

# WHITEPAPER V.2

[www.precog.finance](http://www.precog.finance)

## **Abstract**

Decentralized Finance (DeFi) is evolving rapidly, leveraging innovative technologies to disrupt legacy financial institutions and markets in previously unimaginable ways. The established norms and processes in sectors like banking and trading are being transformed. New financial instruments, asset classes, and business models are emerging to replace the old ones, paving a more transparent and user-centric financial landscape.

The elements of competition and volatility are also inherent to this emergent domain, enabling opportunities through arbitrage trading. This provides an ever-widening scope for traders and investors and thus, wealth is steadily flowing out of centralized (traditional) financial systems and into DeFi—the inevitable future of finance. However, DeFi's exponential growth is making the industry increasingly complex for individuals to fully capitalize on newly-realized opportunities. This is particularly apparent in terms of optimizing returns and profits. Manual strategies (or practices) in crypto-trading are proving inadequate and the absence of intuitive solutions limits the accessibility of cutting-edge financial products in general. Precog Finance fills this gap and meets the rising demand for a futuristic, seamless, and unified ecosystem for crypto-oriented traders and investors. Its unique institutional-grade solution comprises Sentient, a sophisticated trading algorithm powered by Artificial Intelligence (AI) and Machine Learning (ML), and Cerebral, an open derivatives marketplace.

The ecosystem is genuinely borderless and it democratizes financial access as anyone with a crypto-wallet can use these products to generate returns on their investments. It also has a novel staking mechanism that lets individuals earn passive income in PCOG tokens and BTC, as elaborated in this non-technical whitepaper.

# 01

## Executive Summary

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# 02

## DeFi's Maturity and Precog's Emergence

2.1 The Success Story of Yearn Finance

2.2 The Opportunity for Precog

---

# 03

## The Precog Ecosystem

3.1 Sentient: Optimizing DeFi Trading & Returns

3.1.1 Crypto Trading: Manual vs. Sentient

3.1.2 Sentient's Scope and Value Proposition

3.2 Cerebral: Broadening Access to DeFi Derivatives

---

# 04

## The PCOG Token (\$PCOG)

4.1 Profit and Reward Distribution

4.2 Tokenomics & Allocations

---

# 05

## Precog's Design Philosophy

---

# 06

## Team: The Humans of Precog

---

# 07

## Market Strategy & BD Plan

7.1 Initial Steps: Entering the Market

7.2 Pre & Post Launch: Initiatives and Activities

7.3 Value Creation: Collective DeFi Intelligence (CDI)

7.4 DeDe Knowledge Base: Precog Finance Academy

---

# 08

## Roadmap

# 09

## Appendix I

# 1. Executive Summary

Precog Finance is a unique, institutional-grade financial ecosystem that automates crypto-trading and democratizes access to innovative crypto-derivatives. The platform is comprised of two products:

- **Sentient:** a sophisticated trading algorithm.
- **Cerebral:** the first-ever marketplace for decentralized futures and options.

Leveraging Artificial Intelligence (AI) and Machine Learning (ML), Precog helps users overcome the barriers of the fragmented trading landscape in Decentralized Finance (DeFi). Besides ensuring optimal profits, it provides novel staking opportunities where individuals can earn passive income in BTC.

DeFi is becoming increasingly complex for amateurs and professionals alike, especially as it matures. There's a simultaneous rise in innovation and institutional investment. The opportunities for end-users are unmistakably widening with the emergence of unprecedented asset classes. However, individuals are still unable to capitalize fully on these changes due to the absence of algorithmic trading solutions. Precog fills this gap, offering the tools for consumers to benefit from the ongoing paradigm shift in DeFi.

## Highlights

- Precog is a real-time protocol that human traders cannot possibly beat, and it runs 24x7 without missing any opportunity. So, its users needn't burn themselves out for profits.
- Precog can simulate any trading sequence across multiple platforms and thousands of assets.
- Precog is a self-paying, loan-enabling, DeFi protocol infrastructure, where lending/borrowing protocols can integrate with Sentient and utilize the trading strategies pool to generate high returns using the loan amount and implement the auto self-paying mechanism for their customers.
- Precog enables individuals with long-term investments in ERC-20 tokens to generate additional (passive) income on its platform.
- Precog offers unique short-term and long-term opportunities for traders looking to lend their tokens.

## The \$PCOG Token: Overview

Precog has an ERC-20 token at its core, namely \$PCOG, that provides access to utilities beyond facilitating distributed governance. \$PCOG's total supply will be 98,000,000.



## 2. DeFi's Maturity and Precog's Emergence

DeFi provides a holistic alternative to traditional finance, promising to disrupt centralized financial systems that pose severe concerns for end-users, including censorship, manipulation, and opacity. By actualizing this promise in a myriad of ways, it has grown exponentially to achieve a market cap of **over \$150 billion as of January 2022.**

We may presently forgo a detailed discussion on the general problems that DeFi solves in relation to traditional finance, since much has already been discussed on this topic. Instead, let us focus on those aspects of DeFi's evolution that led to the necessity of inventing Precog Finance (or simply, Precog).

Notably, DeFi's potential isn't limited to solving existing problems as it simultaneously creates unprecedented financial avenues. Innovation is its lifeblood, so to say. Thanks to DeFi, we now have a novel range of financial instruments, asset classes, and marketplaces that greatly benefit traders, investors, and hobbyists alike. Moreover, there's a broader scope for hedging and speculation than ever before, further strengthening the domain's value proposition.

DeFi has always been a heaven for retailers and small and medium businesses (SMBs). Enhancing financial inclusion among the global unbanked population and other economically marginalized communities has been one of its primary missions. However, by manifesting the progressive potential outlined above, DeFi protocols have increasingly piqued the interest of institutional investors. "Large institutional transactions, meaning those above \$10 million in USD, accounted for over 60% of DeFi transactions in Q2 2021", as **observed by Chainalysis.**

Besides DeFi's **TVL of over \$239 billion** (January 2022), the above data corroborates the claim that capital is steadily **migrating from CeFi to DeFi.** We may also infer from these premises that DeFi is past its infancy and is now entering the next evolutionary phase. Precog will shine in this phase; we must consider a relevant example to explain why.



## 2.1 The Success Story of Yearn Finance

Crypto-based lending is one of the most prominent outcomes of DeFi. Protocols like AAVE and Compound have enabled more expansive access to lending/borrowing services, diversified the range of collaterals through tokenization, and enhanced the sector's overall flexibility by implementing the user-to-contract model. Moreover, they have invented services like flash loans, tokenized interest rates, passive yield generation and so on, which weren't possible traditionally.

DeFi lending ensured higher returns than its traditional counterparts could ever imagine and soon became extremely popular. The number of protocols also proliferated, each with a distinct business model and interest rate to attract customers. An emergent class of industry participants, namely Yield Farmers, targeted these discrepancies to maximize profits. For example, Protocol A offers 7% APY and Protocol B offers 10% APY on a particular asset at the same time; a yield farmer could get 42% more return by re-allocating their assets from Protocol A to Protocol B.

However, individual yield farmers were increasingly unable to generate optimal returns as the competition became fiercer—interest rates changed faster than ever, and it was practically impossible to keep up using manual strategies. In addition, the cost and labor required grew, making the enterprise of yield farming unprofitable overall. To resolve these issues, Andre Cronje developed and released the Yearn protocol in 2020.

Yearn Finance is an Ethereum-based aggregator ecosystem that automates the process of 'farming' or yield optimization. The protocol periodically rebalances yTokens to achieve the most profitable returns from the underlying crypto-asset. Furthermore, the Curve integration facilitates an inter-yToken AMM that allows users to earn trading fees on top of the lending fees.

Cronje's vision was to offer a frictionless protocol where yield farmers could simply deposit their assets, click a few buttons, and let the smart contract generate the best returns. Yearn was a great success and its governance token, \$YFI, achieved a market cap of \$1.3 billion in less than two months from launch.



## 2.2 The Opportunity for Precog

DeFi trading is currently in a state where crypto-based lending was before the invention of Yearn. **CoinMarketCap's listing** for spot crypto exchanges has 313 entries in January 2022, including centralized and decentralized protocols. Though debatable, the list at least gives a clear idea of the industry's proportion.

Inefficiencies abound in the pricing of digital assets across these platforms and so do the arbitrage opportunities. Capitalizing on these opportunities is likewise problematic because the competition here is much fiercer than with lending. As newer asset classes emerge every day, the situation is becoming increasingly complicated for traders and arbitrageurs.

Crypto markets are witnessing rising interest in derivatives trading, which is the natural progression for any investment class. The global derivatives market, which already has a **notional value of over \$1 quadrillion**, is now expanding further via innovation in DeFi. At least **thirty-three exchanges** facilitate trading in crypto-based derivatives while constantly listing new products.

However, similar to their underlying assets, these derivatives manifest the benefits and problems of a fragmented ecosystem. Despite the high scope for arbitrage, access to these opportunities is limited due to the lack of integrated solutions. As previously mentioned, the entry of institutional investors is ramping up the competition, especially in crypto-based futures markets. The entry barriers are becoming higher for retailers and SMBs, which is ultimately a threat to the long-term vision of DeFi.

Therefore, an automated and user-friendly trading solution is a persistent need in DeFi. Precog responds to this necessity similarly to Yearn, except with a much broader scope. Accordingly, it should have a more significant impact and much greater success, capitalizing on its first mover's advantage in the domain of crypto-arbitrage trading as well as decentralized financial derivatives.



### 3. The Precog Ecosystem

Precog Finance is a unique, institutional-grade financial ecosystem that automates crypto-trading and democratizes access to innovative crypto-derivatives. This AI and ML-powered solution also provides novel staking opportunities where individuals can earn passive income in PCOG tokens and BTC.

Precog comprises two main products—Sentient and Cerebral—explained in the following sections of this paper. There are critical aspects of this progressive ecosystem that are important to review before detailing the Sentient and Cerebral products:

- Precog is a real-time protocol that human traders cannot possibly beat, and it runs 24x7 without missing any opportunity. So, its users needn't burn themselves out for profits.
- Precog can simulate any trading sequence across multiple platforms and thousands of assets.
- Precog is a self-paying loan enabler DeFi protocol infrastructure, where lending/borrowing protocols can integrate with Sentient and utilize the trading strategy's pools to generate high returns. In this very lucrative scenario, the loan amount earns sufficient income from Sentient to cover both the loan principal and interest payments due within the same period; hence the loan self-pays automatically.
- Precog enables individuals with long-term investments in ERC-20 tokens to generate additional passive income on its platform.
- Precog offers unique, short-term and long-term opportunities for traders looking to lend their tokens.

Bearing these features in mind, the core elements of the Precog ecosystem products—Sentient and Cerebral— are detailed next.





### 3.1 Sentient: Optimizing DeFi Trading & Returns

Sentient is a sophisticated suite of trading algorithms—the first of its kind in DeFi, as well as in the overall blockchain-cryptocurrency landscape. It leverages Artificial Intelligence (AI) and Machine Learning (ML) to optimize returns for crypto-trading, as Yearn does for lending. The concept here is to deploy a smart contract that targets profit-making opportunities on the user's behalf, moving funds around in real-time to ensure maximum returns with minimal theoretical risks.

In addition to exploiting pricing inefficiencies across asset pairs and exchanges, our algorithm taps into crypto-based futures markets to execute arbitrage and other trading strategies. Sentient can thus accommodate diverse risk aptitudes, offering intuitive solutions to a broad user base.

Moreover, Sentient provides a notable boost to traders through seamless integrations with DeFi protocols that facilitate self-paying loans. These new-age loans pay themselves off with the return from interest-bearing collaterals such as yDAI or yETH. Precog users can therefore trade with the future returns on their deposits while keeping the principal amount intact.

Sentient effectively removes all complexities for traders, including technical analysis, market research, etc. Moreover, it promptly identifies trends and opportunities by analyzing vast data sets that humans cannot possibly handle manually (even with technology). In other words, every Sentient algorithm learns about the market better than any human can, and its strategies are continuously enhanced. The returns are likewise.



### 3.1.1 Crypto Trading: Manual vs. Sentient

To gain a better understanding of how Precog simplifies crypto-trading for individuals, let us briefly compare a manual trade with one handled by Sentient. Presently, we use a typical arbitrage trade as an example, but this ease-of-use applies to any strategy.

When performing an arbitrage involving spot and futures BTC, the manual process is as follows:

- **First**, it's important to recognize the opportunity by identifying the discrepancy between BTC's spot and futures prices. Given the number of competitors targeting a single opportunity, it would disappear quickly due to the ensuing actions and market correction. It's a race against time.
- **Second**, potential gains must be calculated and risk analyzed to conclude whether the opportunity is profitable. Accuracy will be essential here, which requires substantial experience and knowledge about market dynamics.
- **Third**, the assets either need to be held securely in our wallets or perform due diligence to ensure the exchange(s) being used are safe.
- **Fourth**, the asset must be delivered on time, at expiry—or earlier, if the discrepancy is corrected—and book the profits. Usually, these actions will involve a transaction fee that we must include in our calculations.

These four steps may appear simple in theory but are complex in reality. Moreover, it's impossible to entirely account for the time—hours, days, months, or even years—spent in gaining the expertise necessary to book high profits.

If performing the same trade with Sentient, the process is as follows:

- **First**, deposit the amount desired to utilize for trading.
- **Second**, realize the profits and withdraw them when ready.

That's it—unbelievable but true. Precog's algorithm takes care of everything in between, simultaneously deploying trading sequences across multiple assets, contracts, and platforms to book optimal profits. As previously mentioned, it runs real-time and 24x7, reducing risk while the returns accrue.



### 3.1.2 Sentient's Scope and Value Proposition

Sentient is a progressive trading ecosystem, implementing multiple strategies to maximize returns for traders and investors across the blockchain-cryptocurrency industry. In addition to multiplying returns for amateur and professional crypto traders, the algorithm caters to platforms offering managed services and products.

GameFi protocols can also leverage our algorithm to transcend the limitations of current business models, such as Play-to-Earn (P2E). Sentient can enable newer revenue streams in this domain, ultimately empowering users with long-term value and optimal profits. Similarly, metaverse projects can leverage the algorithm to integrate automated trading functionalities across asset classes, including NFTs.

Reviewing Sentient's performance results will further show the significant boost in profits that the above category of users can gain. Additionally, Sentient provides a viable route for traditional forex traders to migrate to crypto, compounding their returns while minimizing hassles and risks.

Lastly, Precog's team of financial engineers, algorithm experts, and AI/ML specialists strives to consistently add newer trading strategies besides optimizing the returns of the ones currently deployed. As a whole, this will ensure an ever-improving value proposition for the user base.

## 3.2 Cerebral: Broadening Access to DeFi Derivatives

DeFi is essentially about democratizing financial access, and Precog upholds this principle. Through Cerebral, the first-ever marketplace for decentralized futures and options, we facilitate global and open access to innovative crypto derivatives. Anyone with a compatible wallet can use our platform to buy/sell these products using most (if not all) ERC-20 tokens and even non-Ethereum tokens in the future.

Cerebral is a community-oriented environment where users define, create, and deploy custom-built synthetic assets. We implement a decentralized order book to record trades on this platform while incentivizing the community to provide deep liquidity by contributing pooled assets. The parameters determining these contributions will be purely market-driven, based on demand and supply metrics or time to expiry. Expectedly, liquidity providers will earn revenues proportional to their contributions. Furthermore, Cerebral facilitates gasless transactions by enabling end-users to pay gas in \$PCOG tokens instead of Ethereum.

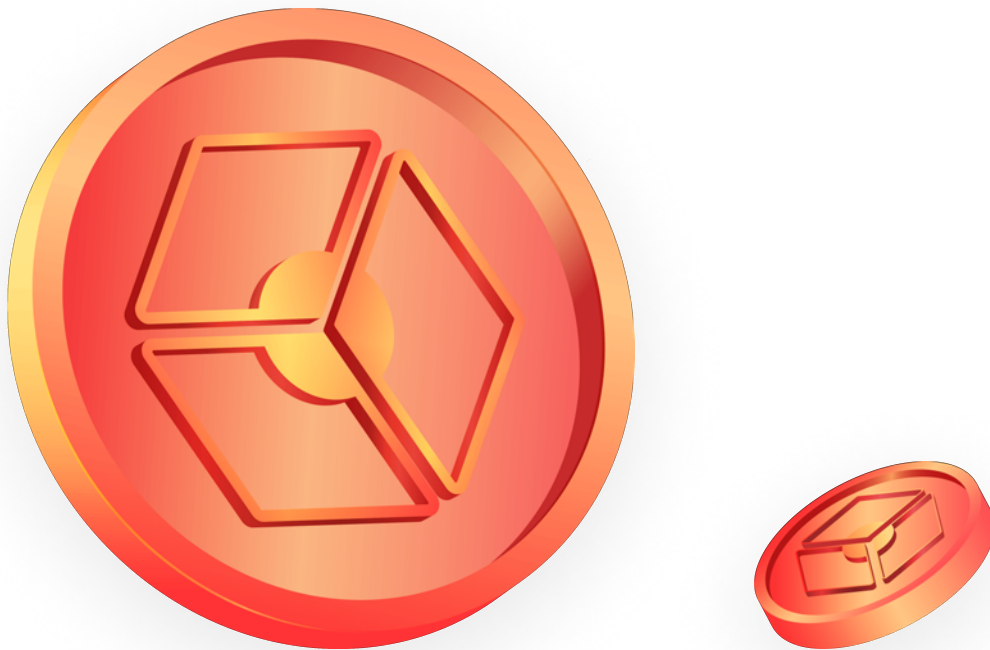


## 4. The PCOG Token (\$PCOG)

The Precog ecosystem will have an ERC-20 token at its core, namely \$PCOG, which will serve as a hybrid token for utility and governance. \$PCOG's total supply will be 98,000,000.

Individuals shall gain voting rights on Precog by owning \$PCOG tokens and staking them for governance. By doing so, they will be able to participate in the decision-making procedure to shape Precog's future. It is in this sense that Precog is a fully community-governed and progressively decentralized ecosystem.

Furthermore, \$PCOG is the ecosystem's native utility token, usable for paying transaction fees and other applicable charges. \$PCOG holders can also stake their tokens to participate in the ecosystem's reward-sharing mechanism, earning percentage of the hashrate tokens daily passive income. These rewards will be distributed in BTC, thus compounding the stakers' original holdings.



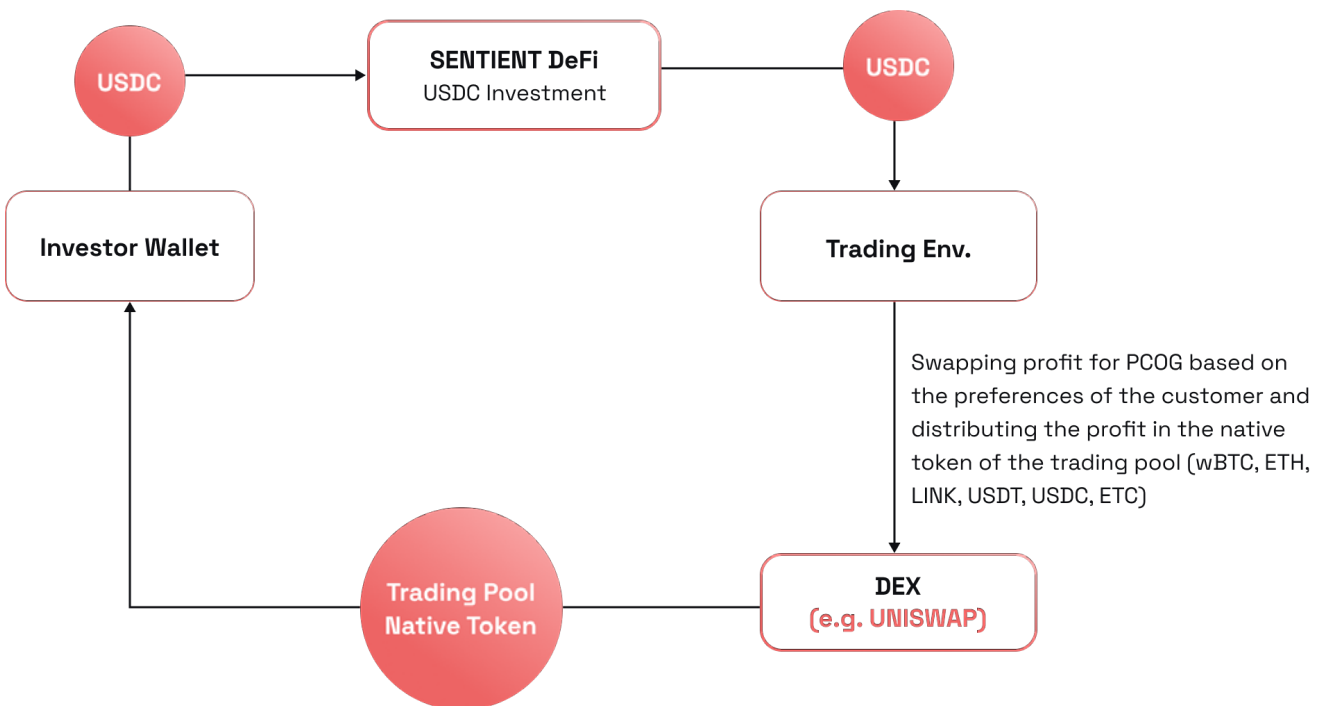
## 4.1 Profit and Reward Distribution

Precog upholds equitable distribution of value as one of its fundamental principles. To this end, it deploys fair and tamper-proof mechanisms for **(a)** Profit distribution in the stablecoins with an option to swap the profit from stablecoins to PCOG Tokens and **(b)** passive income generation and reward distribution through hashrate token purchases.

### (a) Profit Distribution \$PCOG

Precog’s profit distribution mechanism may be summarized as follows:

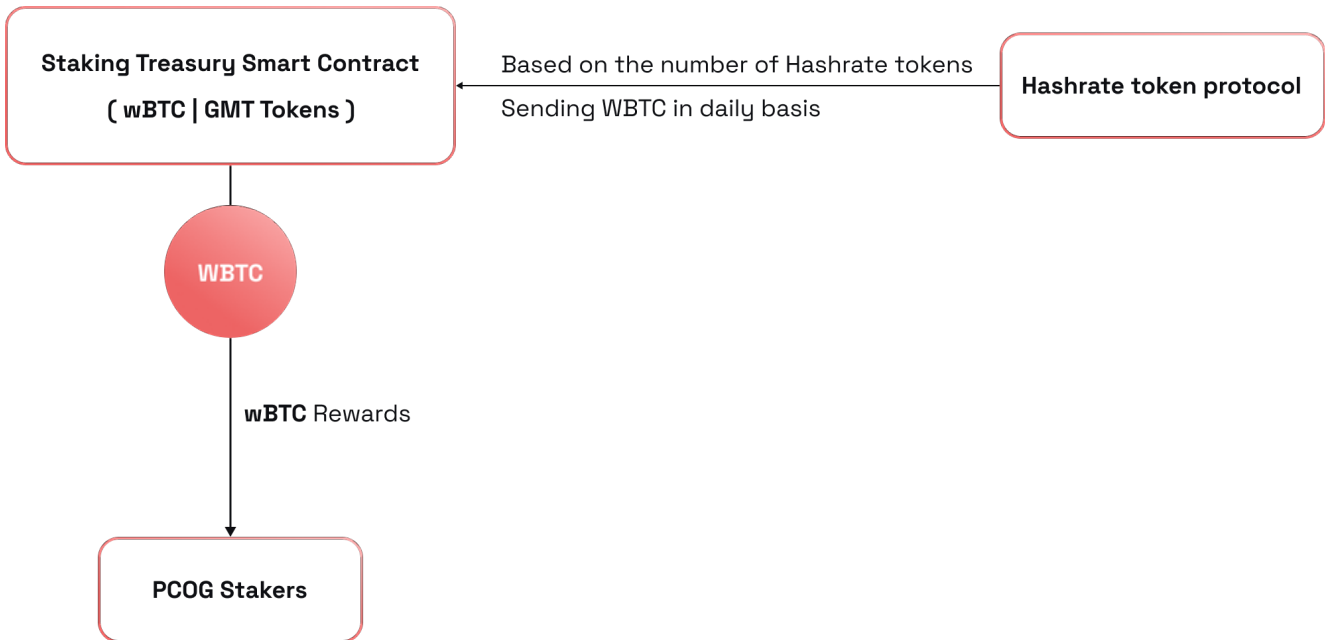
- Individuals participate in various crypto-investment trading strategy pools available on the Sentient dApp. USDT, USDC, and wBTC are some of the possible asset types for these pools.
- The protocol’s smart contract will automatically move these investments to the trading environment, implementing multiple trading strategies to maximize returns.
- Once the profit distribution cycle starts, the protocol will utilize 90% of the accumulated return to be distributed as a profit for the users.
- Investors will thus receive their profits in the asset they use to deposit in the trading pool with an option to swap the profit to PCOG tokens via integration with the blockchain main DEX such as UNISWAP.



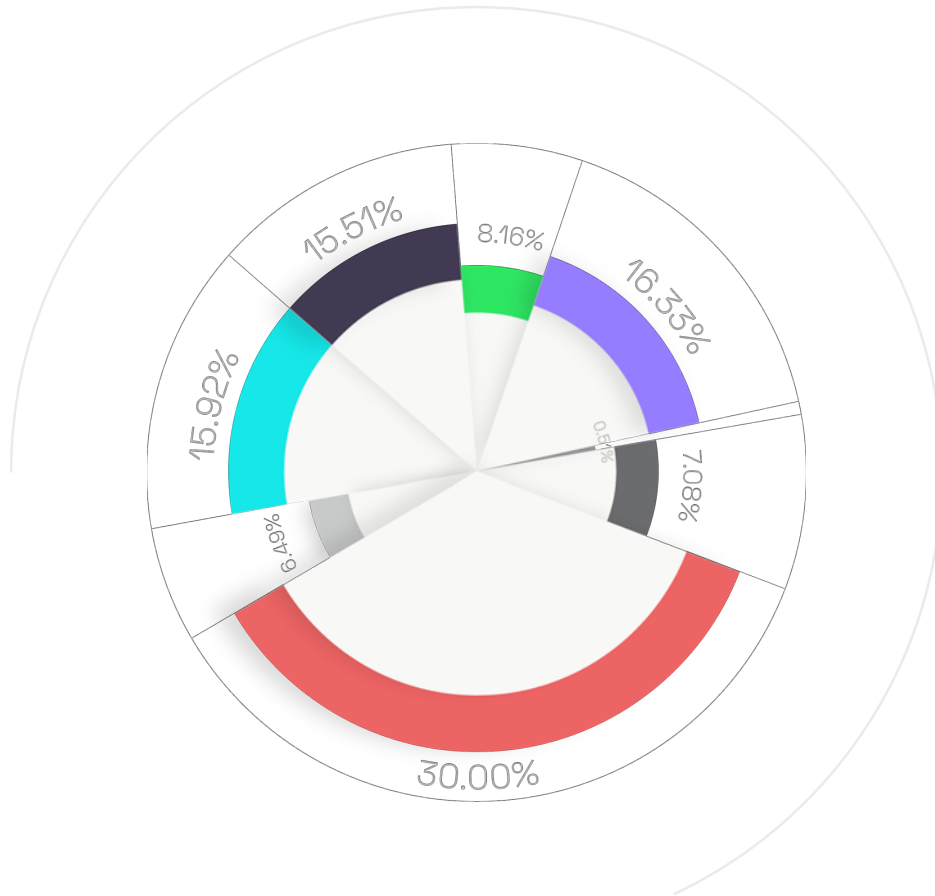
**(b) Passive Income via Staking Rewards**

In addition to profits from automated trading, Precog enables users to generate passive income in the form of staking rewards. The mechanism for this may be summarized as follows:

- In every profit distribution cycle, the Sentient protocol will utilize 10% of the users' accumulated profit to purchase hashrate tokens, such as GMT.IO and BTCST.Finance.
- These tokens will generate daily returns in, say, WBTC, which the protocol will collect in the Staking Treasury smart contract along with the original hashrate tokens.
- The treasury will redistribute the accumulated WBTC, making PCOG a security token among stakers as staking rewards.



## 4.2 Tokenomics & Allocations



<b>8.16%</b> Seed: <b>8,000,000</b>	<b>30.00%</b> Liquidity and staking: <b>29,400,000</b>
<b>7.08%</b> Marketing: <b>6,940,000</b>	<b>16.33%</b> Private sale: <b>16,000,000</b>
<b>6.49%</b> Development: <b>6,360,000</b>	<b>15.92%</b> Strategic: <b>15,600,000</b>
<b>0.51%</b> Launchpads IDO: <b>500,000</b>	<b>15.51%</b> Team: <b>15,200,000</b>



## 5. Precog's Design Philosophy

Precog's design will abide by the following precepts:

- **Ease of Use:** We will offload investors' participation to an automated investment manager. The protocol will leverage algorithms to identify opportunities and decide the optimal position sizes and timing for trades, without human intervention.
- **Transparency:** We will ensure that users have all the information necessary to engage in decision-making for all matters related to their investments, even though the protocol is automated. Our platform will further provide users with various metrics related to its functioning and activities.
- **Optimization:** Robust feedback loops will be utilized to ensure that the protocol constantly learns new strategies based on internal and external data. Achieving superior functionality will be our goal, and the algorithm will self-optimize for performance based on multiple parameters and metrics.
- **Recursiveness:** We will design an optimally recursive system that can evolve and adapt to increasing complexity while maintaining logical integrity and simplicity. The protocol will be easily repairable and scalable.





## 6. Team: The Humans of Precog

Precog is the brainchild of financial engineers, algorithm specialists, and AI/ML experts dedicated to improving the algorithm daily. Perfection is the goal, and it motivates the team to consistently develop new features in the algorithm to expand its scope.

Precog's human creators are also long-time centralized finance experts, providing with vast knowledge about traditional financial systems, their limitations, and their advantages. They can combine the best of the two worlds as a result, particularly when it comes to the development of Cerebral. Thanks to its highly skilled developers and software engineers, the marketplace will regularly have new features.

As a whole, Precog is not merely a trading protocol or a marketplace for that matter, but a holistic DeFi ecosystem backed by experts. And finally, these are people with a long-standing presence and reputation in diverse industry sectors, both financial and otherwise. Precog is, therefore, a culmination of human and machine intelligence, an actualization of foresight and scientific knowledge.



Founder & CEO

### Gehan Rajapakse

Gehan has over twenty years of experience in developing start-ups, whereby he has built and managed multiple teams. He received a formal education in finance and psychology, compounded by operational knowledge gained through his involvement in diverse industries globally. Gehan is therefore integral to guiding and connecting the different elements of Precog's extended team, both internally and externally.





#### CTO

### Artur Goulão Ferreira

Founder of Utrust and Coding Libra, and partner at Obvious Capital, Artur has invested more than five years in team management and leadership. He is the head of Precog's technical department, overseeing the engineer and R&D teams simultaneously. Due to his immense wealth of knowledge on matters of blockchain and DeFi, among others, he is integral to the architecture and development of the Precog ecosystem.



#### Ethereum Lead Developer

### Mohamed Saleh

With over six years of experience, Mohamed is a senior blockchain developer and an early adopter of decentralized technologies and platforms, including Bitcoin and Ethereum. His expertise spans the blockchain space, covering smart contract development and security auditing, gas fee optimization, architecture development for DeFi, and blockchain integrations.



#### Financial Engineer

### Abhishek Gupta

With a dual Masters in Financial Engineering and Business Administration from the prestigious IIT (Delhi, India), Abhishek is a seasoned expert with over a decade of experience in providing advisory services for mathematical and quantitative research concerning financial products and markets. He further assists the R&D team with analyses and operations while developing and deploying strategies for sustainable, long-term growth.





#### Algorithm Engineer

### Andres Maes

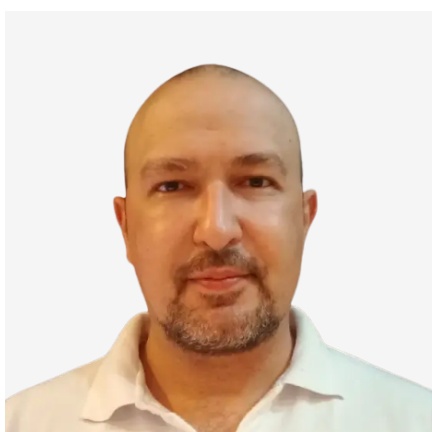
With a master's degree in Computer Science, Andres is passionate about algorithms and specializes in AI. He is currently designing, developing, and deploying the automated arbitrage trading engine for Precog.



#### Data Scientist

### Matías Molina

With a Ph.D. in Computer Science, Matías has gathered experience as a software developer, data scientist, and machine learning expert for over five years. He focuses on supervised learning and transferred learning for classification. At Precog, he is responsible for researching and implementing trading algorithms, thereby playing a pivotal role in fine-tuning the protocol for optimal performance and returns.



#### CBDO

### Steven Roussanov

Steven has undertaken Marketing, BD, and Technical responsibilities in algorithmic trading and electronic finance, working with equities, forex, and crypto for over twenty years in total. He is now working towards Precog's business development and partnerships. Besides these, he is in charge of fundraising, building investor relations, and Institutional & HNWI Client Marketing & Sales.





#### Strategic Advisor

### Eden Spivakovsky

Eden has over twenty years of experience delivering growth strategies, corporate transactions, and new ventures for leading financial institutions. He is currently focused on Precog's growth strategy and execution, including BD strategy, fundraising, and client acquisition.



#### Chief Marketing Officer

### Johnathan King

With over twenty years of combined marketing experience, Johnathan leads the way as the head of Precog's marketing strategy. He works closely with the team to execute its overall vision and achieve the organization's long-term goals. Johnathan also adds value throughout other areas of the organization, including partnerships and fundraising.



#### Marketing & Partnerships Manager

### Can Inellioglu

With an engineering background, Can has been crypto-savvy and highly active in this market for over six years. He has provided various marketing and business development services to multiple blockchain-oriented companies, ranging from start-ups to global exchanges. He is currently focused on creating and developing Precog's Marketing Plan & Outreach Strategies, in addition to communicating with influencers and KOLs.





### Social Media Manager

#### **Marta Moya**

Marta has over five years of experience in social media marketing. She is an energetic and motivated manager with a thorough understanding of social media, content marketing, brand awareness, audience engagement, and community-building strategies. She is highly organized and skilled at finding new ways to enhance visitors' experiences and likes to work closely with Precog's entire team.



### Head of UX/UI

#### **Pollen Chakma**

With over seven years in his domain, Pollen is a UX/UI designer and cutting-edge technology lover. He helps clients fill the gap between business, design, and development. Dedicated to staying up to date on new design trends and techniques, Pollen is an expert in converting crazy ideas into visual language.



### Front-End Developer

#### **Arik Chakma**

With over four years of experience, Arik is a passionate web3 front-end developer, and an expert in DeFi projects and web applications. He has deep knowledge of blockchain technologies, specifically in constructing a perfect pixel decentralized application, custom Front-End development, and a deep understanding of JavaScript.



## 7. Market Strategy & Business Development Plan

Creating long-term value for the community is at the core of Precog's marketing strategy. As mentioned earlier, Precog has the competitive edge of being the first-ever automated algorithm for crypto-oriented arbitrage and derivatives trading. Besides leveraging innovative technology to maximize consumer returns, our team of AI and ML experts is setting new standards for crypto and DeFi. In doing so, we are shaping the future of finance and introducing undiscovered avenues for our users.

It's inevitable that Precog will have replicas in the future. Given the amount of time and resources that we are investing into training as well as optimizing our models for perfection, we will be leagues ahead of the competition. Moreover, Precog is a product of immense expertise, which further compounds our first mover's advantage.

However, Precog's distinctions only matter when its community is aware of these features and the overall scope. Therefore, we are dedicated to fully and transparently communicating updates and analytics to the public. We will employ diverse marketing strategies and toolkits to support this, as described in the following sections.



## 7.1 Initial Steps: Entering the Market

1. Define the platform's primary target audience, constructing nuanced and detail-rich buyer personas.
2. Gather qualitative and quantitative information about the target by "listening and researching".
3. Create brand awareness by engaging the community and providing value to its stakeholders.
4. Deploy the product on the testnet.
5. Collaborate with KOLs to provide and receive feedback.
6. Release the product publicly.
7. Initiate the token listing process.
8. Monitor results while experimenting to optimize performance and efficiency.



## 7.2 Pre & Post Launch: Initiatives and Activities

1. Community-oriented campaigns.
2. Result-driven SEO, Content Marketing, and Social Media Marketing.
3. DeFi trackers to monitor ratings and calendars to manage listings.
4. Targeted advertising for enhanced discoverability.
5. AMAs and podcasts with prominent personalities and industry leaders.
6. Collaborations with KOLs.
7. Interactive forums and community management.
8. Promotional campaigns, including giveaways.





## 7.3 Value Creation: Collective DeFi Intelligence (CDI)

Given our focus on value creation, we are constantly producing and publishing high-quality content on our social media channels, including [Medium](#). We are also building a Collective DeFi Intelligence or CDI to foster in-depth knowledge about ‘all things DeFi’ within our community.

As well as our in-house team of experts, we will seek support from external value providers, including but not limited to data analysts, traders, writers, podcasters, and other community members—effectively anyone interested in creating content and producing value. CDI is our ‘value creation and sharing platform’ that serves as an information and knowledge pool accessible to the broader DeFi community.

Some of the aspects of the CDI are as follows:

- Articles
- Podcasts
- Newsletters
- Campaigns & Initiatives
- Market Research
- Data Analysis
- News & Trends
- Live Streams
- TradingView Trader Invitations
- Incentivization Programs
- Arbitrage Opportunities
- Contests & Engagement Schemes



## 7.4 DeDe Knowledge Base: Precog Finance Academy

Decentralized Derivatives (DeDe) is a new phenomenon in the blockchain and cryptocurrency industry. Precog Finance refers to this emergent and potent asset class as 'DeDe' and will develop the resources necessary to educate the community in this regard. We will thus enable our users to make well-informed decisions and generate optimal returns on their investments in DeDe.

Moreover, we are creating an intuitive product, namely the Precog Arbitrage Calculator (PCA), to assist users further while strategizing and planning. In all, the PFA will be a knowledge base specializing in DeDe, designed for both amateur and seasoned cryptocurrency investors.



## 8. Roadmap Milestones

- Litepaper (Done)  
Website Launched (Done)
- Sentient Research & Development (Done)
- Fringe Partnership (Done)
- Website Updated with New Logo & Branding (Done)  
Whitepaper V1 (Done)
- Polygon Partnership (Done)
- Key Opinion Leader (KOL) Investors (Done)  
Seed Round Closed (Done)  
Launchpad Presale Announced (Done)
- Whitepaper V2 (Done)  
PCOG Token Smart Contract Audit (Done)
- ⊙ Marketing Campaign (In Progress)  
Sentient Demo Launch (In Progress)  
Sentient Audit & Penetration Testing (In Progress)
- Key Opinion Leader (KOL) Campaigns  
Community Growth  
Launchpad Presale Announcement
- Initial Dex Offering (IDO) Launchpad Announcement  
\$PCOG Token Minting  
Initial CEX Listing Applications  
MM Activation  
CoinMarketCap Application  
CoinGecko Application
- Public IDO Raise  
Token Launch on DEX  
CoinMarketCap Listing  
CoinGecko Listing
- Sentient Public Launch  
Staking Program Launch



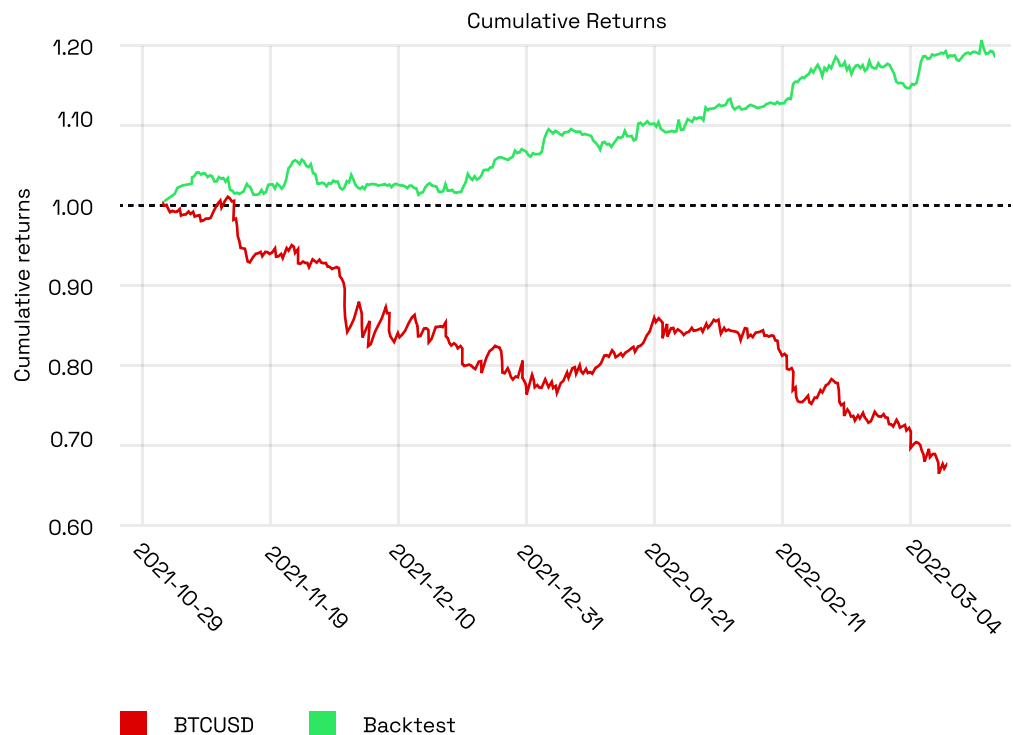
## Appendix I

Here we present the results of backtest over a sample period of run using actual market data. The backtest was conducted on a single asset pair i.e. BTC Perpetual Futures and BTC March 2021 Futures and gives the results of how algo would have performed on a single asset for the period between November 2021 and March 2021.

These results are partially representative of the Precog’s suite of deployments as the actual implementation runs 24x7 across a large number of assets and exchanges.

### Cumulative Returns:

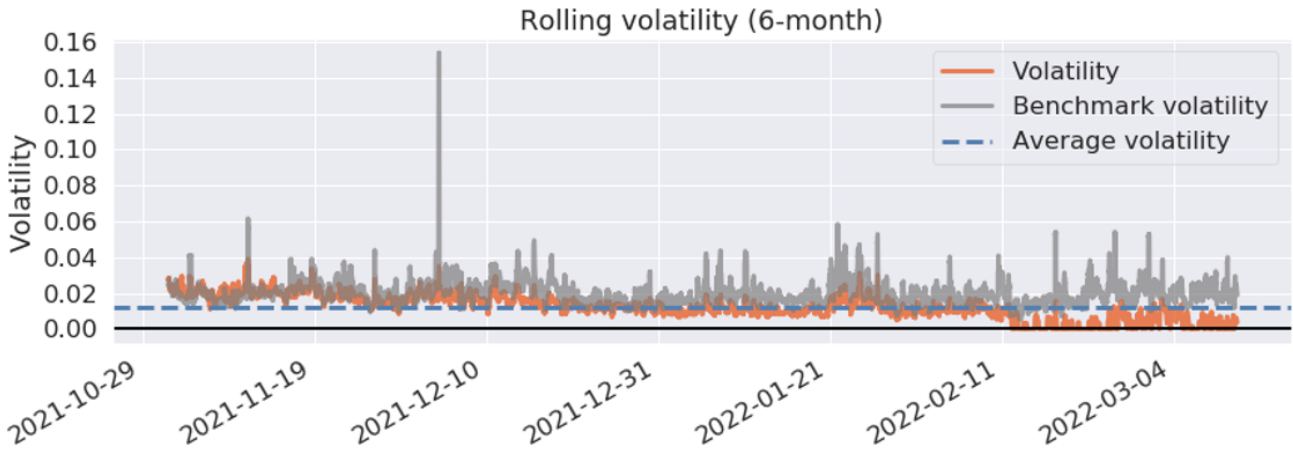
The cumulative returns signifies how much money strategy generated over a period of three months. As visible from the graph, a single asset pair gave a healthy cumulative return of around 20% in three months. Moreover, the consistent upward direction of returns regardless of BTCUSD’s movement demonstrates the edge that arbitrage strategy provides over other buy and hold and unidirectional strategies.



### Volatility

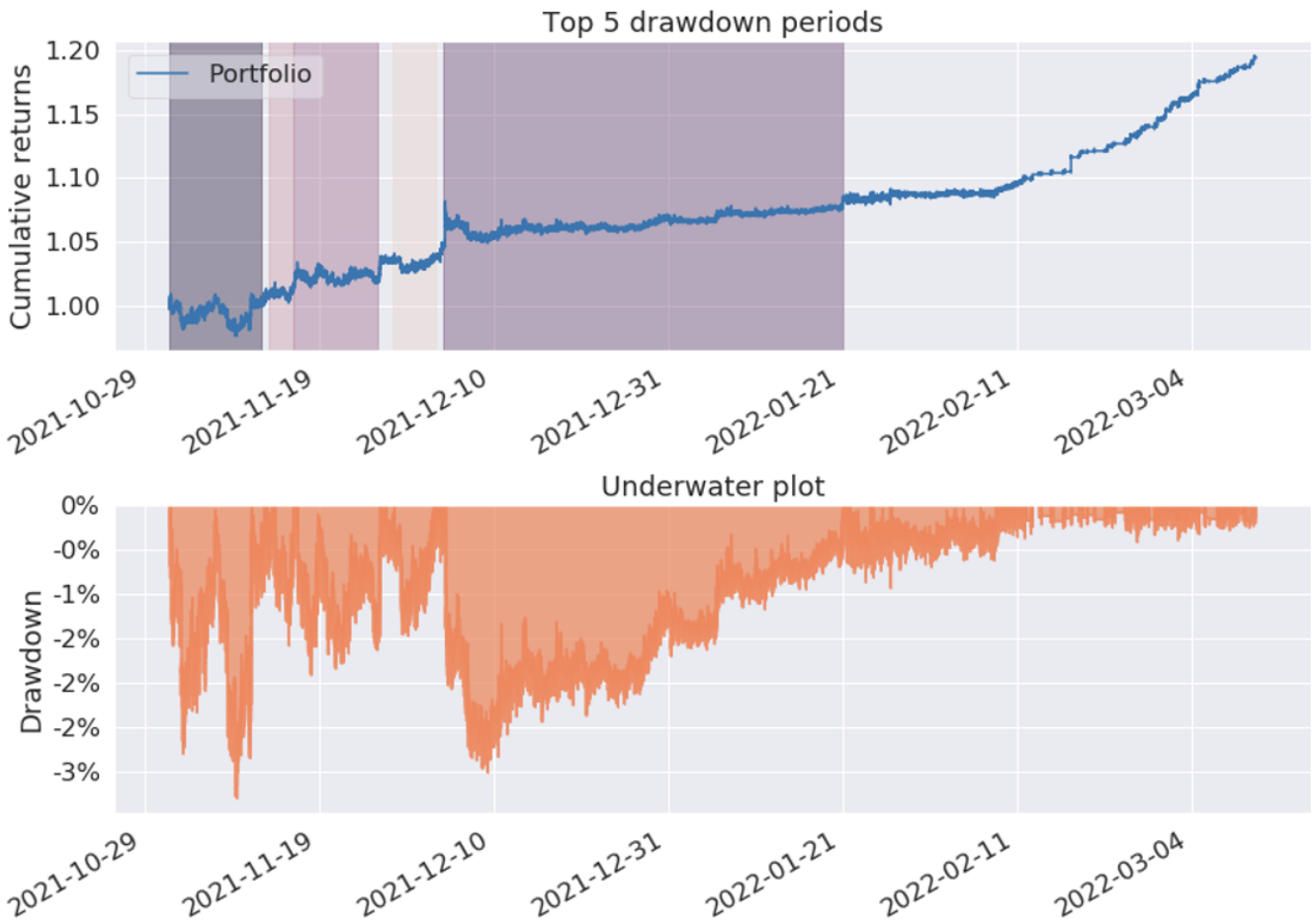
In financial trading, volatility signifies the risk taken by the investor in the particular asset. Needless to say, investors desire lower risk and hence lower volatility. The below chart presents the rolling volatility of the strategy and its benchmark (BTCUSD).

The volatility of the strategy has been significantly lower than the benchmark's one, which clearly signifies the lower risk that the investor is taking while investing in the strategy. The lesser risk can be attributed partially to the directionless' nature of arbitrage strategies and partially to AI based parameter selections of the strategy.



### Drawdowns

Drawdowns signify the depth of negative movement of the strategy/asset over a continuous number of periods. The present backtest shows that there were fewer and shorter drawdowns in the three month period when compared to the usual drawdowns of strategies. The maximum drawdown was only -3.5% that happened near Nov 15th and was only temporary, with a very short duration.



## Cash & Carry Trade: Mathematical Exposition

The following is a complete and strict description of a single Cash & Carry arbitrage trade. The purpose of this is to concretely explain the idea behind the strategy. The spot and futures price of the same asset is used. The operation takes place at two different times, denoted as time 0 and time 1. At  $t=0$ , the futures price of this asset is higher than its spot price. At  $t=1$ , both prices are equal.

Symbol	Meaning
$N$	The amount of money used to buy spot
$N_F$	The amount of money used to buy futures
$P_{s,0}$	The spot price at $t=0$
$P_{s,1}$	The spot price at $t=1$
$P_{f,0}$	The futures price at $t=0$
$P_{f,1}$	The futures price at $t=1$
$t_{bs}$	The transaction cost for buying spot
$t_{ss}$	The transaction cost for selling spot
$t_{bf}$	The transaction cost for buying futures
$t_{sf}$	The transaction cost for selling futures



## STEP 1: buying spot and selling futures

The trade starts at  $t=0$ . The spot price is lower than the futures price.

$$P_{s,0} < P_{f,0}$$

We simultaneously perform two actions.

- We buy spot for  $N$  with a transaction cost of  $t_{bs}$  at a price of  $P_{s,0}$
- We open a trade as a seller for an amount of  $N_f$  with a transaction cost of  $t_{sf}$  at a price of  $P_{f,0}$

These actions result in us having

- an amount of cryptocurrency equal to  $\frac{N}{P_{s,0}} (1 - t_{bs})$
- a sell order for an amount of  $\frac{N_f}{P_{f,0}}$

By opening the order as a seller, we also gain  $N_f$  and pay a transaction cost of  $N_f * t_{sf}$  netting us  $N_f (1 - t_{sf})$ .





## STEP 2: selling spot and buying futures

The trade ends at  $t=1$ . The spot and futures prices are equal.

$$P_{s,1} = P_{f,1}$$

We then perform the opposite actions of  $t=0$ .

- We sell  $\frac{N}{P_{s,0}} (1 - t_{bs})$  spot for with a transaction cost of  $t_{ss}$  at a price of  $P_{s,1}$
- We open a trade as a  $\frac{N_F}{P_{f,0}}$  buyer for an amount of with a transaction cost of  $t_{bf}$  at a price of  $P_{f,1}$

These actions result in us having:

- An amount of currency equal to  $N \frac{P_{s,1}}{P_{s,0}} (1 - t_{bs}) (1 - t_{ss})$
- A loss of currency equal to  $N_F \frac{P_{f,1}}{P_{f,0}} (1 + t_{bf})$

There are two things that still need to be determined.

- Firstly we need to determine how much we want to open a sell order at  $t=0$ , this is the amount  $N_F$ .
- Secondly, we need to find out when the difference between spot and futures is high enough to make for a profitable trade.



## Determining the size of the sell order

When determining  $N_F$ , we want to make sure that our actions at  $t=1$  will cancel each other out. In other words:

$$N \frac{P_{s,1}}{P_{s,0}} (1 - t_{bs}) (1 - t_{ss}) = N_F \frac{P_{f,1}}{P_{f,0}} (1 + t_{bf})$$

$P_{s,1}$  and  $P_{f,1}$  are equal so they cancel each other out. This equation eventually gives us

$$N_F = N \frac{P_{f,0} (1 - t_{bs}) (1 - t_{ss})}{P_{s,0} (1 + t_{bf})}$$

This equation enables us to determine for how much we should open a sell order at  $t=0$  depending on the spot and futures price and the transaction costs.

## Determining the buy threshold

We need to determine when the difference in spot and futures price is high enough for us to start the trade. To this end, we set the condition to be that the net profit should be positive. Since the trades at  $t=1$  give a net 0, the profit is determined by the amount that we gain from selling futures at  $t=0$  and the amount that we lose by buying spot at  $t=0$ .

$$N_f (1 - t_{sf}) - N > 0$$

By combining this with equation 1 we get

$$N \frac{P_{f,0} (1 - t_{bs}) (1 - t_{ss}) (1 - t_{sf})}{P_{s,0} (1 + t_{bf})} - N > 0$$

Which eventually gives us that the difference between the spot and futures price of an asset when starting the trade should be at least

$$\frac{P_{f,0}}{P_{s,0}} > \frac{1 + t_{bf}}{(1 - t_{bs}) (1 - t_{ss}) (1 - t_{sf})}$$



**Thank You**