This represents XP that users can earn by completing tasks on the platform. The achievements are currently designed to allow users to grow their XP to ~20k quite easily, with less easy to attain achievements coming in the future.

By incentivising this metric, we incentivize “grinding” on STFX.

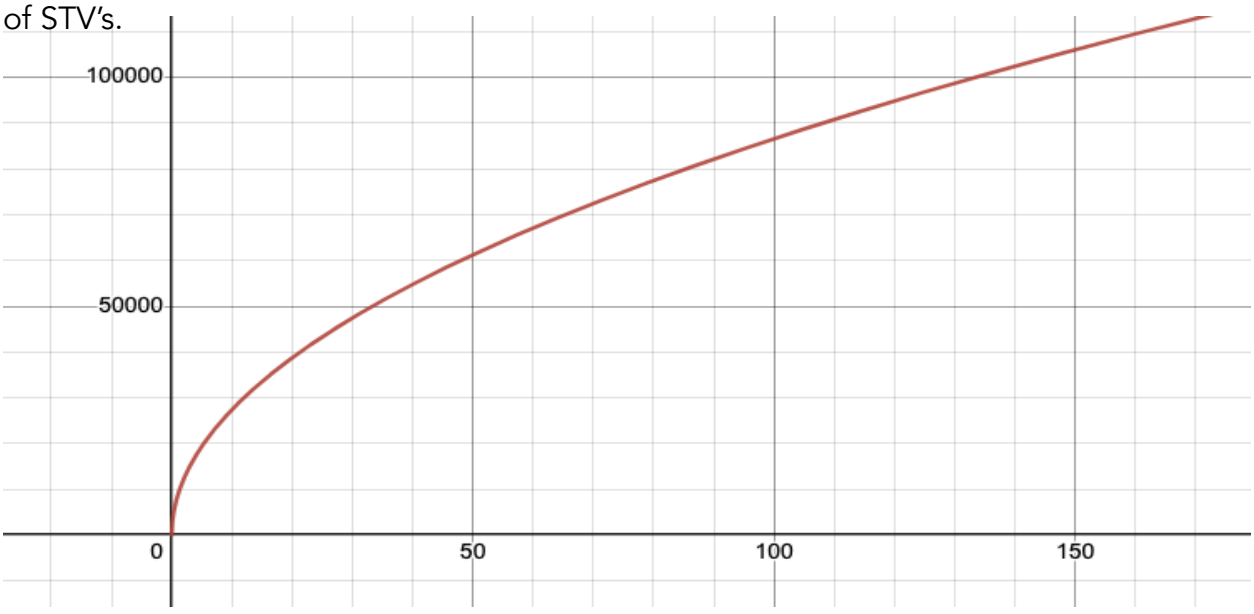
$STFX

The number of STFX that the user has staked. The goal here is to provide utility for STFX holders, and to incentivise people to stake, creating a feedback loop for holders and users of the platform.

Why Sqrt?

One of the objectives of the XP formula is to allow users to be able to grind XP quite easily initially, but over time it should get more and more difficult. Since the F * N section of the formula has the most weighting, only increases over time, and is attainable through grinding without any monetary output, the sqrt is designed to increment at a lower rate over time. The multiplication of this by 50 is to “stretch” the curve vertically

The diagram below shows this for a fixed F, where x represents growth in the number of STV’s.



5. Simulation Method

Our simulation infrastructure sets up an environment where thousands of users create many STV's. STV creation represents the passage of time, in reality creating 100 STV's will likely take over 2+ years (at current historic rates, this rate may increase, so our simulator supports any arbitrary number.

$STFX

During our simulations we omitted the application of STFX, this is due to the fact that it is simply constant based on the amount staked and would just move the simulation results charts up the Y-axis.

However, one consideration is missing, an analysis into the amount of money needed to become an outlier in the system. This can be likened to a governance attack on a DAO, where low token value can allow powerful individuals to own a significant amount compared to non-owners. This could create a system where those that don't stake, have much less power compared to those who invest even small-medium amounts of money.

Achievements

After evaluating the current achievements, we decided to simplify the application of the achievement schedule to be linear over the first 4 STV's.

PnL

For each STV, we simulate the PnL by seeding data based on current STV performance. To do this we,

- Query on chain data of all deployed STV's, calculating the PnL as a % of the amount invested
- Calculate the distribution of this data
- Build a new data set, where we use the previous distribution to seed 10,000 new data points based on a normal distribution
- Randomly select a PnL % for the vault from the new set of PnL's

Seed Values:

$$mean\ (\mu) = 0.0025$$
$$standard\ deviation\ (\sigma) = 6.8815$$
$$min = -100$$
$$max = 100$$

During simulation, we also tested higher thresholds of standard deviation to understand what happens if spread of the PnL set is higher.

Funds Raised

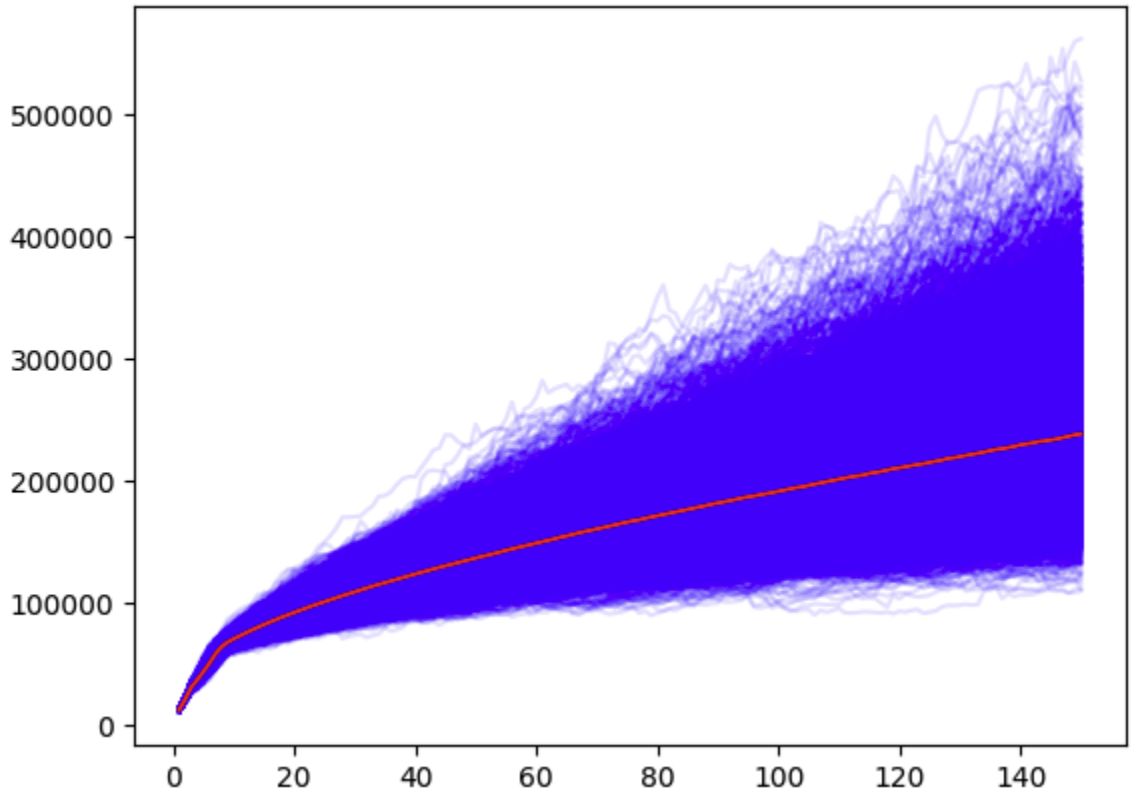
For each STV, we follow the same model as PnL, however instead of PnL, we look at funds raised. We take this %, and multiply it by the XP the user had before creating the STV to calculate the amount of funds invested into this STV

Seed Values:

$mean\ (\mu)\ =\ 55$
$standard\ deviation\ (\sigma)\ =\ 1,\ 5,\ 10,\ 25$
$min\ =\ 10$
$max\ =\ 100$

6. Simulation Results

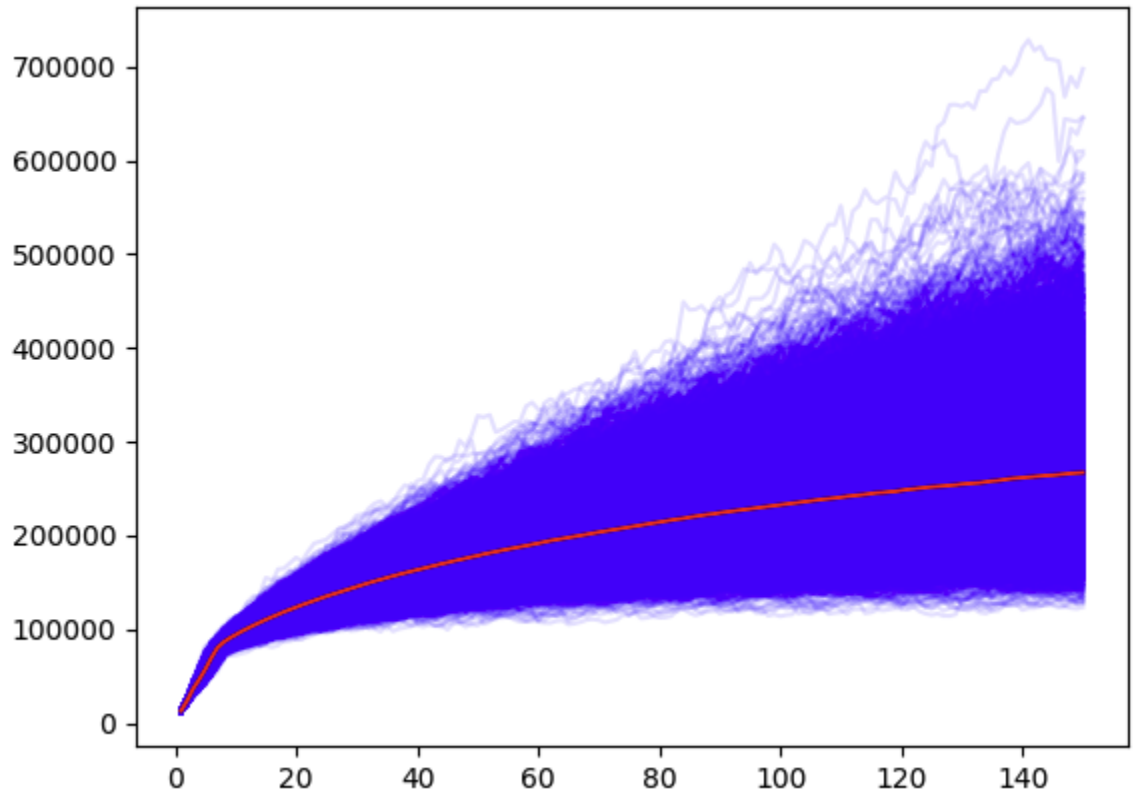
Formula: $XP\ =\ 50\ *\sqrt{N\ *\ min(F,\ 100000)}\ +\ A\ +\ 0.2P$
The XP accrued by 20,000 users through 150 STV's



As shown in the diagram, users can reach the 100,000 XP mark quickly (<20 STV's). From that point on, the growth of XP reduces over time, with the median user barely reaching 250,000 over 150 STV's. Top performing users can still achieve really high STV values over time (0.05% of users reached 540k), however it will take them 150 STV's to reach this mark.

Note that since the growth rate attributed to part of the equation under the square root symbol decreases over time, the difference between the median and the highest XP holders is much greater than the difference between the median and the lowest XP users. This is because, to reach really high XP's, the PnL component of the formula becomes more important to earn XP.

An alternative
Updating the multiplicative constant to 75 yields a higher growth rate.
Formula: $XP = 75 * \sqrt{N * min(F, 100000)} + A + 0.2P$
The XP accrued by 20,000 users through 150 STV's



I'd ask the DAO to compare these two results and see how it aligns with the plans of the achievement system evolving (being worth more), and the expected growth of the STFX token before deciding one of these results, or maybe some number in between.

7. Appendix

Simulator can be found here:
https://github.com/beeshalrizal/stfx-xp#stfx-xp