SYMMIO : A protocol for Intent-Based permissionless derivatives.

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1 Abstract

This paper introduces a method for digitalizing bilateral Over-The-Counter (OTC) derivatives in a permissionless, on-chain manner. As blockchain technology revolutionizes financial markets, there's a growing need for transparent and robust on-chain derivative trading mechanisms. In our implementation, we integrate:
I. An Intent-Centric execution environment.
II. A peer-to-peer (P2P) bilateral escrow system for settlements.
III. Economically motivated MEV researchers, called "Arbiters" who are tasked with: (1) Continuously verifying the solvency of all participants, and (2) Mediating potential parameter disagreements.

Utilizing this novel combination of rather distinct technologies, we have developed what we coin as "Symmetrical Contracts." This architecture facilitates the design and trade of symmetrical, trustless and permissionless settlements of synthetically created digital derivatives amongst two or more parties.

1.1 Symmetrical contracts as n-Dimensional Order Books

Envision each **parameter** foundational to derivatives trading as **one dimension**. Traditional order book-based exchanges operate with a singular parameter for order matching, exclusively, the price. This limitation curtails market diversity and constrains the competition surface for Market Makers. Our approach defined as an n-dimensional framework for order matching, on Intent-based architecture, which attributes are set to empower Liquidity Providers with unprecedented flexibility. Enabling to craft derivatives tailored to any market or demand, adhering to a multitude of rule sets - from Market Maker-specific funding to adjustable price ranges or self-imposed Margin requirements, while merely scratching the surface of the potential parameters.

1.2 A protocol to enhance the evolution of a Liberal Derivatives Market

SYMMIO allows technically for anything to be traded synthetically, that is trusted by two parties, and verified by a collective of neutral observers. We believe such an adaptable on-chain derivatives system has the capacity to not only expand dynamics for the cryptocurrency industry but also holds the potential to fundamentally transform the traditional derivatives landscape.

Harnessing our contemporary technological advancements facilitates the emergence of an unfettered market centered around derivatives. The dynamic nature of this evolving space will be defined by the ability of Liquidity Providers (LPs) to optimally tailor intent parameters. Parameters such as pricing, funding rates, maintenance margins, and other mutable preferences, inherent to this liberal marketplace, will dictate market traction. It is posited that LPs showcasing proficiency in aligning with these ever-evolving preferences will be able to gather a significant market share.

This framework can be characterized as a "Intent-Based Peer-to-Peer Bilateral Derivatives Protocol." This nomenclature pays homage to its antecedent from traditional finance: "Bilateral Over-The-Counter (OTC) Derivatives."

Similar to how Amazon enabled the building of eCommerce stores on its platform, SYMMIO provides the infrastructure for third parties to build exchange broker offering unique financial instruments such as synthetic stocks, CFDs, OTC derivatives, and prediction markets, on top of SYMMIO contracts.

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2 Author's additional thoughts

The robust expansion of DeFi's user base and market engagement currently hinges on a comprehensive understanding of pivotal elements intrinsic to importance of derivatives in any economical system. he integral role of derivatives in driving sustained economic progression cannot be overstated. These instruments serve as a vanguard against risk exposure, an essential facet for safeguarding returns and curating resilient portfolios. Beyond their protective capacity, derivatives unlock a spectrum of strategic possibilities unattainable with mere spot assets. Moreover, they are quintessential instruments for ascertaining the price of underlying assets. It is imperative for users to recognize the multifaceted advantages derivatives proffer in terms of risk hedging, bolstering market efficiency, and unlocking access to previously inaccessible assets and liquidity..
But current cryptocurrency derivatives markets are still prone to manipulation and centralization of power among a few centralized exchanges, this becomes clear when comparing centralized exchange derivatives volumes against decentralized ones (1) Binance biggest centralized deriv exchange: **17,300,142,188 USD** daily volume, (2) DyDx biggest decentralized deriv exchange: **291,132,572 USD** daily volume (on 4th september 2023), a **six thousand percent difference**.

In an endeavor to cultivate a shared understanding, this treatise elucidates certain foundational financial tenets that, though seemingly rudimentary, have been obfuscated or misconstrued within the cryptocurrency domain, often amidst a deluge of misinformation. It should be noted that the assertions and inferences presented herein are a product of our discerning interpretations and suppositions.

SYMMIO is the brainchild of visionaries with a zealous inclination towards holistic decentralization. We are steadfast in our conviction that a truly unhindered protocol, enabling comprehensive creation, issuance, and trading of derivatives, is instrumental in realizing this aspiration. At its essence, finance revolves around risk transference; derivatives epitomize this medium of risk transference. Unfettered derivatives have the potential to seamlessly integrate Centralized Finance (CeFi) with DeFi, bridge diverse blockchains, and actualize genuinely trustless Real World Assets (RWAs), all while obviating the need for regulatory green lights that predominantly serve as gatekeeping mechanisms.

Given an unbounded temporal framework, a free market invariably gravitates towards an optimal equilibrium. Conversely, markets fettered by limitations and regulations inexorably devolve into suboptimal states over time. Such constraints impede the organic evolution, a process inherently underpinned by candid trial and error. While failure is an instructive facet of progress, imposing barriers to potential failure is detrimental. Although we recognize the protective ethos underpinning regulatory frameworks, we argue in favor of a system intrinsically designed for protection rather than one reliant on external enforcement. Our mission is to pioneer such a system, and we earnestly solicit a myriad of perspectives and insights to refine our offerings, ensuring they resonate with the diverse requirements of our users.

3 Introduction

3.1 The role of derivatives in global markets

Different types of institutions utilize derivatives to increase the yield of certain assets, reduce risk, take advantage of arbitrage opportunities, simple market making, get directional exposure or converge to delta neutrality. They are an excellent tool for market participants to gain access and exposure to a broader range of assets and strategies. The more participants, the broader the range of potential products and the customizability of said products. Increasing the range of derivatives would bring diversity to the digital asset market and make it more resilient. Market participants tend to seek more exposure while reducing risk. Increasing the hedging possibilities can also encourage price discovery and liquidity of assets composing the market by driving bonds, farming, and yield products.

Derivative products can be used to enhance portfolio efficiency. By allowing trading with cross margin on credit, foreign exchange, IR, equity, and stocks, all from one place with the same margin, users can create portfolios with more diversity.

3.2 Hedging Operational Risk through On-chain Derivatives

A distinguishing feature of on-chain derivatives within the cryptocurrency realm is their capacity to empower founders and projects with an innovative risk management tool. Specifically, they can offer derivatives on their tokens as a means of hedging operational risks without actually liquidating them. Through SYMMIO, protocol founders can bestow upon their users the opportunity to capitalize on the token's upward trajectories, while concurrently shielding themselves from potential downturns. This avant-garde mechanism presents an invaluable asset for stakeholders across the cryptocurrency sector. By fostering enhanced liquidity and robustness, it is poised to usher in a transformative era for the market landscape.

3.3 Efficient permissionless onchain derivative markets still missing

The derivative market can be split between market makers (MM), who provide the market, and end-users, who use the market. SYMMIO is building a protocol where end-users can request intents from MM's directly and send them intents to trade these intents. SYMMIO's vision includes derivative market liberalization, increased access, and financial reform.

DeFi has shown efficiency in creating a permissionless market for loans and automated market makers (AMMs), however, there are no permissionless derivative protocols that are sufficiently efficient. The more use-cases there are for derivatives, the more volume will be attracted to the market, and the broader the derivative use-cases become.

3.4 Permissionless system

3.5 The Imperative for Decentralized Derivative Protocols

For a derivative protocol to truly embody the principles of permissionlessness and censorship resistance, it is paramount that it ensures scalability, adaptability, and the absence of a central governing entity with the authority to either restrict user access or impose arbitrary regulations. History has shown that centralized entities, when vested with unchecked power, frequently succumb to conflicts of interest, inevitably implementing restrictive practices that can culminate in severe market distortions. A salient illustration of such a consequence can be observed in the last great financial crisis.

3.6 The 2008 Crisis: A Cautionary Tale for Centralized Systems

The 2008 financial crisis stands as a stark reminder of the pitfalls of centralized financial systems. This devastating event, rooted in the obfuscated and often duplicitous actions of investment banks, was further exacerbated by the unchecked excesses of banking lending markets. Such entities, leveraging their immense power and influence, maximized profits until the very brink of market saturation. Subsequently, with audacious alacrity, they manipulated the rules to position themselves advantageously, even as the market crumbled around them. What's more disconcerting is the protective umbrella extended to them by governments and regulatory bodies—entities ostensibly established to safeguard consumers.

This historical debacle serves not as an indictment of banks per se, but rather as a critique of a system that provides avenues for unchecked power and the potential for manipulation. When entities can both set the rules and participate in the game, it paves the way for structural vulnerabilities and corruption. This crisis thus accentuates the critical need for decentralized structures in today's derivatives landscape, offering a safeguard against the repetition of such financial catastrophes.

3.7 SYMMIO: A Decentralized Paradigm Beyond Controls

Inspired by Satoshi Nakamoto's quest to levitate financial markets above the centralized control of those that created and profited from the 2008 financial crisis, is SYMMIO's vision of censorship resistance and decentralized derivatives, believing that it is not money which is most prone to corruption, but derivatives.

Crucial to SYMMIO's decentralized vision is the concept of neutral parties as "Arbiters". These entities facilitate permissionless operations by empowering smart contracts with input receptivity. While it would be utopian to anticipate unanimous agreement between parties for every transaction, practicality dictates a different approach. Hence, in SYMMIO's design, parties exhibiting duplicitous behavior are subjected to punitive measures, ensuring the integrity of transactions.

Arbiters help Symmetrical Contract deployers and participants to create an hyper efficient market through energy exchange between low informational surface areas (onchain contracts) and infinite informational surface areas (offchain world) via well defined incentives structures.

With a richer dataset, that is robust, at its disposal, SYMMIO opens the gates to innovative derivative products, incentivizing competition between a more diverse set of market participants. The efficiency of the Over-the-Counter (OTC) derivatives market, historically, has been inextricably linked to the performance of the underlying asset. Recognizing this, SYMMIO's "Symmetrical Contracts" are meticulously crafted to align with existing financial systems, SYMMIO doesn't fracture liquidity, it aggregates it.

However, the emphasis here isn't on stringent traditional adherence, but on fostering a competitive ecosystem where rulesets themselves vie for relevance. This democratized approach allows participants to craft bespoke frameworks, infusing the space with dynamism and adaptability.

Moreover, the modular nature of Symmetrical Contracts within SYMMIO paves the way for intriguing prospects such as cross-margining under specified conditions. An illustrative example of this could be the seamless cross-margining between stocks from two traditionally non-cooperative jurisdictions. By democratizing access to the OTC derivatives market, SYMMIO extends its reach to encompass a wider demographic, from seasoned institutional investors to the everyday retail investor. The upshot of this inclusivity is the ability to tap into international markets without the proverbial red tape of governmental regulations. Coupled with the streamlining of the OTC trade process, SYMMIO doesn't merely alter the derivatives landscape; it revolutionizes it, laying the foundation for a more resilient, efficient, and inclusive financial future. One of SYMMIO DAO's key future roles is the education of practitioners in the areas of law, computer science, statistics, in programming derivative contracts, on boarding Market Makers and Exchange Brokers. Additionally, by reducing operational costs for building, resources are freed up for product development and innovation.

3.8 Legislation and regulations through code

Translating decades of financial evolution into code allows a hyper-efficiency of the market with elements such as instant settlement and closeouts. Furthermore, it allows transparency and clarity of understanding because it is not subject to the interpretation of a judge. TradFi regulations are a major hurdle for initiates, requiring a lot of energy, and non-initiates because it blocks them. A team of lawyers, a risk desk, and many more resources are required to create and manage products, limiting small market participants to start a financial entity or innovate the financial sector. DeFi derivatives protocols built on immutable code ensure that no party can break the rules, making them simple to use and easy for development. Users can begin trading with very little barrier to entry, such as know-your-customer (KYC), and additional barriers created by big investment banks that come with more complex derivatives.

3.9 Transparency

A transparent market promotes increased liquidity, coupled with increased efficiency, which leads to improved asset pricing. When market participants have more trust in a market and less fear of the unknown, participation and liquidity increase, increasing efficiency. The more efficient a market is, the more accurate an asset is priced, decreasing the risks of pump-and-dumps.

On-chain activities mean users and traders have transparency and knowledge of MM's activities, increasing trust in the market. The more data available to analyze a market, the more trust users can have in phases of uncertainty, resulting in less reactionary trading. This results in a decrease in volatility, creating a feedback loop of trust in the market. Free competition between market makers, risk management tools, defined market rules, and infrastructure, makes for a more attractive and efficient market.

3.10 Automation

Automated, simplified derivative products could enhance growth and stability in the market. But the current DeFi framework doesn't allow for complex financial products due to a lack of order throughput and generally not being able to compute complex functions. By creating a lightweight framework that behaves automatically, while being hundred percent economically sound and technically robust, resources are freed up to focus on vision and innovation rather than constantly building and redesigning core infrastructure. DeFi products that reduce risks, such as using options and shorts as hedging strategies, help to build a robust DeFi portfolio. Additionally, this attracts TradFi to the DeFi market due to decreased risk and the option of taking large positions.

Introducing a global close-out netting system across all blockchains promises to be a massive improvement to the current TradFi model and could be considered the "holy grail" of modern financial theory. In the traditional financial sector, parties require daily settlement on open positions because they cannot trust counterparties to be able to pay themselves after more than one day of market deviations. In blockchain, however, this is not a concern, in SYMMIO solvency is verified every second in perpetuity, settlements are instant can't be interrupted or reversed, and liquidations take only a few seconds, not months.

4 State of the market

The current market for derivatives in DeFi has some major flaws that can be broken down into 4 main categories.

4.1 Liquidity pools (virtual Automated Market Makers / vAMMs)

(examples could be gains network or GMX v1) In protocols such as Uniswap, liquidity providers (LPs) add collateral to a global liquidity pool, which is then used to trade against users. When this system is applied to synthetics or derivatives, users are automatically trading against the liquidity pool, creating a risk for the LPs.

To combat this, a series of solutions are implemented to extract more from the trader and create more value for the liquidity providers. These can come in the form of virtual liquidity, funding, liquidation fees, and more.

A system such as the one explained above operates under the assumption that the combined markets are delta neutral and that there are generally more losers than winners in day-trading. Because of the risk of market manipulation, the number of tradable assets and the amount of leverage available is limited. This liquidity due to the above-mentioned risks results in almost no volume for onchain synthetics or derivative trading in the cryptocurrency markets.

Additionally, to discourage users from holding long-term positions, regular interest rates, called funding, are often charged, making long-term holds unsustainable. This adds to the lack of flexibility, making this system unsuitable for derivatives trading.

Semi-permissionless protocols, despite their allure, do not address issues on a market-wide scale. While these protocols grant users the flexibility to establish bespoke pools with tailored parameters, facilitating trades through oracles or bonding curve strategies, they rely on restrictive rules to compensate for their economical weak designs. The requisite liquidity for every strike, termination, and asset offers a degree of customization, but its practical efficiency remains questionable.

4.2 Hedged Tokens / Isolated Long-Short Pools

Consider platforms like Binance's leveraged tokens or models similar to Kwenta, which implement heightened funding charges on Long/Short imbalanced sides.

On a theoretical plane, these systems seem sustainable. Yet, inherent imbalances can introduce notable spread discrepancies amidst trades. In markets with limited liquidity, traders might be burdened with hefty fees. Additionally, the introduction of dynamic leverage can compromise the trading experience, acting as a barrier to the development of intricate or worthwhile leveraged financial products.

As a case in point, on the 09th of September, Kwenta's YFI funding rate escalated to an eye-watering 210 percent on an annual basis. This hike was driven by a Long to Short ratio tilt of 60/40 percent, a skew that, while significant, is not exceedingly pronounced.

The foundation of a system that levies such excessive fees due to ratio imbalances isn't just unsustainable—it lacks economic prudence. The crux of the problem isn't merely the skewed ratios but the economic model underlying it. This model, coupled with the risks thrust upon Liquidity Providers (LPs) and their consequent incapability to insulate themselves against inbound trades, amplifies the issue. Since these trades aren't causally derived from market-making, LPs find themselves in a bind. Once they commit their tokens to the LP pool, they implicitly agree to execute any trade, at any given time, under the platform's prescribed rules.

Drawing a parallel, it's akin to handing over an item to someone with the instruction to list it on eBay, effectively declaring, "I'm open to selling this to any bidder, at any price, and at any time..." While this might be fine on paper, its clear that the market cannot be defined or leashed by a few imposed rules, markets are dynamic ever changing and bear infinite risks to those who dont pay attention.

4.3 Order book models

On-chain order books are inefficient by nature, as they need to be able to handle a high volume of updates. One solution to this would be a fast blockchain, but we are convinced that such a blockchain, is merely impossible, and even if someone would solve the blockchain trilemma, a centralized orderbook will still be thousands of magnitudes faster than this app specific orderbook blockchain.

A decentralized order book, we believe is in fact an oxymoron, an orderbook should be as centralized as possible to ensure maximum throughput at all times, given that assumption we embrace the fact that orderbooks ultimately can't be decentralized and propose a distributed RFQ system as solution, where every MM and Exchange Broker can operate a local orderbook that they stream through a single messaging channel to all Exchange Brokers.

In SYMMIO MMs and Brokers are both incentivized to offer best execution, creating an environment that has no need to decentralize an orderbook, instead aligns all players in the system for optimal pricing.

5 Team Experience

During the years 2019-2020, our team coalesced around research in decentralized stablecoins, oracles, and derivatives. Our primary objective was the development of an on-chain derivatives system, henceforth referred to as "v0.1" (a vAMM based model). This prototype was tailored to enable trading of up to 500 assets. Intriguingly, its foundational economic structure paralleled the characteristics of GLP, a novel product propagated by GMX. Central to this model was a bonding curve-based liquidity pool. This mechanism seamlessly balanced the unrealized profits and losses (uPnL) of users against an established reserve of ETH. A notable hallmark of these vAMM-LP tokens was their liquidity on secondary trading platforms and the great variety of assets that could be traded.

Our continuous engagement with this system highlighted certain vulnerabilities typical of the vAMM model. Alarmingly, these observations instigated concerns regarding its long-term sustainability.

In light of these revelations, our focus inevitably gravitated towards research in the field of quote-based bilateral OTC derivatives, which later evolved to SYMMIO. Concurrently, during the nascent phases of SYMMIO's research and development, we also embarked on the journey of crafting v0.2 (vAMM-v2). This revamped model featured a liquidity pool poised to bolster the uPnL of traders, primarily through the under-collateralized minting of a fractional reserve stablecoin, very similiar to the model Gains Network v1. However, it was not devoid of its challenges, especially when ensuring consistent payouts to winning participants.

In both v0.1 and v0.2, token holders were inadvertently thrust into the role of counterparties. This framework stifled their autonomy, depriving them of the discretion to oversee trade executions. Strikingly, analogous challenges are evident in contemporary vAMM models, as seen with platforms like GMX and the Gains Network.

This treasure trove of hands-on experience and iterative refinements deeply influenced our trajectory towards SYMMIO. Melding our comprehensive expertise with rigorous testing yielded the Intent-Based solution for Symmetrical Contracts, which we proudly present as SYMMIO.

6 Overview - Infrastructure

6.1 Pillars of Symmetrical contracts

I. intent-centric execution environment, II. a p2p bilateral escrow system for settlement, III. and economically incentivized MEV researchers, termed "Arbiters", responsible for: (1) Continuously ensuring the solvency of all involved parties, and (2) Arbitrating potential price disputes.

- isolation (in various degrees) - mirrored positions inside isolated instances - outside observers as drivers - customizable quotes, complexity in quotes - Oracleless - n-dimensional orders

6.1.1 Isolation

The SYMM derivatives engine operates on the principle of isolating trades between parties, PartyA and PartyB. Within this peer-to-peer trading environment, both parties are treated equally, as they contribute collateral and represent one side of the transaction. The Long position of one party corresponds to the Short position of the other, and a trade can only be executed upon finding a suitable counterparty. The primary objective of the SYMMIO platform is to facilitate connections between PartyA and PartyB, enabling trades to be established between them.

In recognition of the inherent duality of our world, we are confident that this innovative approach will have a lasting and transformative impact on the trading landscape.Profits and losses are effectively contained within the agreement between these two parties, preventing losses from impacting external parties. While users can share PnL among various PartyB participants, it is essential to understand that both parties maintain equal rights. In traditional terminology, the "taker" and the "maker" are treated identically. If the maker lacks sufficient collateral, they will be liquidated in the same manner as the taker.\textit{\textbf{This approach distinguishes SYMM IO from other liqu

6.1.2 Decentralized Oracles

: While the AMFQ system itself is oracle-less, SYMMIO employs threshold-signature-based oracles to help solve disputes between parties. These oracles act as economic-driven, third-party market observers, ensuring the trustless and secure functioning of the system in times when PartyA and PartyB involved in a trade don't agree on preset rules or prices.

6.1.3 N-dimensional Orders:

SYMMIO introduces an n-dimensional order system, which enables liquidity providers to create derivatives with their preferred rulesets. This approach allows for creating an unlimited variety of markets instead of the traditional single-variable parameter model based on price alone.An example structure of a quote from the original Whitepaper.

A flowchart illustrating the lifecycle of a "automated Market for Quotes" in one of example implementations.

6.1.4 Immutable "Intents":

Users can create an immutable "Intent" on the blockchain with their desired trade parameters. When a counterparty accepts the request, a trade gets executed, outsourcing the order matching to 3rd party systems off-chain, achieving maximum throughput while keeping integrity through on-chain settlement.

6.1.5 Minimized Trust Trade Setup:

To ensure minimal trust and increased security, both the buyer and the seller lock the necessary collateral in the AccountManager engine, resulting in a symmetrical agreement.

6.1.6 Oracle-Verified PnL:

A neutral Oracle party verifies the uPnL-based balance changes of each party at any given time, ensuring the solvency of counterparties and enabling smooth and secure trades.

6.1.7 Free Market for Derivatives:

SYMMIO fosters a free market around derivatives, where liquidity providers compete to offer the most desirable parameters, such as price, funding rate, and maintenance margin. This competition drives innovation and creates a vacuum for liquidity, sucking everything into the SYMMIO ecosystem.

1. A part maintained and built by SYMMIO DAO, the "SYMMIO Core".

2. A part built by third parties on top of SYMMIO infrastructure, for example, customized Symmetrical Contracts, independent driver systems for communication and delivery of payloads as well as third party frontends / exchange broker.

Contract Hooks and programmable "Symmetrical Contracts" could be used to deploy and modify additional or existing contracts that inherit the core Intent logic but enable MMs to customize their offering to an infinite array of possibilities. SYMMIO acts as a custody platform and an incentivized ecosystem but is not responsible for the usage by third parties of the permissionless and censorship resistant architecture.

6.2 Symmetrical Contracts

In the following example, the collateral inside a Symmetrical Contract is in cross-margin, meaning that every position shares the same balance. If a position wins and another loses and the total of all positions results in a negative balance, then the overall set of positions are liquidated.

Let's look at the example of the life of a position.

1. Once user Party A opens and adds collateral (1000 USD) to a Symmetrical Contract, they have all of their collateral available and no positions.
2. They open a trade with Party B of 20 contracts of TSLA long with a CVA (credit valuation adjustment) of 100 USD. CVA is collateral that is isolated and locked to pay liquidation fees and incentivize avoiding liquidation.
3. After some time, the user opens multiple other positions, 100 EURJPY long contracts with Party B with a CVA of 75, and 3 BTC long contracts with Party C with a CVA of 50 USD. We can see that the CVAs are deducted from the available balance and can also note that the TSLA position is already in the negative. However, this won't affect the balance until a close, the balance gets settled, or the position is liquidated.
4. The user closes their EURJPY position that is in a loss of 100 USD. In the event of the closing, 100 USD is transferred from the user's account to Party B's account, the counterparty. The available USD balance is updated and the CVA allocated to the TSLA position is unlocked and considered as available balance.
5. Later, a market crash may occur, and the user runs out of margin. This means that their BTC and TSLA positions have a greater loss than the available balance (loss of 760 USD and 750 USD available), with the CVA not taken into the available balance.
6. Party A is liquidated and their USD is distributed between Party B and Party C, who are the counterparties.

   (This example, assumes that the PartyA is in Cross with PartyB and PartyC at same time, current SYMM v0.81 supports this, in SYMM v1.0 isolated positions will be introduced, those can be oracle-less.)

It is therefore possible to create a system that verifies the price of any asset inside a Symmetrical Contract or position. The goal of a Symmetrical Contract deployer (SYMMIO DAO, individual Exchange Broker or MarketMakers) is to have the most possible number of different contracts and assets while keeping the Symmetrical Contract safe and secure, through an open market of incentives and self-regulation through optimization and competition.

Independent MEV researchers help Symmetrical Contract deployers and participants to create an hyper efficient market through exchange of low informational surface area (onchain contracts) and infinite informational surface areas (offchain world) via well defined incentives structures.

6.3 Sending an INTENT on-chain

After allocating to a Symmetrical Contract, there are multiple ways a user could open a position but this Whitepaper and the current SYMM v0.8 MVP focuses on one.

The user sends a set of parameters that correspond to a type of position. We call this an INTENT.

6.4 A (perpetual) Swap build on Symmetrical Contracts (SYMM v0.8)

The Underlying Philosophy
At the heart of SYMM v0.8 lies a foundation built on flexibility and customizability. The objective has always been to craft a system that is not just responsive to current market demands but is also adaptable to the ever-evolving financial landscape. This approach allows users to not merely interact with the ecosystem but to contribute, innovate, and redefine it. **The vision of SYMMIO is Collaborative** SYMM v0.8 stands as a testament to what can be achieved when DeFi meets CeFi. But it's more than just a platform; it's a canvas. The actual limits, if any, are dictated by imagination, innovation, and the ability to find counterparties that resonate with a financial product. In summation, while SYMM v0.8 currently offers (perpetual) swaps, its true potential lies in its adaptability, and the myriad of financial instruments it can support. As the space evolves, so too will SYMMIO. **The Versatility of SYMMIO**
The architecture of SYMMIO is its greatest strength. Beyond the aforementioned features, the contract designs within SYMM v0.8 can be modified to cater to a vast range of financial instruments. Examples include:
Expirable Swaps: Contracts that have a predetermined expiration date, post which they can no longer be exercised.
American Options: Contracts that allow buyers to exercise the option at any time before, and including its expiration date.
European Options: Contracts wherein the option can only be exercised at the expiration date. These are just a few instances, and the potential expands with each unique idea and requirement that users bring into the ecosystem.

6.5 Current Offerings

As of the present version, SYMM v0.8 offers a product that closely mimics the user experience associated with perpetuals futures, the most traded derivatives in cryptocurrency to date Binance is the largest crypto derivatives exchange, with a market share of 59.8 percent and derivatives trading volume of 1,763.3 billion USD in March 2023.May 30, 2023* (source coingecko)
Key features include:

Funding: The system supports continuous funding to ensure that hedgers can offset risks on traditional perpetual markets and preventing any party from bearing undue risk.

Liquidations: As discussed earlier Arbiters are observing solvency at all time to handle liquidations, ensuring market participants are solvent and therefore creating stability and confidence into the system itself.

Settlement: Unlike other onchain swap products, SYMM v0.8 allows for settlements at any moment, ensuring that both counterparties have sufficient collateral at settlement, providing unparalleled flexibility to the user and the ability to create perpetual products ontop.

While the upcoming do draw parallels with a Swap, it's imperative to understand that SYMM v0.8 is not confined to this structure alone.

6.6 Parameters of an example perpetual Swap implementation

A perpetual swap contract is composed of a partyA and a partyB who are betting on a difference in value of an asset, interest rate, etc. If partyA wins something then partyB loses the equivalent amount. We define partyA as the one who initiates the INTENT and partyB as the one who claims the INTENT.

Swap parameters: Our standard swap contracts allow users to close a position however MMs cannot close a position unless their trade is defaulted on and a Arbiter liquidates the position, only PartyA can initiate the closing of the position.

Credit valuation adjustment (CVA aka Maintenance Margin): To ensure that defaulted trades still hold a certain percentage of collateral value in a liquidation event, CVA is assigned to all trades within the SYMMIO ecosystem. CVA is collateral that is locked and denominated in USD and doesn't fluctuate based on price movement, unlike available collateral. All parties participating in a derivative contract have CVA locked into their trade.

When defining CVA, both parties need to study the worst-case scenario in the event of a default, such as replacement costs and others. Another party or entity may consider buying out other positions of the defaulting party at a cheaper price (discounted at CVA value), therefore CVA also acts as incentives for other market participants to buy out defaulted positions, introducing a game theoretical approach to solving OTC derivatives continuous liquidity.

Swap expiration [OPTIONAL] (not included in perpetual swaps offered in SYMM v0.8): It could be important that an MM has some security on the duration of their trades, as they cannot close the position unless the requesting party closes the trade or their available collateral is absorbed and CVA is lost. This is why swaps could have an expiration date.

FVA (Funding added in SYMM v0.81): MMs have costs associated with providing collateral such as fees paid when hedging trades, fees paid when moving assets, credit risk, and other operational costs. To cover these hedging costs a MM may request an APR which is what we call FVA.

Early termination fee [OPTIONAL]: At expiration, a position expires at Arbiter price. In the case of one of the parties wanting to end the position promptly, some additional costs may be accrued such as spread on the hedging position or portfolio rebalances.

Swap initial margin (Swap IM): To ensure that traders are not instantly liquidated, all swaps should have a minimum amount of collateral which is known as the swaps initial margin. Swap IM is only verified when a position is opened.

INTENT expiration: The issuer of the INTENT that we call partyA might not want their INTENT live on the blockchain without needing to spend gas to terminate said INTENT.

Price: On an INTENT, partyA asks for a maximum price. Not asking for an exact price allows for partyB to request a lower price. A Market Maker or "Hedger" , has the option to give the best price to a PartyA without the need to communicate the best price to other users and therefore having potential issues with spreads while hedging due to blockchain latency.

Independent generalized driver systems and exchange brokers (third party frontends) can help users find best price execution, similiar to how CowSwap, UniswapX or DefiLlama Swap provide best Spot execution.

Quantity: Number of underlying securities.
Initial Position Value $(V0) = Price(B0) * Quantity$
Current or Last Position Value $(Vt) = Price(Bt) * Quantity$
Quantity is not limited since trades are undercollateralized, only FVA (funding) and uPnL is limited by collateral amount.
Profit and Loss $(PnL) = (V0 * Bt/B.0) - Fees$

When placing an INTENT the user sends the Intent parameters on-chain via Exchange Broker or Independent Drivers that created a Payload, with all required parameters.

MMs then see the on-chain intent living in the intent-pool and have the option to fill the trade if the intent arguments matches their internal requirements (hedger should run an offchain software for that, more information can be found in our hedger documentation).

Party A represents the address who sends the intent of the trade on-chain (most likely a user).
Party B represents the address who claims the intent (most likely a Counterparty or "Hedger).

example: Swap intent parameters

```
Price // Price of the asset, for example, $40435 per contract
Quantity // Number of contracts
AssetId // 100 (for example BTC, independent MarketLists can be provided
by third parties as onchain databases, similiar to Uniswaps Tokenlist)
partyA_MaxCVA // Max CVA amount that intent emitter is willing to pay to
their counterparty in case of liquidation
partyB_MinCVA // Min CVA amount that intent receiver is requiring to receive
and willing to pay to their counterparty in case of liquidation
partyA_MaxIM // Max IM amount that intent emitter needs to have to open
position
partyB_MinIM // Min IM amount that intent receiver need to have to open
position
MaxFVA // Max FVA that intent emitter is willing to pay
```

6.7 Opening a position

Once an INTENT is emitted, a MM/partyB who is monitoring the Intent-Pool on-chain can claim the Intent by sending required parameters on-chain, locking necessary collateral and therefore executing the trade.

6.7.1 Accepting an on-chain intent

example: Swap intent accept parameters

```
FillPrice // Exact entry price of the position
partyA_CVA // partyA CVA in USD
partyB_CVA
partyA_IM // partyB initial margin in USD
partyB_IM
FVA // If > 0 then partyA pays partyB and vice versa
```

6.7.2 Verifying an INTENT

example: Parameter verification

Once partyB has sent their parameters the SYMMIO core contract verifies that the parameters match.

```
Price > entryPrice
partyA_MaxCVA > partyA_CVA
partyB_MinCVA < partyB_CVA
partyA_MaxIM > partyA_IM
partyB_MinIM < partyB_IM
MaxFVA > FVA
```

example: Parameter Verification

6.7.3 Adding an INTENT to the system

Once the Symmetrical Contract verified that the trade complies with all of the trade rules and a user has a trade filled, a user can hold many ***different types of positions*** that range from derivative swaps to option contracts, to basically anything he can create a Symmetrical Contract, given our Framework, and/or can find a counterparty to take the other side. The SYMMIO DAO will be constantly engaged with grants and development resources to optimize frameworks and onboard exchange broker frontends and independent driver systems to make it as easy as possible to create Symmetrical Contracts and find counterparties for executing them.

But, certain sophisticated instruments such as options contracts are not to be implemented by SYMMIO., the SYMMIO team are experts in designing the SYMMIO system, not financial products ontop of it. Therefore SYMMIO is designed to incentivize 3rd parties to build, create and swap financial instruments via the SYMMIO protocol.

If a 3rd party wishes to implement options contracts with SYMMIO, it is certainly possible, and research will be funded by the SYMMIO DAO with grants.

6.8 Closing a perpetual swap

Closing a position is a critical part of the process where bad actors and behavior can take place causing a loss to one of the parties. As the custodial, the SYMMIO Protocol aims for the fairest conditions but it is up to the users to choose in which manner it takes place, with their preferred pros and cons. This issue exists in TradFi and is one of the most time-consuming events. As there are no automated Arbiters or oracles, therefore every input needs to be entered manually and both parties need to agree.

When a position is closed at expiration, the trader does not pay a spread. If a party decides to close the perpetual swap contract, an additional spread is to be paid to the other party. The simplest solution relies on a bit of trust that MMs will always give best execution, otherwise they wont be able to retain their customers, but also with a little bit of technical contract based pressure.

When initiating a close, partyA defines a maximum spread. In the event it occurs, partyB has x blocks to answer with a close price. If partyB does not respond in the given time then the trade is closed at market price by a neutral Arbiter by providing a bond or oracles.

There are opportunities for additional algorithm development to increase Arbiters and Oracles trust and efficiency. This may prevent one or both parties from having to make decisions. Other solutions can allow the non-closing party to take their time to find enough liquidity to close at a good price.

Update 2023: Additional research, *the SYMMIO core team is working on an* ***"open market for closing"*** *system that is currently being conceptualized and set for development in 2024 , that allows users to resell their open positions to others (MMs or Users), creating an open market for close operations, incentivizing MMs and PartyBs to provide best spreads.*

6.9 Withdrawing collateral

1. 1000 USD unallocated,
2. Verify withdrawal conditions ,
(twelve hour fraud proof window)
3. execute withdraw

Withdrawing is similar in form to validating a trade. The user requests a withdrawal on-chain and an Independent MEV researcher verifies. The MEV researcher checks all PnL (the user may have lost some collateral and the position has not been updated yet) in order to make sure no lost collateral can be withdrawn.
If something unusual is detected MEV researches can provide a fraud-proof to suspend malicious Parties. For example in the scenario of a Chain-Reorg (as blockchain finality is not required to be respected during SYMMIO trading operations) that led to ill-gotten gains.

6.10 Liquidations within Symmetrical Contracts

The liquidation process can be started by any entity, by either giving a oracle proof of liquidation (SYMM v0.8) or providing a Bond and a command to liquidate (SYMM v1.0+).

If the request ends in a liquidation, the entity is rewarded. The process starts by identifying each position and sorting them in order of priority defined by the Symmetrical Contract rules. Each position's PnL is computed one by one in order and in the same way, attributes each party's PnL, including the value of the CVAs in the account balances.

Let's take an example where there is an account at liquidation. There are 6 ranked positions. FB with a PnL of -300, TSLA 200, AAPL -950, ETH +60, BTC(1) -100, BTC(2) -56, and a global account balance with a CVA of 1000. Every positive position results in a total balance of \$1260. After paying #1, we have \$960. #2 already paid us and after paying #3 only \$10 remains. #4 paid us, #5 receives \$10 because there is no more collateral and #6 receives \$0 for the same reason.

liquidations.jpg

Figure 1: Liquidation

Symmetrical Contracts are in cross-margin, meaning that there are a number of positions that share the same collateral within each Symmetrical Contract. When an entity requests a liquidation, it is checked that the sum of all PnL is negative, the entity should provide proof ot said claim.

```
Collateral Balance = PnL Position 1 + PnL Position 2 + . . . + PnL Position
#n < 0
```

If that condition is true, then Independent Arbiters begin liquidation of the account by providing prices for each asset at a given timestamp.

6.11 Incentivized counterparty buyouts (planned for SYMM v1.0)

(this is not yet implemented in SYMM v0.81) Current implementations of OTC derivatives involve performing due diligence on counterparty solvency risks to ensure that the counterparty can continue a trade. There are instances when the agreed-upon collateral for the trade is used up and the counterparty is forced to close the trade. This can be an unfortunate situation for the trader if they wish to continue the trade and it is a result of outdated and manually intensive processes without counterparty diversification. Digital derivatives are able to solve this issue via automating and incentivizing

the continuation of a defaulted trade with the remaining CVA of the defaulted trade.

When a trader defaults or wishes to terminate early, their positions can be bought by another party in exchange for a part of their CVA. When this transaction occurs, an independent party (drivers, Arbiters,oracles or MMs themselfs) verifies that the new party has enough maintenance margin to hold the position. This allows the non-defaulting party to avoid force-closing their position and, in some cases, their hedge. This primarily avoids liquidation events that can snowball into further liquidations.

incentivized trade continuation.jpg

Figure 2: Incentivized Trade Continuation

1. % of CVA distributed to successful counterparty
2. % of CVA used to incentivize the new counterparty to continue the trade
3. CVA of defaulted party
4. Position is liquidated when available collateral is absorbed

6.12 Smart liquidations (planned for SYMM v1.1+)

This involves implementing the possibility for MMs to partially liquidate positions before a total liquidation event occurs. Users and MMs have multiple positions, with some of them potentially leading to liquidation. MMs should be able to choose which of their positions, or which of their user's positions, they wish to close before a global liquidation of their account, which can lead to cascading liquidations.

For example, when a party margin is less than 105% of their CVA, and thus close to liquidation, anyone is able to take the position and be rewarded with CVA, under the condition that they hold double the CVA_IM in their account. 30% of the CVA is given to the other part as compensation for the change in counterparty.

If the liquidating position is not bought up before 102.5% of the user's CVA then the party can choose which position to liquidate to avoid liquidation, however, they are still liable to pay the CVA. This system allows a user to partially liquidate their position instead of total liquidation. A party is able to liquidate their own position at any time and pay the CVA. When a party has a margin below 100% of the CVA then the standard sequence of events occurs where anyone can liquidate them and all their positions.

If a party has a margin below 100% of the CVA, then anyone can liquidate them and all their positions.

6.13 Partial fill (only in Hedger-Cross mode SYMM v0.8)

In some instances, the INTENT might be too substantial for a MM to absorb, due to lack of liquidity, high risk, etc. In these cases, it is preferable for a position to be split between multiple parties, in what is called a Partial Fill. After each fill, the intent is updated. Some parameters can be added to the intent to set a min/max value on the fill value.

The partial fill function is a SYMMIO innovation that contributes towards the efficiency of liquidity. Allowing MM's to partially fill orders solves multiple issues related to lack of liquidity (an INTENT might be too large for one counterparty to fill) and counterparty default risk diversification. It is also possible to set parameters for the partial fill to define a minimum and maximum amount of the fill value. When taking all of these factors into account splitting one position across multiple counterparties is the most efficient method, even if a position ends up being netted.

The example below represents the process of how an INTENT can be partially filled. After each fill, the INTENT is updated, and the remaining unfilled intent is filled by as many MMs as it takes to completely fill the position.

partial fill.jpg

Figure 3: Partial Fill

6.14 Architecture divided into two parts:

7 Beyond v1.0

7.0.1 Foreword

Upgradeable Symmetrical Contracts through user activated Soft forks The SYMMIO Protocol is designed to be modular, upgradeable (through PartyB enabled hardforks), and ultimately to cater to the needs of users and MMs.

Following the basic system presented thus far, we now discuss future updates to continue building the SYMMIO Protocol. (beyond SYMM v1.0)

7.0.2 Transferring a position (sub accounts as NFTs)

When a user opens a position, it is linked to a sub account. If for any reason the position needs to be transferred to another address, the position needs to be closed and reopened, with the risk of the other party not reopening the position. With a transfer of position, one user can transfer their sub account to another address.

This transfer of position ownership allows fees to be added to the transfer which acts as a sell or a buy of the position. For example, it might be useful to an MM that is hedging the opposite position to cut their hedge and receive interest for a very low cost.

In the case where one of the parties predicts that they will be liquidated, in order not to lose CVA, it may be beneficial to sell the position. This strategy may also be useful for someone who wants to hide their trading activities to avoid copy-trading and frontrunning.

7.0.3 Transposing a position

One major inefficiency in the design presented up to this point is that each Symmetrical Contract is isolated from other Symmetrical Contracts. A transposition is when a position open in one Symmetrical Contract is inverted in another Symmetrical Contract. This allows for cross-margin between two Symmetrical Contracts.

An example of the above could be one where a user nets a Symmetrical Contract under German regulation to a Symmetrical Contract under US regulation. This user has direct access to both markets and may be interested in an almost zero-cost bridge of positions across Symmetrical Contracts. This also allows the linking of two Symmetrical Contracts that are the same but on two different chains.

Transposing a position from one Symmetrical Contract to another introduces the risk of a user exploiting the transposition as a way to exit their liquidity from a rogue Symmetrical Contract and withdraw on another Symmetrical Contract. This additional type of position allows for different kinds of attacks and operates under the rule of always being computed last, with the conditions to open the same as a withdrawal.

Independent Clearing Operators (ACOs) could perform transposing between Symmetrical Contracts.

7.0.4 Cross collateral

Cross collateral between accounts means that a user trading on Binance is able to be in cross margin with his trades from example Robinhood. This allows people to develop custom contracts and for others to add them to their systems at a later stage.

SYMMIO provides an account system where things traditionally found in centralized finance (CeFi) can transposed onchain. This is achieved through customizing rules on Symmetrical Contracts and by making use of independent clearing operators. This opens up new use cases and products that users can trade with cross margin.

In DeFi, some chains might be good for intents and accepting trades, whereas others are safer for holding assets. Being cross-chain makes it possible to take advantage of the different blockchain strengths. Permissionless, cross-chain collateral is one of SYMMIO's major innovations, albeit one of great complexity, but is crucial to enhancing *market efficiency.*

7.0.5 Best offer fill (SYMM v0.8 - v1.0 Frontend Based, V1.1+ also Driver Based)

Our free-market system design causes competition between MMs, meaning that when a user creates an INTENT, we can leverage that to create a short auction to determine the best fill price for parameters for the INTENT driver.

A user requests a maximum fill price on their INTENT. After a determined period of time, the best offer is chosen by an independent driver system. If there is no offer before the auction period ends, the first offer could be taken after the initial batch is filled.

7.0.6 Consentual Mid-term position change

During the lifecycle of a position, parties may want to adjust an amendment of terms mid-contract, for example, to roll the position, i.e. extend the maturity or change strikes, change margin calls at predetermined levels, etc. Ideally, the two parties would agree off-chain, to parameter change(s) in the position. One of the two parties pushes the requested change on-chain and the other signs it.

Any parameter can be changed, execution is required to update the account balances of the users, in the case of an agreed partial close, for instance. For example, this can also be used to mutually agree on closing a trade on a stock price on Sunday or to lower a CVA. Important is that both parties agree.

7.0.7 Custom price feeds, funding feeds or any other data source as oracles by agreeing on preferred Drivers/Oracles/Arbiters/ACOs

One of the key components of SYMMIO is a neutral Arbiter ensuring the price movements are not pushing any party into insolvency. When two parties agree on opening a position, the price can be determined without any oracles or Arbiters because both parties have the option to enter into the position or not. Disputes could happen at the time when a trade needs to be closed.

Market makers should be able to choose which exchange the data is fed from by choosing a preferred driver, oracle or Arbiter, as prices differ between exchanges. In order for a price to be validated, input prices from every Arbiter should be verified by a challenger window.

7.0.8 Forward regulator's compliance

While regulation itself is not a concern of the core contract operators, as all rules and markets are defined by all participants, we still want to emphasize that SYMMIO itself can support fully compliant Symmetrical

Contracts.

Due to the ease of adding or withdrawing collateral, even if jurisdiction exists in our system, we do not oversee users actions in a Symmetrical Contract between depositing and withdrawing. A user can simply transfer a position by opening that same position on their cross-margin account and be their own counterparty on another account.

Arbiters can be requested by a Symmetrical Contract deployer to verify such things and implement regulation by executing in-depth checks, and liquidating those who not perform based on the rule set. Another way would be to delay withdrawal from the Symmetrical Contracts in order to thoroughly check the account situation. This enables us to verify if an address is associated with a license, the user's actions and on-chain activities, and much more.

Since trades are transparent, it allows other participants to acquire enough data to not have to rely on speculation, leading to less likelihood of positions being closed in panic, less temptation to cheat or manipulate the rules, and allowing regulators to do their jobs.

7.0.9 Variable FVA

We have shown an FVA that remains the same for the duration of a trade but it can also be variable. Independent Funding Operators could allow us to add multiple kinds of time-based dynamically changing FVA.

For example, in the crypto CeFi derivatives market, FVA changes and is applied every 8 hours. To build this, Independent Funding Operators are called to target exchange APY and store values of FVA on a decentralized storage solution as proof every X hours with the final PnL computed on withdrawal or closing of a position based on saved datasets.

As long as a Arbiter can fetch data then it is possible to create a custom system. If we wanted to create a long-pays-short system, we would need to store the required values on a blockchain. This design is chosen over updating the positions each time, in order to increase the efficiency of the positions.

7.0.10 Fraud-proof pricing (Open Market for Closes)

The exit price is one of the most difficult parts to settle, as in many scenarios, there is one party that wants less spread and the other party that can decide to abuse their power position, a neutral game theory approach that forces PartyB to offer lowest spreads possible.

In the case where both parties agree on an exit price, an INTENT is generated, submitted to their counterparty, broadcasted and compared to the market price. If the *price is correct, an exit intent is set and the counterparty validates. It is the duty of the exchange broker to select trusted, incentivized third parties to give a fair price under the threat of being delisted from the marketplace whitelist.*

In the case of a disagreement, we want to make it dangerous for both parties to abuse the system from a position of power. In order to get a fair price, a PartyA could create a counter-INTENT to close his position using intents of other MMs. If an MM answers by claiming the INTENT, the previous PartyB is forced to take the trade. With Netting enabled, MarketMakers don't know if the INTENT is a closing operation or an opening, and it also is not important. Within a defined time, if there is a sufficient answer to the INTENT, one user can use that new INTENT to nett out his existing position and exit at his desired price, or in the case of abuse, an arbitrager can open a position using this intent with a short expiration at the Arbiter price.

This system would only allow for honest MarketMakers and punish dishonest ones.

8 The endgame - Global Close-Out Netting

8.1 Netting in TradFi

Netting is a method of reducing risks in financial contracts by combining or aggregating multiple financial obligations to arrive at a net obligation amount. Netting is used to reduce settlement, credit, and other financial risks between two or more parties.

Netting is often used in trading, where an investor can offset a position in one security or currency with another position either in the same security or a different one. The goal of netting is to offset losses in one position with gains in another. For example, if an investor is short 40 shares of a security and long 100 shares of the same security, the position is net long 60 shares. (source https://www.investopedia.com/terms/n/netting.asp)

8.2 1. Visionary Framework

Abstract: This subsection delves into the prospects of instituting a global close-out netting mechanism within SYMMIO. This mechanism aims to streamline settlements across a users different positions, multiple sub-accounts, across different symmetrical contracts, and spanning multiple blockchains. The ultimate goal is to infinitely enhance capital efficiency for all participating entities, all the while preserving the core system's smart contract integrity.

The aspiration of SYMMIO is to facilitate close-out netting, streamlining the settlement of all transactions across diverse symmetrical contracts and multiple blockchains. Ideally, this process would preemptively act before a party defaults, ensuring timely cash flow transfers and substantially reducing the potential for financial loss, through delayed liquidations. However, inherent challenges present in current blockchain technology and smart contract systems, including their, slow update cycles, long periods to finality, finite informational boundaries, isolation, limited throughput and the associated costs, pose obstacles to this vision. Actually making it impossible to solve a global *close out netting system onchain.*

8.3 2. A Theoretical Approach to Solution

Rather than pursuing an "inside-out" approach, a more efficacious solution could arise from an 'outside-in' strategy, born from simple first-principle analysis.

8.3.1 2.1. Understanding SYMMIO's Netting Mechanism via first principles.

To comprehend the intricacies of SYMMIO's netting mechanism, it's imperative to elucidate three fundamental components:

Intent: *Within the SYMMIO framework, intent characterizes an entity's underlying motive or objective in engaging in a transaction.* ***Positions:*** *This refers to an entity's extant trades and outstanding liabilities.* ***Collateral and CVA (Credit Value Adjustment):*** *Representing the fiscal safeguards, these are furnished by each participant to ensure their capacity to offset potential defaults.*

Every transactional intent in SYMMIO is subject to bilateral settlement. Both parties pledge collateral, serving as a buffer to discharge a potential penalty or CVA in the event of one's default. Should an entity's unrealized profit and loss (uPnL) deteriorate such that all but the security deposit of the collateral is exhausted, the system may invoke a liquidation process. In such an occurrence, the CVA is systematically transferred to the non-defaulting party. This structural design fortifies economic stability by ensuring transactional isolation, wherein funds solely transition from Party A to Party B within discrete confines, obliterating the possibility of systemic bad debt or contagion through "unknown" or cross-counterparty risk. The principle of isolation is foundational to SYMMIO's resilience. Given that netting essentially is the exact opposite of isolation, a pertinent query arises: how does one harmoniously integrate these seemingly antithetical concepts?

8.3.2 3. First-Principle Solution for Netting within SYMMIO

Netting in SYMMIO might be designed to resemble a solvency signaling system, allowing PartyA or a designated Arbiter to:

1. Enhance the collateral provided. 2. Postpone liquidation for a brief T+x duration following initial margin depletion. 3. Offer short-term loans to mitigate losses. Consequently: 4.Facilitate trades between parties at reduced or zero CVA.

Given that the core system inherently maintains full economic integrity via transactional isolation, collusion amongst certain parties would not negatively impact others. By establishing clear and focused economic alignment, these parties could engage in riskier ventures without imposing risk on unrelated parties. This approach mirrors certain aspects of traditional financial systems but offers superior isolation—a feature we posit that many conventional financial systems particularly lack. Coupled with transparency, this isolation principle from our point of view stands as an modern financial theory's coveted achievement, realized through automated Smart Contracts.

All of this could be done through ***Autonomous Clearing Operators "ACOs"***

Current investigations into the nuances of SYMMIO's internal netting mechanism are still underway. A comprehensive whitepaper, dedicated exclusively to this subject, is in the pipeline. Should the challenges associated with netting be effectively solved and implemented, it is projected that the system might reach an unmatched zenith in capital efficiency. This would be facilitated through strategic asset redistribution, offering short-term loan solutions, and harnessing the benefits of both social and informational asymmetries. We extend an open invitation to scholars and researchers worldwide to collaborate with us, aiming to collectively usher in a new era of financial innovation.

8.4 Closing out positions (SYMM v1.1 - 2.0)

One of SYMMIO's planned innovations is solving a closing out system, a persistent problem found in TradFi. It is inefficient to constantly check the availability of off-chain funds, and it is for this reason that banks update positions every day as they know that an asset cannot deviate more than X in 24 hours. Therefore, a small CVA is needed to always be profitable as long as the counterparty has enough collateral to not default.

Blockchains and independent Arbiters can monitor collateral in real-time 24/7. Additionally, we can monitor counterparties, ensuring they always have sufficient collateral. For example for a SYMMIO synthesized BTC to be trusted as collateral, we could make use of independent clearing operators that insure the value of USD in a lending contract of BTC to USD.

8.5 Global close-out netting through independent clearing operators

For example: an open research at SYMMIO DAO works on integrating a global close-out netting system possible without affecting core-contract robustness. One current way and potential solution to the problem is to create a layer ontop of SYMMIO where Arbiters, MEV researchers and Short-Term Insurance/Loan protocols could conspire with PartyA/Bs and Arbiters to close out short-term liquidity gaps, and therefore protect PartyBs from being liquidated, by using offchain data-rich systems to calculate a PartyBs "true solvency" levels.

Called autonomous clearing operators (ACOs)

9 Use cases

Financial markets are composed of many different actors with different goals and strategies, and when these are brought together and traded in one place, create the market as we know it. In the DeFi space, many projects have attempted to solve the derivative problem by offering a service to only a few of the market participant types, which fragments the market, focusing on use-cases.

SYMMIO addresses multiple use-cases, user experiences, and industry standards. DeFi has the unique opportunity to be the first permissionless market that includes small and large retail users, professionals, and institutions all engaging in the same system. The main differences are in the usage and the value of the orders. Derivative positions can represent large orders and the common use of the liquidity curve does not work in these cases.

A system is needed that can absorb orders of any size.
In TradFi, in order for any entity to be able to trade a specific product, a credit check needs to be passed due to the high risk of default and financial loss that can occur for both parties. This constraint automatically excludes retail and many institutions from engaging with these products. Additionally, it is common for an entity to use the ISDA Symmetrical Contract contracts and annexes when opening a trade with another entity. This is costly and introduces additional problems.

An efficient and desired system is one where the two parties don't need to know or trust each other. The SYMMIO trading exchange system is designed to be censorship-resistant. As long as there is one MM with access to the market and is willing to take the risk of providing liquidity, the market on SYMMIO is operational.

If a market price provider doesn't agree to feed our Arbiters their price feeds, they have no way of knowing which subscribers to their feeds are servicing which Arbiters. By having multiple subscribers to multiple price feeds, we can achieve censorship-resistance, and as long as the blockchains and Independent Drivers are censorship-resistant, the system will prosper.

Another factor that should be taken into account is that a system that is optimized for one scenario wouldn't necessarily remain so under changing conditions. SYMMIO cannot take on the role of a MM, as there will always be an entity emerging with more products, better spreads, etc. SYMMIO's role in this ecosystem is one of an infrastructure provider, enabling composability and scalability.

SYMMIO also does not provide, maintain or host any MM software, all MMs should create their own software and MarketMaking strategies.

9.1 Fund managers

With many actors being dishonest regarding the liquidity of their order books, leading to significant losses, using Arbiters verified prices and a decentralized intent system may attract users of these low-trust products. We can think of many crypto exchanges, CFD brokers, and other offshore-based financial institutions.

Predefined rates and fees might also promote more trust in a decentralized fund manager than one that comes from TradFi and does not care about winning or losing because they are getting paid regardless through management fees. On a global scale, the number of hedge funds outperforming the SP500 highlights an institutionalized inefficiency.

This transparency added to a free market competition might allow some less shiny and more legitimate individuals to be able to manage funds without the need for any license and without extra fees to pay for office space and the like.

Our vision around that is to allow the creation of a decentralized fund where the fund manager is only restricted to predefined Symmetrical Contracts or using their own Symmetrical Contract.

9.2 Exchange brokers

Users, investors, market makers, and other market participants can all use the SYMMIO Protocol, however, due to there being no aggregated liquidity, users need to INTENT on public driver channels.

End users want a simple solution, and this is where exchange brokers come in. An exchange broker is a front-end with associations to multiple MMs that take countertrades. For example, the Binance future UI can be recreated, using SYMMIO as a backend. To incentivize these services, exchange brokers are receiving referral fees from each trade that they conduct.

This implies that anyone is able to create an exchange without needing liquidity. Trading exchanges have multiple ways of linking end-users to MMs. For example, creating complex matching engines that allow anyone to find liquidity, or to set standards in their position variables to filter the market, as well as by whitelisting MMs. Additionally, it can also be in the form of a website or resource that provides investment advice and enables users to take a position directly from its UI.

In all of the above cases, SYMMIO DAO empowers other protocols to provide centralized third-party solutions that are very difficult to provide in a decentralized way.

Instead of being one large marketplace, what would happen if we were thousands of individual marketplaces, with a broader range of users and increased diversity in *our products, stimulating a competitive marketplace? Third parties are incentivized to create the links between users and MMs, with dealer incentives being a percentage rate of the fee of the plattform. The dealer defines their affiliation rate and the MM has the choice of accepting trades routed by the dealer or not.*

In order to keep the system permissionless, a third party provides the link between user and user, MMs to MMs, users to brokers, and so on.

9.3 Generalized Drivers as replacement for Exchange Brokers (SYMM v1.1+)

Another solution to solve the communication problem between users and MMs is to use a generalized driver system as frontend replacement. A driver is a polling service that queries MM websockets for intents and tries to push INTENTs with correct payloads onchain for users and settle them using different MMs.

A user can therefore: 1. send an empty INTENT directly onchain (without knowing any parameters, but whitelisting a specific driver or set of honest drivers.) 2. the Driver polls intents from MMs 3. The Driver now fills the right parameters for the INTENT 4. The MM responds to the sufficiently filled INTENT

Driver and MMs are both incentivized to not conspire, bad drivers wont be used twice, and bad MMs won't work with bad Drivers.

9.4 Trading bots and stop limits

For Exchange Brokers and Drivers (trading UX) providers to take a share of the referral market, utilities such as trading bots and stop limits are needed and are better handled by third parties or MMs directly, as opposed to event-based functions as used by many exchanges.

Functions may include:

- *Stop orders that close a position at the best price once an asset crosses a chosen threshold price*
- *DCA (dollar-cost averaging), where buys occur regularly, defined by the user*
- *Grid trading orders - to profit from the stability of a market by speculating on reversals without the constraints of iron condors or other trading strategies*

By offering these kinds of services, a third-party provider can be the referrer of a trade that they allow, creating the potential for exchange brokers to be competitive against other brokers.

The above can also be handled in a decentralized manner by having a keeper call a Independent Drivers to sign the price for any trade to take place.

Non-retail users with higher capital would benefit from being able to customize their own hosted systems based on their needs. Moreover, exchange brokers themselves might have an affiliation program.

9.5 CFDs

CFDs (contract for difference) are OTC derivative products that allow users to enter an agreement where the buyer pays the seller the difference between the current value of an asset and its value at the time of the contract, without having to hold the asset.

The CFD industry suffers from a bad reputation due to low regulations that lead to a lot of scam exchanges. SYMMIO allows CFD brokers to build on top of our architecture and restore truth with their customers.

In the case of a CFD provider wanting to be isolated from the rest of the market, they can deploy a Symmetrical Contract allowing only themselves to take trades, denying other CFD providers to compete with them on the same customers with the cross margin system. Free market competition between Symmetrical Contracts makes it harder for a liquidity provider to be competitive when isolated from the market, however. This also includes traditional CFD brokers that accept cryptocurrencies.

9.6 Gamifying derivatives

We allow game developers to build games on top of derivatives without the need for a broker's license.

For example, a game where users need to pay a premium and need to survive in a BTC x200 position for 1 hour without being able to exit the market, only going long or short.

Gamify derivatives in CEX are usually not enjoyable by retail users, even if this kind of event is tailored for them, due to some users trading bigger volumes and becoming participants, by default, to these types of competitions. Other gamify derivatives are more like a casino where the house always wins. Being transparent, the margins that MMs make on these kinds of activities may be reduced, inducing more interest in these types of products.

It's possible to reinvent the trading competitions field. For example, every participant opens a position of a certain size in a Symmetrical Contract as an entry fee, where the trader is limited to a certain amount of trades with a certain amount of value in a limited time, with the winner claiming the pot.

9.7 Credit rating third party

In Uniswap, when a user wants to swap a token that is not in the safe list of organizations like Coingecko, an alert pop-up notifies the user that they are trading at their own risk.

A user is unlikely to verify the safety of a Symmetrical Contract that they are trading through. Since all assets are not trustworthy, there are many rules that require verification. A Symmetrical Contract can be modified, therefore a user must need to know whether the Symmetrical Contract they are trading on is the latest version and safe. Economic incentives to data checkers are needed in such a scenario because of the difficulty of generating an impartial qualitative risk analysis on a wide range of assets. This is another case where the benefits of affiliation are clear.

When a Symmetrical Contract is validated by multiple centralized checkers, the risk of an attack is highly unlikely as the risk-reward of the attack is very low due to the ease of verifying the information.

9.8 IR derivatives

9.9 Example of an IR swap

The interest rate derivative (IRD) market represents between 65% and 80% of the TradFi derivative market, with some order of magnitude in DeFi, largely made up of loans and diverse debt products,
DeFi Lending Statistics: 37.764b USD total value in DeFi 13.077b USD in Lending (34,63 percent), 8.36b USD in CDP (22,13 percent), 3.35b USD in Yield Farming Protocols (8,87 percent). Source https://defillama.com/

These types of products allow users to take leverage on a yield farm, trade the spread between two APRs, insure against an increase or decrease in APR, and much more. There are many applications and products in TradFi around IRDs. We'll focus on DeFi, bringing about this new type of product, and empowering the ecosystem. In summary, what is needed to expand a financial market is easy access, diversity of participant types, covered/low risk, and liquidity. These are the needs that we want to answer.

More than farming interest rates, in the architecture of the SYMMIO Protocol, a low-risk position of a farm that is usually not considered by higher risk DeFi users can be taken with the same collateral as higher risk positions, allowing an increase in gain expectancy without significantly increasing the total risk of the portfolio. In most cases, it's difficult to exit to another token and multiple farms are used in the process. This introduces multiple risks with multiple tokens, and if a token loses value then a liquidation may occur, destroying profitability. In other cases, entering into these farms costs too much in gas.

A major issue in the chain is that positions can cause large financial losses due to the fact that profitable positions take time to close, and losing positions are very difficult to close because collateral may have been sent to another chain, or in some cases converted to purchase a physical good.

By sacrificing some of the profitability on an asset, users are able to take more risks by buying an option or a swap that hedges the risk of lost capital. Additionally, some collateral is available to add if at risk of liquidation.

To illustrate what derivative products can bring to DeFi, let's take an example of a Symmetrical Contract linked to lending contract inputs. In this scenario the user of the lending contract takes insurance on their position in exchange for a yield. If there is an economic or technical failure in the contract, their counterparty pays them the insurance amount. With that in mind, a special Symmetrical Contract on insurance can be created to optimize cross margin for insurance providers and increase exposure to a safe asset on their insurance collateral.

Typically, the position that the hedger takes is going to be short, and considering that there is unusually more long demand than short, an MM might be interested in netting their trade with some users who seek protection on their assets.

9.10 Existing leverage yield-farming products

A common strategy to increase yield entails entering one farm, receiving a token as a reward and entering another farm, and so on. In some cases, it is possible to loop these strategies, where a user receives the same token, allowing leverage on specific farms.

Magic Internet Money (MiM) is an example of this, where users can take leverage without any lending on farms that have sufficient liquidity and a bearer token.

For example:

The MiM protocol deposits non-collateralized MIM into a Kashi pool. (A Kashi pool is used only to allow lending/borrowing an asset against other predefined assets, avoiding a scenario where assets can impact others.) The user obtains tokens, deposits them into a Kashi pool, and receives minted MIM. Then, the MIM tokens are swapped through a curve against a stablecoin, to receive a bearing token. This loop is repeated until the user has the desired leverage.

9.11 Utilizing Portfolios as Collateral: Advancements in Lending through tokenizing SYMMIO's Subaccounts as NFTs (available in SYMM v1.0)

In traditional financial systems, the concept of employing one's portfolio as collateral in lending practices is well-established, though not without its limitations and compli-

cations. Within the context of DeFi, there's an emerging approach where collateral can be farmed to earn an Annual Percentage Yield (APY) without foregoing access to the collateral itself.

Considering this, the SYMMIO Protocol proposes an innovative enhancement, allowing users to avail loans in USD against their portfolios tokenized as NFTs. This is achieved by representing the portfolio in the form of a Sub Account inside a Symmetrical Contract, which is then minted as a Non-Fungible Token (NFT). Every asset within this NFT would undergo rigorous risk evaluation and its value would be safeguarded by the core SYMMIO system. This mechanism could potentially empower users to farm with their capital while retaining accessibility to it. Furthermore, this protocol upgrade could facilitate lending in USD against portfolios benchmarked to indices such as the SP500. Such a feature offers users an advantageous position to benefit from central banking activities, like the Federal Reserve's monetary policies, all while actively trading in cryptocurrencies.

From the Market Maker's (MM) perspective, this system guarantees a predetermined APY from the trader, making it an appealing proposition for institutional investors in search of secure returns and retail traders desiring greater market exposure. We envision this system being particularly advantageous for larger entities adept at risk management, enabling them to allocate their capital towards higher-risk avenues rather than exclusively hedging with derivative products available on SYMMIO. Consequently, such a structure minimizes the onus on users and other projects, as they are relieved from the continuous necessity of monitoring the safety of every individual component.

An illustrative scenario within this framework would be if a user leverages 10 percent of their collateral to buy stock. While they receive exposure equivalent to a spot position, it's imperative for the user to periodically rebalance their position to circumvent potential liquidation.

The system works as follows:

1. *The user deposits USD into a Symmetrical Contract that offers tokenized subaccounts.*
2. *The user searches for an asset to trade via a front-end that matches a user with a counter-trader*
3. *The user selects the fill price and other parameters (empty parameters are filled automatically)*
4. *The MM accepts the position*
5. *The position is pushed on-chain*
6. *The user requests a Independent Drivers to execute an overcollateralized loan in USD*
7. *The Independent Drivers computes the amount of loaned USD, freezes the collateral in the Symmetrical Contract, and releases the USD*

In order to modify any of the assets and parameters in the lending Symmetrical Contracts as well as the collateralization ratio, a snapshot vote would need to take place at the protocol level.

9.12 LP swaps

One problem facing liquidity farmers with liquidity pools is impermanent loss. Suppose that we have an LP farmer with little knowledge, who wants to reduce the risk of IL on their portfolio, but wants to earn an APY, or provide liquidity, for whatever reason. On the contrary, another user who is more knowledgeable may be able to reduce their IL due to their understanding of risk-free yield farming protocols, however, they lack diversity in their risks and in turn suffer from the low APY of low-risk protocols.

A solution to this problem would be to let them hedge their risk via Symmetrical Contracts, all that is required is to create a market for them via SYMMIO and find someone to take the other side of that hedging trade.

10 Case study - Open Leverage

Consider a market with a participant who wants to trade different assets, such as stocks, ethereum gas, and volatility derivatives. In order to trade all these different assets, the user would need to deploy their capital in each of these projects separately, ensure that they rebalance their capital to avoid liquidation, and optimize capital usage if taking *any leveraged positions.*

It would be much more efficient to take a 5x leverage on a stock and yield farm with the balance of the collateral on a spot farm and employ some money management than to commit all collateral because, in the example above, it's not possible to take an undercollateralized position.

In order to solve this, an under-collateralization mechanism is required. For this to be possible, funds need to be in a closed circuit where the exits are controlled. In SYMMIO's case, Independent Driverss control every exit point of the system. A closed-circuit system is possible on-chain but it is limited in complexity and cannot encompass an entire ecosystem. With an under-collateralization mechanism, a user still needs to manage their collateral regularly to avoid liquidation. A solution would be a permissionless, cross-margin mechanism. This is the most critical element of the SYMMIO Protocol but also the most complex.

Without cross margin, if a user has 1000 positions, it requires money management on all 1000 positions. With the risk of high volatility on some positions, it implies that a system without cross margin would be unsustainable and impossible to manage. With additional degrees of freedom come greater responsibilities. Many different types of attacks need to be mitigated in order to make the system permissionless. The system must be permissionless because no DAO, nor any other organization, can successfully, and accurately rate the risks on assets, and SYMMIO is no exception.

For context, in TradFi, imagine a scenario where Chinese stocks can be traded with the same collateral as US stocks and Brazilian commodities, or in a country where counterparties operate under no legal framework. Imagine what these scenarios would mean for a fund that doesn't have to allocate resources to comply with each jurisdiction or find third parties.

TradFi is plagued by a multitude of third parties who all take an individual commission because of their inefficiencies. An efficient system is a system that links the trader to the liquidity source directly for any products. In a decentralized and trustless system, in theory, all intermediaries can be removed because everyone can trade with everyone else without much concern, and due to the free competition between each intermediary and the ease with which to find and use the best one, only the strongest ones, with the best fees and service systems, will remain. The only third parties that should remain are the risk manager and the party that links asks and bids. Once again, it works like a flywheel, by only deleting one intermediary in the chain, making the new system competitive.

It would stand to reason that the first MMs using the SYMMIO Protocol will be retail. However, as the democratization of the protocol progresses, third parties who see their users utilizing their liquidity to meet a need on the SYMMIO exchange systems *might be tempted to provide liquidity to the SYMMIO ecosystem themselves and retails that see competitiveness will seek niches to provide liquidity, expanding the range of their available products.*

11 Market Maker's responsibilities

From the moment a Solver accepts a trade, they must assume the responsibility that someone can potentially front-run their hedge on the market. For this reason, a protocol cannot perform a direct solving service as it cannot assume a monopoly on executing decisions because only one entity with a faster or more sophisticated bot is needed to exploit an entire solver based protocol.

A third party takes on all risks associated with a trade, and is punished for bad decisions and trusting bad actors. This is a key component of blockchain technology. Validators compute transactions and risk their collateral if they confirm transactions that are deemed to be inaccurate or fraudulent.

A MM can choose not to take a hedge position based on a trader's behavior. Because a trader's address is known to the MM, the MM can monitor a trader's behavior over time. They can identify arbitrageurs, or users that repeatedly take advantage of the MMs mispriced orders. A MM also considers the cost of hedging, collateral, operational costs, etc. Taking this into account along with trader behavior, MMs can blacklist users that they do not wish to engage with.

As the counterparty, the market maker can require a different set of fees, the three main ones being regular interest on open positions, fees on opening and closing of positions, and liquidation fees. These fees compensate for capital immobilization for hedging the position and cost of hedging, including moving collateral between the market and the SYMMIO Protocol, and lastly, because of the sudden need to exit positions, liquidity may not be sufficient. In general, it can be considered that counterparties who take a risk of discountinuity on their positions should be rewarded. It can also be considered that the counterparty is trading in multiple layers and the liquidated trade can affect the rest of their layers.

12 Standardization

For any financial market to thrive and maintain dynamism, it must transcend a restricted portfolio of offerings. A constrained product range often culminates in market stagnation. DeFi platforms risk marginalization if they eschew the integration of off-chain commodities. In the realm of traditional finance (TradFi), the process to enlist a security is unduly intricate, and regulatory frameworks often play a facilitative role in simplifying this endeavor. A market's vibrancy, especially in terms of activity and price discovery, is invigorated by streamlined processes for product inclusion.

Standardization of tradeable assets on exchanges augments liquidity stability. Furthermore, the financial instruments proffered should prioritize lucidity and user comprehension. Such an approach not only amplifies the roster of market participants but also galvanizes overall market activity.

An observed anomaly within the current DeFi landscape is the decoupling of lending rates from those witnessed in conventional markets. This divergence is primarily attributable to trust deficits and varying demand dynamics. Introducing short-selling capabilities and endorsing a broader spectrum of derivative products can catalyze token holders into engaging in lending activities. An increase in lending, in turn, elevates lending rates and amplifies the market's global appeal.

There arises an imperative for market participants to have the autonomy to select Symmetrical Contracts aligned with their bespoke requirements. Encouraging competition among Symmetrical Contract platforms is paramount. Transparent regulatory parameters are integral in bolstering long-term investment commitments.

A consolidated set of guidelines to evaluate risks is imperative. For fund managers, derivative acquisitions often supersede spot purchases as the former seldom disrupts existing asset portfolios. To augment price discovery within a market ecosystem, there's a necessity for a pliable derivative market equipped with adjustable risk profiling mechanisms. SYMMIO endeavors to offer support to DAOs and projects in ensuring operational consistency.

The hallmark of a robust and liquid derivatives market is its diversity in active participants eager to trade derivative. This diversity is often driven by a shared ambition to enhance risk management strategies pertaining to business and financial facets. The annual publications from credit-rating agencies serve as pivotal transparency instruments. Additionally, advocating for discerning Market Makers (MMs) can cement investor confidence.

TradFi often presents barriers to small and medium-sized enterprises (SMEs) from participating in derivative markets, adversely impacting market efficacy. Contrarily, DeFi facilitates listings with alacrity, outpacing its traditional counterpart. A salient advantage in DeFi is its inherent design to harness tools and products pioneered by third-party entities, which trims developmental expenditures and spurs innovation. The endorsement of derivatives as collateralized assets coupled with loan architectures paves the way for short-selling, a critical mechanism for price discovery. In scenarios necessitating hedging through short sales, it is prudent for protocols to furnish lending avenues to sustain short-selling operations.

13 Implications on Market Dynamics

Empirical observations indicate that within a closed market, the introduction of a derivative market associated with a particular security tends to modulate its volatility and enhance trading volume. This phenomenon can be attributed to the fact that derivative speculation inherently involves leverage, obliging market participants to frequently adjust their positions. Such adjustments manifest as buying pressures during price declines and the converse during price ascents. Given that on-chain projects are not encumbered by the waiting times or costs typically associated with Centralized Exchanges (CEX) to facilitate user access to derivative markets, there is a discernible reduction in volatility and a concomitant increase in trading volume and user engagement.

Implementing a protocol that mimics a white-label solution of a derivatives framework introduces several favorable market conditions:

Competitive Attraction: The facility enables projects to hold a competitive advantage in luring speculators. The hedging mechanism ensures that any value transacted on the SYMMIO Protocol (an Intent-Based derivatives platform) is mirrored in the derivative's price.

APR Enhancement for Single-Token Staking: There emerges an opportunity to offer Annual Percentage Returns (APR) for singular token staking, as the staked asset can be harnessed by the protocol to furnish liquidity for those adopting short positions. This feature inherently encourages token holders to retain their holdings.

Strategic Hedging for Protocol/DAO Owners: These stakeholders can efficaciously hedge their token assets by supplying liquidity to long positions through futures and calls. This obviates the need for direct market sales to diminish their exposure. Additionally, those in possession of locked tokens acquire the capability to prematurely capitalize on their tokens' cash flows.

Retail Speculation Opportunities: The structure accords retail investors the avenue to speculate on microcap securities, contingent upon the presence of a liquidity provider.

In summation, the interplay between derivative markets and the dynamics of securities, when examined in the context of the digital landscape, offers a plethora of opportunities and strategies for diverse market participants, enhancing both stability and engagement.

14 Conclusion

In this paper, we presented an innovative approach to digital derivatives in a permissionless environment. While the DeFi realm is teeming with derivative projects, the SYMMIO Protocol sets itself apart by the sheer breadth of its potential applications and implementations. Our primary motivation is to reinvent the traditional derivative system, one that feels archaic in the face of the rapid advancements of blockchain and digital consensus technologies.

This enhancement in capital efficiency, coupled with superior risk management and the groundbreaking concept of using MEV researcher as Arbiters through economical *incentives, is set to redefine how derivatives are leveraged using these novel tools. The groundbreaking principle that Bitcoin brought to the world was eliminating the necessity of trust in financial transactions. By infusing this revolutionary principle into the traditionally exclusive derivatives industry, we will make the market more inclusive and accessible. It opens the doors for not just professionals, but also laypersons to utilize sophisticated products, potentially driving both personal and global economic growth. We earnestly encourage participants to critically assess our ecosystem and explore the myriad possibilities that this foundational digital derivatives platform can usher in.*

15 Glossary

(Multi-) Account manager: *A set of functions that allow users to deposit collateral, set accept on-chain intents, close positions, and withdraw collateral*

Available collateral: *Collateral that fluctuates with a price feed, this collateral is used to pay counterparty PnL*

SYMMIO Intents: *SYMMIO Intent-Based Exchange Protocol*

Exchange: *An entity building a front-end that interacts with SYMMIO smart contracts*

Interest rate derivative (IRD): *A derivative of a fixed income asset*

Market maker (MM), Solver or Hedger: *A counterparty that places countertrades to fill positions in return for trading fees, MMs can only close their positions in the case of liquidation or swap expiration*

Muon and Independent Drivers: *Muon is a decentralized stateless Microservice Network that enables running Web2 and Web3 applications, off-chain, on-chain, and cross-chain. The network acts as a base layer that bridges the division between blockchains, creating a fluid DeFi ecosystem.*

INTENT: *Intents are signed messages or transactions that enable users to express their on-chain goals, while third-party solvers handle the technicalities, simplifying the process and enhancing user experiences. Intents are opening the door to new use cases.*

Swap/swap contract: *A derivative between two or more counterparties*

Third-party: *A third party is any entity that is interacting with SYMMIO smart contract, these entities include: MMs, users/traders, and exchanges*

User/trader: *An entity that interacts with SYMMIO contracts via an exchange*

16 Resources

[1] (ISDA Legal Guidelines for Smart Derivatives Contracts: Foreign Exchange Derivatives, 2020)
https://www.isda.org/a/bPYTE/ISDA-Legal-Guidelines-for-Smart-Derivatives-Contracts-FX.pdf.

[2] (International Swaps and Derivatives Association, ISDA Clause Library, 2021)
https://www.isda.org/a/u6TgE/ISDA-Clause-Library-factsheet-2021.pdf

[3] (International Swaps and Derivatives Association, ISDA Definitions, 2006)
https://www.isda.org/book/2006-isda-definitions/

[4] (Private International Law Aspects of Smart Derivatives Contracts Utilizing Distributed Ledger Technology, 2020) https://www.isda.org/a/4RJTE/Private-International-Law-Aspects-of-Smart-Derivatives-Contracts-Utilizing-DLT.pdf

[5] (International Swaps and Derivatives Association, Legal Guidelines For Smart Derivatives Contracts: The ISDA Master Agreement, 2019) https://www.isda.org/a/23iME/Legal-Guidelines-for-Smart-Derivatives-Contracts-ISDA-Master-Agreement.pdf

[6] (International Swaps and Derivatives Association, Developing Safe, Robust, and Efficient Derivatives Markets in China, 2021) https://www.isda.org/a/nctgE/Developing-Safe-Robust-and-Efficient-Derivatives-Markets-in-China-ENG.pdf

[7] (Risk Management Guidelines for Derivatives, 1994)
https://www.bis.org/publ/bcbsc211.pdf

[8] (Muon Network, 2021)
https://muon.net

[9] (Uniswap X) https://uniswap.org/whitepaper-uniswapx.pdf
[10] (Anoma Intent-Centric) https://github.com/anoma/whitepaper/blob/main/whitepaper.pdf

17 Disclaimer

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