TL;DR

- We introduce the hypothetical idea of decentralized reinsurance pools (DERPs) to enhance the crypto insurance landscape.

- A DERP would be a pool of capital that underwrites a collection of retail-facing insurance pools and is simultaneously managed by them.

- DERPs help consumers assess insurance quality and raise the creditworthiness of their constituent pools.

Overview

If insurance is useful in traditional contexts, it must be doubly so in crypto, where risks and volatility are far higher. But insurance in crypto markets has been precluded from reaching its full potential because crypto insurers themselves can be risky and hard to evaluate.

This blueprint proposes a solution oriented around reinsurance

(i.e. insurance for insurers). Specifically, it proposes decentralized reinsurance pools (DERPs)

— funded by retail-facing insurance pools — as ways to mutualize losses and remove opacity. DERPs directly underwrite their constituent pools to improve their solvency profiles. Moreover, an insurance pool's participation in a reputable DERP provides a clear public signal. If the operational challenges can be addressed, DERPs could bring the sophistication and efficiency of traditional insurance to crypto without severely compromising crypto's decentralized ethos.

Status Quo Shortcomings

Given the elevated risks of hacks, scams, and financial turmoil, insurance in the crypto world seems critically important. But despite the market need, the industry remains tiny in notional and relative terms alike. DefiLlama (as of June 21) notes that the total value locked (TVL) by insurance protocols is $450 million, compared to the $75 billion total in decentralized finance. For reference, existing protocols primarily insure smart contract risk and hacking risk, although a few also underwrite financial events (e.g., InsurAce wrote coverage on the de-peg of UST).

Arguably, this limited take-up is due to the fact that insurance in the crypto world lacks a rich ecosystem of regulators, reinsurers, and auditors. Without this ecosystem, crypto insurance pools in the status quo face two stark choices:

1. They can be 100% collateralized, which is an inefficient use of capital and inhibits the protocol's scalability[1]

2. They can be undercollateralized, which is capital-efficient. But in turn, they must contend with two new problems[2]

3. Consumers have limited abilities to assess the riskiness of insurance protocols

(which requires sophisticated mathematical modeling). As such, irresponsible pools may maximize risk; responsible pools will find themselves out-competed.

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While not perfect, the insurance industry in traditional financial markets solves these problems by picking the undercollateralized option and then adding two defense layers:

1. Insurers must submit to regulation (a [mix of state and federal regulators](#) in the US). Consumers thus know that any firm selling insurance is sufficiently creditworthy and reliable, without having to perform due diligence.

2. Insurers contract with reinsurers to cover losses that they are unable to meet during episodes of distress. This is illustrated in the following graphic:

The Decentralized Reinsurance Pool

Decentralized reinsurance pools (DERPs) can be the solution: they create clear standards for consumers and underwrite risks for retail-facing insurance pools. At the core, DERPs are just reinsurance pools to which the underlying constituent insurance pools provide governance and capital

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To understand the dynamics in more depth, suppose a new insurance pool wants to join an established DERP. The existing participants of the DERP, i.e. the existing insurance pools, vet the new pool. They negotiate a suitable premium based on the new pool's underlying riskiness and its correlation with the DERP's existing risks for it to enter the DERP community. Once the new pool enters, it (or any existing pool) can access the DERP's emergency funds when depleted by payouts to users. This is illustrated in the following graphic:

Critically, this allows the constituent insurance pools to be undercollateralized; but it mitigates the two core problems related to opacity to consumers and financial vulnerability. Of course, it is straightforward to understand why DERPs solve (or at least mitigate) the backstop issue.

The informational aspect is more subtle but just as critical. Under this model, the cognitive burden of assessing a pool's risk shifts from the insurance-naive (consumers) to the insurance-savvy (other insurance pool operators). Now, consumers only assess whether an insurance pool participates in a reputable DERP or not

, as a measure of riskiness. Existing pools in the DERP — whose managers have better understandings of insurance risk — assess the new pool in granular detail and set customized premiums based on the entrant's riskiness. This removes the incentive for irresponsible pools to maximize risk and rewards responsible pools with lower premiums.

Private Over Public Standards

At its core, DERPs bring private standards to crypto insurance

in lieu of the public standards that regulators impose on traditional insurance firms. This is not a perfect solution, and we should not be cavalier about the disadvantages. In particular, we see three key potential pitfalls:

1. DERPs may still prove irresponsible or inept in assessing the riskiness of other insurance pools. They are incentivized to perform reasonably well because they are responsible for each other's losses — but they still may be flawed assessors.

2. The governing bodies of reputable DERPs may utilize their market power to block competitor insurance pools (even responsible ones) or charge them unfairly high premiums. Again, this can be mitigated by competitive markets and transparent selection processes, but those risks will remain.

3. While it is easier for consumers to assess the quality of the backstop under this model than in the status quo, consumers still have to do some due diligence on the quality of DERPs and so could still be misled.

On the other hand, there are potential advantages that private standards have over public standards, such as a lower risk of regulatory capture or slowness.

But ultimately, this comparison is hypothetical because public regulators have not yet implemented standards for crypto insurance. Thus, the approach of private standards outperforms the status quo, which lacks any standards.

Dynamic Challenges

In this article, the operations of DERPs are described at a given snapshot in time. However, the key challenge will be operationalizing these protocols over time

. As we focus on the framework rather than the operational details in this article, we do not detail the solutions. We identify the core challenges:

1. DERPs need to build and maintain good reputations to provide clear and credible signals to consumers. As such, they must overcome the "cold start" problem to seed their reputations. Moreover, they must overcome ongoing threats to

their reputations, e.g. their more responsible constituent pools leave a DERP, or their constituent pools decide to increase their DERP's risk-taking behavior.

2. This proposal envisions the founding teams of insurance pools, rather than retail users, to interact with DERPs. This is essential to keep the informational abilities in the governance process high. However, those founding teams (or their risk specialists) may depart their pools, and retail users may find ways to get involved anyway.

3. Pools may adjust their riskiness levels after the premiums to join DERPs have been fixed and paid. As such, DERPs must build mechanisms to adjust the premiums dynamically or otherwise impose some risk conditions on participating pools.

Conclusion

Traditional finance and decentralized finance need not be disconnected, particularly if crypto is to achieve more mainstream adoption. This blueprint illustrates one conceptual way the two can merge, augmenting the utility of crypto insurance without making key sacrifices.

But this is only one such example. Here at Jump Crypto, we are constantly thinking about ways to port innovations between the two spaces. In doing so, we can improve the depth and maturity of the DeFi ecosystem.

Please let us know what we got wrong or missed, as we would like to understand this subject matter more thoroughly and correctly. Thanks to the research team at Jump Crypto and especially to Mike Setrin and Ben Huan for feedback. This note does not constitute financial advice.

1. This is (implicitly) the model chosen by Ease (formerly Armor), which is the largest insurance protocol measured by TVL on DefiLlama as of June 21. Ease mutualizes losses amongst all staked positions, which corresponds to a fully-collateralized protocol. ↵

2. This is the model chosen by Nexus Mutual, which is the second-largest insurance protocol measured by TVL on DefiLlama as of June 21. Ease (discussed in Endnote #1) and Nexus Mutual together account for 80% of the total insurance TVL as of June 21. ↵

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