TrustPooler.xyz
https://trustpooler.xyz

The Trust Pooler Team

May 28, 2024

Let's assume that an investor with some Ethereum requires a 10% return for 12 months. Let's assume that we have a credit default pool for XYZ CEX and that the default risk over the 12-month period is 1%. Let's further assume that the Pool Manager fees are 3%.

Required rate of return $r = 10\%$.

Probability of default $d = 1\%$.

Pool Manager fees $f = 3\%$.

First, we need to calculate the risk-adjusted required payoff P using the formula:

$$P = \frac{1 + r}{(1 - d)(1 - f)}$$

Substituting the given values $r = 0.10$, $d = 0.01$, and $f = 0.03$:

$$P = \frac{1 + 0.10}{(1 - 0.01)(1 - 0.03)}$$

Calculating the denominator first:

$$(1 - 0.01)(1 - 0.03) = 0.99 \times 0.97 = 0.9603$$

Now, calculating P:

$$P = \frac{1.10}{0.9603} \approx 1.1452$$

Therefore, the risk-adjusted required payoff P is approximately 1.1452.

Let s be the split of money in the pool allocated to the default event.

Next, we want to calculate the cost for a depositor to purchase credit default risk protection.

We require:

$$\frac{1}{1-s} = P$$

From the previous calculation, we know that $P \approx 1.1452$.

Solving for s:

$$\frac{1}{1-s} = 1.1452$$

$$1 - s = \frac{1}{1.1452}$$

$$1 - s \approx 0.8739$$

$$s \approx 1 - 0.8739$$

$$s \approx 0.1261$$

Therefore, the split of money in the pool allocated to the default event s is approximately 0.1261 or 12.61%.

In other words:

$$s = \frac{d + f - df + r}{1 + r}$$

Let K be the payoff achieved on a default event. As the Pool must balance, we need:

$$s \cdot K = 1 - f$$

Solving for K:

$$K = \frac{1-f}{s} = \frac{1 - 0.03}{0.1261}$$

$$K \approx \frac{0.97}{0.1261} \approx 7.6964$$

Therefore, the payoff achieved on a default event K is approximately 7.6964.

Now let's calculate how much it costs to insure 100 ETH:

The cost to insure 100 ETH is given by $\frac{100}{K}$:

$$\text{Cost to insure 100 ETH} = \frac{100}{7.6964} \approx 12.9975$$

So, it would cost approximately 12.99 to insure 100 ETH in this example.