

Discount IBC and ETH Assets at Sif

Jacob Gadikian
Cofounder NotionalDao
Hanoi, Vietnam
October 19, 8:20AM Indochina Time

Opening Disclaimer: This is a best-effort document, and may contain inaccuracies. That said, I personally believe that the contents of this document are accurate.

THIS PLAN ADDRESSES THE #1 USER COMPLAINT ABOUT SIFCHAIN AND ONCE IT IS EXECUTED, IMMEDIATELY TERMINATES ALL PRICE / LIQUIDITY SHAPING METHODS USED ON THE SIF BLOCKCHAIN.

Summary

There's an ongoing price arbitrage situation on sifchain that has greatly increased risk to users. Based on a review of the code and a call with the Sif engineering team, which isn't enough to be 100% certain of anything below, I believe that:

- The sif blockchain is functioning according to its code and current design.
- There has been an unanticipated interplay between features recently added to Sifchain, and this has allowed some users to engage in economic exploits.
 - The liquidity protection feature of sifchain has resulted in a price divergence between the price of rowan on Sif and the price of rowan on external exchanges like Osmosis and Ascendex.
 - Users are behaving in an economically rational manner by using IBC or Peggy to access external markets in order to profit by balancing the prices.
 - There's been no new attack on sif. This is more of an economic systems issue, and it can be addressed.
- The sif team has used the admin account on the chain to disable most trading features, and this has prevented users from making the arbitrage transactions that many in the cosmos community assumed were an exploit of a bug, like:
 - <https://www.mintscan.io/sifchain/txs/85CAF192B66628520C15B22B0000D55A6038FC66553E96BF007D2629167C79A8>

- [this wallet](#) is an advanced arbitrageur, not so much a hacker.
- Arb should generally be viewed as positive as arbitrage allows markets to establish clear prices.
- These arbitrage techniques did result in unfair economic gain for the arbitrageur, but given that the chain is performing to spec, it is my opinion that they've done nothing that falls within the realm of immoral or unethical or illegal.
- Disabling pools has proven an effective mitigation for the arbitrage situation, but disables the core featureset of Sif.
- Sifchain's margin trading features work.
- Sifchain's dex features work.
- Sif has been patched for Dragonberry.
- Peggy (Sif's connection to ethereum) is working properly.
- The key issue is that sifchain has features called **liquidity protection** and **lpd** that increase the spread in the price of rowan on Sif only. Arbitrageurs noticed this, and set about their normal work. They were particularly successful because they could purchase much lower priced rowan on Osmosis and Ascendex, bring that to Sif, where it had a higher price due to features on sif designed to boost the price of Rowan on Sif, purchase both IBC and Ethereum assets and then bring the assets that they acquired at a discount back to their "home" chains in Cosmos, or back to Ethereum.

Detailed summary of the "sale on ibc and ethereum assets on Sifchain" provided by Casey from the Sifchain team:

Step 1: Acquire Rowan at a discount on Osmosis (instant 4x value increase when you move it to SifDEX)

Step 2: Buy up a small token (eg DAOFI) with low liquidity to inflate its price on Sifchain

(<https://www.mintscan.io/sifchain/txs/7CE99157F92D8815FAE4B1E999559EBC86B6FF7A348B295114F08AFCC917848C>) - DAOFI pumped from \$.03 to ~ \$11.52

Step 3: Add liquidity to a pool of [discounted Rowan]/[small token (DAOFI)] at the small token's inflated price

(<https://www.mintscan.io/sifchain/txs/4C69FC148C78A57CF03D12F3F445B803334CF37C282828C01CFEBA1D3CEA367E>) - On external exchanges: 950,000 Rowan (at \$.0003) / 989 DAOFI (at \$.03) = \$2850 + 29.67 total liquidity - On SifDEX: 950,000 Rowan (at \$.012) / 989 DAOFI (at \$11.52) = \$11,400 + \$11,400 total liquidity

Step 4: Swap inflated small token (DAOFI) at its inflated price for ATOM

(<https://www.mintscan.io/sifchain/txs/39E2AA72D1079FF19C31545F16870621BBDB1EEC3725A37BA3B72DF19E508627>)

Step 5: Withdraw atom from sifdex

Basically, this wasn't a fair situation for other sif users, but Sif was working exactly as designed, and it's possible that the arbitrageur should be given the "arb of the year award."

Solving this arb route also addresses the #1 community complaint about Sif: The limitation on total daily sales of Sif. Notional strongly encourages sifchain to follow this mitigation path.

Mitigation - Sif Team

Sifchain should disable liquidity protection and lpd. Once this is done, the admin account should be used to re-enable the sifchain dex and Sif's margin features. The desired result is for the price of rowan to equalize on Sif's major exchanges, Osmosis, Sif, and Ascendex. Once the price has equalized due to arbitrage, it should no longer be possible for arbitrageurs to use Sif's liquidity protection mechanism to acquire discounted IBC and Ethereum assets.

- Risks of this approach
 - It's impossible to be 100% sure that this will result in equalized Rowan pricing between Sif and other exchanges listing Rowan.
 - It is also impossible to be 100% certain that disabling liquidity protection and lpd using the admin key will work correctly.
- Benefits of this approach
 - Sif should resume functioning normally in all areas:
 - Trading
 - Margin
 - Pool safety (which is to say that the safety of sif pools ought to be equivalent to Uniswap v1, and is not to say that they'll be perfectly safe. Providing liquidity is never perfectly safe.)
 - The Number one issue reported by users will be eliminated.

Opinion / Recovery Plan

Disclaimer of sorts: Notional validates sif. I'm not endorsing the token, there are currently a number of issues, and their mitigations may fail completely, or the chain could be overwhelmed with botspam and just give up the ghost. I am, however, endorsing consistent engineering quality improvements, as well as steadily improving concern about decentralization. Notional was previously paid by sifchain, and is currently a creditor to Sifchain for about \$40,000 for the provision of RPC's & engineering services. Sif is currently in a high risk state, DYOR, stuff could explode, etc. This report is part of Notional's Dragonberry-derived "no, really, call us for free, any time of day or night, if you think there's a security problem and we will evaluate that for free, any time of day or night, because we validate your chain" policy. (Eg, both Jacob and Notional

have a horse in this race, and both do well if Sif does well, and neither wishes to be unclear about that)

Today I checked into indicator transactions provided to me by Shayne Rarua from Notional, read through the code, and spoke with:

Sif Team Members On Call

- Jon Hancock
- Grant Zukel
- Lance Zukel

Validators On Call

- John MacCloud from ConsensusOne
- Jacob Gadikian from Notional

Validators actively consulting on these issues but not on call:

- Blockpane
- Validato.rs
- Consensus One
- Notional

Before the call I was strongly recommending that Sif halt their chain.

During the call, we came to consensus that the most likely correct sequence of events is explained above.

I'm now recommending that Sifchain use the admin keys to disable liquidity protection and lpd. I think that this will resolve all major issues with the chain.

Desired Result

- The price of Rowan should normalize between Sif, Osmosis, and Ascendex.
- IBC and ethereum assets will no longer be on sale at Sif
- Sif's margin features should be fully usable again
- Sif should acquire price stability and be a usable product again

Mitigation: Validators

- Increase your gas price by 5x to reduce the transaction volume on the chain. Unlike botspammers, regular users who want to use the chain tend to be happy to pay for transactions.
- Monitor the number of transactions in blocks that you propose. Test a few transactions. The goal is to be priced high enough to make spamming sif to death impractically expensive.
 - Sif is growing at a very rapid pace due to the presence of so much spam.
 - This poses a risk to the chain and its users, while increasing the cost of operating infrastructure for Sif dramatically.

The Next Version of Sifchain:

The admin account should be removed

It was designed to allow the team to act rapidly in case of emergency, but centralizes Sif's functionality and pose a set of risks to the chain and its users, be disabled in favor of some flavor of:

- Rapid governance proposals that allow both validators and their delegators to opt to disable pools.
- A multisig composed of 66% of VotePower.
- Another solution that moves the ability to enable/disable features of sifchain away from the team and towards bonded stake, reducing the scope of risk for the chain generally.

code should be clearly commented on each function and variable

- Improves readability and makes audits easier

Variable names should clearly relate to what they do

- Improves readability and makes audits easier

Code should be formatted and linted

- Golangci-lint v1.5.0 using go 1.19 (for the linter itself, not the chain)
- Linter exclusions should be made per-line instead of globally

GlobalFees Module

- Tgrade / Confio have developed a cosmos-sdk module that allows for chains to set gas prices as a global, consensus-enforced parameter. This will provide users with greater consistency around tx pricing.

Remove Liquidity protection and LPD

- These modules allowed for arbitrage that resulted in user harm, and should be removed from sif completely.

Significantly Increase Gas Prices

- Generally speaking, chains in the cosmos ecosystem set fees too low to provide protection against griefing. The community should use globalfees to attempt to keep transaction pricing no lower than \$.02/tx

Investigate Precision Issues that may affect gas pricing

- Blockpane reports that he has been unable to determine a value for gas prices that allows some transactions while blocking others. He suspects that there's a precision issue affecting Sif's gas pricing.

Closing disclaimer: While I think that I have a full understanding of the situation, I might not. I can't assure anyone that this is a safe plan and every action could have unintended consequences up to and including the total failure of Sif. Based on the information I have at hand and accumulated knowledge of cosmos chains, I anticipate Sifchain achieve stabilized prices very shortly after Sif's pools are re-enabled.

Not a safe plan (there is no safe plan), but there's clear consensus from validators and team that this is the best plan.

THIS PLAN ADDRESSES THE #1 USER COMPLAINT ABOUT SIFCHAIN AND ONCE IT IS EXECUTED, IMMEDIATELY TERMINATES ALL PRICE / LIQUIDITY SHAPING METHODS USED ON THE SIF BLOCKCHAIN.

NOTIONAL