Riso: A Decentralized Commodities Exchange

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Abstract

Riso is a blockchain-based commodities exchange platform which leverages the power of distributed ledger technology to address the challenge of transparency and trust in commodity trading while also lowering the barrier to entry for producers and consumers to enter the market. The platform will target burgeoning markets that do not have the advantage of a commodities exchange to hedge crop prices and/or cannot trade at the volumes which exchanges require.

1 Preface

1.1 A Brief Overview of Commodity Exchanges

A commodity exchange is a marketplace where various agricultural products, precious metals, energies, and other raw materials are traded. These exchanges provide a centralized platform for market participants to buy and sell products while hedging their losses, using standardized contracts, such as options and futures. Standardized contracts specify the quantity, quality, and delivery terms of the underlying commodities. These contracts are traded through

open-outcry or electronic trading, with prices determined by supply and demand.
In addition to providing a platform for trading, commodity exchanges also offer services such as price information, storage facilities, and delivery services. They play a crucial role in the global economy by providing a transparent and efficient market for the exchange of commodities, enabling producers, consumers, and investors to manage their exposure to commodity price fluctuations.
The current commodity trading system lacks transparency which often leads to disputes and inefficiencies in the market. Additionally, the existing system involves several intermediaries such as brokers, clearinghouses, and banks, leading to higher transaction costs and longer settlement times.

1.2 A New Model

Riso aims to be a fully decentralized, global commodities exchange leveraging blockchain technology to guarantee transparency, data availability, and transaction finality. To understand why Riso is an improvement over the status quo, one must compare its offerings to the advantages which traditional exchanges provide:

1. Price transparency: Commodity exchanges provide real-time price information on traded commodities, allowing market participants to make informed decisions about buying and selling. However, existing exchanges maintain data ownership. Their order books are locked behind paywalls, and buyers are forced to trust that the exchange is reporting accurate prices. Conversely, Riso's data is transparent and available by nature since its blockchain will necessarily store the entire market history in a publicly accessible format. Additionally, clients do not need to trust the exchange itself, they need only trust the mathematics which govern its functions. Modern exchanges are intermediaries, they own their client's trades. Riso provides an upgradeable framework for the free market to govern its own transactions.

2. Price discovery: The exchange provides a platform for buyers and sellers to come together and determine the market-clearing price of the commodity based on supply and demand. Where Riso improves on this model is by removing trading minimums. Restrictively high minimums, in turn, restrict true price discovery, not to mention, make it impossible for small-scale, local trade to experience the benefits of commodity hedging. Riso would provide a platform which allows for more complex market interactions where several market niches can form around a single product. Geographically localized markets with relatively small transactions could form economic sub-groups which distinguish themselves from the macro trends which, by and large, govern the social perception of a given commodity.

3. Risk management: Commodity exchanges offer standardized futures and options contracts, which allow market participants to manage their price risk exposure and hedge against unfavorable price movements. Riso proposes a less restrictive transactional model which allows for broader financial expression. Instead of restricting contracts to futures and options Riso defines a contract as a set of upgradeable parameters which can be tuned to the producer's financial needs *(covered in section 3)*. This open ended financial model allows for a more thorough hedging process which better serves buyers and sellers' needs.

4. Liquidity: The exchange provides a central marketplace for trading, which enhances liquidity and reduces transaction costs, making it easier for buyers and sellers to find counterparties to trade with. Riso takes this a step further by removing intermediaries and

minimums driving liquidity further up and transaction costs down.

5. Quality assurance: Commodity exchanges ensure that the commodities traded meet certain quality standards, which reduces the risk of default and ensures that buyers receive the expected quality of the commodity. This model, functional as it may be, is restrictive. Products must all flow through the same center before they can be shipped off to their final destinations. This is both inefficient and stifling for smaller, localized economies. Riso proposes a solution in which local businesses which specialize in quality assurance become partners. This allows for trade to happen any time from anywhere, reducing transportation costs. It also stimulates local economies and helps local supply chains grow.

6. Storage and delivery: Commodity exchanges offer storage facilities and delivery services, which enable market participants to take physical delivery of the commodity if required. Riso takes a different approach: the best commodity exchange will never be the best transportation company or storage facility, because they are different products which face very different sets of challenges. Instead, much like the quality assurance issue, Riso connects its clients with local transportation companies, which can much better serve their communities.

By lowering barriers to entry, Riso can bring the benefits of commodities trading to untapped markets; it can bring improvements to existing markets; and can promote a more equitable and globalized economy.
Riso offers a promising solution to the challenges facing the current commodity trading system. The platform will improve transparency, reduce transaction costs, and enhance trust in the market. By eliminating intermediaries, the platform will enable buyers and sellers to transact directly, leading to faster settlements and improved efficiency.
Our mission with Riso is to create a better logistic-financial layer which will help economies retain the profit they generate and flourish.

1.3 Design Philosophy

Riso is intended to be the best global framework for trading commodities. For a novel product to become the best at what it does it needs to specialize in accordance with a clear vision and offload as much unrelated labor as possible. This is why Riso will be built such that it only fulfills its core functions, but makes it easy for users to plug in other specialized products to fill in the gaps. By serving only its core functions and leaving the rest to other specialized teams Riso creates a platform for other companies to thrive. It would allow each component of the ecosystem to perform its function to the best of its ability. Riso will never be the best storage facility, it will never be the best messaging app, but Riso will make it easy for buyers and sellers to connect themselves with the solutions that are going to best serve their needs. Riso serves to transact and record transaction history while allowing communication channels, delivery services, and legal systems to perform at their best where necessary.

2 Transaction Model

The central problem for a decentralized commodities exchange is making sure that physical products reliably change hands. Riso's proposed solution is called the *open-lockup model*.
The open-lockup model is a novel method for designing standardized commodity contracts which lets the seller designate custom functionality for their contracts while protecting buyers' funds from fraudulent transactions. It

works by delineating a set of upgradeable contract presets:

1. Cost of purchasing the contract.
2. The price per unit of volume for the commodity.
3. The volume of product to be traded.
4. Choosing to give the right to purchase or the obligation to purchase a chosen volume of product.
5. The finality date for the contract. The date by which a physical product *legally* changes hands (note that this does not mean that the physical product was transported, it simply means that on-chain records will indicate a change in ownership of the supposed product).
6. Designating which party (the buyer or the seller) is responsible for transportation and its related costs.

This open model allows for markets which better serve the niche requirements of commodity producers and purchasers. It creates an upgradeable set of conventions which allow the market to optimize itself.

The lockup model adds a layer of security for buyers. It freezes the buyer's funds until a contract's finality date, at which point, the buyer will either verify that the physical product exists, is of good quality, and is changing hands, or they deny the quality/existence of the physical product and their funds are returned. For all transactions, complete or incomplete, there is an on-chain record of the transaction, so either party can use such information to take legal action against the other if they feel compelled to do so. A blockchain provides the ideal paper-trail to build a solid case and would disincentivize fraudulent activity.

The open-lockup model provides an open-ended model for creating commodity contracts which can act as options, futures, spot deals, and any permutation of the three. It also provides an economic model which disincentivizes fraudulent actors from misappropriating the product.

3 Implementation

Riso will leverage the decentralized and immutable nature of blockchain to create a transparent, secure, and trustless commodity trading platform. Blockchain technology provides an environment natively suited to notarizing contracts and tracking ownership, which makes legal disputes over physical transactions more objective and expedites legal proceedings.

3.1 Overview of Substrate

Substrate is an open-source blockchain development framework created by Parity Technologies. It provides a modular architecture that allows developers to create customized blockchain networks with their own unique features and functionalities. Substrate is built using the Rust programming language, which provides a high level of performance, security, and reliability. It allows developers to create blockchain networks with a range of features, including smart contracts, governance mechanisms, and customizable consensus algorithms. The architecture of Substrate is based on a set of core components, or "pallets", which can be combined to create a complete blockchain network. These pallets include modules for identity, assets, governance, consensus, and more. Developers can use these pallets to build their own custom blockchain network, with the ability to modify and add functionality as needed.

Overall, Substrate provides a flexible and powerful framework for blockchain development, allowing developers to create customized blockchain networks with the features and functionalities they need. Creating an application specific blockchain, in such a way, gives Riso developers full control over the

initial product, and, importantly, the fees that clients pay.

3.2 Building a Commodities Exchange with Substrate

Riso is built using Substrate with the following pallets and modules:

1. Identity pallet: This pallet provides a mechanism for creating and managing user identities on the blockchain, which is essential for user authentication and authorization in a commodity exchange.
2. Asset pallet: This pallet allows for the creation and management of asset tokens on the blockchain, which can represent commodities or other tradable assets. This module enables the exchange to create tokens for different commodities and trade them on the platform.
3. Treasury pallet: This pallet enables the management of the exchange's treasury, which can hold funds and other assets to facilitate trading on the platform.
4. Trading pallet: This pallet is responsible for managing the trading process, including order matching, execution, and settlement. It enables users to place buy and sell orders for different commodities, and execute them based on market conditions.
5. Price feed pallet: This pallet provides a mechanism for feeding price data to the blockchain, which is critical for determining market prices and executing trades.

Using these pre-build and custom pallets, Riso's blockchain-end can implement the entirety of the open-lockup model.

4 Summary

Riso is a decentralized, blockchain-based commodities exchange platform that aims to address the lack of transparency and trust in traditional commodity trading while also lowering the barriers to entry for producers and consumers to enter the market. Unlike traditional commodity exchanges, Riso provides complete transparency by storing its entire market history on a public blockchain, enabling clients to trust only the mathematics which govern its functions. It removes trading minimums, allowing for more complex market interactions, forming economic sub-groups that distinguish themselves from macro trends. Riso also provides an open-ended financial model for contracts that can be tuned to the producer's financial needs instead of restricting them to futures and options. Riso further reduces transaction costs and enhances trust in the market by eliminating intermediaries and enabling buyers and sellers to transact directly, with the paper trail to take legal action in case of problems. Riso provides an ecosystem where businesses around the world can cooperate and drive forward a more efficient global economy.

5 Disclaimer

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