STFX Battle Royale Competition

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Preface

STFX will be running their first incentive competition. The goal of this report is to provide weightings and formulas for how manager and investor incentives should be distributed. We will also be including a backtest to understand how the rewards distribution would be developing if it were running in the last few months.

Manager Program

The manager program aims to incentivize the top 25 managers with an available pool of 25M $STFX.

Variables:

- PnL - 80%
    - Aggregate PnL during the competition
    - Subscribed Capital and manager capital is included
- Subscription Count - 7.5%
    - Number of subscribers a manager has at the end of the competition
    - This will be pro-rata based on the amount of days
- Trades - 5%
    - The number of trades a manager places
- PWA Points *(campaign)* - 7.5%
    - Points accumulated via the PWA points campaign
- Staking Multiplier
    - Reward stakers based on their tier

*Note: since we are rewarding **subscriber count**, there is two clear sybil opportunities:*

1. *Create multiple investor accounts and subscribe to a manager*
2. *Create multiple manager accounts and sybil attack the subscriber account by having investors subscribe to two of your accounts*

*It might make more sense to use **subscribed value** instead*

Qualifying Vaults:

In order to keep the program from being easily gamed, vaults are required to be open for at least 2 hours, or have a closing price that is +/- 5% of the open price.

Calculation Method:

We will explore a few different calculation methods, discuss pros and cons before finalizing a specific candidate formula.

We will use the following symbols throughout the rest of this report:

- P = PnL
- S = Subscriber Count
- T = Trade Count
- Pw = PWA Points

Candidate 1 - Individual Rankings

In the second candidate, we propose ranking the top 25 by each of the categories individually, assigning points for each category based on their ranking (1st is 25, etc). We can then multiply each category by a weighting factor based on that category's importance.

E.g. set the following category weightings:

P = 0.8, S = 0.075, T = 0.05, Pw = 0.075

If someone manages to come first in all categories, they'll receive:

0.8 * 25 + 0.075 * 25 + 0.05 * 25 + 0.075 * 25

= **25 Points**

Candidate 2 - Overall Rankings

Similar to candidate 1, however instead of only ranking the top 25, we rank all participants. One of the reasons to do this is to prevent outsized rewards for Sybil. For example, if you use candidate 1, it is more profitable to sybil as you get outsized rewards for ranking in the top 25.

The issue, however, is that if there are a large number of participants, the difference in ranking between 2 ranks is so minimal. E.g. The difference in points between first and second in the old model would be 1/25 = 0.04 points, however if we have 100 participants, there would be 1/100 = 0.01 points difference.

Proposed Candidate - Weighted Overall Rankings

An issue with both candidate 1 and candidate 2 is that it fails to fairly reward *skill* if any of the criteria is better skewed towards one of the participants than another. Also, it is easier to sybil attack as it is more rewarding to have ranked accounts rather than 1 highly ranked account.

In the most fair model, we can mitigate manager sybil-ed rewards by trying to make them have the same rewards if they use 1 account or many accounts.

Note: the ease of sybilling subscriber count on Page 1

One way we can achieve this is by weighting each manager's contribution to each metric and then assigning them a corresponding point total. We will only include contributions to the metric if they are > 0.

Let's use the PnL metric for illustration:

Say the total manager PnL during the competition is $1,000,000 and the top ranked manager contributed $500,000.

Their weighted points will be:

$$P = 500000 \div 1000000 \times 1000 = 500$$

If the weighting of PnL is taken to be 80%, their final points from PnL will be:

$$Points(PnL) = 0.8 * 500 = 400$$

Note: it is still sybil-able since we have a 25 manager cut off. If we opened it up to all managers, it would further mitigate sybil, however with this solution it is less profitable than previous candidates.

Proposed Formula:

$$Points = 1000 * (0.8 * P + 0.075 * S + 0.075 * Pw + 0.05 * T)$$

Note: The constant 1000 was chosen arbitrarily - might make sense to use a larger number so it looks better in UI's and has less decimals

Where,

$$P = \frac{PnL}{Sum\ of\ all\ PnL}$$

$$S = \frac{Subscriber\ Count}{Total\ Number\ of\ Participating\ Subscribers}$$

$$Pw = \frac{PWA\ Points}{Total\ PWA\ Points}$$

$$T = \frac{Number\ of\ Trades}{Total\ Trades\ Made}$$

From this, every single participant will accrue points. The DAO can then pro rata the total rewards pool to the participants based on the points that the top 25 have earnt.
Once the top 25's points are known, their manager share (share(m)) of 25M $STFX is equal to their weighted points in the pool.

$$Share(M) = Points \div Total\ Points$$
$$\$STFX = 25,000,000 \times Share(M)$$

Discussion

- With weighted rewards, there is a risk where most rewards will be skewed towards the highest ranking managers, meaning it might be less likely to convince investors to invest in other lower ranking managers. However, as with all trading competitions, this will enable the more skillful managers to rise to the top.
- In the current leaderboards, the top 3 managers would dominate (with the top 1 commanding a huge share). This means that if STFX is unable to recruit more skilled managers, the competition will be heavily skewed. One way to overcome this might be to either incorporate ROI or reduce the weighting of PnL.
- Since PnL is the most influential factor, those who have higher trading caps might be able to gain an advantage over those with lower trading caps. One way to mitigate this might be to introduce ROI. However, it will also incentivise more managers to stake, which could be a good thing.
- The weighting for subscriber count/trades is sufficiently low making it harder for investors to manipulate the final results by subscribing/unsubscribing. However, if

it is not very competitive toward the bottom of the 25, it could theoretically be manipulated. However by pro-rata-ing the investor program, it will further mitigate this.
- There should be a minimum amount of trades, ensuring a manager continually trades. Suggest 1-2 per calendar month, otherwise points are reset.
- Only consider those managers in any of the metrics with positive PnL

Investor Program

The investor program aims to incentivize all investors who supported the top 25 managers during the period. All active subscribers will receive rewards based on their pro rata contribution to their ranking.

There is a pool of 10M $STFX available for investor incentives

Variables

- Profits - 75%
    - Pro rata profits of the individual investor, from the pool of all total investors
- Time - 25%
    - Total number of days the individual was invested
- Early Finder Bonus (TBD)
    - Have your time-points boosted if you invest in a non-top 10 investor (kicks in after 3 months)
- Staking Boost
    - Platinum stakers get a 50% boost to their allocated points
- Ve-Lock Boost
    - After completion of the event, investors will have the opportunity to lock their stake for up to 24 months in order to receive boosted points.

Proposed Calculation Method

We need to calculate both the total rewards per manager, and then the amount of rewards each investor receives.

Total Rewards Per Manager

There are two ways to calculate how much rewards will be distributed to each manager's subscribers:

1. Ranking - allocate a fixed amount per rank for each of the top 25 managers

2. Weighted - allocate a % of the total rewards pool to each subscriber's investors based on the results of the manager incentives competition

I propose we use (2) as the calculation method, as it rewards investors who find and back the higher ranking managers.

Total Rewards Per Investor
The rewards for each investor need to be calculated on a per-manager basis. First, calculate the share of each investor as specified in the Manager section. Then, calculate the pro rata points via the following formula:

We will use the following symbols throughout the rest of this report:

- *P* = PnL
- *T* = Time
- *St* = Staking Boost
- *Ve* = VE boost

$$Points = 1000 * (0.75 * P + 0.25 * T) * St * V$$

The share (Share(I)) of $STFX an investor receives from the pool is equal to their points pro rata of all points

$$Share(I) = \frac{Investor's\ Points}{All\ Investor's\ Points\ for\ Manager}$$

Where,

$$P = \frac{Investor's\ Profit}{Total\ Profits\ of\ All\ Investors}$$

$$T = \frac{Days\ Investor\ Invested}{Total\ Number\ of\ Investor\ Days}$$

Thus, the amount of $STFX an investor will receive is equal to 10M * Share(M) * Share(I), where Share(M) is the Manager Share (see section 1) and Share(I) is the Investor Share.

$$\$STFX = 10,000,000 \times Share(M) \times Share(I)$$

For example, if investor I has 25% share of Manager M's rewards, which are 10% of total manager rewards, they will receive:

$$\$STFX = 10M \times 0.1 \times 0.25 = 250,000$$

Discussion

- There should be a minimum investment amount, suggest $100 to have some tangible cost if sybil
- There should also be a minimum investment time period, suggest 25% of the program (3 months), as it will prevent investors coming in at the last minute to make a risk-free profit. However, this will mean we must also set this requirement on the manager level.
- Ending a subscription sets the investor's points to 0, if they resubscribe, it will start again.
- Decreasing and Increasing a subscription amount should be allowed, however decreasing below the minimum will reset the investor's points.
- I believe there should either be a bonus for early investors, or a time decay function. E.g. We could use a bonding curve to create a time based point earning rate, however this felt like over-engineering the problem when we can just boost early investors.